11. Providing strategic guidance: a case study from industry

11.1 Strategic investment in IT

A major multi-national enterprise with operations headquartered in Germany requested all of its subsidiaries to begin a strategic investment in IT to 'future proof' business operations and to embrace an IT driven approach to business services design. IT had been largely ignored in terms of investment for many years and was not a trusted resource.

The enterprise subsidiaries focused on manufacturing and sales of rubber-based products (for example products such as industrial strength conveyor belts for mining and metal pipe manufacturing, fabrication of rubber cements and glues, and importing and assembling components for tyre repair kits---which even in 2021 is a multi-billion dollar market--- and re-selling of multiple imported related products), and provision of bespoke services to the mining industry.

This case study relates to the USA subsidiary, the New Jersey (NJ) HQ office, where the organization is brigaded under five vice presidents: Purchasing and Supply, Industrial, Corrosion Protection, Automotive and Engineering Belting. The President of the subsidiary made it clear from the start that IT use was inadequate and not remotely in line with modern business.

The existing IT support was focused on incident management of operational activities and provision of the IT environment, desktops and laptops; mobile phones were distributed and managed in a different area. All Sales and much of the Purchasing and Manufacturing information was intended to be part of a Microsoft Navision suite first installed in 2002/3.

As with many organizations that operate in a complex purchasing/manufacturing/ distribution/sales environment, the business information needs were inter-connected, nuanced and engendered many dependencies, requiring detailed analysis before any decisions could be made regarding the information needs of the enterprise. As a result, the Navision product was tailored making it also difficult to migrate to newer versions with richer possibilities.

Initial consultations surfaced an almost entirely absent consistent approach to gathering, storing, securing and exchanging data. Reliance on IT was increasing though the business was surprisingly analogue in its approach; expensive manufacturing designs were (literally and figuratively) made on scraps of paper and stored in filing cabinets. Items imported to warehouse facilities in the South of the USA were placed in storage without any IT support such as bar coding and almost all warehouse activities were manual, duplicated and reliant on people. Purchasing and manufacturing processes were duplicated in the South and in NJ via networked printers reliant on inadequate IT hardware and networking equipment and all activities relating to the processing were manual—no automation of any scale was present.

However, the USA operations were **very** profitable, and because of this an *'If it ain't broke don't fix it' attitude'* prevailed at the top of the office and the scale of change believed to be needed to move to an IT driven business was both feared and considered to be too risky and expensive.

Service integration

Service integration is the set of principles and practices which facilitates the collaborative working required to maximize the benefit of delivering services using multiple service suppliers. Service integration links services, the technology of which they are comprised and the delivery organizations and processes used to operate them, into a single ecosystem which is capable of meeting the needs of the business it supports. A good practice (e.g. Service Integration and Management, SIAM) exists to cover the technical side of integration but BIM must take responsibility to address integration issues regarding information and data sources and use.

As indicated in chapter four in this book , the scope of the information management organization will vary between enterprises. As a minimum, it will usually include management of the origination or acquisition of data, whether it originates in digital or other form, storage, processing to create more valuable data and reports *via* applications, and the transmission of the data or resulting reports.

Failure to enforce a holistic approach to managing information services and sources of the data will almost always lead to a fragmented set of information services and data stores (often known as islands of automation), which may be incompatible, contain duplicate or inconsistent information, and omit critical components of information.
The mess is compounded when information partners or supply chain partners are excluded from the picture of the ecosystem to be managed.

10.2.5 Technology Strategy

The portfolio of the agenda of the BIMC will guide the Technology Strategy.
The correct Portfolio, Programme and Project Offices model (Portfolio management good practice; P3O), will allow the enterprise to define a balanced portfolio of improvements (changes) and will ensure a consistent delivery process. Larger enterprises will have a sophisticated tangible office and team, smaller ones perhaps a virtual team. The creation of the Portfolio is governed by the executive decision making as described in the Governance domain.
A portfolio is defined as 'The totality of an enterprise's investment (or segment thereof) in the changes required to achieve its strategic objectives. Portfolio management is a coordinated collection of strategic processes and decisions that together enable the most effective balance of organizational (enterprise) change and business as usual. Be aware that a service portfolio is a subsidiary of the overall enterprise portfolio.

10.3 To conclude

As we postulated, perhaps the most important contribution of DID is to ensure that from the start of a programme to transform the business, or to improve BIM (using DID), an efficient connection exists between the various business information management activities, meaning that good governance is mandatory. The day- to- day operation of the framework is delegated by BIMC as we proposed in this book. BIMC can be a person or a department, but it can also be the whole of responsibilities delegated to different keypersons to work together making BIMC work. Coordinating BIM requires specific skills and knowledge.

At LoB level, strategy is an amplification of perspectives of the enterprise strategy. The focus is on the interpretation of enterprise policies and their enactment to ensure the right information is being captured, processed and used, and to establish that appropriate outcomes are being met.

The information policies and principles set out in the Governance domain will impact data architecture, modelling, data portraits, database design and data administration and data stewardship. Data portraits of customers will be subject to privacy policy and external regulation, though some enterprises will see the opportunity to mine data and prefer to take risks.

Business areas should be represented in the committee where policy is adopted, and they should be free to be able to negotiate flexibility or degrees of compliance. Where a LoB negotiates exemption, it is not enough to simply say *'OK, we are now free to implement Apple computers instead of Microsoft Windows because we prefer to develop our ideas on a Mac*'; a proper exemption should be documented and recorded, after all we are promoting proper records management in BIM!

The agreed standardization policies and data architecture should be pursued by making strategy responsible for the instantiation of projects that meet the specifications set out. Clearly wanting to use a Mac is not just a technology issue.

10.2.4. Service strategy and service integration

Service strategy

The services perspective requires stakeholders to analyze both business information service needs and value and the issue of sourcing, e.g., build or buy?
All services that are built in support of information services will be part of an IT service portfolio, and the dependencies between the IT service portfolio and the information services portfolio must be unequivocal.

A service supplier is expected to have the correct mix of services that enables business objectives to be met consistently and effectively. The service portfolio is the internal view of that mix of services, whereas a service catalogue is the external view, the catalogue is open to view.
A primary consideration is the impact of improvements to enterprise business information services on customers, partners and suppliers. BIM should focus on projects that will lead to visible and demonstrable improvement in the way that business is transacted and these projects will be candidates for development from the portfolio.

The suppliers of the information services may be internal, external or a combination of the two. Whatever the structure, the relationship must be carefully managed. Information services consumed operationally will of course mean that day-to-day management activities will take place but that will not be the case at the strategic level.

When it comes to Sourcing at the strategic services level, contracts and agreements and detailed discussion will be mostly a Procurement undertaking. BIM must ensure that the strategy will meet business information needs. That is a question that cannot be answered generically, though BIM will need to establish both a Value For Money (VFM) case for existing and often, VFM criteria for introducing new information services or changing existing services. As mentioned, BIM should be visible in such discussions because Procurement no matter their experience and expertise, will not be looking at issues regarding information services supply or indeed at detailed issues regarding software quality.

Governance to see whether they are still valid. Begin at *2.1 Business strategy* (see figure 10.1 and see table 2.1 (for reference) and follow the topics coming from the four perspectives on the strategy domain.

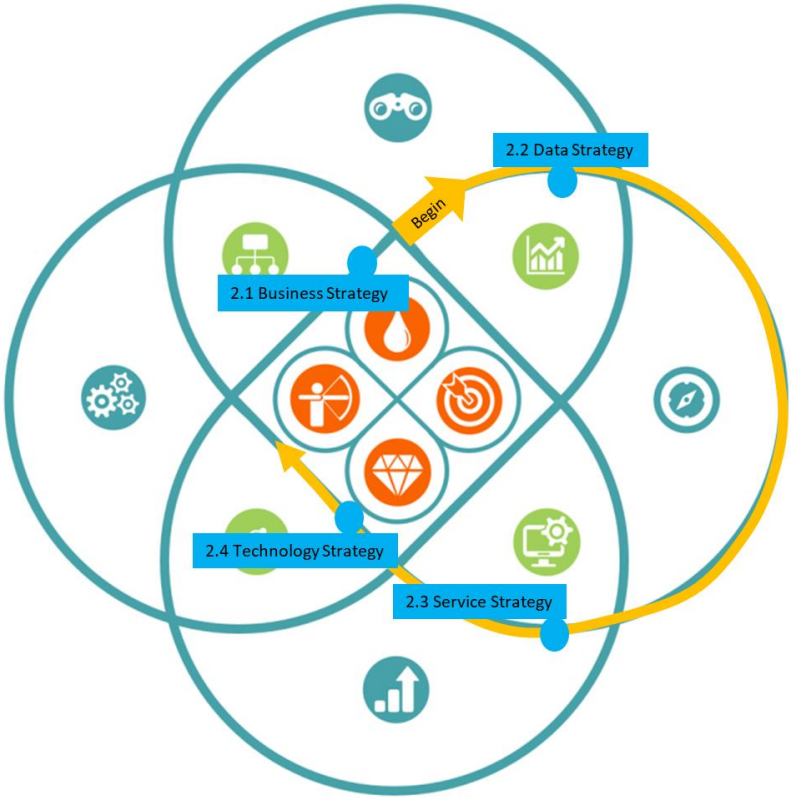


Figure 10.1 Analysis using DID guidance

10.2.2 Business strategy

You should have reached a view on whether your current business information services, the IT infrastructure or data structures are a part of your business problem, or largely irrelevant to it. And keep in mind that Improvement will depend on careful planning of any required changes.
As an outcome of your deliberations you should be aware that some of your IT applications will become redundant because they either do not support current or future demands for BIM or they are a cause of poor quality information being used. You may need new or substantially modified applications. You may need new network and computer capacity. You may need your infrastructure to have greater flexibility.

So, before using your understanding of your current IT to improve it, you first of all need to assess its continuing relevance to the new business environment. In any respect, the changes to the business portfolio and its impact on information services, whether carefully planned or disrupted by events will require you to understand portfolio, program and project planning.

10.2.3 Data strategy

The strategic focus will most likely (or it should) consider how all LoB can be served better by creating useful common modules of information and data that are used by many LoB (for example name and address of a customer might be shared across many enterprises in the information chain).

technology that support it. In other words, it is about managing strategically so that the enterprise business is supported, enabled or transformed in the most effective way possible by its information services and its information technology.
Creating and managing strategies follows three stages of planning, followed by the ongoing process of strategic management – implementing the programs that have been decided upon, and reviewing and updating the strategy. This is the sequence of activities that must be undertaken regarding the components of strategic management, cascading from strategic issues through major themes to individual programs and projects of change. The three stages of strategy development are:

- business analysis (looking in detail at the issues facing the enterprise, how things are currently done
- deciding the future state that the enterprise should move towards and identifying strategic themes
- strategic planning, translating strategic themes into candidates for action, prioritizing these and assisting executive management decide how to proceed.

The main characteristic of strategy formulation in the early stages of any strategy study is synthesis: identifying patterns and creating candidates for improvement from a wide spectrum of inputs. BIM should be focused on improving the way information is made available and information services are being used. Quality of service design, leading to the integrity of the application processing of the data and appropriate security/confidentiality are as important as availability of information services. The third stage of strategy development involves shifting the emphasis from strategy formulation to high-level planning, which is the necessary basis for detailed planning and implementation. Detailed planning will generate detailed breakdowns of activities and resources required, which is discussed in chapter 4.4

The strategy for the enterprise whether for the enterprise as a whole, individual LoB, or for its information services, should include as part of its overall mission, a strategic 'vision' that promotes BIM. The vision is a long-term view of how the enterprise wishes to position itself in relation to its business environment, for example, its role and functions, the products or services it will deliver, its relationship with customers or competitors. BIM should not be ‘just another trend’; it should have an agenda for improvement.

10.2 Agenda of strategic themes: analysis and decisions

BIMC would focus upon the significant areas of improvement the enterprise will address, in order to respond to the risks and opportunities it faces. These themes will form the focus of interest for the strategy domain. The enterprise might need to change in terms of organizational units, and in turn business functions and activities, product and service delivery, management and staffing issues, technology, or external relationships will alter and all will have an impact on business information. The policies which will guide the decision making processes, and provide a framework for management decisions, will influence the patterns of behavior which drive the enterprise towards the desired future; governance policies will be key to changing behavior. The policies can be regarded as the 'strategy success factors' – that which the enterprise must focus upon if it is to move in the direction of the desired future and if BIM is not one of those success factors then it will inevitably fail to become established.

10.2.1 Analysis using DID model

Again, the analysis follows the same approach as we have seen earlier. But in this case, we stay within the strategy domain although we should reflect all topics in relation to

- new ways of doing business, brought about by new technologies, social media or automation of existing manual processes
- reorganization to improve efficiency
- regulatory changes

2. themes relating to technical issues:

- using innovative IT to improve support for the business
- using IT to transform the business (for example, through e-business, or apps)
- improved management and processing of information
- restructure of tasks and processes
- facilities for communication, within and beyond enterprise boundaries
- new systems for management, monitoring and regulation

3. themes relating to political issues:

- decision processes
- sources of power and influence in the enterprise
- definition of policy
- relationships with the external environment
- national and international regulatory issues

4. themes relating to cultural issues:

- enterprise values
- communications in the enterprise
- stakeholder perspectives
- skills of staff and new skills becoming necessary
- internal and external structures and relationships.

There are some obvious critical tests of success for this strategy. Services must be:

- joined up around customer needs, offering them valuable information services
- accessible, secure and reliable
- delivered and supported electronically, seamlessly and jointly by enterprises and departments that should be part of an information chain
- open and accountable
- able to be used by everyone entitled to do so, as mentioned above; not everyone can afford a smartphone, not everyone has access to the internet, and not everyone wants to communicate via these means, e.g., when this also implies risks (for instance banks changed the conditions on Internet services such that the client is in principle responsible in case of internet fraud. Business information must therefore be available to everyone, leading to a conclusion that paper will still be needed somewhere.

10.1.4 Creating and managing the strategy

Managing business, IS and IT strategies is about creating, harmonizing, implementing and monitoring strategies for the business and the information services and information

- Business: how the enterprise interacts with its customers, information chain partners and its suppliers, how it provides its services and improves efficiency or revenue by meeting rising customer/citizen expectations or through the need to streamline supply chains.
- Political: decision-making, hierarchies, policy issues, e.g., the need to address public perceptions of a policy, for example one relating to a sensitive issue such as crime or health or where successful delivery requires collaboration and commitment from enterprises or organizational units within the enterprise that report to different management boards.
- Cultural: values, attitudes, competences and relationships, such as the need to change the existing behavior of staff and customers in order to work in new ways.
- Technical: IT, business information management and communication concerns, e.g., requirements for robust security on information provided and shared electronically, digital delivery, 'cloud first', capacity of technical resources needed to deliver high levels of service performance and common standards for information exchange and interoperation.

A critical success factor for a strategy is being able to demonstrate that a key issue has been addressed in a way that is clear and so that outcomes/benefits can be measured.

BIM therefore must be addressed strategically with specific measurable goals based around themes for improvement.

10.1.3. Strategic themes

Strategic themes are the areas of business activity in which the enterprise needs to engage to meet the challenges posed by strategic issues. BIM should be aware of and monitor strategic themes and issues to gauge the influence of them on information services and to identify any necessary improvements to information services.

The strategic vision describes the desired future, in broad terms, which will be the intended outcome of the changes undertaken by the enterprise. Strategic themes are the specific areas that must be addressed along the way. A road map to the desired future of BIM in the enterprise is mapped to strategic themes.

To illustrate the relationship between strategic issues, strategic themes and candidates for action, an example for an enterprise providing online services to its customers might be:

- strategic issue – the pressure to improve quality of service in online transactions because of poor customer experience;

- strategic theme – improvements in information provided to frontline staff, requiring better linkage between front and back office.

Candidates for action might include enterprise- wide Electronic Document/Records Management, internet access, and a programme of staff training; each of these being wholly dependent on effective BIM.
Some possible strategic themes for each of the four types of strategic issue (business, political, cultural, and technical) above could be:

1. themes relating to business issues:

    - responding to customer information needs
    - dealing with competition
    - new requirements for products and information services
    - requirements for partnering and other new external relationships

10. Creating BIM strategy

10.1 Focus on outcome

Creating a BIM strategy means clarifying, creating and refining the strategic vision, strategic issues, strategic themes and the candidate programs and/ or projects that will commence after approval. The strategic vision expresses the projected future for the enterprise, its desired position in relation to its partners and supply chain ecosystem and the outcomes it wishes to bring about, both within the enterprise and in its dealings with customers and information chain partners.

10.1.1 Creating a strategic BIM vision

The strategic vision can be seen as a blueprint for change. It might well focus on a number of related (and sometimes unrelated) changes that are managed in the Improvement domain and should be fundamentally focused on outcomes, which are set in policies defined in Governance. Outcomes are the changes the enterprise or LoB aims to make in order to improve the benefits for the good of the enterprise and or its customers or partners. Government examples might include a healthier population, or improved access to education, perhaps reduction in crime or in the reduction in cost of public administration. Information services will be essential for each of these themes, collection and distribution of healthcare information (which will be subject to Privacy regulations), creation of accessible websites and distribution of information, collection of financial data for action.
BIM is important to ensure that strategic themes are enacted as expected. Consider also interface changes, focusing on how the enterprise positions itself in relation to its business environment both internally and with partners in terms of how it will do business or how its business needs will be achieved (perhaps through new ways of working with suppliers and/or customers).

Although BIM is not directly concerned with internal changes that focus on how the enterprise wishes to be constituted, such as any internal restructuring, infrastructure renewal or even change of culture, it must be influential in ensuring that such changes reflect the need to manage information with integrity and in line with BIM governance.
Results that are strategic but represent only a stage along the path to achieving more significant outcomes are known as intermediate outcomes. In your enterprise, a program directing the work of an employee training scheme might increase the number of employees trained to certain levels or in certain disciplines (one of which might be sales). For this scheme, an intermediate outcome might be a raised level of sales expertise in the workforce, and a final or policy outcome could be the beneficial effect on market share.

10.1.2 Strategic issues

An issue is a challenge facing the enterprise that requires action. It may be regarded as a problem or an opportunity. Issues that are critical to the enterprise high-level plans for realizing transformation outcomes, or that could jeopardize its business, are strategic issues.

All enterprises will differ in terms of the issues to which they must respond, there is no ‘one size fits all’. The range of relevant issues will depend on individual circumstances, although many enterprises will identify common elements. Generally speaking, we can identify four categories:

BIMC can earn money for the enterprise. On the one hand by preventing extra expenses or costs (cost avoidance) and on the other hand through the effective use of demand and supply bundling (economies of scale or smarter, enterprise-wide portfolio management). The latter assumes that BIMC has a good understanding of the products and services that are being delivered and the underlying architecture (generic or not) or structure of the enterprise.

For example, a supplier can sell licenses multiple times to different users. With BIMC in between, the chance that this will happen is much smaller because there is a portfolio-wide overview. A study of portfolio management within the business world shows that just having a good overview of the total portfolio could save enormous amounts of money.

With a perspective on enterprise digitization and the data issues that pertain, it does not take much imagination to realize the cost savings that could be made by avoiding duplication of databases and inconsistency of data. Think of the value of the data to the social media companies and search engines……

Make hidden costs visible

When everything is in-house, there is little pressure to need document hours or charge costs for all activities. External suppliers generally think differently about this. The result is that these invisible activities suddenly become visible. A rough estimate is that these costs are at least 5%. With regard to BIM, hidden costs are most likely in the duplication of data and in data accuracy (which in most enterprises would better be described as inaccuracy).

For BIMC to have the right to exist, it must at least be able to provide evidence of how the function recoups its costs. This can be achieved through documentation of cost reduction, demonstration of effective use of resources through, for example, smart demand bundling and portfolio management, prevention of failure, and the prevention of additional costs by continually assessing whether the requested service is justified or necessary.

- Control and measure. This is monitoring the quality of service. This includes measuring, analyzing, evaluating and improving the results (quality, costs, satisfaction) of services and managing the service catalogue.
- Quality Management includes monitoring and checking the efficiency and legitimacy of the services provided.
- Financial control and analysis, which includes monitoring the entire budget. The intelligent Customer will be responsible for preparing financial analyses and coordinating any payments to the supplier with the financial administration. BIMC is unlikely to embrace total responsibility for this monitoring, (unless no one else is responsible), though it is recommended that they take full control of the process regarding the development of information intensive application development.

These elements are generic intelligent customer capabilities. By this we mean that these elements are needed in every BIMC. They form the foundations with which a BIMC within the BIM Governance framework can in principle be designed.

However, it is the variation in size, scope, content and complexity of the BIM needs of the enterprise that makes every BIMC different.

9.5 Quantifying the added value of BIMC

Can we quantify the added value of BIMC? On the cost side this is not difficult. The costs mainly comprise personnel costs and because expertise is important, these costs are relatively high. Quantifying the benefits is more difficult unless the process of benefits management (discussed in the DID Foundation publication) is in place.

Without BIMC, the supplier has free rein, customers can ask for whatever they want and if that demand is insufficiently managed, this can lead to substantial additional cost overunswhen designing and building business applications. .
Moreover, in IT-outsourcing contexts demand management is paramount to achieving success.[23] Added *value* arises from more effective use of resources, preventing excessive costs and and combating hidden costs. The cost of service development should be transparent to all parties and the customer should know and understand what they are paying for, what this entails and how their expectations will be met. Otherwise, you can expect the customer experience to be poor and the usual backlash about failing to meet expectations.

Looking at potential benefit in this way, that is, customer satisfaction being ‘built in’, using BIMC becomes a clear and obvious necessity.

More effective use of resources and control of costs

[23] See GPAJ Delen, RJ Peters, C Verhoef, SFM van Vlijmen, "Lessons from Dutch IT-outsourcing success and failure." Science of Computer Programming 130 (2016): 37-68. And GPAJ Delen, RJ Peters, C Verhoef, SFM van Vlijmen, "Foundations for measuring IT-outsourcing success and failure." Journal of Systems and Software 156 (2019): 113-125.

9.4.2 Policy, innovation and advice

If BIMC has made contact with the customer (the customer may also have taken the initiative) and has identified a need, BIMC must translate this need into a solution. To be able to do this, BIMC must have insight into the matter, the issues, the technology, the concrete solutions that are available internally or in the market and the solutions that may already be available elsewhere in the enterprise. Based on this responsibility, the following capabilities within the focus area of policy, innovation and advice are needed: Policy and strategy formation and preparation of strategic plans. Developing and maintaining the business strategy: the vision, spearheads, priorities and multi-year planning for the services of the enterprise in order to help realize the business strategy. This means clearly defining the strategy and translating it into the services that the Intelligent Customer provides in such a way that the synergy with and the development of the enterprise is optimal based on internal and external developments. The chosen strategy is then blueprinted in strategic plans.

- Manage architecture/ blueprint of business operations. The goal is monitoring and controlling the architecture/ blueprint of business operations, i.e. the consistent set of principles and models that coordinates the design and realization of processes, enterprise structure and information provision, including monitoring the optimal use of services.
- Portfolio management. Determining and monitoring the technical and logical coherence between the systems. The correct timing of new investments is important for the growth of the business. This does not necessarily relate to investments in new systems, but can also mean that investments are made in existing systems. In both cases it is important to prevent legacy problems (such as those with technology) and to alleviate problems that have already arisen in outdated services.
- Program management. Managing projects / programs that are executed by the project managers or suppliers on behalf of the customer enterprise. Coordinating the mutual coherence of those projects and making optimum use of the opportunities for synergy.

9.4.3. Contract management

After determining which solutions are suitable for improvement proposals, contract management comes into the picture. Contract management research the market for suitable service providers and takes care, often together with Purchasing and Finance, for contracting including underlying service level agreements. Where services (or application development) is outsourced It may be necessary to examine possible service integration with the service provider to ensure coherence in the information and/or supply partner chain. Capability within contract management is:

- Contract management, managing contracts at the strategic and tactical level. Negotiating contracts, adjusting contracts when changing circumstances require, monitoring the intended goal (from best buy to partnership).
- Supplier Management, managing supplier relationships. This means having knowledge of the market and developments therein understanding the supplier position and the range of services.
- Services integration, managing the information and supply chain. The monitoring and safeguarding of the coherence of the supplier-transcending production processes and the infrastructure, including ensuring proper agreements with regard to the functionalities of the total (production) chain.

9.4.4. Management Control

After the agreements have been made, the service can be delivered. Performance Management actively monitors whether the service agreements made are in accordance with contracts. Activities within performance management are:

Only after project control was properly executed it was found that budget overrun was inevitable because of changes accepted without official executive mandate. Project management requested therefore a change procedure for the business *before* technical impact analysis and proposals were issued to avoid any discussions on business needs and the financial consequences being undertaken by those without the necessary business experience (in other words, IT). The change procedure was set up according to the following agreement.

Local BIMC was charged with the creation of a change advisory board (CAB) within each LoB to make sure that any changes technical or relating to business processes or functions, would first be presented and analyzed against business use, the consequence for project lead time and possible budget consequences.

The CAB process was set up largely along the lines discussed in the ITIL framework, adapted for the specific needs of business and information, and chaired by BIMC. In particular:

- When possible improvements/changes are identified by the supplier or the business, first the change subject should be discussed in the CAB. Only after discussion and agreement by the business will further impact analysis be mandated. After any further impact analysis the changes would need to be presented again to the CAB.
- A description (using a standard format) needed to be created presenting the impact of the possible improvement/change. Before the final decision would be taken, four steps were foreseen: initial presentation, impact analysis, advice by the CAB, decision by the directors. If the change would be larger than a specific amount (in this case 70k euro) the formal steering committee would be convened to make the decision.
- All changes, including those not accepted, were to be registered in a BIMC CAB register.
- The Change Advisory Board (CAB) now meets every four weeks where all changes are discussed and decisions are taken. The contract manager is responsible or communication liaison with the supplier. BIMC is the liaison to executive management from the LoB. In case of urgent requests, CAB can be convened earlier.
- Only Directors can schedule a discussion of urgent requests.

BIMC took control over the entire business change/improvement process because of business ignorance of IT and IT ignorance of business. Neither business nor IT were to blame for their lack of knowledge because both disciplines are so radically different; however, where improvement is key (as described in the DID model), then simply hoping a change will do the trick simply does not work and it becomes clear that expertise is needed to make sure everyone is content with new services.

projects fail because it is not recognized that implementation must be based on existing technology. There is always a legacy issue with IT. This is the case for any BIM project; unless you work for a start-up that erupted from a brainstorm in the local pub, most data sources and processes will already exist albeit if most are chaotic and were constructed without a strategic overview.

In the case of BIM, consider the drivers Need and Value in the DID model and of course BIMC must also assess viability by examining the tension between Mission of the enterprise and its current Capability.

While working, a network of relationships within the enterprise will be built. It can and should not end there. This relationship structure should be based on the principles of the Intelligent Customer capabilities. For example, the following capabilities have been identified within the focus area of customer management, obviously they do not apply solely to the generic intelligent customer:

- Relationship management (internally focused). The goals are maintaining professional relationships with business and stakeholders with the following objectives: recognizing user needs and developments, receiving requests for new or adapted services, identifying suppliers, recording agreements with customers, steering the results and complaint handling.
- Advising / information management. Translating business demand or policy demand into services and possible solutions, taking into account dependencies between business processes and information systems, as well as providing insight into the (financial and other) consequences of the proposed solutions.

Case Study: Setting up a business change advisory board

BIMC and assessment of change

Consider an enterprise having four LoB; each has a 'local' BIMC implemented to keep watch over the data needs of day-to-day management of BIM. One of the LoB is commissioner for a multi-million business application renewal project. After two years it becomes imminent that changes in the specifications are required as a result of new business developments. Originally it was decided by the Board that a 'freeze' should be in place, that is, no changes would be allowed to impact the specification. A specific governance rule was that changes that had consequences in time and money were not allowed unless mandated by the steering committee. However, this rule was not implemented.

It soon became clear to project teams that specifications were either incorrect or had not been thought through and that it would be sensible to disregard the freeze to make the new IT fit for use. Mostly the changes seemed to have only a technical consequence but the local BIMC discovered that the so-called technical changes would have major business processing consequences. BIMC also discovered that management became aware about changes too late in the process. By then, changes were already agreed on and budget was already allocated to project teams, and in some cases already spent.

Establishing control

The process then indicates several strands that you should amplify to analyze the issues and understand the issues to be covered. See figure 9.2.

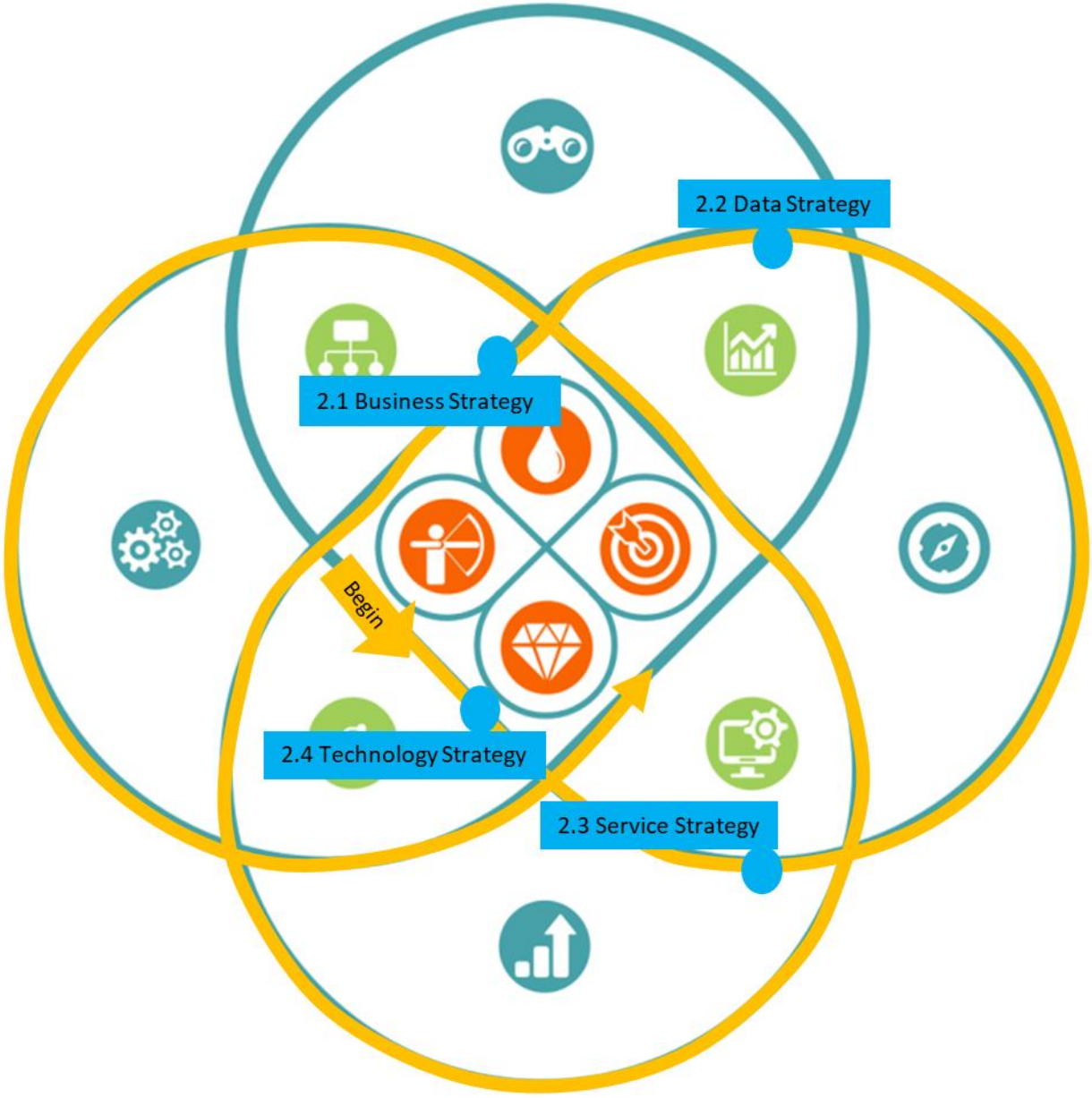


Figure 9.2: Implement and improve BIMC

9.4 Results of analysis in the different DID domains

9.4.1. User management

The first step is to make the connection with the business and users. What is the need? Why is this need there? Does this need occur in more places within the enterprise? In practice, you never have to start from scratch. Consider the well-researched use of IT in the enterprise; evidence suggests that technology is rarely implemented 'green field'; even where this is a Policy statement, most often

improvement domain. Basically, all topics in this domain must be covered to support operational and strategical information management.

2. In Step 2, again, we follow the PDCA cycle; this is not accidental. Placing guidance in the widely accepted Deming cycle for continuous improvement makes sense. Thus, we need to look back to discover if strategic issues are covered, and forward to see whether all necessary issues in the operational perspective are taken care of.

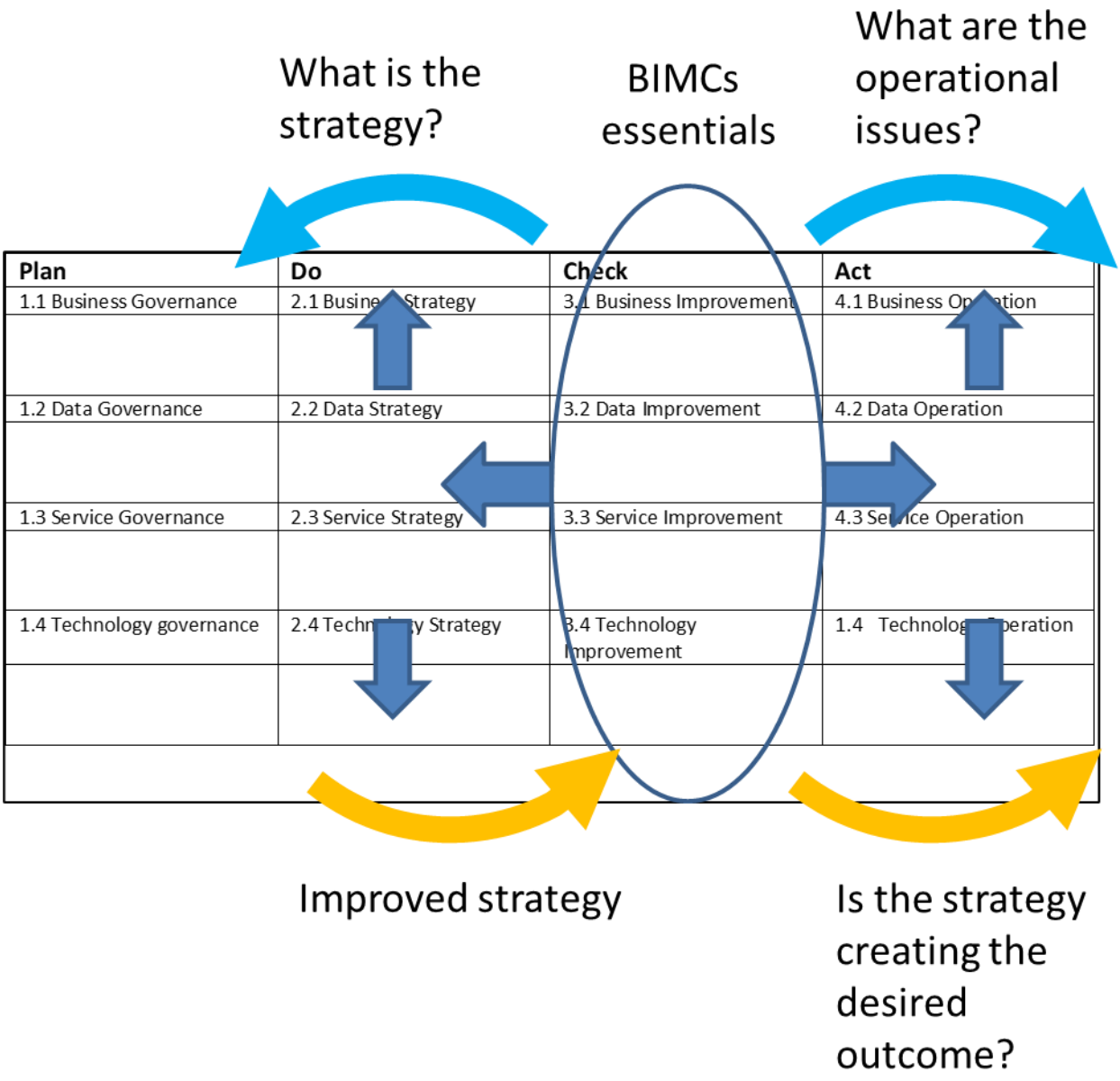


Figure 9.2: Building BIMC: Analysis of outcomes

Step 3: start with an issue in the Improvement domain, we selected *3.1 Business improvement* on the model—it is not important **where** you start but following the flow we describe will make it easier to draw the DID model and cover the issues that arise.
Next, follow with the Strategy domain, and decide on the changed strategy that translates into improvement actions. In the model you will navigate back from the Strategy domain into the Improvement domain where the strategic actions are translated into implementation plans and activities and are implemented within the Operation domain.

accuracy of data is a key component of the ability of any BIMC to be able to guarantee quality of services.

BIMC will need to address standard and non-standard information sources, information requests, processing, storage, archiving and sharing issues.

Non-standard needs are, surprise, surprise, not known in advance and answers cannot be planned. PIA management will have to examine the best solution as such questions arise. In cooperation with contract management, we can look at which solution is the most suitable (and thinking as one of the capabilities of the intelligent customer), can be supplied by the market. Performance management is also a process within control management.

In general, we see these four responsibilities reflected in all enterprise forms of BIMC. However, it will differ for each enterprise whether responsibilities are carried out locally, carried out by third parties or other enterprise units where different departments have to work together. In terms of BIM, employing the DID domains and perspectives as lenses through which to apply intelligent customer thinking will radically improve the ability of the enterprise to design and build robust applications that process data effectively.

9.3 Building BIMC using DID guidance

Now use the DID model to understand and organize the activities within BIMC.

The necessary BIMC capabilities, extrapolated from the intelligent customer guidance, are linked to one another in a quality cycle in the form of the Plan-Do-Check-Act (PDCA) cycle. The DID domains (governance, strategy, improvement and operation) are directly related to PDCA. Each main step from the Deming circle contains a cluster of responsibilities. These responsibilities relate to BIM responsibilities in the four DID domain (governance, strategy, Improvement and Operation) and its perspectives Business, Service, Data/Information and Technology, and would be the responsibility of BIMC. The various responsibilities are the substantive tasks of BIMC and therefore the business information activities can be related to the best practice intelligent customer responsibilities. These four responsibilities are:

- policy, innovation and advice (PIA) management (Plan, mostly Governance in the DID model),
- contract management (Do, mostly Strategy in the DID model),
- control management (Check, mostly Improvement in the DID model)
- and user management (Act, clearly the Operational focus of the DID model).

1. Step 1. Understand the issue at hand; you can use table 9.1 to give you an idea of the types of key topics in each domain and using the perspectives to gain insight. Keep in mind what we mentioned earlier that you need to distinguish between green and brown fields, or hybrid situations and consider how your thoughts correspond to the Drivers. In chapter 6 we presented a straightforward approach to BIM; now we go forward with a more complex but more effective approach using BIMC. In this case, the essence of BIMC can be found in the

(some of which activities are also relevant to the design and build of services by internal departments). These agreements must be managed.

Management control is the 'Check' element of the Deming cycle, ensuring that any contracts (or agreements) made are met and the finances are guaranteed. This responsibility should be undertaken within the DID Service perspective. All Policy directives and strategic principles and designs should be thoroughly audited.

User management focus (the 'Act' part) is responsible for all internal needs or questions that must be articulated and addressed. This responsibility fits within the Services and Technology perspectives. Where BIM and DID are concerned the need is to ensure that services process the required information as they should, that data is both accurate and properly managed and that the needs of business have been fulfilled. Feedback about, for example, the design of the applications or the limitations of current technology will help the board to provide for continuous improvement by influencing new or adjusted policies and therefore new or improved services.

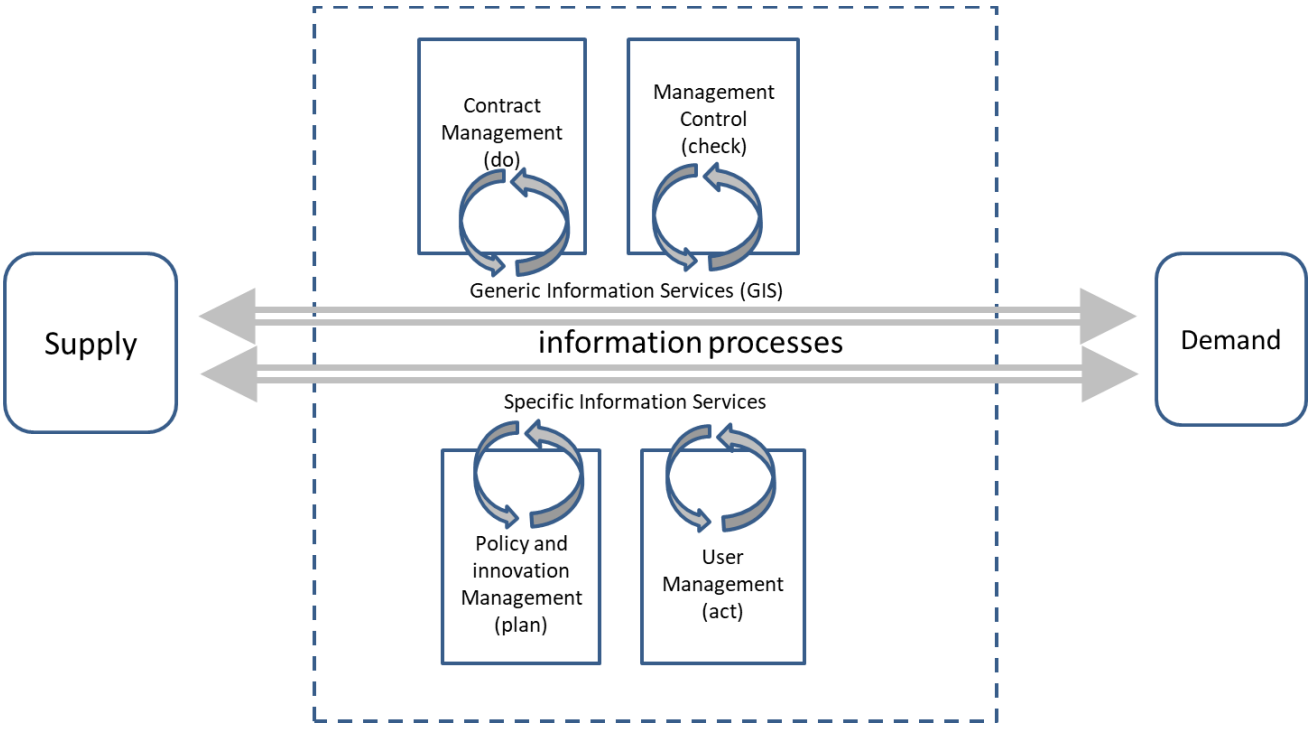


Figure 9.1 Opening up BIMC: Four responsibilities

The four responsibilities are linked to one another through information processes/ services. In the main process - ensuring the delivery of the information services (delivery process) - two streams are recognized: standard user needs or standard user services, and specific user needs or user services.

Examples of standard services are requesting a new password, the request for a new workplace or for data (reports) to be circulated. Examples of specific needs are the application for a license for a non-standard software package (for example a word processor specifically for mathematical symbols), demand for new information services based on new policies, the application for a new software package or implementation, or the conduct of a tender. For the moment we use these two types of information processes to explain the functioning of BIMC. With regard to BIM it is clear that

9. Implementing BIMC

9.1 A roadmap for BIMC

The intelligent customer guidance suggests the following as a roadmap for '*how to get started*'. To a large extent, any roadmap depends on knowing the state of play in your enterprise and with regard to BIM, whether or not BIM activities exist. With that in mind, you should think about the state-of-play of BIM right now and whether or not you need to do some 'marketing'.

Remember the Introduction? BIM is the ability of the enterprise to set up an expert interface between all business information activities and the users and suppliers of that information; ensuring a strategic design and execution for the governance and management of the BIM organization. By now you know why the enterprise needs a BIM coordinator (or a team, depending on the size of the organization). BIMC will support business managers, IS planners (governed by some form of BIM board/ IS Steering Committee, the ISSC) and programme directors in translating the Policies of the Management Board (the guiding principles) into purpose and direction for the managers of IT services.

The generic features of the best practice of 'the Intelligent Customer capabilities' are used when design the BIMC organizational structure.

We distinguish four areas of responsibility within the value chain of the generic BIMC. These four are illustrated in Figure 9.1.

The focus areas of customer management and policy, innovation and advice (PIA) form the demand management side of the Intelligent Customer. This is about matching supply and demand. Demand management deals with topics such as: researching, identifying, combining, rationalizing, standardizing, modulating and prioritizing demand. Only enterprises such as Google and Facebook can truly claim to have performed these activities religiously, which is what you should be aware of when using Facebook, for in practice is using your data as a profit generator.

The areas of focus for contract management are supply management and focus on topics such as market conformity and market standards, relationships with suppliers, contracts, legal aspects, performance agreements and control.

Supply and demand management are inextricably linked and highly dependent on each other.

9.2 Opening up BIMC: Four responsibilities

Policy, innovation and advisory (PIA) management requires that needs are translated into products or services that must fit within standards and agreements as applied by the enterprise. Clearly this is a Planning task and is therefore Strategic, dealing with the necessary Policy. This responsibility fits within the Business perspective. **Contract management** (the 'Do' element of the Deming cycle) will be needed to drive the purchase of needed products or services and the DID perspectives of Information and Services will be influential in determining the design of the necessary services. Contract management is a responsibility that BIMC undertakes to make agreements with the market

network services in the long term the IT Services Planner could significantly constrain the enterprise growth, and technologies may be difficult to change. The choices materially influence how we use data; the practitioner needs to be aware of technology, developments and potential for use. Think about AI for example; the potential for loss is as large as the potential for gain. You can and should influence selections though you are not responsible for procurement.

IS strategy planning must address the IT needs of the organization for the strategic planning period. This is an important consideration for the business.
The ideal situation is where the application systems and supporting data can be supported on a wide range of technology without significant change or dependence on specific systems.

Infrastructure planning transforms the program, or programs that emerge from the strategic planning exercise, to add new or to enhance existing IT services in support of changing business needs, into a set of projects. The process makes a more detailed assessment of the actual resources available and current constraints and risks. The emphasis is on what will be delivered and the infrastructure changes necessary to support these deliverables.

The limitations on resources must be resolved during tactical planning. These limitations may be due to current commitments, such as maintaining existing services and existing development projects, or financial constraints.
Final arbitration of what is to be achieved will be decided by the business priorities and data needs established during strategic planning.

8.5 What we do in the shadows

Not just a great movie, but a good description for BIMC. At every stage in the strategy formulation, if you are not involved in ensuring that the right information is being made available at the right time to ensure your enterprise will prosper or your government department will properly serve the citizen, who is?

If you know the answer and responsibilities are defined, documented and clear, then everything will be wonderful. Though let’s be realistic, much of the detailed nuances and improvements do exist in the shadows where most people have either forgotten to pay attention or simply assumed someone else (anyone else) is responsible.

Having covered the issues of good foundations, execution and the myriad capabilities you would hope to find in the enterprise, we can now consider how BIMC should work. If you think that having wall to wall planning bodies and resources devoted to implementing back-breaking processes is what is needed, think again. Many activities will in the modern world be managed through intranets and internets and it is likely that many roles and responsibilities for capabilities will be vested in only a select few. That creates two problems; you are going to be busy and you will need to convince the wider world that they need BIM.

Figure 8.3 Implementation planning and monitoring

A proposed program of work must be produced, based on a realistic assessment of what is possible given the current priorities and constraints. Where conflicts arise between business priorities and the program order, the reasons for these must be highlighted to senior management. Where possible these should be accompanied by ideas for overcoming such problems and their impact on the budget and timescales.

8.4.1. Monitoring, tuning and review

This is a continuing activity whose objectives are to ensure that the strategy delivers the expected business benefits.
This can be considered as both an Improvement activity (in the sense that where data needs are not being met, you can initiate activities to fix the problem before it impacts business) and an Operation activity because problems might not be spotted until services are being used in anger.

8.4.2 IT infrastructure planning

Business and technology are in a constant state of change. The rate of technological advancement in the computer and telecommunications industries is ridiculous for hardware. For software this is not the case, in fact the better the hardware the better bad software still runs on it. This rapidly changes the investment options available and poses difficulties for the IS strategy planner. By choosing inappropriate technologies for hardware, software and

From these analyses, organizations can reach decisions as to what is expected from the IT Directorate during the planned period. With final management agreement the planning team can convert the decisions into an outline plan for progressing any agreed strategies. Many important decisions are made as a result of the IS strategy study. It is important to document the basis for these decisions and to make this information available to managers and planners responsible for subsequently implementing the plan. The role of tactical planning is to determine how the IT Directorate will supply the systems and services to meet the business demands identified by the strategy study.

As we mentioned, enterprise capabilities differ from industry sector to sector and must be identified in plans and documented. Supporting generic information/data capabilities can then be placed in context. You must now be very specific about the requirements of your enterprise. The enterprise strategy must be consulted and strategic issues identified.

8.4 Implementation planning and monitoring

The decisions and supporting documentation from strategic planning are passed to the tactical planning teams who are responsible for developing programs into detailed implementation project proposals.
A plan must be drawn up for the required work program. This plan must take into account lead times for procurement, resource limitations and interdependencies. Individual project profiles will take account of resources, funding and benefits. In the DID framework you will roll forward again going from the Strategy domain, to the Improvement domain into the Operations domain as shown in figure 8.3.

tender process would start. BIMC escalated the results of their investigations and the CIO intervened, paused the tender and agreed the program plan. Priority was set to make sure the data vision and strategy was formulated. The strategy would frame the structuring and choices made by IT about IT network infrastructure allowing contract management and the purchasing department to progress their work. And of course, governance was improved by the board becoming aware of the issues and making sure policy existed to cover future technology planning.

8.3 Strategy definition

During the strategy definition phase, the options chosen are developed into an outline portfolio of work. Estimates are made of the resources required and the business benefits that will be the result. This includes an evaluation of how the existing infrastructure will migrate to meet the new requirements.
Management and technical policies are formalized and documented at this time. However, additional work may be required subsequently before policies are finalized.

8.3.1 Using the capabilities

A practitioner will use DID to execute and govern planning and development of strategic information services and data needs, strategize portfolio needs and plans, decide on development and programming methods and prevent a framework Armageddon[22].
To achieve this, you must analyze your current environment, use the drivers to identify what you need to transform and use strategic processes to provide context for business service design based on data needs.

The IS Strategy Plan should provide clear direction on the services IT will supply to meet the needs of the business for the foreseeable future. The plan considers the business conditions and IS conditions and how these will shape the business demands for information systems. Current and future business conditions are considered in terms of how they may affect the business requirements for IS. This means quantifying the likelihood of changes in business priorities and methods of working in the enterprise. Similarly, financial and other resource constraints must be defined. Much of this information is available from the business strategy plans. However, the implications for IS need careful evaluation.

Current IS conditions, including existing plans, require careful consideration. An understanding of the current position provides valuable information on the constraints placed on existing and future strategies.

The planning process produces options for future IS strategies. These options must be examined to identify the business and the IS implications of each scenario considered.

[22] See figure 3.2

A multi-national enterprise with several subsidiaries, maintained connectivity through a single network provider. Since they operated in many countries, these subsidiaries had to reconcile different services from different service providers. To facilitate reconciliation, the multi-national had outsourced the entire global WAN to a single large carrier, that was then required to patch together the most cost-effective offerings from regional providers. Cost savings and a belief that information security would be improved were basic governance principles that brought the enterprise to their choice to outsource.

Contract renewal
Imminent expiry of existing contracts caused the Purchasing department and IT contract management to decide that because of technology changes and price decreases in the market, it was necessary and worthwhile to initiate a new tender. IT network infrastructure being incredibly sexy and entertaining, meant that no one in the business areas had any interest in looking at the tender specifications; IT and Purchasing therefore took charge of the tender process and engaged architects from different subsidiaries to assist with contacting the market and requesting expressions of interest and preparation of information that would form the ITT (Invitation to Tender).Over coffee with one of the involved architects an information manager from centralized BIMC became aware of the activities, while discussing an unrelated subject.

BIMC
At the same as the ITT BIMC (central and local) were working together with the different LOB (and of course the IT department) to formulate a new data strategy for the next five years, involving the use of new technology platforms together with business analytics and artificial intelligence. These innovations were not an issue and were not considered a risk to the enterprise business model. BIMC teams were also aware of another development within the enterprise which was intended to lead to new business opportunities and would significantly influence the enterprise business model.

BIMC took responsibility for central oversight of the new technology platform, the data strategy, new business development and coordination of the networks refresh and created a program plan that treated each of the projects both individually and collectively to ensure coherence.

The decision was taken because the Internet is untrusted WAN transport, using it as part of a corporate backbone requires significant planning to secure dynamic connectivity. In many cases, retail and financial institutions have deployed separate networks with local internet exits to offload certain traffic, such as guest Wi-Fi. This is done to preserve bandwidth for the corporate branch and also to segment guest traffic for security and compliance reasons. Pending legal decisions and recent experiences with data leaks that had drawn attention to privacy and cybersecurity at board level and without BIMC attention, would have threatened the focus on improvement and innovation.

Improvement
Tendering for significant technology upgrades without knowledge of new business developments could hurt the enterprise in the short and long term. Hence, it became essential for BIMC to make sure that the data vision and strategy was in place before the

Figure 8.2: Analyze strategy domain

Step 5. Following the analysis, examine how the drivers are impacted (Figure 8.2) and identify where additional capabilities or investment is necessary.

To a large extent, that follows the steps taken by well-educated business/systems analysts, i.e., those that look at data and information. The emphasis for BIMC is on the data and how it is needed and used; sadly, that emphasis has been overlooked for many years.

Case study BIMC and IT network infrastructure

Introduction

IT enables enterprises to globalize their operations and achieve domestic and foreign revenues and profits by the coordination of similar value chain activities (such as procurement or production in LOB) across different geographic locations. These activities impact the management of business information to make decisions related to the activities and the management of knowledge and resources necessary to perform the activities. Overall, they impact utilization of capabilities across the enterprise and will impact the framing of board decisions about information and data.

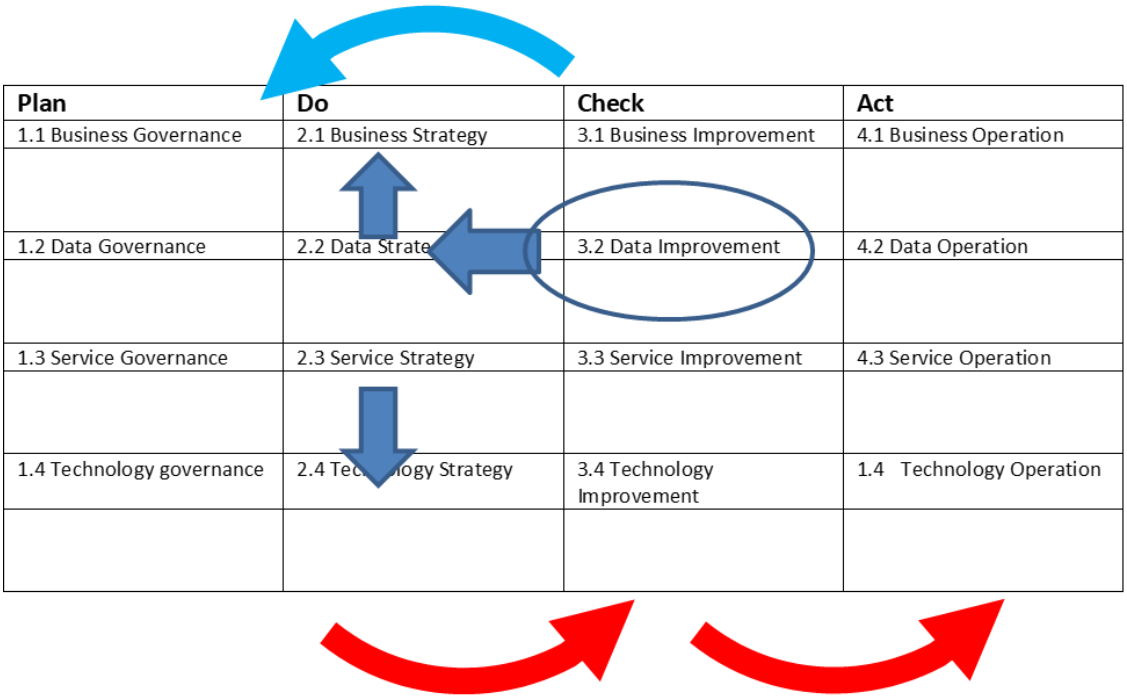
Information management decisions at board level can have consequences for IT deep in their operation. And *vice versa*, choices made at the basic level of IT operations can limit or strengthen strategic decisions made at board level.

An effective network infrastructure enables enterprises to utilize global and local systems to communicate knowledge through different levels of the enterprise and provides an infrastructure to share, distribute and absorb knowledge across geographic and functional boundaries, to coordinate activities and develop strategic opportunities.

The issues

The more observant among readers will have noticed that we follow the PDCA cycle; this is not accidental. Placing guidance in the widely accepted Deming cycle for continuous improvement makes more sense than attempting to create some fatuous and useless model for improvement that improves precisely nothing that is already in existence.

Table 8.2 Using the DID model and start with 3.2 Data improvement



Plan	Do	Check	Act
1.1 Business Governance	2.1 Business Strategy	3.1 Business Improvement	4.1 Business Operation
1.2 Data Governance	2.2 Data Strate	3.2 Data Improvement	4.2 Data Operation
1.3 Service Governance	2.3 Service Strategy	3.3 Service Improvement	4.3 Service Operation
1.4 Technology governance	2.4 Tec ogy Strategy	3.4 Technology Improvement	1.4 Technology Operation

Step 4. Find your issue on the model—ideally one that does actually impact your enterprise) and start following counterclockwise (or, depending on the vagaries of your enterprise and where you were, by necessity, compelled to begin your assessment, clockwise) to PLAN-DO-CHECK-ACT the several strands to analyze the issues and understand the changes to be made. See table 8.2.

Step 2. Ensure comprehensive understanding of the business drivers in relation to the business information/data drivers. Take a look at figure 8.1 to gain an idea of where the actions lie in the context of the DID model. Let's assume that you are unfortunate and that your enterprise simply wants to transform every manual process that has existed since 1776 and build a digital world. That is your Mission; and now you must identify every possible capability that you will need in order to fulfil that Mission. Hopefully 'burning witches' is no longer a service that comes under **'Need'**, or at least if it does, no one other than the odd misogynist or evangelical actually attributes **'Value'**.

Every service that is Needed and Valued needs to be documented in detail, data sources, how the data is processed, what the outcomes of the processing are, who does the processing, the storage, legal and security issues (now you need to consider Governance and Policy as well), and you need to know what needs to be done to identify new services, replace existing services or simply improve services that can continue to exist in their present form.

Step 3. Understand the perspectives from which you should approach the issues. Again, look at table 8.1. and look at figure 8.1, using the DID model.

Figure 8.1 Using the DID model

Using table 8.1, an issue belonging to **'3.2, Data Improvement'** principally will be examined from an information/data perspective; but make sure you consider business (need and value), service (new, replaced, 'as-is' or improved) and technology (do we need new/other tech?).

We will now explain the five steps for applying the DID model in the strategy study:

1. Step 1. Understand the issue at hand: you can use table 8.1 to give you an idea of the types of key topics in each domain and using the perspectives to gain insight. Keep in mind what we mentioned earlier that you need to distinguish between green and brown or (more likely) hybrid situations and consider how your thoughts correspond to the Drivers.

Plan	DO	Check	Act
1.1 Business Governance	2.1 Business Strategy	3.1 Business Improvement	4.1 Business Operation
• Responsibilities and policy making • Business change governance and P3O • Standardization policies • Knowledge management	• Enterprise vision for BIM • Business architecture • Agenda of strategic themes • Portfolio of Improvements	• Business requirements • Description of information service offerings • Testing • Training and documentation	• User support • Service-desk • Communication and training • Authorization
1.2 Data Governance	2.2 Data Strategy	3.2 Data Improvement	4.2 Data Operation
• Data exchange policies and contracts • Data governance committee • Master data management policies • Identity and access policies	• Information/data architecture • Information service lifecycle • Key Performance Indicator (KPI) models • Master Data Management (MDM) and models	• Data requirements • Enterprise data environment • The cost of information quality • Automated and non-automated information	• Master data management • Implementation quality plans • Data quality • Operating the data environment
1.3 Service Governance	2.3 Service Strategy	3.3 Service Improvement	4.3 Service Operation
• External executive relationships • Sourcing policy • Service portfolio policies • Service Integration	• Service portfolio management • Sourcing strategy • Service architecture • Service Integration	• Build a service organization • Service requirements • Assembly • Service validation	• Service support procedures • Service measurement • Service monitoring • Operational supplier management
1.4 Technology governance	2.4 Technology Strategy	3.4 Technology Improvement	4.4Technology Operation
• Technology policies • Guidance on technology related topics • Shared technology • Technology driving change	• Importance of the technology strategy • Technology integration • Information technology infrastructure • Joint procurement	• Deployment • Non-functional requirements • Testing • Technology watch	• Availability • Partner and supply chain liaison • Suppliers • Incident management

Table 8.1: Topics within the DID framework[21]

[21] Remember the summary on the DID guidance at the beginning of the book. Within the DID model one can find the PDCA cycle on different levels, just like Matryoshka dolls. Mini PDCA cycles exist everywhere On a different level processes in each domain also should be improved using the same approach.

8. Creating Information System Strategy

8.1. Information System Strategy

If it is not clear by now, let's make things crystalline; BIMC (that's you, the practitioner) will need to be closely involved with creation of the Information System Strategy (IS strategy). When the BIM Board/ ISSC (IS Steering Committee) mandates an Information Strategy it should be obvious that the enterprise will be needing BIM good practices, and therefore DID, or something similar to draw up the strategy. It is highly likely that you, the BIMC, is needed to support the BIM Board/ ISSC and coordinate the creation of the strategy and most likely, carry out the actual writing. .

The Information Systems strategy covers ALL aspects of IT, not just the technology. An IS strategic planning exercise typically comprises five phases, all of which to a greater or lesser extent require BIM input depending on data strategy, digital transformation, or just getting information properly managed. They are:

1. scoping study
2. strategy study
3. strategy definition
4. implementation planning
5. monitoring, tuning and review.

We use the DID guidance to create the information system strategy.

8.2 Scoping and studying strategy

The study defines the breadth of the strategic planning exercise and identifies any issues which must be addressed before the strategy study can start. The study identifies how many strategies the organization needs; yes, there may be more than one needed. A business transformation, a data, a knowledge, an IT even a relocation strategy.

The strategy study takes account of existing business reports, strategies, policies and business plans. From these the planning team derives a series of business objectives and priorities. Current business operations are usually modelled in some detail, including details of the data/information requirements. This activity should involve the IT Services Departments and provides insight into how IT can be best utilized. A detailed appraisal of current application services and costs is also included.

From this analysis, a series of options or scenarios are identified. These are then evaluated in terms of the potential costs and benefits to the business. Business Objectives and Business Priorities documents are produced during this phase. These documents are of particular importance for subsequent planning and management purposes. The documents detail what the goals are and provide a weighted priority for each objective.

Part 2: Implementing Business Information Management using DID

Risks will manifest themselves differently in each enterprise, however all risks must be mitigated in a timely fashion. Various risks have been identified in the previous chapters. We list a few of the more important risks below:

- Too much focus on delivery and demand bundling and too little on users, customer satisfaction and governance.
- Too little capacity for planning and/or competence within BIMC.
- Too little sponsorship from higher management.
- Not taking the time to grow and gain experience.
- Forgetting to look back. Are the assumptions we have with regard to design and development still legitimate?
- Not enough visibility of the added value of BIMC.
- Failing to recognize when 'Good is good enough'; knowledge of the market means insight into the range and suitability for one's own objectives and needs.
- Insufficient insight into the project portfolio and costs.
- Too little interest in opportunities for cost savings, innovation and improvement.
- The lack of adequate risk management.

Often BIM is seen as being 'Something done by IT' (a capabil-**IT**) rather than being a management function that the enterprise depends upon to ensure the integrity of the information used to transact business effectively and appropriately. And business transformation often focuses on the operating model and not on the enterprise architecture, meaning that there is a gap between business and IT understanding. DID will help you to focus on innovation for the business by structuring the process of thinking about new services and will assist you in maintaining the integrity of the business data/information perspective.

This concludes part 1 of this book. If you have been sufficiently inspired by now, read on. If not, have a drink and try again. In part 2 we show several examples how introduce BIM or to improve BIM using DID guidance. So, have a drink anyway.

Key Points

When implementing BIM, most often the first question is where to begin. There are two sensible approaches you can choose: bottom-up or top down.
Basically you cover 5 steps

1. Step 1. Understand the business model : Understand the topic at hand, the position in relation to the DID drivers (i.e. where the topic impacts your business model) and the environment of the enterprise and the position in the lifecycle.
2. Step 2. Governance, strategy and business transformation: Think about governance and strategy and necessary business transformation by understanding how your organizational architecture (the operating model of your enterprise) and the consequences for topics and issues to be analyzed in conjunction with other strategic themes and choices.
3. Step 3. Identify capabilities needed: Understand the necessary capabilities and identify business mission fulfilment capabilities
4. Step 4. Present the business case: Present the business case for your project/plan and make sure a management decision can be made about your proposals
5. Step 5. Secure the transformation: Implement the plans for transformation and make sure the developed solution is both permanent and robust in operation.

7.7 Don't give up

These words were sung by Peter Gabriel and Kate Bush, but there again they had loads of money and could afford to sing in clichés. That said, it is in fact true that persistence is needed to ensure a rigorous approach to BIM. Of course, the lists of questions cannot be definitive, though armed with these as a guide and amplified with the answers to many of the other questions we have identified throughout this book (and the DID Foundation book), you will be in good shape to prepare a business case that provides evidence of the need for BIM in your enterprise.

But what happens if you cannot engage executive interest? Identify an information service that is valuable, needed but unfit for purpose and dissect the service components. First, think about the information service in terms of the four domains, identifying how good Governance should be applied or better Strategic design, or perhaps simply Improvement. Identify the key (and expensive) Operation issues. Be flexible in your thinking.

Consider the service from all stakeholder perspectives to assess where improvements will be justified, cost effective and demonstrable. Then consider the drivers we have identified and sketch out how you can use these drivers to identify KPIs and CSFs for an improved service.

Calculate the costs of having to maintain the inadequate service and the impact of the service on the business. Then calculate the costs of improvement, and the money that will be saved through having a service that is not causing problems. Maintenance costs over the life of an information service far outstrip the cost of development.
You can demonstrate the improvement value for one business information service in this way; extrapolating these results into the likely outcomes of improving other information services should be an effective way to gain interest!

Setting up and operating BIM governance and BIMC is a change process that has far-reaching consequences for the employees. In order to improve the chances of successful implementation at an early stage, it is necessary to include them in the thinking and development process for the design (and functioning) of a BIM function that fits in with that of the enterprise. This can also mean that a different 'language' is created that fits better with one's own culture and discipline.

The road to fully realized BIM is characterized by behavior rooted in experience where it develops from reactive, through active, to proactive mode. But this development process is not linear. It is the route from 'good' to 'better' that makes the added value of BIM visible, it is not a targeted pursuit of a final phase in the development.

John Kay (who knew Steppenwolf lyrics would cover such arcane management theories……) describes this as 'obliquity'[20]; it (in this case 'it' is BIM….) is not the goal but the route to it that matters. And in general, this route is not a straight line. That is why we also state that, apart from the trajectory that it is developing, BIMC must strive to move from reactive, through active, to proactive behavior. This can only be reached if BIMC staff has sufficient time to gain experience.

[20] Kay, J., (2011), Obliquity, Why our goals are best achieved indirectly, Profile Books.

Case: Article 17 GDPR 'The Right to Erasure (to be Forgotten)[19] ' User request

Introduction:

A university receives a request from a former student based on Art. 17 of GDPR: Right to erasure). Since this particular university was born out of several other universities, the amalgamated body has not designed processes to fulfil such requests and as the data protection officer is in charge of all GDPR-related requests, as is common, will ask IT to remove the related data.

The issues
The first question is: Where is all the information about this student that needs to be removed and the second, how do we recognise information that should not be removed?. And if you think you have an answer, consider the local use by the student of excel sheets, marketing applications with their own data and so on. What information did this student interact with, where is/was it stored, is it archived, who else was the student in contact with……

BIM
The main concern relates to who REALLY knows what to do. This is why BIM should be in charge. DID has specific references to ensuring that BIM understands the holistic use of data across the entire IT infrastructure as well as in the business. Key to that understanding is being involved at all stages of the design of application services and use of applications.

7.6.4 Quality and efficiency

A QMS dictates that documentary evidence is available and that such evidence (data if you like) can be audited. Whatever the answers you may have unearthed in gathering evidence, this now needs to be documented to cement a quality-driven approach:

- Have you documented the enterprise data architecture? Does it correctly (and succinctly) describe the information services, systems, data, and applications aspects of your information services?
- How is the information services data architecture implemented in your enterprise? Is the architecture dictated by legacy services? Are there guidelines and procedures that guide the implementation?
- Are your data designers and architects sufficiently experienced and trained?
- Who has ownership of the current data architecture management process and who is responsible for implementing the architecture?
- What do you do to ensure that technology choices are consistent?
- Does every IT unit in the enterprise follow the standards and guidelines of the enterprise data architecture?
- How is information regarding problems and/or work requests analyzed and fed back to improve the technology or applications infrastructure?

[19] https://gdpr.eu/right-to-be-forgotten/

Each of these activities will be a BIM (BIMC) responsibility.

7.6.2 Performance

The front line may not be the executive focus, though it is very important that you gather information about how the information services are performing to provide any evidence about the need for BIM.

- Does the IT supplier or unit have the infrastructure and performance instruments in place to accurately determine how the enterprise is currently functioning with regard to digital information service use, quality and need for improvement?
- What methods are practiced by the information service developers to ensure that the processes of design and delivery are continually improved? Is Agile a buzz word or a way of thinking? Are communications effective?
- Describe the means used by management of the enterprise to discuss and develop objectives, provide required resources and organize work.
- Describe the enterprise process of dealing with user incidents, requests and problems in terms of the initial identification of issues, escalations, assignments, scheduling, time tracking, entitlements, ongoing information and knowledge collation, and resolution. Is the process 'ITIL-like' or 'ITIL-compliant'? The former generally implies a thoughtful approach, the latter a reliance on an expensive consultant model that may or may not add value and which is likely to focus on infrastructure issues.

The key to formulating strategy is not having a model of procedures, it is being aware that the combined brain power of a group of individuals needs to be focused on sensible, measurable goals and benefits that improve the business. The approach shown is valid for any strategic brainstorm. After all is BIM so special that it should have a unique strategic thought process? Think before acting and eliminate risk where possible before spending money; mistakes are more expensive to correct as time passes.

7.6.3 Compliance with policy, strategy and performance

- Can you identify the parts of the enterprise data architecture that are critical to your information services? Do you know which parts of the architecture represent risks (potential bottlenecks, capacity chokepoints, single points of failure, etc.) to the efficient operation of your information services?
- What communications and formal agreements are put in place to set the coordination for technology infrastructure and project architecture programs? Are the agreements contractual or legally binding? If so, how have they been working?
- Do the sourcing and procurement organizations in your enterprise get involved with making technology choices? How do they help?
- Is any group responsible for enforcement of the (various) architectures? Communicating the architectures? Guiding other groups in understanding and using the architectures?
- How do you manage technology decision-making?
- How do you determine the priority and impact of IT-driven project requests? Do you operate a planning unit, program or project office? How effective are they?
- What cost components are important to you in defining the value of your significant information services and your supporting technology infrastructure?

- Use information to shape their future role as a great enterprise.

The board want to have the opportunity to become a data-driven enterprise with the capability to unlock the value of their information assets and enable strategic imperatives. To highlight the size of this opportunity, they looked at how effective information management could support them, their customers and environment. Based on their vision the board formulated ten principles describing why they believe information is critical to success and to guide all their information management activities:

- We will use information as best we can, even if it's not perfect
- We will increase the trust people have in our information by assuring its fitness for purpose
- Information can affect people's lives and we will use it transparently and ethically
- We need to understand how the information we collect is used by others to make sure it is good enough for everyone
- We must continually earn the right to look after our customers data
- Information is a valuable resource that will be kept safe and secure from accidents and attacks
- Looking after information has a cost we should understand and account for
- We all have a responsibility to look after our information so that it is fit for purpose
- Decisions made with information create better outcomes for our customers, stakeholders and ourselves
- The value of information is only realized when it's used to help make decisions

BIMC and the Information strategy

From their vision the board formulated an information strategy that sets out a roadmap and framework of being data driven and how they want to achieve their vision. It describes how their information vision will be achieved to deliver value and realize the best possible return on investment. It also explicitly describes the need for BIM in the work of the enterprise if the intended future state is to be a reality.

As stated in their strategic documents, being data-driven will enable them, their customers and suppliers to make decisions underpinned by a trusted source of truth. Through developing their information management system and investing in data-to-intelligence capabilities, they will enable the strategic outcomes for their enterprise. This change will be delivered through three activities:

- Inspiring a data-driven culture,
- Providing data-to-intelligence services
- and Investing in data-driven capabilities

but the way it is managed and contained in different systems failed to make providing that information as timely or as useful as it could be. Naturally such conclusions required months of work by expensive consultants interviewing rafts of people who already knew what the problem was, but needed consultants to say the same things or they would be ignored by their Directors.

Many decisions required information from multiple places. It was critical to have a business information model which offered a single view of the types of data that existed and a logical information model which described how the data related. The consequence of the failings were: additional cost, re-work to applications development and delay that crept into almost every part of their business. Levels of frustration resulting from poor data and incompatible systems were high, which impacted their people, their engagement and well-being. Levels of frustration that a bunch of strangers were paid small fortunes to tell them what they already knew were not assessed.

Innovation
Traffic management technology changes very quickly (no, that is not a joke). Which sadist invented the speed camera? Also, the external environment changes at pace, though years of road work is how we know that judging speed as well as time is relative. Digital development and technology advances mean that data is everywhere, and customers can consume information about their traffic management network. The executive board decided that their reputation and the reputation of the department and even their right to exist depended on their ability to provide trusted information and services to the public, by protecting and treating traffic and traffic-related data and information rapidly and ethically every day.

The information vision and strategy created by the department reflected this ambition and captured their excitement about a connected future (they are civil servants, they take excitement where they can get it), enabled by information – that benefits employees, customers, stakeholders, society and the economy.

Vision statement
Our vision is to realize the full value of information by empowering our people, connecting ourselves and building trust with our suppliers, stakeholders and customers. By providing information that can be trusted and valued by all, we can fulfil our purpose of connecting the country through better journeys. The future belongs to the connected. What connects our environment is us. What connects us is the power of information.

We can agree this vision is very brief, then again there is a lot of traffic in the world so a long statement does impart a certain gravitas. In four primary objectives they describe what they hope to achieve:

- Harness the passion of their people to innovate and realize value from information
- Treat information as an asset, and a means of achieving their strategic objectives
- Build advocacy with their suppliers, stakeholders and customers by sharing trusted information

- Do we understand existing resource capabilities?
- Do we understand how customers perceive the service, is it needed and valued? Is the experience of using the service good,, bad or merely adequate?
- Do we understand how to explicitly describe future capabilities needed and is it explained in the business case how they relate to the proposal?
- Is it understood how the requirements impact operations?
- How does the business case explain the strategic added value in relation to the four drivers: capability, mission, value and need?
- Does the business case explain the strategic need and also whether proposals are realistic and how actions can be executed?

7.6 Step 5. Secure the transformation

If operational management of BIM is already in place, at this point BIMC switches from a supporting role to an executive role. Activities should be focused on translating the solution into improvement and operations. Questions to be answered.

- Who owns the transformation program? The BIMC unit?

7.6.1 Delegating responsibilities for functional management

Who will be responsible for the following activities?

- Orchestrate the pace and timing of digital transformation and the use of DID.
- Communicate a consistent view of the transformative changes you wish to make; are you focusing on documenting and automating business processes, or on finding an opportunity to introduce BIM or simply to use the DID good practices?
- Create a central point for information exchange.
- Use sensible, non-generic metrics to monitor progress.
- Make sure that executive action focuses on the links between strategy, tactics and operations.
- Provide regular updates for middle managers, using handouts to ensure further dissemination.
- Appoint someone to stay close to the program manager or leading teams, to stay on top of issues and to ensure that no mixed messages are communicated. This could be your services design coordinator role if you have one, or of course the SRO.
- Understand that there is a difference between communicating what is to happen and expecting it to happen.
- Make sure the overall vision is simple and inspiring, but not constricting.
- Consider which specific groups of employees will be implementing improvements or changes and therefore expected to understand the change.
- What new skills will they need?

Case: Data and Information strategy in Government

Background

A government traffic management agency formulated a data and information vision and strategy. They concluded that their directorates and suppliers already held a lot of data,

- Should the enterprise's information strategy and transformation evolve 'bottom-up', or 'top-down'? Why is one of these approaches considered preferable to another?
- Should the enterprise's information strategy be dictated by the available technology?
- Is your enterprise state-of-the-art or 'state-of-the-ark' (but proven) technology?
- Should you always commit to a supplier that proposes a particular technical solution?
- How do you determine the degree of IT support the enterprise needs to function effectively?
- Do you know how much knowledge of your processes, products, services and customers resides in unstructured and inaccessible files? Can old microfiche records, paper records, CDs, video tapes or eight track cassettes be found, let alone accessed for content?
- If a new way of working will require support from a new or improved information service or system, can you be sure of obtaining one that works? What will you do if it doesn't work?
- How many frameworks and standards are there and who knows what they are and how they fit together?

7.5 Step 3. Identify capabilities needed

The Capabilities discussed in chapter 3 provide you with the important information you need to think about in terms of how the enterprise mission can be addressed. To help you focus on some key features, think about answers to the following questions.

- What major enterprise and departmental polices guide your technology choices? How is Bring your own device or Choose your own device (BYOD or CYOD) implemented and, more importantly, controlled?
- How are new digital information system technologies introduced into the enterprise? How is their impact assessed and managed in the data center and in the field?
- Have you identified a catalogue of standard information/data services? Or a blueprint of how the standard technologies interact with each other and support the digital environment?
- Are you dependent on any one particular partner or supplier for the whole, or any part, of the information services of your enterprise? What about IT infrastructure?
- Have you clearly identified possible transition strategies?
- Make sure everyone understands that there is a difference between a capability and a capabil-**IT**.

7.4 Step 4. Present the business case

Does the enterprise have a process in place to continually examine and determine how to bridge the gap between the anticipated future requirements for information and data, and existing resource capabilities? Can you interpret your business model in a way that focuses on strategy and not only what is operational?
Question to be asked.

- Do you have an information management decision framework in place?
- Is there are controlled process to present initiatives and make decisions?
- Is there a mandate for change?
- Are the appropriate stakeholders present in the steering board for BIM?

- Have you documented an enterprise data architecture for your enterprise? Where are the data about the architecture recorded and how is it made available as appropriate?
- Based on the execution and impact of ongoing projects, how are enterprise data risks identified, classified, recorded, analyzed, documented, managed and communicated?
- What financial approaches are used to fund and track both initial and ongoing investments in information/data programs and projects? Are they effective?

7.3.3 IT planning

In the digital age, information is intrinsically and irrevocably linked to IT; clearly then, you must now take a close look at IT within your enterprise and ask some searching questions. Consider the issue of structured and unstructured data; in many enterprises unstructured data is the major issue and in all enterprises there is evidence that more unstructured data exists than useful structured data. Think also of the 'digital savvy' employees that have created (for whatever reason) their own personal Database(s). Not just that but their own personal downloaded apps that sit on the corporate network.
If parts of the enterprise have pockets or islands of information that is organized or used in some specific fashion in order to meet business needs then it should be corporate and it is a failure of BIM to have no knowledge of the need and the data. Conversely it is also a failure of BIM to recognize the danger inherent in allowing these islands of data to exist if they are not necessary. Did a policy exist regarding keeping data in private repositories? If not, why not? And if it did exist, how was compliance enforced, what went wrong?

- Describe how the enterprise tries to overcome resistance to change and to meet any urgent need for the planning and execution of business opportunities. Does the enterprise examine risky opportunities and take chances to profit?
- Describe the strategies, processes and technologies used by the enterprise to identify improvements and to initiate, assess, approve, assign, deliver and support changes to the user environment. Is change management an enabler of change or a bottleneck?
- Describe the way in which the enterprise initiates, assesses, approves, assigns responsibilities, strategizes and delivers beneficial results from IT-driven and data-driven projects to the users.
- How effective is IT in these areas?

7.3.4 Architectural issues

It may not be all about IT, though as we have continuously emphasized, IT is both a driver of innovation and a legacy that you must deal with because information is delivered electronically. Particular attention should be paid to information service architectural issues. Some of the following points will amplify your thinking about the LoB in the context of IT. And remember, BIM primarily focuses on the data architecture - but a service architecture, and a technical architecture will also exist and so will a business architecture and as BIMC you will need to be aware of all of these.

A few typical 'IT' issues:

- In considering a merger with another enterprise, is it possible to get scale advantages from combining two central IT departments? This is far more than a technology decision.
- At which level of the enterprise should the IT strategy be formulated? What about the data strategy?

7.3 Step 2. Governance, strategy and business transformation

The most effective introduction of BIM requires the business case to focus on the scale of the current and future digital environment and how good governance and effective strategy will assist with being clear about the need and value of new or improved digital business services.

7.3.1 Essential questions for your strategy

It is suggested that when addressing the business model, you should initially focus on the following questions:

- How does the enterprise currently determine whether technology support and delivery capabilities accurately match requirements with regard to managing data and information services?
- What challenges does the enterprise face in achieving strategy and goals?
- What are the internal delivery capabilities (processes, competences) required to fully support the enterprise strategic objectives?
- What is the experience you expect users to have when using digital information services and will these match expectations?
- What are the delivery capabilities that are currently provided by suppliers and do they work with both internal and external suppliers?
- Does the enterprise have a plan that accurately describes how your business will function in the near future? In six months? In twelve months? In eighteen months?

Remind yourself that there is not one, single, absolute way to success, use what suits you and your audience. Once you have answers to the questions posed above, or have gained an understanding of the current state of play in your enterprise, you will be in a position to identify the supporting information you will need for a solid business case.

7.3.2 Gather essential supporting information

You can expand your thinking by acquiring information about how success should be measured. Some of the questions you will find are repeated. Look for evidence, not just ‘box ticking’, a quality policy will usually require documented evidence, but sadly this is not current practice in all situations.
Consider the following points when gathering supporting information:

- How do you arrive at the measurement of business need and value with business information services and information technology solutions in terms that are both quantifiable and meaningful to your executive management? And are they meaningful to users? And partners or suppliers?
- Describe the process and technology used by the IT units to manage the assignment and configuration of information and data assets for specific information services. Is it effective?
- Describe the processes and technologies used to monitor and manage essential commitments made by IT and measure user satisfaction. Are they effective? Are they focused on information services and not on technology?
- How does the enterprise evaluate the success and failures of BIM/IT initiatives? What are the key issues?

- What is the enterprise trying to do better, cheaper or differently, and what are the factors that constrain this?
- What are the relationships with other enterprises, including competitors?
- What information services are provided and for whom?
- What information services are procured and from whom?
- Who else should be consulted?
- What characterizes the culture of the enterprise?
- How are responsibilities organized?
- What are the command structures and reporting chains?
- What styles of management are in use?
- Who has authority and to what degree?
- What freedoms, constraints or political imperatives are there?

7.2.2 Analyzing underlying topics and issues

From a BIM perspective the practitioner should be thinking about the impact of (digital) services, ensuring the focus is on the business processes. Transforming the business begins with the business model and articulation of the desired enterprise services. The elaboration should always begin with thinking about the business model, the enterprise architecture(s), the services and then the operating model.

You can analyze the issue at hand using the DID model. Refer to Figure 7.2, where the 'anchors' have been placed, to give you an idea of the types of key topics in each domain and use the **Perspectives** to gain insight. Keep in mind that we mentioned earlier, you need to distinguish between green and brown field situations or (more likely) hybrid situations and consider how your plans correspond to the **Drivers**.

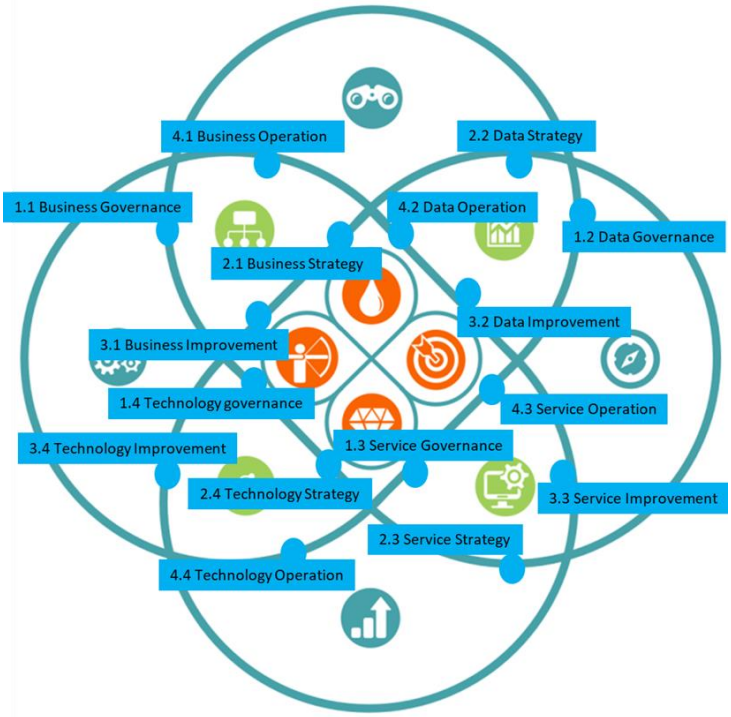


Figure 7.2: Anchors

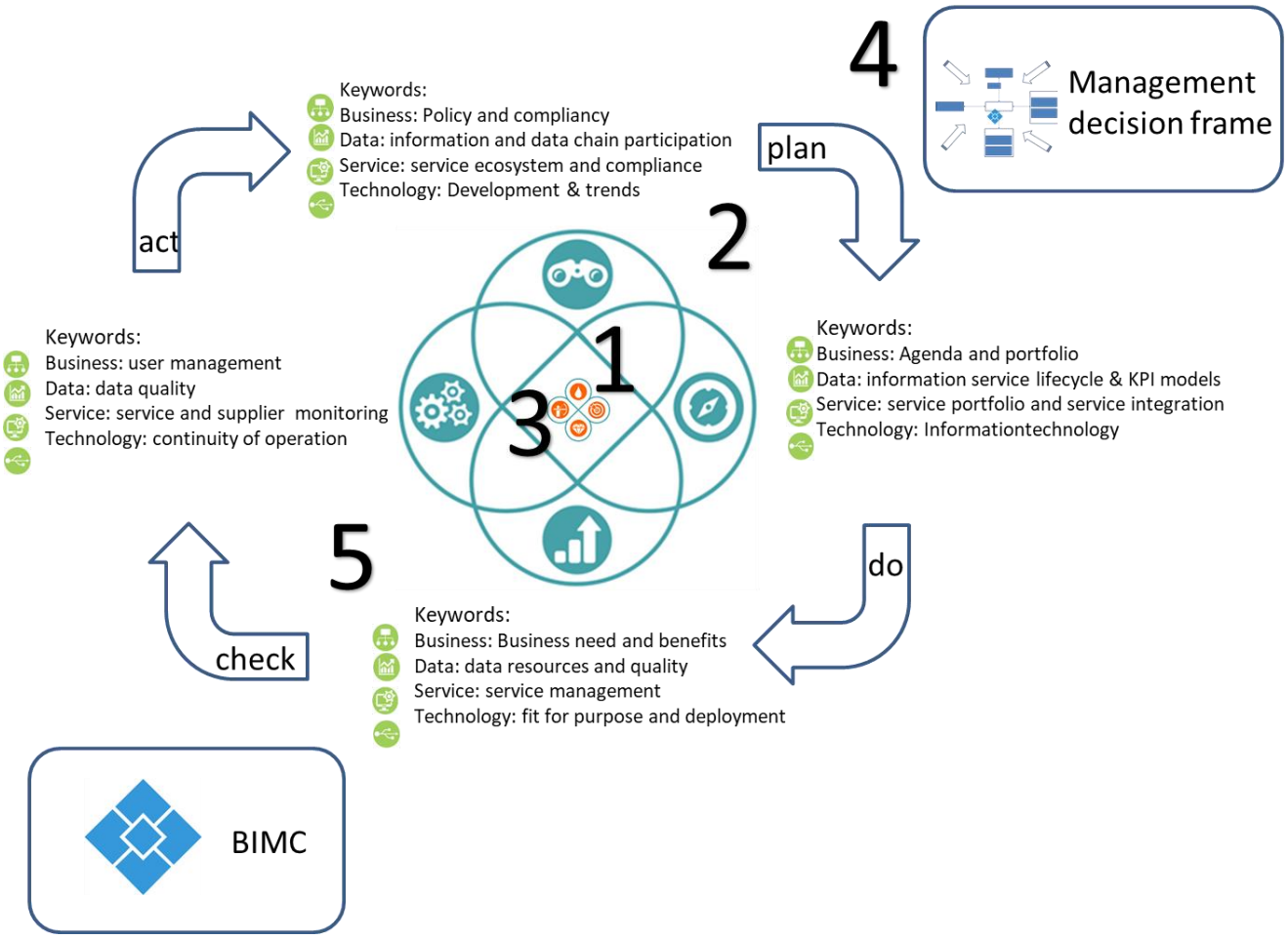


Figure 7.1: Implementing and executing BIM

7.2 Step 1. Understand the business model

7.2.1 Identify your business drivers

Use **Drivers** to identify *your* business drivers and current organizational drivers. Before embarking on establishing BIM (or implementing DID), it is good practice to think about how your enterprise and its business are organized. The questions listed below will help you develop a balanced view.

- What is the business of the enterprise? It might be obvious to you, but are all goals and aspirations clear to everyone, including suppliers and partners?
- What are the strategy and goals for the enterprise/LoB
- Who are our customers and stakeholders?
- Where are the internal customer and supplier boundaries?
- What about external customers, partners and supplier boundaries?
- What about information chain partnerships?
- How, why and when does the business interrelate with other LoB in the enterprise?
- What are our digital assets?
- How well does the enterprise meet its current objectives?
- Can information integrity be relied upon?
- Is BIM a recognized discipline in your enterprise and if so, how is it functionally organized?

7. Implementation of BIM

7.1 Practicing BIM

Given the ever-present nature of digital information sources and assets *where do you start?* is a very good question. The answer to the *'why'* question should be obvious, because of the sheer volume of data floating around in the electronic ether and the vast amounts of data being collected by various (and nefarious) organizations. When implementing BIM, most often the first question is where to begin. There are two mayor approaches you can choose: bottom-up or top down.
Frankly, if BIM is not practiced in your enterprise then anywhere will do, though the most substantial effects will be achieved if executive sponsorship and support is obtained. If you have a new line of business with undocumented business processes to start with, then you can use this Line of Business (LoB) as a pilot; if you have undocumented business processes throughout your enterprise, use that problem as an opportunity. No matter how small the project, make sure you can demonstrate benefits.

In this chapter we focus on both approaches to kick start you. Whatever approach you choose follow the steps below:

1. Understand the topic at hand, the position in relation to the DID drivers (i.e. where the topic impacts your business model) and the environment of the enterprise and the position in the lifecycle.
2. Think about governance and strategy and necessary business transformation by understanding how your organizational architecture (the operating model of your enterprise) and the consequences for topics and issues to be analyzed in conjunction with other strategic themes and choices.
3. Understand the necessary capabilities and identify business mission fulfilment capabilities
4. Present the business case for your project/plan and make sure a management decision can be made about your proposals
5. Implement the plans for transformation and make sure the developed solution is both permanent and robust in operation.

Each step can be placed in an overall framework that summarizes our earlier chapters (Figure 7.1). For each step, we are supplying checklists of essential questions you need to ask and the information you should gather that will help you to build a solid business case for business transformation, and/or BIM, and how to use DID effectively to assist you.

resourced and that value might well pertain to the ability of an enterprise to transact business based on data. In which case (depending on need), 100 people working in a pyramid management structure might well be considered 'agile'.
And you do not often hear about Google, Microsoft, Facebook, or any other data hive complaining about having too many people looking at data. If a service is free, you are the product. Or as they say in the USA ``TINSTAAFL'', which is short for there is no such thing as a free lunch.

Key points

BIMC will support business managers, IS planners (governed by some form of BIM board/ IS Steering Committee, the ISSC) and program directors in translating the Policies of the Management Board (guiding principles) into purpose and direction for the managers of IT services.

BIMC fulfils a bridging function between the demand from the enterprise and the supply from the service providers.
BIM is therefore that BIMC operational management may be different for each enterprise, but that the ingredients that every enterprise can choose from are comparable.
To cover essential operational, day to day processes. BIMC must be able to: make agreements with enterprise business users, translate the work into a standardized approach where practical, negotiate with service providers, and always check on performance.

To manage these activities BIMC will have four responsibilities:

- policy, innovation and advice (PIA) management (Plan, mostly Governance in the DID model),
- contract management (Do, mostly Strategy in the DID model),
- control management (Check, mostly Improvement in the DID model)
- and user management (Act, clearly the Operational focus of the DID model).

BIMC must be expert in the four areas. Thus BIMC is placed between the four most important stakeholders. On the demand side, BIMC has to deal with three parties: general management, customers and users. On the supply side with relevant suppliers.
In many enterprises, you do not necessarily see one department where all the intelligent customer tasks are undertaken together. Sometimes the functions are spread over several departments.

- Complaint handling is effective.
- Communicate with all management levels and departments in an enterprise.
- Think like the customer, make proposals to the customer for alternatives and a new approach to problems. Personnel should empathize with customer needs and express the wishes of the customer in their own language.
- Identify any underlying question and give specific advice.
- Take initiative in building a network within the enterprise based on trust and expertise and know who are the most important/ influential people.
- One can establish relationships between developments in society, politics, governance, the professional field and the future needs of the enterprise and advise about the trade-off between theoretical solutions and practical feasibility.
- Substantive knowledge of subjects or the ability to identify subject matter expertise.
- Knowledge of and experience with project management and skilled in managing multidisciplinary teams in projects (mostly technical, logistical, legal and financial-economic disciplines) and disseminating new ideas and concepts in such teams.

6.5 How many people are needed in BIMC?

Looking at the competenences of a BIMC one asks himself how many people need to work within BIMC? One hundred and three. No wait, that's not very agile, let's have seven. Look how agile we were there, we reduced management overhead by ninety six and yet have no clue how much work is actually needed, that is the beauty of being agile.

More seriously, the answer depends entirely on the size of the tasks being undertaken as well as the size of the enterprise. BIMC should coordinate and assist with the implementation of all major programs, not only a specific BIM program, to realize the enterprise objectives regarding information/data and monitor the results. This includes the strategic advisory role. BIMC is positioned between supply and demand. In terms of BIM, what (and who) is the need behind the demand for data and what (or who) will supply that data.

It is worthwhile thinking about sizing the function initially from a 'global' perspective and then (because this book is about BIM) specifically thinking about BIMC in your enterprise. We need to consider the size because the Intelligent Customer is defined independently of implementation. It may therefore be that large parts of the actual implementation, such as programming work or technical maintenance, are included within the enterprise, for example as a separate department. If everything is outsourced, a core staffing that suffices a few basic functions will suffice. Outsourcing often refers to a rule of thumb of 8 to 12% of the outsourced amount as structural costs for managing contracts. However, this can be considerably lower if there is main contracting. It can also be considerably higher when it comes to vital systems or safety-critical systems. We often see a ratio of 1 FTE internally to 3 FTE externally.

The maturity of the demand enterprise (business) and the maturity of the providers also influence the size. The more mature the demand enterprise and the providers function, the smaller the management enterprise. Or vice versa: the worse they function the more coordination is needed.

One more point; quite often the need for more people is met with the response that something is 'not very agile' or that 'it needs too many people'. Well, did anyone actually quantify the work that needs to be done? If there is no need for work (or a process) then of course anyone working on that activity is a waste of resources. However, if an activity has value, then it should be properly

6.4 BIMC competences

BIMC can manage on multiple levels of abstraction, terms and scope of service. On the one hand, BIMC advises the enterprise on new developments and helps with policy preparation. On the other hand, depending on the nature of the questions or incidents, BIMC is expected to take the measures that are necessary to guarantee uninterrupted business operations.

The role of BIMC differs fundamentally from Operation that is responsible for the actual delivery of results. BIMC, on the other hand, does not interfere with operational services, but coordinates the supply and demand chain and monitors that chain.

BIMC is placed between the four most important stakeholders. On the demand side, BIMC has to deal with three parties: general management, customers and users. The services are purchased and compiled for users, so that they can perform their work optimally. Based on the needs of users, the BIMC office makes agreements with customers about the price that must be paid to be able to provide the services. The most important customer or client is generally also on the board or in general management, in charge of the portfolio for business operations.

The most important customer is also the party that pays for the generic or basic services. These needs are often laid down in service agreements or (internal) service level agreements (SLAs). BIMC assesses the need and translates these functional requirements into a technical package of requirements that is understood by whoever will design and supply the business services. In doing so, BIMC takes into account requirements set by the management, such as architectural requirements, operational management principles, etc.

In addition, BIMC will also advise the board on topics such as new developments, standardization policy, policy frameworks and costs. BIMC then purchases the service from one or more suppliers. BIMC must be aware of the market, technological trends (particularly in BIM, Digitization and Knowledge/Information/Data management) and developments in society and their significance that may translate into services.
To that end, it concludes contracts, covenants or serviceand experience level agreements (SLAs). The service is delivered to the enterprise (users) in accordance with a product and service catalogue and maintained, for example through service management and a service desk. Based on measurements (audits, satisfaction surveys or panels) and the performance management on the contracts, BIMC gets a picture of the quality delivered. The results are reported back to the general board and the customers. BIMC can also take the initiative to advise users or service providers on new developments.

The consequence of these competences in general terms is that the emphasis of the requested competences is on social-communicative and intellectual competences. This is in contrast to, for example, the enterprise that has implementation in-house, so that the emphasis is more on administrative-enterprise, emotional and task-oriented competences.

- Specifically, this requires the following of the demand side of the Intelligent Customer guidance.
- People feel personally responsible for the relationship with internal customers.

solution involved a functional and technical end to end test with specially designed data test-packs.

During the contracting phase of the project, these issues had been overlooked by the applications development teams, internal infrastructure team, the senior user on the project board and even by the senior technical teams responsible for database integrity. BIMC also discovered that although in the contract requirements were set for data delivery, the LoB had not been attentive to the functional requirements of the solution where data had to be available to several other external parties that acted on behalf of the enterprise to resell insurance services.

Mindful that testing is not restricted to the application software, BIMC also had to be sure that responsibility for ensuring that the installed hardware and software was available. Necessary arrangements were made with infrastructure teams to ensure processing was functional and that information was processed effectively and accurately in the overall supply chain.

BIMC advice and guidance
As a consequence of the issues discovered, project management advised by BIMC instigated a number of corrective actions to improve and restructure the test process; the actions were implemented immediately to react to the issues discovered and were defined as policy for the future. These included (in this case, because the project was half complete) a revised, comprehensive test document written by the LoB with the supplier to create a more agile process to test requirements and service integration, defining exit criteria to make sure there was a threshold for 'go/no-go' decisions about implementation and go-live, and defining a continuous improvement strategy for the enterprise service organization focused on the needs of the LoB.

Root cause analysis
LOB management had created their own policy of not to allow changes in the application requirements during development and or to the environment in which the new application would be implemented. They had formally issued a 'freeze' notice to the project manager. In practice, reality is that this rarely, if ever, works, especially in a brown field environment. Needs of LoB will change or mutate with the market dynamics. Fortunately, BIMC identified that if the application delivered did not meet up-to-date requirements, it would have been rejected at worst, or endlessly changed in operational use.

Policy advice for the future
The purpose of requirements specification work is to avoid making mistakes and to do complete job. It is not possible to avoid all mistakes and only some US presidents are omniscient. Accepting that there is a risk of being wrong is part of project planning. The essence of the matter is to make sure that your risk management is in place to manage issues as they arise.

A 'post mortem' was instigated by BIMC and the findings reported to the Board to consider. It was accepted that Policy should be issued about exit criteria to define the point where User Acceptance Testing would be finished, and was in line what was needed based on fitness for purpose (even if not all contract requirements were fulfilled). Where contract requirements were unfulfilled, Policy was that the project team would identify such issues and the service organization would take responsibility. As an improvement issue, the service organization would be expanded for a finite time to close all open issues.

For the future, being serious about quality of the test process would be an integral part of the project vision document and the planning process.

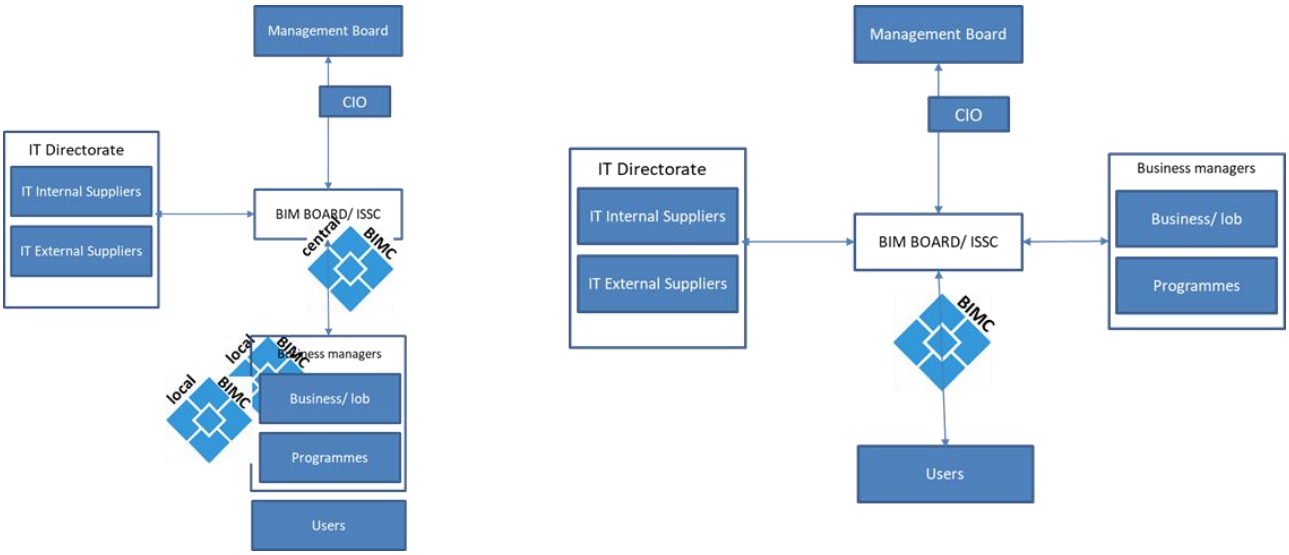


Figure 6.2: BIMC central and local organization

Although, to our knowledge, no further research has been done into this, in practice we see four dominant aspects on the basis of which organizational model for BIMC is decided upon. These are:

- The size of the enterprise. Is the enterprise of a size that it becomes sensible to set up a single department for BIMC, or is the enterprise so gigantic that it is better to organize the areas of attention separately because of economies of scale (or other issues)?
- Complexity of the line for business or process from the primary enterprise. Are the services and information processed between one or more LoB upon inter-related and sufficiently complex to warrant a coordinated approach?
- Homogeneity of the businesses. Are the LoB comparable in terms of maturity level?
- Experience of the enterprise with functional management of BIM. Does the enterprise have knowledge of and experience with functional management related to data and if so, is it effective?

For larger enterprises, a distinction is made between services that apply globally or generically to the entire enterprise and services that apply to a specific domain. In that case it is often decided to make a distinction between management at the corporate level and management at the business unit level. The principles and roles *per* focus area remain the same. However, the coherence and management of generic and specific needs to be properly adjusted.

Again, different variants are conceivable. Figure 6.2 provides an example of a management office at corporate and business unit level that has a clear line mandate.

Testing applications is a serious business

The issue

The external supplier responsible for development and implementation of a replacement motor insurance information system was also contracted to provide a test strategy. BIMC discovered during the development phase that in the test strategy the requirement of the LOB about participation of the user in the testing and implementation of the applications had not been specified. In addition, it was had not been foreseen by the supplier that the complete end- to- end

As we explained in chapter 5, within the enterprise BIMC fulfills the role of the strategic and tactical professional representation of the business that coordinates the business information services to achieve desired business outcomes, compliance with any related contracts and the control thereof and controls costs where applicable. BIMC is positioned between the customer enterprise (business) and the supplier(s), internal and external. It is the intermediary who, as a delegated client, ensures that the client's needs (or the needs of the business) are well served by clear formulation of the needs and the translation thereof into purchased and delivered information services.

To operate effectively BIMC should be aligned to the BIM operational activities.

Keep in mind that BIMC **does not carry out all of the above activities** and most often is responsible only for the tactical level not the day-to-day activities. The tasks and responsibilities mentioned in this chapter must be properly assigned. Implementing it requires a lot of insight, experience, expertise and competences, which are not always present. As Deming[18] notes, it is only by striving for continuous repetition and conscious improvement that high quality can be achieved.

The term BIMC is used to state what needs to be done in order to support management, LoB and users with BIM execution. In order to make this possible BIMC must be expert in the four areas that make up the intelligent customer capability. In many enterprises, you do not necessarily see one department where all the intelligent customer tasks are undertaken together. Sometimes the functions are spread over several departments. It is of course a possibility that only little control is required and implementation will be minimal. The same is true where BIMC adopts the intelligent customer functions.

The intelligent customer functions can be instantiated in several variations. All variants are conceivable: from one person with a universal mandate to a multidisciplinary department (and everything in between). In practice we often see that two dominant criteria are used to choose an organizational model. The first criterion is about whether BIMC focuses exclusively on one or more LoB. The second criterion concerns the mandate. Is there a direct line relationship between the various focus areas, or is it a strategic network of focus areas that are functionally managed? In the last case it means that not all tasks identified are part of the functional BIMC unit but are part of organizational departments that need to cooperate.

[18] Deming, W.E., (1982, 2000), Out of the crisis, MIT Press. Beniger, JR, (1986), The control revolution, technological and economic origins of the information society, Harvard University Press.

This type of issue is related to the proper design of the information architecture. Business (and IT) use of rogue applications and tools is a major issue and should be controlled by BIM.

4.Operational management

Operational management is particularly focused on monitoring the satisfaction that customers and users have about the nature, quality and extent of the information services. Operational management conducts various surveys and other techniques to establish the degree of satisfaction. Operations also uses the data that arises from handling complaints and disruptions due to production, user management also ensures complaints, incidents/problems and malfunctions are handled satisfactorily. See section 6.2.5 for more information.

Summarizing the user management responsibilities is tabulated for you in Table 6.4.

Table 6.4 Tasks within user management

Ensuring delivery of services and products (demand side)	Make a contribution to determining user needs, and their translation into a program of requirements and the creation of contracts. • Record agreements in service agreements and contribute to the preparation and evaluation of SLAs. • Compiling and managing the service catalogue, the service descriptions and management agreements.
Guarding customer interests	• Ensure representation of the stakeholder interests. • Monitoring customer and customer satisfaction. • Supervision of the handling of complaints and malfunctions Initiating steering measures, changes to the services or changes in strategy or strategic planning.
Relationship Management	Maintaining relationships with users/LoB management. • Follow the needs of and developments of the users e.g. changes in strategy or strategic planning. • Informing, consulting and influencing customers. • Initiate and monitor the translation of customer needs into supply services, including the control of the output. • Discuss advise and develop proposals with the users, negotiate and obtain an order from the customer to proceed with execution.
Operational management	• monitoring the satisfaction that customers and users have about the nature, quality and extent of the information services • manage day to day DID operations

6.3 How to structure BIMC within the enterprise

The Fifth element is of course a movie.

1. Ensure the delivery of services and products (demand side).
The tasks within user management aim to ensure that the needs of customers are optimally aligned with the range of services and to monitor this together with the users through managing results. Needs are translated as much as possible in terms of functionalities. For example, I want to be able to use my smartphone anywhere to process information, instead of *I want a smartphone type XYZ.*

Tactically, BIMC tries to bundle needs as much as possible and to reach a common position through consultation. Specific agreements are only made in those cases where this is not possible. This creates the difference between agreements on generic services, services purchased for everyone, and specific agreements, the so-called customized agreements. In practice, there is another intermediate category that talks about common or 'plus' agreements. These agreements form a category of services that are required for parts of the enterprise but for which it is not clear who is responsible for payment.

2. Guarding customer interests
Consider here the role of the Custodian described in DID; there is a corollary between guarding customer interests generally and the specific role of guarding the integrity of data resources. Where developments have been approved, an estimate is made of what these developments mean for the strategy and the range of information services on offer. Customers are informed about developments in the range of services and products.

3. Relationship management
BIMC uses relationships to surface specific needs (where digitization is a key driver, these may well be technical as well as data driven, remember that BiSL describes the need to cover Business, Information, Services **and** Technology issues). Strictly speaking, relationship management can be said to include Operational management (below) though for clarity, it is worth setting out operational tasks as a separate element.

Case: standard software

Introduction:
In any organization there are a many different software tools. Even if BIMC is involved and takes ownership there might still be challenges. What if your supplier of a software tool includes a link to another tool from another provider. And the issue is not simply related to cloud-sharing software. People inevitably start using tools if they find them useful, but what does it mean to GDPR and what are the implications for a business? IT might not even be aware of these ghost (some businesses describe them as 'rogue') tools.
The issues

There is unlikely to be a contract with the provider of ghost tools (and what about licencing issues…..). What functionality do they provide? How will they handle data? Can they use data for other purposes (maybe without the knowledge of the business)? And if the business identifies a genuine need for using the ghost tools and assume that they are safe and managed, how do we make sure that different LoB do not end up with several similar applications, used for the same functionality, that might not work together.

BIMC

- Quality improvement. To gain insight into where the quality of service of both the Intelligent Customer and the services that are delivered can be improved.

3. Financial control
This includes:
- Prepare and determine the budgetary framework, budget, budget allocation and such, partly based on the agreed volume and the agreed prices.
- Taking care of financial implementation and accountability, for example with regard to intended spending or policy decisions with financial consequences.
- Invoice handling. This comprises two activities: determining that the performance has been delivered (declaration of performance) and then authorizing the invoice).

Table 6.3 summarizes the activities.

Table 6.3 Activities of management control.

Management	• Assessing the legality and effectiveness of the services provided and analysis of risks, including financial. • Determine cost. • Analyze the degree of market conformity, including by performing cost price analysis and benchmarking. • Develop, manage and operate a quality assurance system. • Structured management and coordination of activities and processes and contribute to monitoring the quality of the services to be provided. • Manage and update data files and maintain the files. • Analyze and report management data.
Performance management	• Aggregate the available information (provided by the focus areas) on the financial performance, satisfaction and performance of the suppliers, analyze it in full and report on it to management. • Make improvement proposals aimed at improving the overall process. • Organize and monitor connections and processes between suppliers (service integration).
Financial control	• Prepare and approve the budgetary framework, the distribution of the budget, the budget and implementation (spending, policy decisions with financial consequences). • Ensure implementation and accountability in the financial field. • Processing invoices.

6.2.4 Tasks within user management

BIMC needs to have good relationships in many areas of the enterprise. For example, the activities of user management focus on maintaining the substantive relationships with users. At the strategic and Tactical level, there are four principal areas of work within user management; the first three are largely strategic, the fourth element necessitates further expansion for the Practitioner, in section 6.2.5, to cover essential operational processes. The four principal elements are;

1. ensuring the delivery of services and products (demand side);
2. guarding business/LoB interests;
3. relationship management
4. operational management.

After the contracts have been concluded, BIMC naturally wants to ensure that the services provided are in accordance with agreements. This responsibility has been assigned to the control management focus area. Three task areas are distinguished:

- service management;
- performance management;
- financial management.

1. Service Management
The influence on the integral costs is greatest in the phase where the management office determines the need (or when drawing up the program of requirements). After that there are limited savings. After the contract has been concluded, influencing the costs becomes high again if changes are made to the specifications within the contract.

From this financial perspective, control management contributes to determining business needs, translating these into a program of requirements and the procurement process or the conclusion of contracts and changes to existing agreements. In this regard you can see how the service management and financial management areas must work together (and do not forget that the task area's might not be independently managed, they may be the task of one person).

Control Management covers all activities performed by BIMC that are aimed at ensuring that the requirements of the contracts are achieved and that the risks for the client remain at an acceptable level. The primary goal here is that management is efficient and effective.

Important elements of a control function are:
- The assessment of the legality and effectiveness of the products and services provided and the analysis of the (financial) risks.
- Determining cost, on the one hand, to enable BIMC to make a realistic budget and on the other, to be able to determine market conformity. On the other hand, customers (and buyers) need insight into the cost of products and services, so that they can make an assessment of whether, and if so to what extent, they want to purchase products and services.
- The analysis of whether the services provided in relation to the cost are still in line with the market. The most obvious methods are cost price analysis and benchmarking.
- The development, management and operation of a quality assurance system.
- Taking care of data management, i.e., the management and supervised updating of various data files, most often undertaken with the Custodian role of DID so that there is clarity and consistency.
- Analyzing the data and taking care of management information from these databases for the purpose of performance management.

2. Performance management
The quality of the service is largely influenced by the quality and reliability of the overall development. Performance management influences productivity, assists risk management, cost control and cost effectiveness. Performance management contributes to:
- Contract fulfillment. To demonstrate whether the delivery is what has been agreed.
- Evaluation of SLAs. To determine whether the services have been delivered that have been agreed with the customers.
- Cost control. To demonstrate whether the agreed services remain within the agreed costs and whether the relationship between price and performance is still correct (test for efficiency).
- To demonstrate whether the supplier has delivered the performance as agreed in the contract and then whether the supplier can be paid.

- Insight into who needs to take action at what time. For example, who takes the initiative to reopen a contract, who can contact who at the supplier when something is missing in the service.

3. Market and client and contracting
Contract management maintains relationships with potential and existing suppliers. Control of total costs (TCO, short for Total Cost of Ownership), optimizing business processes, reducing risks and making optimum use of market knowledge as early as possible are the central principles.

Contract management follows developments in the range of services and products closely and uses the knowledge from the market for the timely recognition of opportunities for other and / or better services. It informs suppliers about developments at customers and within the management enterprise. Where digitization is part of the corporate strategy, engaging with suppliers might be the only way to manage skills shortages or technical requirements.

Table 6.2 Activities of contract management.

Ensure delivery of services and products (supply side)	• Contribute to determining business needs and role of IT translate this into a program of requirements. • Participate in the entire procurement process (specify, select and contract) and co-responsibility for legal, financial, enterprise and substantive conclusion of appropriate contracts / covenants. • Review contract (s) /agreements (periodically and during contract period). • Contribute to the preparation and evaluation of SLAs.
Contracts supplier management	• Registration and management of contracts, contract details and agreements. • Monitoring contract agreements, promotions and planning, also one signaling function. • Provide proactive advice on the handling of various contractual matters and the realization thereof. • Coordinate information about the contracts. Analyzing and reporting on realized versus agreed services. • Monitor supplier performance (based on management reports) and measurement results from the supplier) and initiate improvement proposals.
Market and client and contracting	Maintaining client-contractor relationships with suppliers. • Following developments at suppliers (for management / customers). • Informing or sparring / coordinating with suppliers. • Adjusting the suppliers. • Guaranteeing service integration on the supply side.

Service integration must also be guaranteed on the supply side. In addition, suppliers for (groups of) products and services are designated as coordinators for the integral linking of processes or infrastructure. The other suppliers are required to coordinate their products with the designated coordinator. Table 6.2 summarizes the activities of contract management.

6.2.3 Tasks within management control

For completeness of understanding, we will expand information about the responsibility of contract management; this focuses on making agreements to agree the desired services with either internal or external parties, in a contract, to actively and unequivocally record, manage and monitor all term agreements in a contract, as well as to provide the agreed. The aim is to be able to control the risks that arise because agreements are made with external parties, to monitor and optimize costs and to ensure the services are delivered effectively and efficiently. However, the contract cannot be an end in itself but is a derivative and forms the basis for the relationships between customer and supplier. In general, the focus area of contract management pursues a number of things:

- For concluding contracts: translating internal needs into market supply, market exploration (identifying suitable suppliers), obtaining the most favorable agreements and reducing uncertainties about future performance.
- For the execution of contracts: providing insight into and keeping the contracts and ensuring that the appropriate level of performance is delivered with the right quality, at the right time and in the right place.
- For extending or terminating contracts: at a time that is most favorable to the enterprise.

Contract management therefore undertakes the following activities:
- the delivery of services and products (supply side);
- contract and supplier management;
- market and client and contracting.

1. The delivery of services and products (supply side)
Contract management offers support in determining business needs and translating them into a program of requirements. Subsequently, contract management - in collaboration with the Purchasing department, takes care of the conclusion of the contract and the contractual agreements on the performance to be delivered (specify, select and contract), as well as on changes to the existing agreements. In addition, contract management assesses the contracts at the conclusion and periodically during the contract period.

Contract management also contributes to the drafting, evolving and evaluation of service agreements (inter departmental SLAs, external SLAs), so that they remain seamlessly in line with the contracts concluded.

2. Contract and supplier management
Contract management information must be up-to-date and available to those involved. Contract management contributes to obtaining management information, standardizing services and standardizing the procurement process within the Intelligent Customer function.

Contract management covers the following issues.:
- Insight into whether a (legally) valid contract is available for each supplier. For example, whether the contract has been terminated after the acquisition of a supplier or should be extended.
- Management possibilities for the various suppliers through, for example, periodic management reports, evaluations and benchmarks.
- Insight into the risks associated with contracts. For example, where the critical contracts/ contract agreements are for daily implementation.
- Insight into quality, quantity and financial scope *per* contract, as well as per outsourced service and for each LoB. For example, for financial accountability, coordination between contracts, agreements and performance management.

It is necessary to ensure a consistent set of principles and models that provides coordination of the design and implementation of the processes, the enterprise structure and the provision of information. Monitoring the technical infrastructure for the customer is also a key process. Technical services integration covers monitoring and guaranteeing the coherence of the supplier-transcending production processes and the infrastructure, including ensuring that there are good agreements regarding the functionalities of the total production chain.

Service integration (activity) integrates the different subsystems into one coherent whole, such that the different subsystems communicate smoothly and effectively with each other. From the perspective of the user and customer, the work environment functions as a whole, in look and feel and in operation. It is important within the joint offering of services that individual components for IT services are integrated and offered as a whole within an enterprise. Services integration has two aspects:

1. technical integration, regulated by BIMC through contributions to management policy, innovations and controls through assessing changes in business outcomes, information needs or services or innovation of services for compatibility with the portfolio, and
2. the architecture/ blueprint of the business operations.

In addition, there is a business, information/data, service and technical perspective of service integration. This responsibility lies largely with contract management. The actual integration will usually lie with the service provider and BIMC will ensure that the integration also takes place. The activities for Policy, Innovation and Advisory activities of the function are summarized in Table 6.1.

Table 6 .1 Policy, Innovation and Advisory tasks

Strategy formation	• Strategic policy making and frameworks. • Translate business strategy. • Adaptive response to changing environment or business operations. • Outsourcing strategy. • Market exploration
Translate from need to functionality	Translate business demand into products and services. • Advising business operations. • Development of new products and services. • Release calendar and priorities. • Feasibility tests. • Supply technical and functional programs of requirements for purchasing and suppliers.
Monitor and determine the enterprise structure	• Determine and maintain the architecture / blueprint. • Monitor overview and coherence for all services. • Assess the impact on these services in the event of changes. • Manage and establish basic functionality. • Coherence of portfolio and architecture / blueprint with services and products suppliers (technical services integration)

6.2.2 Tasks within contract management

BIMC does not always carry out **all** of the above activities and most often is responsible only for the tactical level activities. Day-to-day support is often delegated to a service desk .

6.2.1 Tasks within Policy, innovation and advisory management (PIA)

The added value of BIMC is most often to be found in the substantive knowledge and expertise that it has of its own enterprise and the data needs of the enterprise together with oversight of the professional disciplines that impact BIM for which it is responsible, such as IT, database processing, data/information security, enterprise/business architecture, the program/project portfolio and perhaps peripheral issues that might have some BIM impact such as facilities and housing services and the environment, physical security, in-house emergency services.

This group of tasks guarantees and develops the strategic and substantive connection between environment, customer, user and supplier. BIMC advises management (policy and coordination) about this and monitors the content and implementation of projects and programs. There are therefore three broad task areas:

- strategy formation;
- translating needs into functionality;
- monitor and determine the enterprise structure.

1. Strategy formation
With strategy, we strive for the continuation of the primary business objectives. The mission and goals of the enterprise are dictated by the political developments, market, user groups, possibilities of technology, *et cetera*. The strategy relating to operational management support is achievement of the mission and objectives of operational management. Working with Operations will often necessitate new agreements to be made, and deviations might be required with regard to frameworks and policy.

The advisory role includes consulting executive management about market developments. An example is the standardized design of the physical environment in such a way that the workplace fits in well with the individual wishes of the users. Advice might also be required about investment in new information systems, renovations, legacy technology, reuse and the vexed question of knowledge sharing.

2. Translate from need to functionality
To translate business demand into service provision, while also fulfilling the mission of the enterprise, the requested solutions should fit into a larger whole in which coherence is coordinated. The domain therefore provides a common language between enterprise, information and infrastructure. The requirement is determined within user management.

Effective coordination must take place with the implementing party. Desired changes that may have consequences for the implementing party will have to be coordinated at the architectural level at an early stage. Each time, a trade-off is made between flexibility and manageability by drawing up standards to achieve the desired quality at optimum cost. This ensures that future developments continue to fit within a whole (no islands of automation or knowledge). To achieve this, it is necessary that the management of the enterprise ensures that all departments work within the architecture.

3. Monitoring and determining the enterprise structure

architect and application manager were asked to come up with an acceptable solution to upgrading technology. The system was originally implemented in the late 1970s, and regular software upgrades have allowed the software to reach a high degree of maturity, often matching modern requirements.

So; what to do? There are several ways that the IT professional can change existing software e.g. converting, re-implementing, re-developing, 'wrapping' existing software behind one or more access interfaces or to replace it with a shiny, new existing standard system. And 99 times out of 100, maybe more, the business neither knows nor cares what 'wrapping', or re-implementing, or whatever even means. BIMC needs to both understand and care.

Any choice has advantages and disadvantages that need to be analyzed. If conversion is not feasible, wrapping is not desired, redevelopment is not affordable, and replacement is out the question-- that leaves re-implementation as a compromise solution between conversion and re-development. In fact, it becomes the solution by default since it is always possible and it can be done with a reduced effort and at low risk.

On the basis of earlier experiences and the underlying business case, the BIMC team in this case study selected re-implementation. Re-implementation meant rewriting the original code in another language and/or platform based on a re-documentation of that code. This distinguishes it from a conversion where the code is translated statement by statement to the target language. Re-implementation requires human judgement. Re-implementation can only be partially automated. Human thought is required to reconstruct the target code. Re-implementation is considered in two steps: first a model of an existing program is abstracted from the code and existing documentation. In the second step that model is implemented in the same or another language.

The result is a different solution to the same problem. In this case study other approaches already failed and although the re-implementation project is not finished yet, already useful results are produced. And without BIMC to assist, the business users would have been marooned without advice from a trusted resource.

6.2 Strategic and Tactical Tasks within BIMC

As explained in chapter four and described in the Intelligent Customer guidance we can distinguish four areas of responsibilities where tasks for BIMC can be identified:

- Policy, innovation and advisory (PIA) management
- Contract management
- Management control
- User management

In the next four paragraphs corresponding tasks and activities are explained in detail. Of course, it will depend on your enterprise which tasks and activities are most important. Keep in mind that

will be elements of strategy and tactics since some triggers will cause developments or improvements that will impact the overall strategy for BIM and may be a trigger for policy changes.

The use of the PDCA cycle is a practical way to complete the tasks of BIMC. We also observe similar management functions emerging within facility services, human resources and increasingly in other disciplines. The division into these four main groups is easily applicable to all disciplines. It is also important to determine that professional terms from a specific domain do not stand in the way of the nature of a BIMC practice, hence the choice of Deming's terminology. In other words, just make sure everyone knows what the responsibilities are that relate to the nomenclature.

In practice, any BIMC should ultimately function so well that all processes run smoothly. If you assessed all tasks in detail, you could say that each area of responsibility contributes to every process. In practice, however, it will appear that, depending on the need, several formal or informal consultation events will be required between the employees of the individual business areas to ensure that the processes run as effectively and efficiently as possible.

Case Study; Re-implementing a legacy system and 'Technology Watch'[17]

Why watch technology?

Isn't that rather like watching paint dry? Software systems are embedded in a technical environment comprising hardware, middleware and software. That environment is constantly changing. It often seems the hardware elements are replaced as fashion dictates, for instance the mainframe is replaced by a network of distributed PCs. Later the PC network is replaced by a cloud server, which in essence back to square one, namely a mainframe but now called an enterprise server, while the green screen terminals are replaced by much more expensive PCs with browsers.

Some software elements, e.g., the data management system, a data communication framework or a particular programming language are no longer supported. Or support from certain software providers is terminated, maybe because they terminate this line of business. Without support the user cannot go on using their products, unless others take over. On top of that, the existing technology may no longer be fashionable so that users are unable to recruit new personnel. Users are sometimes forced by industry to replace or update their products periodically. As with many other lines of business, the consumers of software are driven by the producers.

The question is often asked, '*Why should users want to renovate their old legacy environment?*' Largely, the answer is because changing the environment is not always desirable because of high risks and often high investments. It is not *just* a question of money. The existing software may contain special features which have matured over the years and no one in IT would dream of 'sunsetting' them because of special needs of users or features that are difficult to reproduce. As liaison with the enterprise on this subject, BIMC needs to assess the impact, the risks concerning business continuity and raising of service costs. And BIMC needs to escalate matters to the Board when disruption is a real possibility.

An example from the automotive industry

In this particular case, that of an automobile leasing system, the functionality of the legacy business is dependent on maintenance and sustainability and of course quality. As a nod to the future, the business architect and business information consultant, together with the technical

[17] For more information about Re-implementation see also Sneed, H., Verhoef, C, (2019),

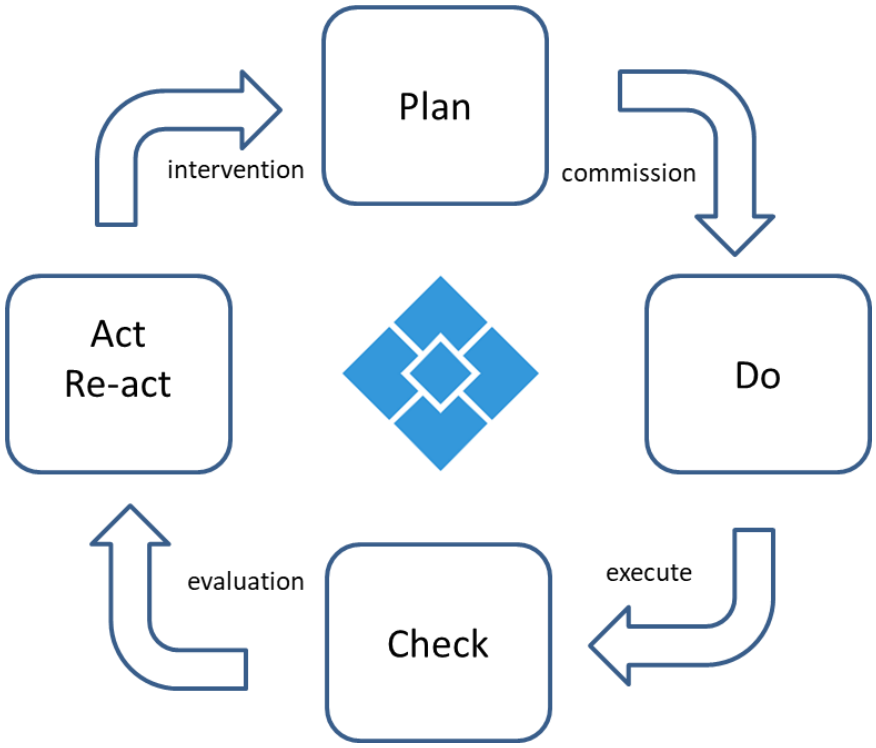


Figure 6.1 Deming, the Intelligent Customer and DID

The necessary BIMC capabilities, extrapolated from the intelligent customer guidance, are linked to one another in a quality cycle in the form of the Plan-Do-Check-Act (PDCA) cycle. The DID domains (governance, strategy, improvement and operation) are directly related to PDCA and thus the three best practices are linked. Using the Deming circle, we demonstrate that the development towards a mature BIMC goes through a cycle of quality improvement. BIMC focuses on results. Every time this cycle is completed, BIMC strives for an even better and more effective result. This touches on the essence of the PDCA cycle. Based on this, in Figure 6.1, we can illustrate the management activities of BIMC that are interconnected through processes. The main processes of BIMC are integrated with the entirety of the enterprise.

Each main step from the Deming circle contains a cluster of responsibilities. These responsibilities relate to BIM responsibilities in the four DID perspectives Business, Service, Data/Information and Technology, and would be the responsibility of BIMC. The various responsibilities are the substantive tasks of BIMC and therefore the business information activities can be related to the best practice intelligent customer responsibilities. These four responsibilities are:

- policy, innovation and advice (PIA) management (Plan, mostly Governance in the DID model),
- contract management (Do, mostly Strategy in the DID model),
- control management (Check, mostly Improvement in the DID model)
- and user management (Act, clearly the Operational focus of the DID model).

The practitioner needs to be fully aware of operational issues. Keep in mind that **each** of the stages of PDCA will require you to think strategically, tactically and operationally because for example, a decision regarding a legal issue leading to a change in data policy will strategically impact many information services and may alter plans to improve services. This sort of decision has tactical implications regarding for example, testing of new information services and unless someone is aware of the possible operational implications, users might encounter unexpected problems. Operations will inevitably focused on and cover all triggered incidents, requests and changes. Even here there

6. BIM Coordination

6.1 Organizing BIMC

As discussed in the previous chapters, there are different ways to design and position Intelligent Customer capabilities within BIMC and every enterprise will have its own interpretation. However, the objective and the resulting tasks are comparable for every enterprise. The approach we will describe in this chapter concerns structural insights into how to deal with customers and suppliers, how you measure performance and how you can handle such a process from a budgetary perspective. We will also cover essential operational, day to day processes. You must be able to:

- make agreements with your business users,
- translate the work into a standardized approach where practical, negotiate with service providers,
- and you always check on performance.

Further, you translate these structural solutions into standard working methods, procedures, and standard processes that are repeatable in various situations. This approach explains why we can identify components for BIMC as building blocks, or ingredients that can be used in every situation to shape the structure (think DNA). The way in which ingredients are combined determines what the management function looks like within the enterprise.

Our starting point regarding BIM is therefore that BIMC operational management may be different for each enterprise, but that the ingredients that every enterprise can choose from are comparable. However, be observant that the set-up of BIMC depends on the strategy that the enterprise wants to follow with regard to digitization and/or the data and information needed by the enterprise and the information services provided, and to be provided.

We should state once more that there are **no new (or fancy) theories about management or coordination** in this book; the emphasis is on a practical approach that examines the various, existing best practices of the Intelligent Customer, well-respected guidance about program and project management, infrastructure management and the coherence between these ingredients within the framework of DID.

DID focuses very much on continuous improvement. BIMC fulfils a bridging function between the demand from the enterprise and the supply from the service providers. BIMC takes over the information needs of the business/LoB and translates this into a SMART[16] formulated assignment for information/data suppliers. BIM needs are translated in such a way that they fit the enterprise-wide agreements on standardization, quality and price. BIMC then monitors the level and volume of the services. In this way the function can assist the Board in creation of policies that can provide strategic guidance; where the processes are placed in context of the DID model, BIMC provides strategic guidance with regard to digitization generally and BIM.

To clarify the tasks and logical steps within BIMC and to illustrate continuous improvement over time, we fall back on the evergreen of quality management tools, namely the Deming Plan-Do-Check-Act cycle (PDCA cycle). See Figure 6.1.

[16] Specific, Measurable, Acceptable (or Achievable), Result-oriented (or Relevant) and Time-bound

standards are based on our own measurements and experiences, benchmarks and (scientific) research.

The foregoing theoretical discussions are not abstract; they are directly applicable to a BIM practitioner working strategically. A case study in chapter 10 illustrates how much of the strategic guidance and the practical tips were used to kick-start BIM in a large, data dependent industrial enterprise. But first, let's in the next chapters take a look at taking these design issues forward in more detail by exploring some specific activities in BIMC.

Key points

BIM Coordination (BIMC) is needed to support the BIM Board/ ISSC and coordinates the activities of the various Executive Committees with those of the ISSC and also acts as guardian of the data elements of the IS strategy.

The core of BIMC is managing the organizational capability of the enterprise so that the correct specification for an information service can be drawn up.

BIMC maintains various relationships with the various parties (external and internal).

It is up to BIMC to coordinate supply and demand between these, sometimes conflicting, interests in such a way that everyone is content.

The relationship with the customer or user is an essential part of the demand side of BIMC Regardless of the sector, branch, government or non-government: if you offer services or products it is essential that you know and understand your customers.

to them. Sometimes the customer asks questions that are impossible to answer. They ask for the cheapest solution, but of top quality. The supplier needs to explain that quality has a price and by specifying the desired quality a realistic price can be estimated.

It is up to the business and therefore to BIMC to be well aware that, for the right considerations, specific requirements must be set for the design method and the request. The needs that are set must also be operationalized. BIMC ensures that suppliers are professional and help customers to offer high-quality solutions at acceptable costs. This is not always easy in environments where procurement rules prevail.

5.6.2 Quality and risk management

Risk management is associated with quality. The BIMC has to take account of unpleasant consequences. Risk management focuses primarily on unpredictable events that may result in a part of the enterprise's primary process being seriously affected. This is not easy. Risk management forces the BIMC to explicitly taking uncertainty into account. A well-known example is a switch box of a telephone provider that caught fire, causing a large part of the mobile telephone traffic in a part of the country to be disrupted. At the time, insufficient action had been taken to quickly switch to an emergency facility, exposing a failure in defining business continuity management measures. In addition, an environmental analysis was insufficiently carried out to identify single points of failure. A failure analysis (FMECA Failure Mode Effect & Criticality Analysis) would undoubtedly have exposed this issue. Depending on certain factors, it took from a few hours to a few days before the mobile telephone traffic became operational again.

The structured management and coordination of activities and processes and making a contribution to the supervision of the quality of the services to be delivered is also a responsibility of Performance management.

The purpose of the quality measures is to gain insight into the nature and behavior of the results of the services and to reduce the variation in them successively. The goal is of course to have control over the quality of the service and to have information in order to be able to manage. When these measures are properly applied, they also provide insight into the relationship between costs and quality.

The data that becomes available also help with risk management. Think of understanding what can go wrong with the service and which events can cause which damage. Examples of risks are: supply risks, HR risks (mandates, knowledge), financial risks, geopolitical developments (threat, terrorists), less functioning of the enterprise because employees fear their job, discontinuity of the (primary) process, supplier reliability, risks in transition process, loss of knowledge.

To recognize these risks, it is wise to think about this beforehand. Incidents can be life-threatening, but it becomes different if the supplier's services can immediately lead to life-threatening situations. An example: it is not obvious that software is error-free. Software errors in healthcare, for example, can have disastrous consequences if data about blood values are incorrectly linked. This requires scenarios with measures that help prevent or limit damage.

It is wise not to choose the most obvious key performance indicators (KPIs) such as availability and response time too quickly. Think about KPIs that are less measurable, such as the extent to which a supplier keeps quality manuals up to date or, for example, the periodic testing for reliability or the available security level of data centres. Critical success factors (CSF) and performance indicators help to monitor and compare the purchasing relationship with norms and standards. These norms and

Formally, contract management enters halfway through when functional demand must be translated into a supply-side solution, but in practice it is more sensible if contract management is involved in demand articulation from day one. Once an initial selection has been made, the negotiation process begins. The business has a different interest than the supplier. Business focusses on outcome and wants to have solved a problem at acceptable (preferably minimal) costs with as little hassle as possible. This interest is not always explicit with the supplier. In the long term, the supplier must earn money to safeguard its own continuity.

5.6 BIMC and management control

5.6.1 Measuring is knowing

A good contract is only the beginning of the relationship with the supplier. Proper, active management of contracts (and therefore monitoring of performance) offers many opportunities for BIMC. Active management relates to three themes. Does what is delivered actually match the agreements made? Does the offer still match the current needs and demands of the internal enterprise? The challenges of management control within BIMC are obvious. Management takes place by comparing the delivered performance with the agreed performance. In the analysis, BIMC connects all measurement results with each other with the aim of improving the total process. Do I get what I asked for according to the agreements made and are contracts being used optimally? Where necessary, this leads to giving an order for (additional) management to the supplier. The following are intended with control management:

- Control and measurement. Monitoring the quality of service. This includes measuring, analyzing, evaluating and improving the results (quality, costs, satisfaction) of services and managing the service catalogue.
- Control. Monitoring and checking the efficiency and legitimacy of the services provided.
- Financial control. Monitoring the entire budget (services, purchasing, management and management). Preparing the financial analyses and coordinating payments to the supplier with the financial administration. Promoting transparency in costs.

The conclusions of these analyses must be traced back to improvements in the contract, or SLAs, improving the way that specifying requirements that are set for the solutions are found or suggestions for improvements to the process and product and services.

Not everything can ultimately be provided analytically. For example, room for future expectations of users requires attention. Even though the contracts concluded are legally sound and the process went perfectly. If the service is not in line with the wishes of the business, this leads to dissatisfaction, which is annoying for both the provider and BIMC. Long-term contracts must therefore offer sufficient room to move with the dynamics of enterprises. This will be easier for market parties than for procurement law enterprises.

Operational compliance

In order to make management control and financial control possible, the service must be operationalized at which point the relationship with the supplier is completed. Performance management and quality and risk management close the Deming circle to proceed to a new cycle. Management monitors that the specifications of the needs are and remain measurable. Only then can it be properly addressed whether everyone complies with the agreements made or can adhere

Requests that come in through user management have consequences for the content of the service. This includes requests such as *'I want a new application', 'I want a new service' or 'I want new functionality*'. Questions that BIMC is subsequently confronted with are: how do we assess the technological impact and how do we assess the consequences for the totality of service provision? This certainly applies if several service providers are involved. What developments are there in the market and how does this question (and any suggested solution) fit in? And, also important: do the new products or services not disturb the cohesion of the enterprise data policies?

Regardless of the tasks that are performed, Policy, Innovation and Advisory (PIA) has three functions. In the first place, there is management of the (technical) environment that has been outsourced and that must seamlessly connect with the rest of the enterprise. Secondly, there is an advisory task, such as substantive information and advice to stakeholders about technical possibilities, about policy frameworks or proposals for policy frameworks and offering a substantive solution for customers in the existing infrastructure. Thirdly, there is the innovation function. If it appears that no solutions are possible within the existing frameworks, it must be examined whether it is useful or feasible to look for and implement new developments.

5.5 BIMC and contract management

Contract management aims to organize the supply, delivery and management of the requested generic services, both for internal and external service providers, in such a way that the objectives are met.

The interpretation of contract management is, more than the other focus area within BIMC, a group effort in which different experts make their contribution in the different phases of the process, from requirement statement, to contract negotiation and performance management.
That is why almost always purchasing or tendering teams are put together with specific expertise in tendering and procurement processes. Expertise that is generally required:

- Buyer: the buyer knows the market, prices and procedures.
- Lawyer: the lawyer knows the legal frameworks and the formal handling of contracts.
- Economist: the economist makes financial capacity analyses, conducts market surveys and / or market research, draws up economic price models to be able to tender according to the applicable award criteria.
- Subject matter experts: ensure a SMART-formulated question.
- Service level (and/or Experience level….) manager: monitors the performance of the delivery.

Add to that the specific expertise needed to ensure business needs regarding information will be met and it becomes clear that an intelligent agency should focus on all aspects of business need in the enterprise to ensure consistency and assist with levels of digitization. These experts can be present in different positions within the enterprise, or can be hired. Different phases are distinguished within contract management. These phases are:

- needs assessment, support demand articulation;
- requesting parties through an RFI (Request for Information), RFP (Request for Procurement), market consultation;
- award phase;
- management of the contract;
- the further design and realization of demand;
- putting the result into service.

new platform in relation to both the 'as-is' situation and the anticipated consequences for the users;

- An explicit, outcome focused overview, of services and subservices was provided, together with impact assessment on the work processes;
- The scope of the project was adapted to focus on the needed outcomes
- A communication strategy and plan was circulated, focused on the common denominators which lead to understanding between the different parties;
- Explicit demonstrations and descriptions provided about the impact of the transformation, training needs and defining a change program outline for the business;
- Full definition of the acceptance process and defining a process for short-cyclic development and configuration of functionality which would inform acceptance criteria
- Documenting a general agreement between management and the supplier to make sure that changes in the way of working would not conflict with the contract; where problems did arise, these would immediately be identified and brought to the steering committee to validate and discuss.

The overall program and most project outcomes could be salvaged and ultimately it was possible to implement the new solution, although time and budget estimates were exceeded, some significantly. After a full post-mortem of what went wrong, central BIMC handed over operational control to local BIMC to monitor and manage.

5.4 BIMC and enterprise policy and innovation

In general, users do not think in terms of concrete products and services, but in terms of needs or solutions combined with more or less technical solutions that they know from their personal environment. This means that a match must be made with the available products and services within the enterprise. If a product or service is not offered in the current service catalogue, a service must be sought outside the existing range. This match is limited by the available resources and the policy principles that the enterprise uses. If the demand is new and falls outside the existing provisions (and therefore budget), BIMC will look for solutions. This may require investment.

Making the match means that the users demand is disconnected from the actual management of the delivery process through BIMC. Decoupling customer demand and delivery process is a well-known phenomenon in logistics. Through this disconnection, BIMC takes over the issue. BIMC translates the question into the necessary activities to be performed, the associated resources (in number and hours), the required security levels: BIMC takes over the concerns of the business and user.

User management will translate questions from users in the business into activities. In this way, user management decouples business demand. At that time, substantive activities are requested and the emphasis shifts to policy, innovation and advisory management. The knowledge to make the right decisions with regard to every customer demand comes from the 'policy, innovation and advice' area of focus. This focus area preferably invests the activities within existing agreements. This means that BIMC must have insight into the content and added value of these activities as well as the most important aspects that contribute to the activities being carried out properly.

Failing to properly define acceptance criteria was bad enough; failing to understand what was really needed made matters worse, including:

- Not enough involvement of key users and local BIMC
- Users feeling not part of the change
- No understanding of what information would be needed as input or what information would be delivered
- Poor communication between LoB management and the teams responsible for renewal/ future of the services
- Not enough communication with users
- No change management program within the LoB
- Insufficient control defined in the acceptance and 'go/no-go' criteria

The existence of the overall program and the projects involved, and the success of the business transformation were endangered. After thorough investigation by central BIMC, it was agreed that they needed to intervene to correct matters.

BIMC impact

The BIMC team proposed a course of action where it was necessary, first, to get everybody together on the same track, making clear what was going to be designed and delivered, what the consequences were going to be for the business and how to prepare for the new situation. Secondly, together with the IT department and the supplier, changes were made to plans to create a more buzzword -compliant 'agile' configuration. What 'agile' really meant was that the original design was not sufficiently flexible and needed to be changed to reflect the actual business need. These changes had consequences for contract agreements but the advantages far outweighed extra costs.

At first the Senior Responsible Owner (SRO) was reluctant to approve the proposals as she could not see why this was necessary. In her view the contract was clear; thus, deliver what was specified in the contract. Also, there was a widespread belief that doing this it would reignite the discussion about why there needed to be new business information systems anyway.

In the past there was widespread resistance to proposed changes and it was feared that discussions would be reinvigorated. Unfortunately, the uneducated proved once more that it is not possible to overestimate the innate stupidity of people when presented with simplistic solutions and only chaos can be guaranteed.

So, the steering committee, principally the senior buyer who was director of the LoB and the senior supplier (the director of the IT department) convinced the Senior Reponsible Owner (SRO) that it was necessary to make changes in order to mitigate risks that the overall program would be shelved.

Central BIMC together with local BIMC, IT experts, a representative group of business management and of course potential users, together with the supplier used an approach based on Collaborative Business service Design (CBSD)[15] to create a plan of action where:

- Detailed Terms of Reference were documented and used to inform all stakeholders about the added value of the new platform and to furnish explanations of the capabilities of the

[15] Johnson, B. and L.P. de Rouw, Collaborative Business Design; Improving and innovating the design of IT-driven business services, Cambridgeshire, 2017

From the demand perspective, it helps to look more closely at the nature and character of the customers. BIMC cannot of course talk to anyone and retrieve information from everyone. BIMC would therefore do well to divide its stakeholders into different groups so that it can respond to the diversity in the enterprise to the maximum.

From the perspective of BIMC, segmentation can be made into different groups based on user characteristics. In the first instance, BIMC segments according to the four previously recognized main groups: business/LoB management, executive management, users and suppliers. A further subdivision can then be made within each of these main groups (business or user profiles). This subdivision depends on the specific enterprise. For example, in a hospital, specialists will be seen as a separate group, in an international enterprise this might be the expats or the foreign offices and in political enterprises politics and its support form a separate group. Priorities in the work based on (Capability) position and status. The line between formal agreements (blueprint) and informal reality (red print) is thin but exists, and BIMC is wise not only to be aware of this but to act accordingly.

Innovation and renewal can also be a good reason to create space and not to opt for a dogmatic approach. Innovation and renewal tend to manifest in places unexpectedly. This also leads to a shift in the classification of 'global, regional and local' in the long term. Space for new initiatives leads to a signal effect and can lead to innovations being picked up quickly and spread more widely throughout the enterprise. In this way local developments can lead to global services.

Case; It's better to have and don't need than need and don't have
Don Covay (look on You Tube) sang after reading DID. Well, technically that is a lie, but it is at least an attention-grabbing start. This case study concerns knowing and understanding what you need rather than simply wanting something because it is fashionable or shiny and new or you can get a nice badge. The Stones also read DID and wrote *You can't always get what you want, but if you try sometimes, you get what you need….possibly.*

Failings in defining need
OK they didn't but, a large government department was in the process of contracting for a modern technology platform as part of a major business transformation. The platform was intended to open new opportunities to manage data and improve flexibility when adding new or improved applications/functionalities such as business analytics and data information messaging. The new solution would be totally different from the legacy situation. Key to acceptance was that a platform would be implemented, instead of different, loosely coupled independent information systems that would drive a totally new approach in business working processes.

It soon became clear (in the pre-contracting period) that lack of experience in defining project acceptance criteria and a practical acceptance process for IT driven business information service was going to be a problem.

This was primarily caused by business leaders not having sufficient insight into what they really needed; they were focusing mostly on what they believed they wanted based largely on the functionality they already had. As a consequence, the contract was not well-defined. And even worse, users had little idea of what they would be receiving in terms of services, changes to processes or training plans. During the course of the project it had also become clear that the supplier did not have enough knowledge of the core business of the department while users did not really understand how the new platform had to be configured.

The consequences

and the performance. Naturally, a goal and the achievement to be achieved (and therefore the motivation) is influenced by many factors. Think of the knowledge, skills and personality, feedback on performance, involvement in the goals, task complexity, available resources and limitations imposed by the environment. Insight into the goals of customers and the possibility of achieving them gives the management office insight into the nature of the support.

5.3.2. Creating insight into the products and services package

To create optimal insight into the products and services package that BIMC may seek, at least three criteria are important.

1. Classification of data products and services (to the extent that they are centrally funded).
2. Classification of data products and services (according to the extent to which they are used throughout the enterprise or department-specific).
3. Classification of data products and services according to the extent to which the associated operational costs can be standardized.

There is, of course, a connection between these criteria, as is apparent from their description.

Criterion 1: financed centrally

With the first criterion, a classification of products and services is made according to the extent to which they are financed centrally and are therefore actually purchased centrally for all employees in the enterprise. One of the members of the board often owns the operational management portfolio. *De facto,* this board member is therefore the client for BIMC of the data products and services that fall under the generic basic package. This also means that these so-called basic products and services cannot be influenced by the employees in the enterprise in terms of nature, volume and price.

Criterion 2: global, regional and local

Over time, enterprises have been confronted with a plethora of data solutions that are difficult to control and / or coordinate. The costs are correspondingly high. Cost is the reason why action is taken and an attempt made to create broad basic data management applications and services that are suitable for everyone within the enterprise. This has led to a general subdivision of the products and services packages between global (available for everyone), regional (available for a select group) and local (available for one department or person). How is data classified in your enterprise?

Criterion 3: degree of standardization

The third criterion relates to the degree of standardization. The management office strives to standardize as many of the supplied products and services. This naturally has major advantages, not only in terms of costs but also in terms of the time that the management office has to spend on user questions. BIMC distinguishes between standard customer requests and questions and non-standard user questions. The idea behind standard user requests is that they can be made without intervention from BIMC. This will be possible because BIMC will make prior agreements with business/LoB and suppliers.

5.3.3. Segmenting and filling in the environment

Why should you have to segment the products and services differently after they have already been classified according to the three criteria described? Depending on the purpose, a segmentation principle is chosen. From the supply side, the previous segmentation along the line of financing and standardization helps to realize cost benefits and to create simplicity in the total service portfolio.

organized, can be laid down in a governance or control document. Although all four domains must be completed for proper operation, we regularly see that the focus is often on demand bundling and delivery (Strategy and Operation) while the customer environment attaches the most value to governance and quality (Governance and Improvement). For BIMC to be able to develop into maturity, we cannot emphasize often enough that the management of BIMC must centre on data availability, management, processing and integrity, but must nevertheless also focus on agreements with general management, business/LoB and on user satisfaction.

The BIMC team must arrange initial critical consultations, for example, the periodic governance consultation, the periodic contract/SLA/XLA consultation and the service consultation.

5.3 BIMC and customers

Regardless of the sector, branch, government or non-government, if you offer services or a product, it is essential that you know and understand your customers. The relationship with the customer is an essential part of the demand side of BIMC[13]. BIMC's right to exist is partly determined by understanding of this relationship and how the customer perceives the experience of using services or products. This means both maintaining relationships within the environment and an expert translation of the need into a product and / or service to be purchased or built. These are the tasks of customer management and policy, innovation and advice management within BIMC. From the practitioner perspective, these are the most important.

5.3.1. Insight into the needs, behavior and motivation of the user

Motivation is the Capability in people that drives them to take action. This Capability comes from a tension that arises as a result of unmet needs. People consciously and unconsciously strive to continuously reduce this tension by selecting objectives and by displaying behavior that is aimed at achieving these objectives. The objectives that people want to achieve depend on:

- their personality;
- expectations and perceptions;
- previous experiences;
- attitude.

Needs and objectives depend on each other. The one does not exist without the other. Needs and objectives change and grow depending on the physical condition, environment, interaction with others and experiences. As customers achieve their goal, they develop new needs. If they do not achieve their goal, they will continue to strive to achieve the old goals or they will replace these goals with other goals).

Goals are at the basis of people's motivation. Especially Ronaldo's. A goal is subjective: it defines what an acceptable level of performance is for an individual. A goal is simply defined as what an individual wants to consciously pursue. People want to achieve objectives instead of maintaining a 'status quo'. Motivation of people is made plausible by the 'goal setting' theory of Locke and Latham (2013)[14]. This theory emphasizes the positive relationship between goal setting and performance. Their research shows that there is a linear relationship between the degree of difficulty of the goal

[13] In the case of BIMC it concerns internal customers or users, depending how they are called within your enterprise.
[14] Locke, EA, Lathan, GP edited by, (2013), New Developments in goal setting and task performance, Routledge.

- Consultation 2: Administrative consultation between BIMC and general management (with the portfolio holder from the general management or owner) on the basis of annual plans, developments, etc., for example three times a year.

- Consultation 3: Management and control of technical / functional services between BIMC and business, sometimes with the management of the most important service providers. Consultation on substantive developments and the consequences for the enterprise, for example twice a year.

- Consultation 4: Management and control of the financial agreements between suppliers and BIMC. For example, once a year.

- Consultation 5: Management and control of supplier performance. Consultation between suppliers and BIMC about performance management (reports and such), for example once a month.

- Consultation 6: Management and control of proposals, RFCs and handling. Consultation between the account management of suppliers and BIMC about current user questions: once a week.

- Consultation 7: Control and management (including planning) of the functional requirement. Consultation between user management, BIMC and individual users. Topics covered include service level agreements, plans, needs, reports, etc. For example, four times a year.

- Consultation 8: Management and development of agreements with suppliers. Consultation, coordination and adjustment on the content of the concluded service level agreements: for example, twice a year.

- Consultation 9: Management and control of the project portfolio. Consultation about the projects, their progress and coordination, for example once a month. In the event of an escalation, a consultation line is followed: service management, user management, business management, executive management.

- Consultation 10: Service Management. Operational consultation between business / users and suppliers about the services that have been agreed within the service agreements / service level agreements. For example, once a year.

- Consultation 11: Various consultations with management, experts, BIMC) about architecture, strategy and sourcing.

- Consultation 12: Governance and strategic development. Strategic consultation on the content of the development and management, for example six times a year.

The nature of the aforementioned relationships can be informative, guiding or advising, depending on the purpose, the people involved and the mandate. Choice for the types of consultation, nature and frequency is determined by the needs in the enterprise. These are usually related to the size of the enterprise and the complexity of the topics that BIMC is concerned with. Keep in mind also that the list may appear long and dull to the point of boredom, but the likelihood is that these discussions are carried out but may not be recorded or formalized.

The way in which the mutual relationships (consultation structures), communication and accountability between service provider, users, business/lob and general management and BIMC are

5.2.4 Domain: Operation

In this domain the relationships between business/LoB, suppliers and the management office that focus on the actual delivery of the services are maintained, meaning that it also concerns the actual implementation of agreed projects, (and changes) for which tenders have been issued. This also means that the products and services to be supplied are clearly identified and are recorded in a product and service overview. Service management, through use of a service desk/help desk, is the interface through which the supplier ensures that complaints and reports are channeled and resolved. Processes and procedures are to be properly documented and transparent. BIMC is kept informed through reports afterwards. Sometimes BIMC performs audits or manages them. Multiple forms of consultation monitor the operational process, for example operational consultation between business and suppliers and regular progress consultation between suppliers and BIMC.

Following these steps helps to make the responsibilities and the roles in a process concrete. BIMC will work with stakeholders to ensure appropriate consultation about major processes. Depending on the nature of the consultations, these may take place frequently. An example of the various consultations is shown in Figure 5.1.

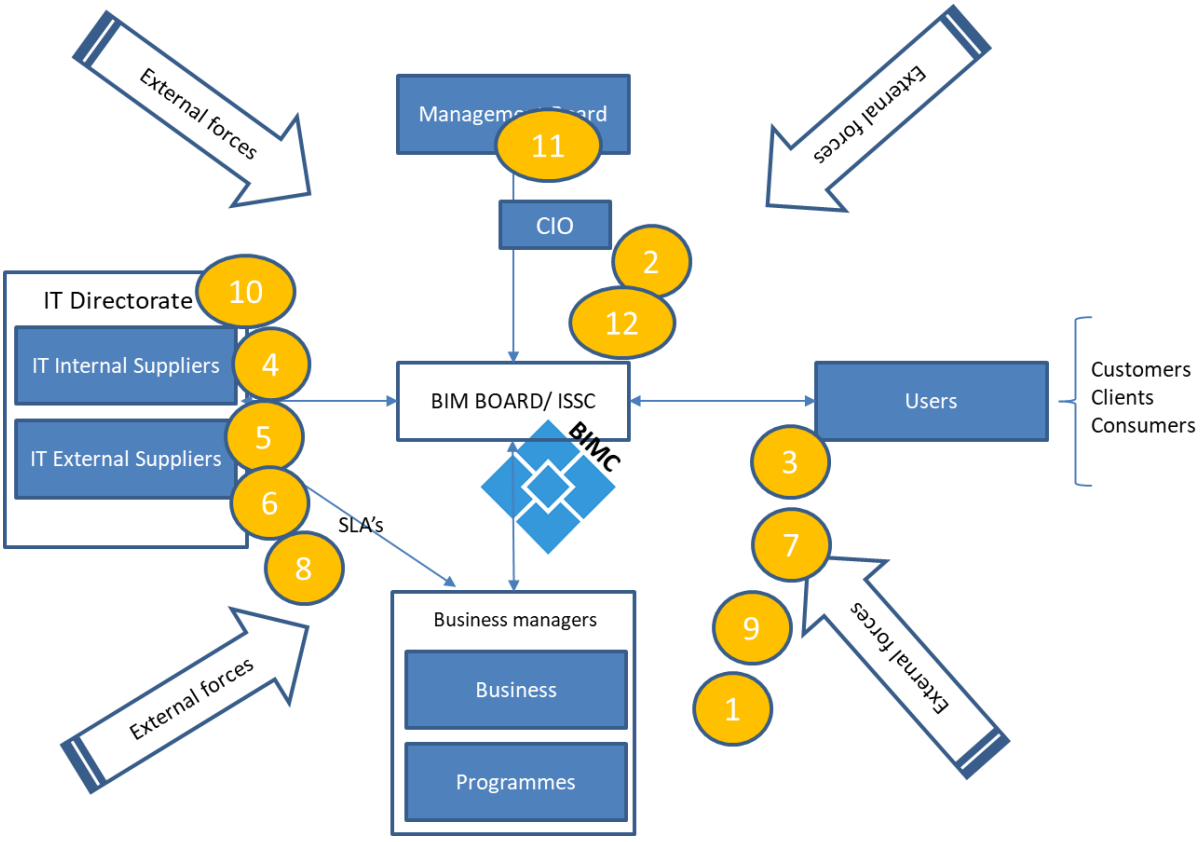


Figure 5.1 Examples of consultations between BIMC and stakeholders

- Consultation 1: Regular consultation with opinion leaders and large groups of users about the quality of current and future support will be needed. User panels can also be organized or individual conversations can be scheduled.

Different measures are specified within each DID-domain that BIMC can use to maintain and safeguard the dynamic balance.

5.2.1 Domain: Governance

Remember that the domain that is formed by the relationships between BIMC, its business/LoB and the executive board is of course Governance. The content of the activities within this domain are of a strategic nature. It concerns the policies and agreements that arise from the enterprise goals, legal frameworks and financial scope and that provide guidance (advice, information or guidance) for the development of services in the longer term. Think of architecture, agreements and sourcing policy, portfolio management and policy objectives. BIMC must also be accountable and draw up annual operation plans and investment plans. The role of the team coordinator in the management office focuses on these topics; this role monitors the effectiveness and efficiency of the service.

5.2.2 Domain: Strategy

In this domain the relationships between business/LoB, management and suppliers that relate to the agreements made between functional needs and the range of products and services based on price, time and quality are maintained. This means that BIMC is aware of current (and future) data needs and has translated those into delivery agreements with suppliers. This is done with support from the Purchasing department. BIMC maintains regular contact with the decision-makers in the enterprise with relationship managers or customer managers to identify the needs.

Several consultation bodies can be set up for an effective process. Consider, for example, consultations between suppliers and BIMC to discuss SLAs or the quality of the service (performance management). Periodic account conversations with relationship managers are advisable between customers and BIMC, as well as setting up and organizing a separate user platform for large-scale users. Consultation between suppliers and business is also desirable here to create short lines of communication, to obtain clarity and to maintain clarity about the actual need for functionality. The contractual, financial and legal relationships regarding data should continue to go through BIMC at all times.

5.2.3 Domain: Improvement

The domain is predicated on the relationships that BIMC has with customers and users and the management as well as the designers/builders of services (internal or external). The quality of the service is a result of the agreements that BIMC makes with business and suppliers, and the method of delivery. The board mainly benefits from the fact that employees can perform their work optimally. Tension can arise because users are not directly confronted with costs. That is why operational users will be more inclined to maximize their wishes and requirements. Certainly, in times of cost rationalization, the discrepancy between wishes and needs and available options will increase. This makes it all the more difficult for BIMC to influence user satisfaction more directly.

Business satisfaction can however be influenced in a number of ways. In the first place, ensure that the service provided by suppliers is good. Secondly, BIMC can regularly manage satisfaction surveys or customer or user panels. Thirdly, it can offer training programs. Fourth, BIMC can actively involve customers or users in pilots or innovative developments.

Sometimes the combined activities of BIMC are known as ‘operational management’ as opposed to ‘technical management’. We prefer Business information management coordination on behalf of the business/line of business. But call it Elvis if that suits you.

Commodity knowledge is at the basis of a successful result. Space for the inventive and creative role and involvement of people in the mix of the various ingredients is essential here. The quality of the employee is paramount. The use of generic components is less a law and more as a guideline as the office takes shape.

Several perspectives explain the tensions that arises because of the stakeholder’s interest. Coordination of BIM should include management of the points below:

1. BIMC people
2. Understand size of BIMC
3. Understand tension between supply and demand
4. Understand business management
5. Understand policy innovation and advisory management
6. Understand contract management
7. Understand performance management

5.2 BIMC and domain dependencies

BIMC maintains various relationships with the various parties (external and internal). Sometimes these are instrumental relationships, such as contracts or work agreements. Other relationships can also be identified, such as social, capability, dependency and negotiation relationships. The nature of the services that we discuss here is often secondary and generally supportive of the value chain. A characteristic of this type of work is that it is primarily a cost center for the enterprise. The choice to translate needs into a concrete range of products and services therefore mainly concerns the use and distribution of scarce resources. The BIMC team is therefore looking for the optimum balance between wishes and needs, and the services available in the market. But, as discussed, the wishes and needs of business, users and executive management are not necessarily the same. Users want maximum support, regardless of the costs. Business management will explicitly look at the costs in relation to the quality of service. In addition to the realization of the enterprise objectives, management or general management also has other interests in mind, such as social or political interests. This means, for example, selective cost reduction or standardization.

The service providers do of course maximise profit. It is up to BIMC to coordinate supply and demand between these, sometimes conflicting, interests in such a way that everyone is sufficiently satisfied (this is known in the business literature as 'satisficing'[12]. Steering exclusively towards cost reduction will ultimately frustrate suppliers, which makes them inclined to focus primarily on minimizing their costs. Allowing users and buyers the free choice comes at the expense of the desire for cost control and standardization. Ultimate standardization sometimes disrupts the ability to develop new markets, so that users and customers become dissatisfied. This means that BIMC must balance between sometimes equal and sometimes different interests. In practice, this translates into a mixed approach to relationships: on the one hand demand or customer oriented, on the other hand by acting as the guardian and conscience of the enterprise for the services that fall under its responsibility.

[12] Simon, HA, (1959), Theories of decision-making in economics and behavioral science, In: American economic review, vol. 49, issue 3 (June 1959), pp. 253-283.

5. BIMC and enterprise environment

5.1 BIMC supports the business

In this chapter, the various capabilities are translated within the enterprise in specific processes, areas of attention and those responsible within and outside BIM coordination office (BIMC) are connected in a learning cycle (the PDCA cycle) so that BIMC can achieve its objectives. BIMC can only operate within properly defined parameters.

BIM Coordination (BIMC) is needed to support the BIM Board/ ISSC and coordinates the activities of the various Executive Committees with those of the ISSC and also acts as guardian of the data elements of the IS strategy. We use the DID framework, to describe, position and provide tools for the design of BIMC for the information assets of the enterprise. The DID framework has been set up to effectively shape BIM within an enterprise with the aim of better use of information and technology in the enterprise and therefore higher returns. BIM is concerned with **effective** business information management. Think portfolio and program management in line with the enterprise strategy; design of information services that meet business needs; agility, transformation and improvement of business information services; selecting the right technology and ditto technical infrastructure plus deploying the right competences at the right time. No less!

Within the enterprise BIMC fulfills the role of the strategic and tactical professional representation of the business that coordinates the business information services to achieve desired business outcomes, compliance with any related contracts and the control thereof and controls costs where applicable.

BIMC should therefore be responsible for data demand bundling and is the delegated client. The term is ‘delegated’, because someone from the board or general management is always responsible for the supporting services and will have mandated this responsibility to BIMC.

BIMC is positioned between the customer enterprise (business) and the supplier(s), internal and external. It is the intermediary who, as a delegated client, ensures that the client's needs (or the needs of the business) are well served by clear formulation of the needs and the translation thereof into purchased and delivered information services.

The core of BIMC is managing the organizational capability of the enterprise so that the correct specification for an information service can be drawn up; the value is actually obtained as a result of the benefits that the information service provides in implementation. The scope and nature of resources that are available internally (or that originate externally but are managed internally) are necessary to both improve and perform day-to-day activities.

With regard to digitization, the data, information and knowledge necessary for the enterprise almost certainly will arise from many sources and a capability to manage and control the entirety is needed to be effective. The function of BIMC is necessary particularly where outsourcing has taken place and data is shared, so that expertise about the business information (and business information services) within the enterprise is retained.

The ability to properly execute BIMC comes about through a combination of roles such as service manager, SLA manager (and or eXperience Level Agreement (XLA) Manager), contract manager, relationship manager, customer management; often the relationship role is an essential part of one of the other roles, and given the importance of data, it is recommended that it is the role of BIMC.

- BIM Coordinator supports the BIM Board ISSC, coordinates the activities of the various Executive Committees with those of the board and acts as guardian of the data elements of the IS strategy.

- Key to the management of resources is management of the organizational capabilities needed to ensure that there is a valued requirement for an information service and that the value will be the result from the benefits of it being in place can actually be realized. In other words the customer gets what they paid for and expected.

Therefore, the intelligent customer capability could and should be a BIM responsibility and capability. Having a helicopter view of the four aligned domains provides the opportunity to manage Capability and Mission centrally and to understand repercussions through the domain stack and to manage information up and down the perspective pipelines. In chapters 4 and 5 we discuss how the DID model and the Intelligent Customer guidance are fundamentally aligned through their basis in the Deming cycle of 'plan do check act'. The well-researched and practiced principles of the intelligent customer can therefore be applied to BIM where appropriate.

These intelligent customer capabilities can be carried out by BIMC which as we will see is a combination of roles like service manager, contract/SLA manager and relationship manager (often the relationship role is part and parcel of one of the other roles). However, depending on the size and complexity of the arrangement, it is possible that multiple roles may be filled by the same individual, or covered by the same team. The role is needed because there will also be a contract manager on the supplier side. Data management is much too important to leave to third parties as we now will discuss in chapter 5.

Key points

- The importance of Stakeholders: Networked enterprises are based on cooperating and competing units with different interests. The relationships between these parties are characterized by simultaneous cooperation and competition.

- The stakeholder approach emphasizes the importance of investing in relationships with those who have an interest in the stability of these relationships. These stakeholders within the enterprise or in the environment of the enterprise have an effect on the enterprise or are affected by the objectives of the enterprise. They will try to influence your strategy and your actions to execute BIM,

- BIM is concerned with **effective** business information management.

- By setting up a BIM governance framework manage BIM value creation for the enterprise is managed. And to be clear about the policies needed to ensure data integrity, a BIM decision framework should be in place. It originates within the overall governance structure of an enterprise. Such a decision framework within your enterprise addresses at least four functions:
    - Managing information and data
    - Identification of business requirements
    - Guidance of the intelligent customer capabilities
    - Requirements for IT.

- A BIM governance frameworks comprises the IS Steering Committee (ISSC) or BIM Board. The IS Steering Committee (ISSC) reports to the management board and is responsible for setting the enterprise Information management/ services strategy.

- **Intelligent Customer capability**: Practicing an Intelligent customer capability enables the enterprise to achieve a common understanding between customer and service supplier(s) of service expectations and possible achievements. BIMC focusses on tactical coordination and strategic support of all business information activities and processes. Activities are as below.
  - use service quality monitors as a basis for demonstrating ongoing value for money and service improvements
  - manage ongoing change and the effect on relationships with partners and suppliers
  - assure consistency in the use of information service and IT and compliance with standards and conformance with procedures, making the user community aware of how to exploit the information services to best effect
  - preserve suitable flexibility in service arrangements, including in contracts, in order to proactively deal with unexpected changes and demands
  - establish suitable baselines from which to track performance relating to service delivery and service improvement
  - understand and influence the factors that preserve and enhance relationships to achieve maximum business benefit
  - ensure that the benefits approach appraises the full investment in business information service change and is not simply a validation of the IT components
  - ensure that IT contingency and business continuity plans are kept up-to-date.

- **Technology oversight:** we have mentioned the issues of technology oversight. Technology changes faster than ever could be imagined a few years ago, that does not mean however that your enterprise always has to go for the newest and shiniest, you must address both risk and opportunity. Enterprises such as Uber and AirBnB were built on technology and did not have the legacy (in technology and in thinking) that constrained its use. Some would add they did not entirely think-through a number of potential (and now all too real) pitfalls. Clearly establishing a capability to evaluate the potential of new technology will inevitably pay dividend. BIMC will not undertake this role, though it should influence decisions.

- **Standards oversight**: a management objective to enforce enterprise wide standards cannot be driven bottom-up. The capability to oversee standards is predicated on them being in place and audited so it is apparent that another objective within management relating to capability is empowering BIM to set and to enforce standards regarding management of data, data sources, risk, security, quality criteria and re use.

- **Information portfolio management**: general Policy about the enterprise portfolio will be interpreted by BIM to ensure compliance and to create a Policy for managing digital assets. The objectives of the portfolio will include the ability to recognize market trends, technology trends and of course information service needs.

In conclusion to this chapter, keep in mind that what is known in the UK as ‘the Intelligent Customer Capability’ area provides an expert interface between the Lines of Business (LoB) and suppliers. It is widely recommended in the UK that the intelligent customer capability should exist wherever outsourcing has taken place so that expertise about the business information (and business information services) is retained within the enterprise.

In addition, any developments in quality criteria, security, even use of different technologies within the chain should be monitored and evaluated for both the short and long term implication on information services.

- **Supply chain partner management:** evaluation of the partner supply chain is one side of the coin; evaluating how your enterprise interacts (or could interact, or even *should* interact) with suppliers and partners is another objective of management. From a business and data perspective it is clear that information services might be improved if value is identified in the supply chain that can be used in the enterprise.

  Once more Policy will be key in order to meet goals and in the case of suppliers, is more likely to emphasize the capability of managing contracts and SLA.

- **Relationships**: irrespective of the size of a customer organization or whether relationships are formal and contractual or informal, the effective management of relationships is vital if customers are to make the right choices and get the best value from their investment in information services. If there is a good relationship, a contract, once agreed, should assume the role of a reference document. However, it is important that a contract clearly defines what is to be supplied, when, how, at what price and the allocation of responsibilities.

- **Supplier relationships**: to ensure that relationships with suppliers are effective and worthwhile an enterprise first needs to set clear objectives for these relationships which take account of the future direction and policies concerning information services as set out in their strategy. Existing 'formal' relationships with suppliers, and the internal administrative procedures that support these relationships, should be evaluated to determine how effective they are.

  Formal relationships need to be planned, maintained and regularly reviewed if resources are to be used efficiently and effectively. Informal relationships are also important but need not be controlled to the same extent.
  Relationships in general are likely to be more effective when there are fewer contact points to maintain, hence one argument for centralizing a BIMC. Enterprises should review the number and frequency of their contacts with a view to reducing them to a minimum and ensuring that the communication paths within each organization are effective.
  Measuring the quality of a relationship between a customer and suppliers is largely subjective, but this is no surprise since relationships depend to a large extent on the skills and attitudes of the people involved to be successful. Unless the right people are given responsibility, poor relationships may result and the consequences can be significant in terms of loss of business efficiency.
- **Supplier management:** Customers have a number of general expectations of a supplier including delivery of the required information services of the right quality, on time (and at a reasonable price), value for money, rather than simply the best price (of course it is possible for the best price to reflect best value for money but the one does not always go hand-in--hand with the other).

  Other expectations include the delivery of the information services (or goods) to proceed smoothly, a clear contact point within the supplier who has the required level of authority to be able to commit to delivery of the goods and services and of course, no surprises.
  Any issues should be raised early and any problem raised should be accompanied by one or more potential solutions wherever possible together with a clear escalation route for resolving difficulties and as a last resort a clear disputes procedure.

Budgeting enables an organization to predict the cost required to run IT Services for a given period. Ensure that actual spend can be compared with predicted spend at any point. The intention is to reduce the risk of overspending and to ensure that revenues are available to cover predicted spend (where charging is in place).
IT accounting enables an organization to account for the money spent in providing IT Services. The goal is to calculate the cost of providing IT Services to both internal and external customers. Activities will include performing cost-benefit or return-on-Investment analyses and identifying the cost of changes.
Charging enables an organization to recover the costs of the IT Services from the customer of the service by operating the IT organization as a business unit if required. This is considered to be a means of influence over user and customer behavior.
The overall scope of Financial Management of IT Services is taken to cover hardware, software, people, accommodation, external services (e.g. outsourced application development), and transfer costs (e.g. IT Service buying PCs on behalf of a business customer).

- **Availability management**: the activities ensuring current and future availability of the applications that underpin services for the users. Availability is widely misunderstood, it has three components: confidentiality, integrity AND availability. This means that BIM is responsible for policing the integrity of the information services. and is not just a label for trying to assess spurious measures such as 99.9999% uptime.
- **Information Security Management**: both complementary to the availability components and also a vital 'standalone' process. Think cyber security (or lack of it), data breaches and thefts and don't forget the big tech roaming your data on social platforms to make a profit out of it.

- **Business continuity management**: establishing measures to ensure that information services can continue to function according to expectation, or with an acceptable level of risk to the underlying information. This includes, for example, measures such as protection against fraud or sabotage, being prepared for emergencies such as total IT service collapse, or the necessity to maintain either parallel services and/or system processing.

- **Business process development:** over the long term the goal is to support business processes efficiently and effectively. BIM must be capable therefore of translating any change in the business process (as can be inferred from Figure 4.4, whether because of market influences, partner or supplier influences or simply innovation), so that information services are improved (or designed and assembled) to fulfil the need.

- **Information chain partner management:** often a single decision maker is missing in the information chain between enterprises (and sometimes within the enterprise). BIM should accept the responsibility of this role to ensure value chains set at LoB levels are coordinated and managed internally and externally. Agreements will almost certainly need to be in place to manage the various interests. Keep in mind that some information partners are not voluntarily sharing; information exchange may be mandatory because of legislation or simply an imperative for example in following an individual through the process of being arrested, jailed and paroled.

  Establishing enterprise wide Policy will be an important activity. Managing changes and improvements that impact the chain will be a challenge that can be addressed only by having a holistic picture of the need for information and its value.

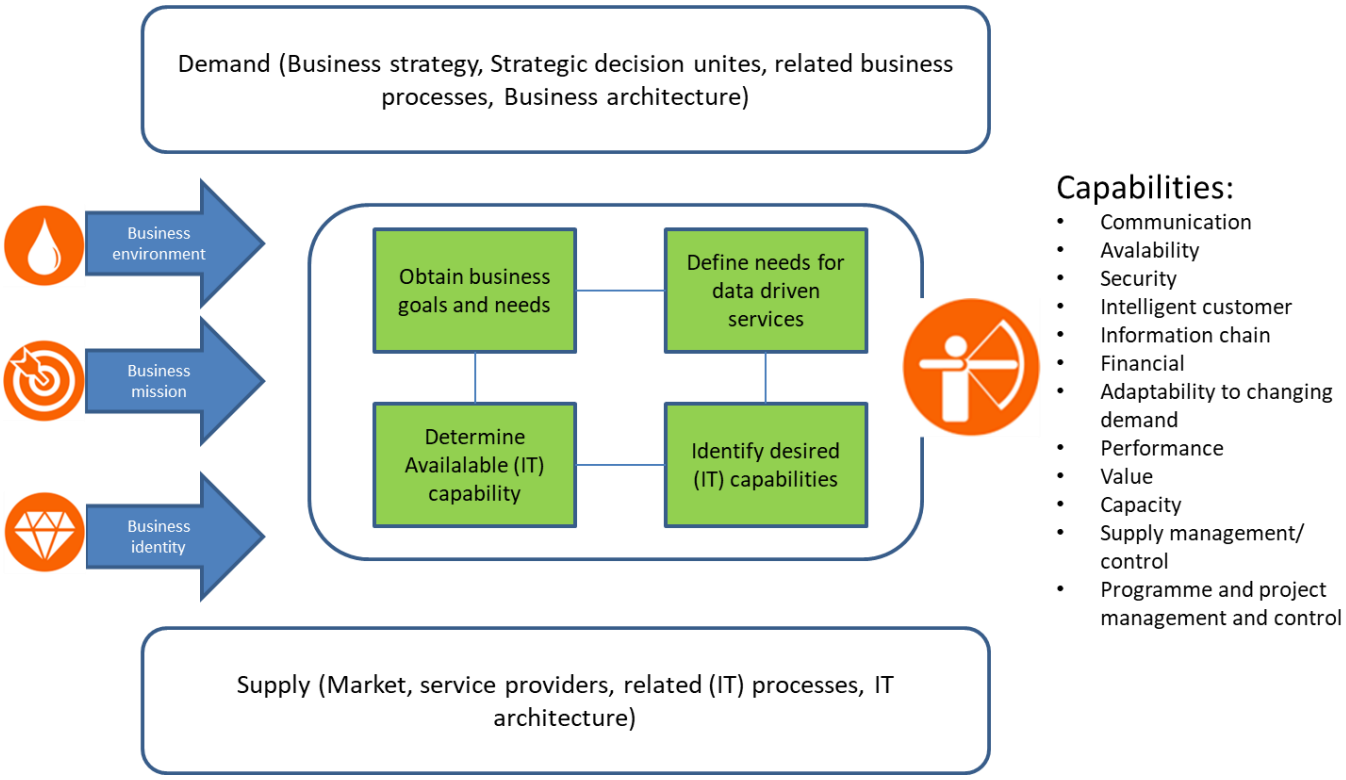


Figure 4.4; from Mission to Organizational capabilities.

Once again you can see that all four perspectives of business, data, services and technology will apply and will need to be considered when considering organizational capabilities.
Information service specific capabilities that should be given most attention should include:

Capacity management: mapping out of expectations regarding the necessary capacity (in units of measurement that can be widely understood and justified) and activities ensuring optimal use of IT resources. This capacity with regard to information services requires a knowledge of estimation techniques, one of the most well-known is Function Point Analysis (FPA). Of course, we realize that nowadays the Agile community uses story points and its variants, but the estimation accuracy of these metrics is not up to par with function points. For instance, function point counts are a reliable metric[11]). For story points such reliability is not feasible if only because each team can develop its own counting mechanism.

- **Financial management**: over-arching financial management for IT services is concerned with helping the business to assess whether its (IT) supplier is doing the best it can with the money it has. The business has to understand the true costs of providing services and manage these costs professionally. Financial Management implements IT Accounting and Budgeting processes, and often Charging processes for services, allocating IT expenditure to services and recovering the costs of those services from the business customers to whom they are provided. The management of information services is no different and can be considered as either a subset of the entire discipline or (where the information service delivery is costed to include **all** components of the delivered service) it can be considered as *the* service. The difference is in the detail; be clear about financial aspects you wish to manage, control and report about.

[11] http://www.few.vu.nl/~x/rofpc/rofpc.pdf

- improved delivery of the required levels of IT service
- more effective response to new IT service requirements
- to the IT Service Management Team, improved information with which to
- manage change better
- improve their own effectiveness and efficiency.

Good planning and control should, however, not be seen as a measure of overall success or failure for that matter. Adequate plan accuracy is just hygiene of programs and projects, IT-intensive or not. Success is a multidimensional notion where sometimes more budget than anticipated is not a problem at all and in other cases is it (also) a large problem.

4.5 Information service capabilities

Key to the management of resources is management of the organizational capabilities needed to ensure that there is a valued requirement for an information service and that the value will be the result from the benefits of it being in place can actually be realized. **Organizational capability** is the engine of the enterprise: the capabilities that are available internally (or that may be sourced from the wider world) are essential to bring about both improvements and to run day-to-day operations. There is a tension between capability and what the enterprise wants (**Mission**) because the mission cannot be achieved if capability is short. Balancing what the enterprise **Needs** and the availability of Capabilities is essential, hence the importance of the management decision board to weigh careful the proposed projects and **Value** that must be realized.

The importance of organizational capabilities cannot be understated so we will recap some basic material from the DID Foundation book. Organizational capabilities will of course differ from industry sector to sector and must be identified in plans and documented. Figure 4.4 provides a generic overview of organizational capabilities to be found in a modern enterprise. Supporting generic information/data capabilities can then be placed in context.

Strategy otherwise data will be scattered, duplicated, error prone and unmaintainable. All management structures should reflect three things: the importance of enterprise wide data, the impact of failing to keep up to date with information needs and the need to be agile in the face of building the BIM capability without compromising risk.

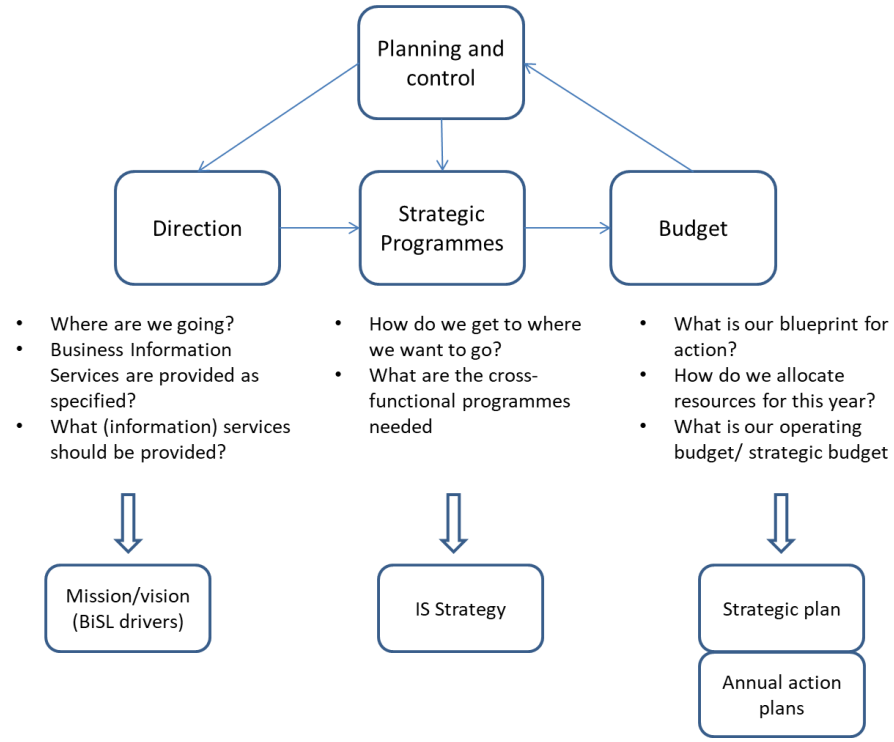


Figure 4.3 Typical planning and control within the BIM decision framework[10]

The aim of planning and control is to provide information to ensure that Business Services are provided as specified, to time and within budget. Planning and control should be treated as a total, coherent and logical set of activities which may be carried out across physical boundaries such as internal organizational structures, separate companies, or a number of individuals. It is important to look at the whole process to ensure that it is complete and consistent across boundaries.

The effective delivery of information services to an enterprise business community is closely linked to how effectively its IT Services Organization is managed. Meeting cost, time and functionality targets is paramount and a reactive, unplanned approach to IT service provision will almost certainly have a negative impact on the customers, the parent organization and the IT Services Organization itself. The only effective approach is to operate proactive information planning and control.

The implementation of a system to plan and control the provision of information services will help any IT Services Organization to support the successful achievement of the appropriate business driver(s). In addition, there are benefits to be gained by different parts of an organization from the introduction of planning and control in the Business Services Organization.

The main benefits should be:

- to the parent organization greater efficiency and effectiveness through better informed planning of future requirements for IT service provision reduced costs
- to the customers

[10] Adapted from Freeman, RE (2010), Strategic Management, a stakeholder approach, first printing 1984, digital printed 2010. Cambridge University Press.

about which are opportunities for the enterprise and which are likely to be problematical. Trends arise partly because of general developments such as changing demographics, development of technology, legislation etc. and partly because of the behavior of stakeholders.

Stakeholders as we discussed earlier are individuals and groups who influence the enterprise one way or the other, examples are customers, government, employees, stockholders, founders, suppliers, unions, competition, local societies and society in general. And, of course, politicians. It is important to distinguish between internal and external stakeholders; internal stakeholders are individuals or groups, such as employees or those that possess stocks. External stakeholders are all other individuals or groups which influence the enterprise.

Competitive forces emerge from behavior of external stakeholders, rival practitioners, customers, suppliers, potential entrants to the market and substitute products that lead to rivalry between different parties. The rivalry that results from these forces defines your environment and shapes the nature of competitive interaction within your sector.

Trends in the environment influence how the enterprise operates. Determination of important trends is based on the nature of the development or innovation, the perceptions of people in the enterprise and the expected consequences of the development. Typical questions that can be asked include the following.

- Which demographic trends are relevant and can be perceived in society that impact the enterprise? Focus on trends in the build-up of data about birth, death, illness, aging; emigration, immigration; local/regional/national/international.
- What are the relevant ecological trends? Focus on trends in environment, nature events; climate, supply of raw materials etc.
- What are the relevant social trends? Focus on trends about individualization, globalization; boycotts, education.
- Which relevant technological trends can be identified? Focus on trends in scientific developments, IT innovations using combinations of materials and applications, information-communication technology, use of robots, and so on.
- What are the relevant economic trends? Focus on trends in competition and competitive forces, market developments, currency, inflation, macro-economic systems, financing, owner relationships and market mechanisms.
- Which relevant political trends can be seen? Focus on trends in legislation, control; democratic; culture, values and norms; increasing or decreasing levels of government.

The recognition of external developments depends on the nature of the innovations and the powers of observation of the people in the enterprise tasked with ‘technology watch’ and on the expected consequences of the developments. You will soon discover that there is rarely agreement about interpretation of innovations and their potential benefits.

For BIMC an important task is to understand the different outside and inside forces and how they impact the enterprise.

4.4 BIM Planning and control

Information Services planning should be conducted within the formal management framework. This does not mean unnecessary hiring of many management positions, top-heavy process design or unnecessary overheads; formal management recognizes that enterprise wide BIM requires Policy and

4.3.3. IT department (or directorate)

The IT department is responsible for the IT components which meet the IS Strategy. It is normally chaired by the IT Director. This role directly manages and oversees technical infrastructure components (the computer centre(s), hardware, middleware and operating software) and is common in larger enterprises.

The IT department is responsible for the IT infrastructure, the provision of IT services and, often, the development of new applications. The IT Directorate must provide assistance to business managers in producing IS plans. To give effective assistance, IT Directorate (and BIMC….) staff must concentrate on the information and business issues and not on possible IT based solutions.
The IT Services Manager is responsible to the IT Director for ensuring that IT services meet the customer's needs both now and in the future. To do this, the IT Services Manager must clearly understand the customer's current requirements and have some understanding of how they will develop in the future. This can only be achieved by understanding, in detail, the business use and value of the various aspects of the IT services provided, in the customer's terms.
Keep in mind that the IS strategy and its data needs may require changes in the IT infrastructure, and lead to an IT infrastructure renewal program.

For new system development projects an IT Planning Unit (ITPU) can be set up, which supports the IT department. The ITPU can also be used to support IT Services Organization activities.
The ITPU must interface with other planning functions that share the same aim of delivering, managing and controlling effectively the enterprise investment in IS. The ITPU must interface with:

- those responsible for the Corporate IS Strategy
- those responsible for the IS Strategy for particular business areas
- the PSO, if the organization is large enough to warrant a separate PSO
- individual IT Services Organization planners.

The development of new software may be undertaken by the enterprise itself or it may be procured from external suppliers. More guidance is available in the old but still relevant IT Infrastructure Library (ITIL) Software Lifecycle Support module if you have that in your collection or the updated versions of that guidance in ITIL version 3 about Information Lifecycle Support and Wisdom, Knowledge, Information and Data management, as well as in guidance encapsulated in PRINCE2.

4.3.4 Users

Regardless of the industry sector, branch or government department, where services or products are offered, it is essential that you know and understand your customers. Your customers are represented by their users. User focus (in a perfect world) is always on maximum value for their customers. Hence, user needs and wishes originate from the outside world and are less dominated by the proposals or ideas of the IT department or through enterprise strategic actions or capabilities. The relationship with the customer, through the users, is an essential part of the demand side of BIMC. The right to exist of BIMC is partly determined by their ability to translate the needs of users in a way that fulfils customer outcomes and therefore enterprise outcomes. Remember the focus on outcome is key to guide decisions on investment and transformations.

4.3.5 External forces

BIMC, IT and other parties with BIM interests must understand market forces that impact external innovations. Developments that are innovative influence any enterprise. These can be changes to the desires of customers, but also changing legislation. Market developments may be favorable or adverse. Market trends in the environment should be analyzed and their impact understood: think

needs; agility, transformation and improvement of business information services; selecting the right technical (technology...) infrastructure and deploying the right competences at the right time.

Within the enterprise, BIMC fulfills the role of the professional representation of the business that coordinates the executive information services on the result of the desired services, on compliance with contracts and the control thereof and controls costs simultaneously with professional performance. BIMC should therefore be responsible for demand bundling and is the delegated client. The term is 'delegated', because someone from the board or general management is always responsible for the supporting services and has mandated this responsibility to BIMC.

BIMC is positioned between the customer enterprise and the supplier(s), internal and external. It is the intermediary who, as a delegated client, ensures that the client's needs (or the needs of the business) are well served by clear formulation of the needs and the translation thereof into purchased and delivered information services.

The core function of BIMC is being the intelligent customer capability of the enterprise so that the correct specification for a business information service can be drawn up; the value is actually obtained as a result of the benefits that the information service provides in implementation. The scope and nature of resources that are available internally (or that originate externally but are managed internally) are necessary to both improve and perform day-to-day activities.

With regard to digitization, the data, information and knowledge necessary for the enterprise almost certainly will arise from many sources and a capability to manage and control the entirety is needed to be effective (BIMC). The function of BIMC is necessary particularly where outsourcing has taken place and data is shared, so that expertise about the business information (and business information services) within the enterprise is retained.

The ability to properly execute BIMC comes about through a combination of roles such as service manager, SLA manager, contract manager, relationship manager, customer management; often the relationship role is an essential part of one of the other roles, and given the importance of data, it is recommended that it is the role of BIMC.

We recommend that BIMC is a concept that can be a physical department or a virtual group of information managers that work together to coordinate IT management from the business perspective. They can be positioned within business units or independently. BIMC constitutes operational management. As to where BIMC is positioned in the enterprise, depending on agreed scope of the function, they can focus on any or all of the strategic (for example some CIO office), tactical (for example within the businesses) or operational information and digital activities within businesses or at the internal/external supplier side.

Program and project plans are maintained by the Project Support Office (PSO), should one exist, on behalf of the managers. Depending on how you are organizing your BIM governance and your BIMC, you could make the Project Support Office (PSO) part of BIMC. Larger enterprises often create a PSO, smaller enterprises may create virtual offices or vest all responsibilities in a one person.

A PSO is a temporary or permanent organizational unit that provides a portfolio of services to support project teams that are responsible for a defined group of projects. Depending on your favorite practice you can call it different.

The IT Services Manager should be represented at meetings which discuss and review these plans where the provision of IT services or the development and operation of IT infrastructure are involved. The IT Services Organization should obtain copies of relevant plans from the PSO.

Figure 4.2 BIM Roles/ responsibilities in the management framework

4.3.1 Business management

Business managers develop business plans for their respective areas of responsibility---which are likely to require IT services. These plans must be agreed on by both business managers and the IT Directorate, particularly the IT Services Organization. Where the delivery of IT service has been outsourced the Service Control Team (SCT) will be responsible for agreeing on the changes to the requirement with the service provider. The agreed on requirements are encapsulated as Service Level Agreements (SLAs).

Some business plans require co-operation across business areas and these should be formed into business programs. Best practice recommends the appointment of a Program Board and Program Director for each program. Programs are derived from business plans and strategy which they are designed to implement. Implementation is by means of a collection of projects some or all of which may have an IT component. A Program Director represents the enterprise or business and ensures it obtains its expected business benefit from the program. The Program Director is supported by a Program organisation which includes the Program Manager.

Of course, in smaller enterprises several roles can be combined and depending on the scope program and project can be the same! A project is focused on a specific result within time and budget (output). A program is focused on added business value and benefits (outcome). For smaller enterprises benefits and costs are much more closely linked hence projects should look much more like programs.

An Information Systems (IS) strategy in support of business needs should be developed by an IS Steering Committee (ISSC) or BIM Board. The IS Steering Committee (ISSC): The ISSC reports to the management board and is responsible for setting the enterprise Information management/ services strategy.

The strategy MUST be informed by the inclusion of a business information strategy. The business information strategy is a BIMC responsibility and cannot be abrogated. The ISSC should be led by business managers and requires the involvement of the IT Directorate. Most often it fails because no one is responsible for overall BIM The IS strategy provides an overall framework for business plans and business programs which affect those business processes which rely on information. Ultimately the Management Board is at the top of the enterprise and (hopefully) generates the business strategy and business plans. They are the ultimate customers for the IT Services Organization.

4.3.2. BIM Coordination (BIMC)

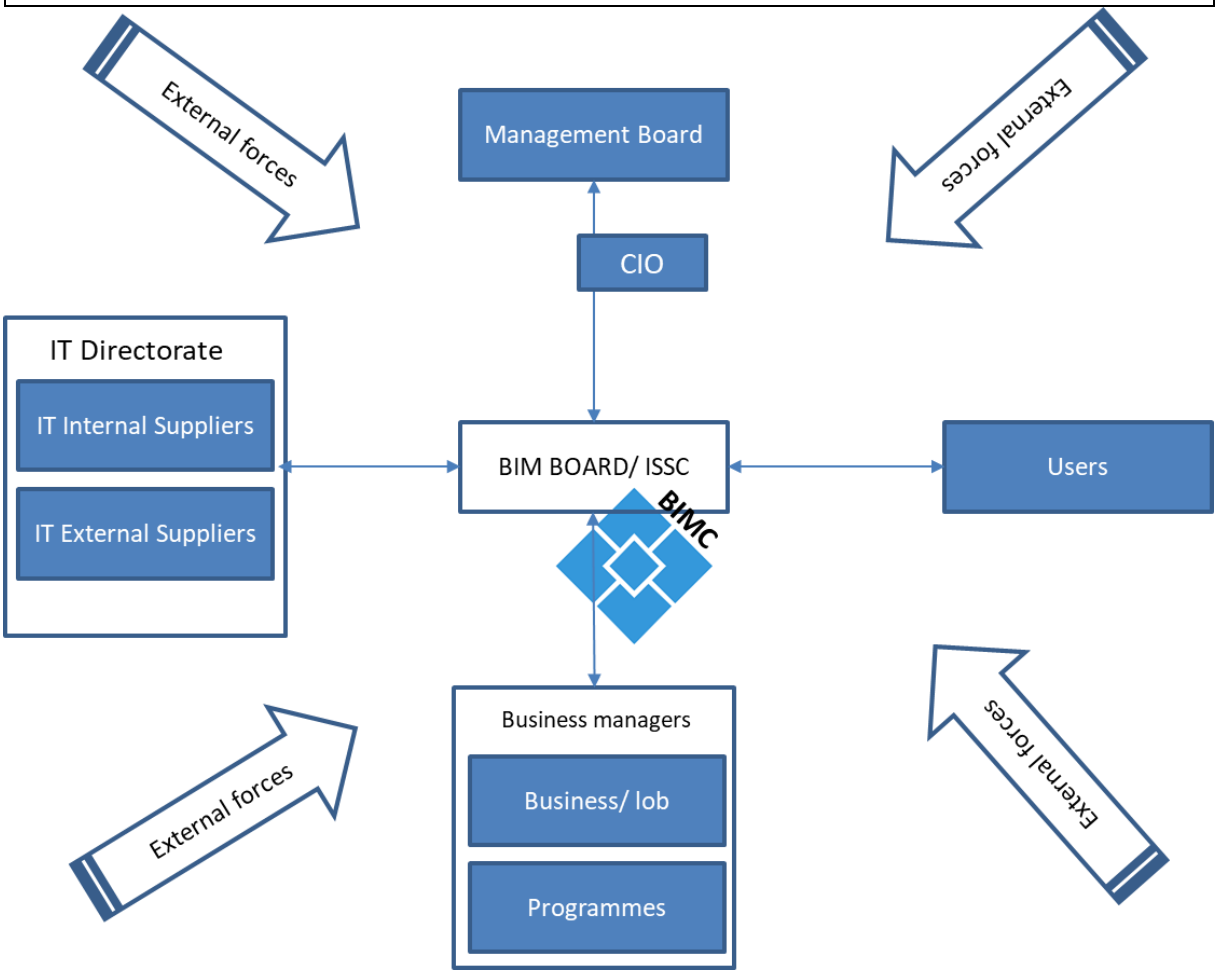
BIMC supports the BIM Board ISSC, coordinates the activities of the various Executive Committees with those of the board and acts as guardian of the data elements of the IS strategy. We use the DID framework to describe, position and provide tools for the design of Intelligent Customers for the information assets of the enterprise. The DID framework has been set up to effectively shape Business Information Management within an enterprise with the aim of better use of information and technology in the enterprise and therefore higher returns. Business Information Management is concerned with **effective** business information management. Think portfolio and program management in line with the enterprise strategy; design of information services that meet business

cooperation and sharing are concerned and those business services where cooperation is not necessary.

4.3 A generic BIM decision framework

These key topics should be part of a generic decision structure as shown in figure 4.2. It illustrates how business managers, IS planners (governed by some form of BIM board/ IS Steering Committee, the ISSC) and program directors, translate the Policies of the Management Board (guiding principles) into purpose and direction for the managers of IT services.

The diagram is drawn from best practice and reflects the complexity of departmental (or often multi departmental) program and project planning. It is not however meant as an organization chart or indeed as a hiring guide. To effectively understand BIM within your own enterprise, to set up a suitable governance framework you must be aware of how demand and supply has been organized. Only then can you organize the intelligent customer capability for BIM. Any instantiation of these various boards/committees must be in line with the needs of the enterprise, the size and impact of the program and the commensurate risks.



4.2.2 Identification of business requirements

Second, we need to identify business requirements for business information services in the business planning stages. It involves deciding how business operations are to be carried out and what information, and therefore what information services, is required to support them. Strategic planning for information systems is primarily the responsibility of business managers who must specify their information needs clearly. Information service analytical studies can be used to identify opportunities for improving business operations. By analyzing business processes, information flows and processing, the cost and quality of information systems can be greatly improved. How often though, does business analysis undertaken by IT encompass the need for and value of data?

It is important that a distinction is made between development, implementation and management, and between strategic, tactical and operational management. Think about topics at strategic level such as vision formulation, policy making and good commissioning, taking initiatives, solving problems, breaking stalemates. Determine what can and cannot be done as generic services; e.g. manage the financial frameworks and monitor whether the system is functioning properly. Questions at tactical level are about the description of the (mutual) roles and tasks involving compliance with policy / innovation/ advisory management, customer management, contract management and control (performance) management. Questions at the operational level focus on the daily correct functioning of IT in accordance with agreements. In terms of content, this concerns the actual provision of products and services and the use of systems in which the (mutual) roles and tasks of users and customers and the IT suppliers are fixed.

4.2.3 Guidance about the intelligent customer capabilities

Third, how many business managers find it frustrating to deal with IT? Identifying these information requirements depends on an understanding of the value of information to the business and on an understanding of what opportunities are available through the use of IT. That said, how many business managers are capable of so doing without expert guidance? More importantly, by developing a better understanding of how and why the business uses the information and its value, the service level requirements and their relative business priorities can be better understood. This leads to a better match between the IS service provided and the business needs. So, the guidance proposed to set up a tactical structure we have termed BIMC. BIMC teams should comprise individuals from a mixture of backgrounds (business, IT and even consultants) as the best approach to staffing a group for IS planning and advising executive management.

4.2.4 Requirements for IT

Fourth, the information needs of the business activities define the requirements for IT services. By analysis of the use of the information, service priorities can be defined. The requirements should be expressed in business terms before any technical solution is considered. So, focus on the need of the business (for example ‘we need to manage our assets in real time’ instead of ‘we want software-package A or B in where we can manage our assets’). By defining the requirements in this way both users and the (IT) Services Manager can be sure that the service requirements stated **are** business requirements.
Understand how your sourcing strategy is executed. Questions that are addressed relate to standardization and bundling, the significance of supply in terms of IS/IT services by a service integrator, independent suppliers or an eco-system, the generic (data) services that necessitate repositories and the use of architectural principles. It also should give you inside with regard to generic and specific IS needs. It concerns the topics within the business services where logically

sure that 'hard' and 'soft' instruments (technical tools, training and procedures/work processes) are optimized to minimize any continuity risk.

4.2 Making BIM possible

The stakeholder approach emphasizes the importance of investing in relationships with those who have an interest in the stability of these relationships. These stakeholders within the enterprise or in the environment of the enterprise have an effect on the enterprise or are affected by the objectives of the enterprise. They will try to influence your strategy and your actions to execute BIM, sometimes for the good, sometimes for the bad. And even for the ugly.

Considering the value of information and the strategic importance of IT, it is clear that executive management must be aware that information services and the underlying technological infrastructure are integral to the digital future of the enterprise. Quality of information is mandatory to make the best use of information and communication technology; and the quality of IT influences the quality of information management.

Specific attention and oversight should be implemented to ensure the integrity of essential data. By setting up a BIM governance framework manage BIM value creation for the enterprise is managed. And to be clear about the policies needed to ensure data integrity, a BIM decision framework should be in place.
A BIM decision framework is not operated in a vacuum. It originates within the overall governance structure of an enterprise. Business governance focuses on the direction, and control and execution of the business plan and strategies by the CEO and team. As a consequence, BIM is an integral part of management of the enterprise, thus BIM governance should focus on the direction, control and execution of BIM plans and strategy. Enterprise governance drives business governance and all functional governance including BIM

Ensuring proper governance of information services is paramount. That means managing the different interests of all stakeholders, setting a structure for formal oversight in terms of hierarchy, roles and responsibility and making sure that the right decisions can be made within a planning and control system. Such a decision framework within your enterprise has to address at least four functions:

1. Managing information and data
2. Identification of business requirements
3. Guidance of the intelligent customer capabilities
4. Requirements for IT.

4.2.1 Managing information and data

First, managing information flows, structuring information and data dependencies and work methods must be coordinated between strategic suppliers, business partners and users of information and data in the ecosystem of information and data. Therefore, BIM governance should apply also to relationships with parties outside the enterprise, such as suppliers and partners in the information demand and supply chain.

any time *via* the Internet. This evolution has several benefits: it facilitates the interoperability of systems and reduces the infrastructure and maintenance costs. However, the ICS/SCADA protocols lack built-in security. Hence, ICS/SCADA devices have been inadvertently exposed on the public Internet without proper security measures, facilitating not only ill-intentioned users (hackers) in gaining access to the devices and potentially causing severe incidents, but also facilitating accidental mistakes by people coincidentally scanning parts of the Internet.

Cybersecurity
Add your Alexa, Siri or other connected device to Cybersecurity problems while we are discussing enterprise issues---do you really think your data is safe? Anyway, cybersecurity units will monitor and assess online discoverability and vulnerability of the enterprise ICS/SCADA devices. This is carried out by setting-up a measurement and logging infrastructure, to detect possible scanning and attacking attempts in a stage as early as possible,

To improve the protection of these infrastructures, a number of measures to secure these devices and to reduce the chance that attacks have been trialed with a degree of success. These measures are well-known and easy to implement.

Monitoring whether devices are discoverable and vulnerable is an important first step in protecting the ICS/SCADA but there are obvious measures that should be in place. These belong to the so-called 'usual suspects' that secure the infrastructure from unwanted access. Think about the following.

- Limit the access of ICS/SCADA devices from the Internet,
- Install software updates in a timely manner, change the default TCP/UDP port numbers,
- Use techniques to restrict network traffic on ports and protocols associated with ICS/SCADA services,
- Harden the device configuration by disabling functionalities and services that are not used by the managers and operators,
- Maintain an up-to-date list of software and hardware that is running in your infrastructure
- Monitor the manufacturer vulnerabilities,
- Keep other systems that interact with the ICS/SCADA devices secure and ensure that they run the latest software version,
- enforce strong passwords, do not save them in the clear, so use hashing and salting,
- avoid unauthorized access, and
- Ensure that the default passwords of ICS/SCADA devices are changed *et cetera*.

Role of BIMC
For BIMC, which is concerned about data quality and data integrity it is paramount that measures are in place to avoid any of such incidents and that proper recording and reporting can take place. Partly these measures are not only technical but also so-called 'soft' measures. Users and operators must be trained to be aware of the risks and correct procedure. Together with the IT department cyber security unit, BIMC must cooperatively assess business continuity and make

4.1.3 Users

Users receive/purchase services and products from the suppliers or have the permissions to use the services of the internal departments of the enterprise. They must, however, remain within the agreements made with general management. There is no individual coordinate relationship between users and the executive management of the enterprise, but indirectly the satisfaction of the users about the service provision is of great importance for the management of the enterprise.

4.1.4 Service providers

Within market-oriented enterprises, the relationship between customer and contractors (service providers/suppliers) is established on the basis of agreements regarding, e.g., price and quality. The market mechanism implies that if no agreement can be reached on price and performance, the relationship between client and contractor is in fact not be established.

Case study: Business continuity and data integrity[9]

Why BIM is a security issue

On a regular basis we read in the news about cyber-attacks on critical business IT infrastructures, such as power plants, the UK NHS and celebrity nude photo archives. Such infrastructures rely on Industrial Control Systems, (ICS) and/or Supervisory Control And Data Acquisition (SCADA) networks, except for celebrity nude photo archives that rely on the celebrities not using Facebook or whatever to store the photographs that most likely were not a good idea in the first place.

ICS are used to monitor and control industrial processes. ICS are usually managed using SCADA systems that provide a user interface for operators to monitor and control physical systems. ICS/SCADA devices are used in many sectors, including critical infrastructures, e.g. power distribution systems, water treatment and sewage facilities, manufacturing facilities, communication facilities, and transportation systems.

Vulnerabilities on ICS/SCADA devices pose a significant threat to industrial networks, particularly those associated with critical infrastructures. Unavailability or failure of critical infrastructures or compromised data used by operators could have serious consequences. Unreliable operation of such systems could disrupt the infrastructures environment, harm the long-term operation of the responsible enterprise, or in in the worst scenarios threaten human lives. More and more incidents are being reported.

Security, especially with critical systems is a hot topic on the agenda and therefore executive managers want to know whether all mitigation measures, possible and logical, have been taken. The Board and BIMC must understand that in a connected world information systems, networks and users should be protected against the threat of cyber-attacks.

The incidents involving ICS/SCADA systems are a consequence of their evolution. ICS/SCADA devices systems originally were restricted to being accessed by operators within the infrastructure of the enterprise, isolated from the Internet. Service protocols used in these ICS/SCADA devices were therefore designed with functionality as their main goal. It is now desirable for system operators to be able to remotely connect and control the ICS/SCADA systems from any location at

[9] Ceron, J.M., Chromik, J.J., Dr. J.J.C. Santanna, J.J.C., Pras, A., (2019), 'Online Discoverability and Vulnerabilities of ICS/SCADA Devices in the Netherlands', Universiteit Twente, In opdracht van het Wetenschappelijk Onderzoek en Documentatiecentrum (WODC).

4.1.1. Executive management (The Board)

Executive management has the final responsibility for the performance of the enterprise as a whole. There are various topics to decide upon or issue guidelines. Consider, for example, strategic considerations such as digitization, information sharing, outsourcing issues, housing considerations, salary levels, supply chain issues, privacy and security.

The attention of executive management is often attracted by the potential of negative publicity. For example, cyber security such as the increasing threat of hackers on corporate networks. Because of this threat, the security and management of the network and the data is more and more regarded as a primary issue for the organization.

BIMC has a role in the formulation and implementation of information and data policy and strategy. It contributes to strategy formation by issuing policy advice to the Board and elaborates the adopted strategy into strategic plans. Examples include either coordinating or creating contributions to (depending on how the role is instantiated) governance planning and policy development, information planning, safety plans, housing plans, outsourcing plans, transition plans.

4.1.2. The business / line of business (LoB)

In addition to the policy and strategy decision making, general management can also be regarded as the most important stakeholder for BIM because they own the budget. The budget is primarily intended for the basic services that are standardized for everyone in the enterprise.

General management determines the content and quality of the basic services and also determines whether purchase/delivery of services is standardized. The agreements that the management of the enterprise makes with external businesses about the services are laid down in either contracts (where external parties are involved), contract agreements, or service level agreements (SLA).

In addition, business is often budget holders for a specific category of information services. BIMC can act on behalf of the business and support them with their strategic and tactical responsibilities, though the customer remains ultimately responsible for success or failure. In such cases BIM may also be a complex issue, depending on whether or not data is important in other areas of either the information partner or supply partner chains. Consider as an example if (in the UK) the Prison Services held a budget for processing data about inmates; the Police, Courts, Probation and many other enterprises would benefit each from having access to the information held and no doubt it would be in the public interest. Consider now the issue of data sharing and the current UK legislation regarding privacy. Then stir in GDPR….

Insofar as they do not belong to designated business and user groups, all businesses can purchase/use the basic services that have been agreed on with general management. The delivery then takes place at the established service levels and against the (financial) conditions agreed with the management.

It may be that for some businesses the basic service provision does not apply or does not adequately meet their needs. In that case, businesses can make separate agreements *via* the management of the enterprise about additional services and different service levels. The control function is advisor to general management in all situations. A condition for deviating agreements is that the (additional) costs are borne by the business, unless the management decides otherwise.

4. Managing business information

4.1 Stakeholders rule

Looking around you will find yourself surrounded by stakeholders, as shown in Figure 4.1, internally (employees, owners, suppliers, etc.) and externally (customers, government, the trades union, *etc.*). BIM Governance is key to managing multiple stakeholders to create BIM value.

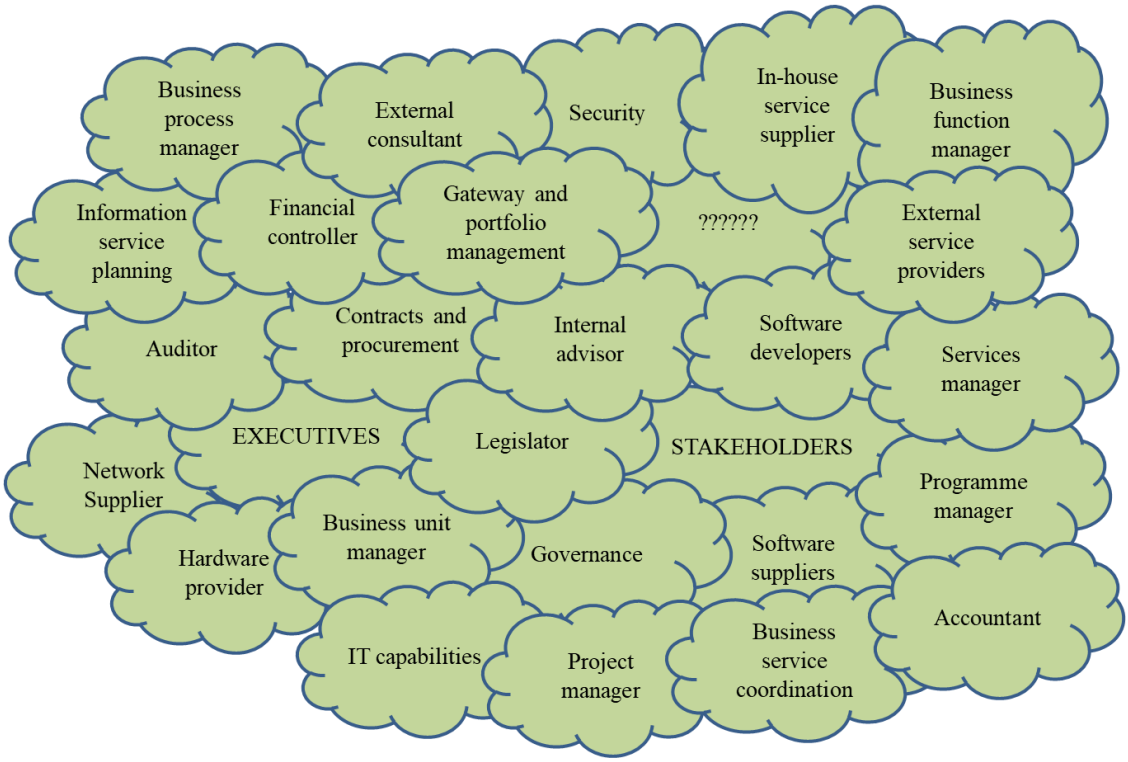


Figure 4.1: Possible stakeholders in an enterprise

Networked enterprises are based on cooperating and competing units with different interests. The relationships between these parties are characterized by simultaneous cooperation and competition. In other words, in some activities the emphasis is on cooperation, and in other cases competition is dominant and the individual interests of units play a greater role. The interdependence between the parties is evident.

BIM, in a networked environment, necessitates greater vigilance because of the shared data; it also has implications for privacy and therefore governance policies. That is not to say that either data sharing or privacy is unimportant in the stakeholder approach only that the degree of complexity and issues of interdependence in a networked enterprise will most likely be approached using different instruments, such as contracts.

Key points

- A service can be defined from two perspectives: the demand side and from a supply
- Information flows between business and supplier (i.e. demand and supply) and with BIM we aim to manage these flows.
- Information flows are part of information services that have a lifecycle and information needs, and availability of data, will vary between the different phases of the lifecycle.
- The DID framework takes your business model as the starting point. Therefore, when thinking about transformation of your business or simply transforming how you manage data, ensure everyone is clear about the enterprise business model, the operating model, the enterprise architecture and the service definitions using the model as 'the looking glass'.
- Practitioners (advanced level thinkers in the BIM world) will need to amplify the described processes to ensure that the spectrum of the model is covered, from Governance to Operation, which necessitates defined Planning and Control. To fully manage the scale of data issues and to understand BIM in your enterprise you will also need to expand policies and guiding principles and create steering boards and directives. For example, look at all of the processes described in ITIL, they have been 'adopted' by ASL and BiSL for many years and most remain relevant to BIM practices, but only if they are used appropriately and are not simply hammered into the enterprise as a 'a solution'.
- The success of BIM – as well as the general quality of the BIM processes – is largely connected with the extent to which enterprises coordinate the various business information management activities with one another.

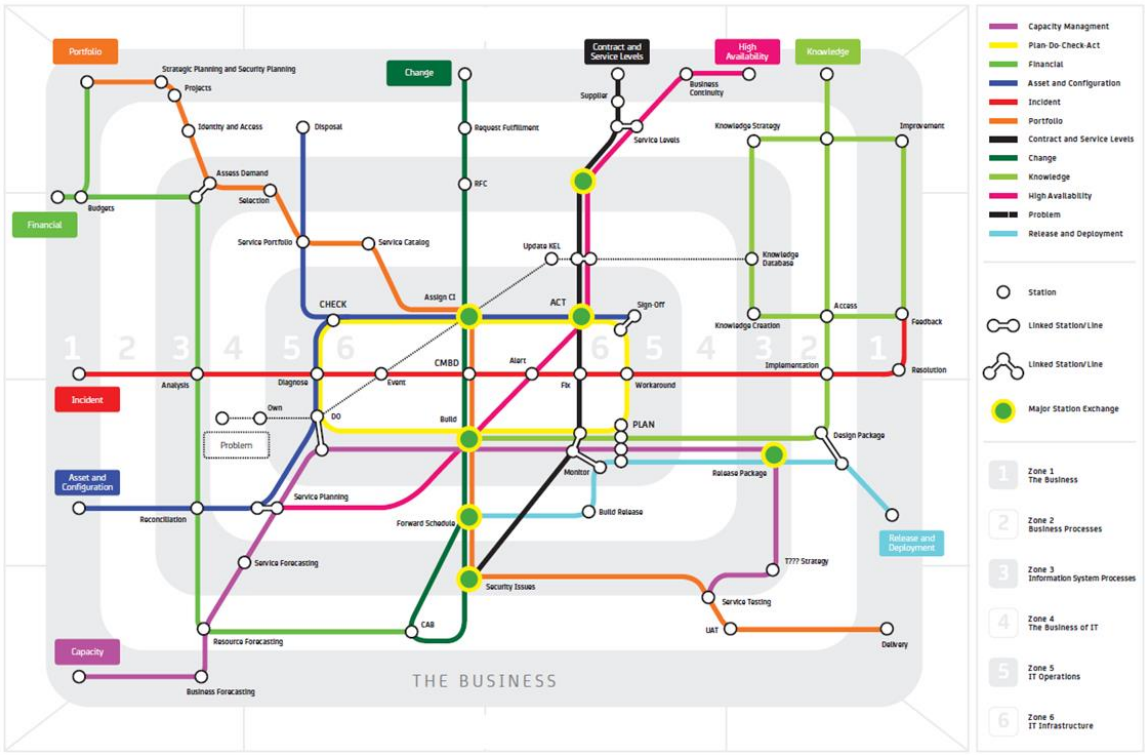


Figure 3.3: Navigating from the business zone to the IT factory

The knowledge needed, and captured by the business, is located way outside of the zones recognized or understood by IT. This means that business knowledge needs to be captured by people that understand business, business information services, and IT. And if IT cannot do this task because of ignorance (in the true sense) of business, and business LoB has no involvement, then BIMC, i.e., you must take over.

Subway maps (or come to that any bus route map) work the same, no matter where they are located. Whether in NYC, or London, or Tokyo, all achieve the same thing; you look at a big, complex picture of destinations, identify out your destination and the best way to get there, and then once you are on a specific track, you travel through a series of stations until you get where you want to be. Our map is the same in that respect and differs only in that it is likely that you have several destinations that you need to reach in order to improve the way that your enterprise manages its IT dependent business capabilities.

In a general commuting situation, you probably would not notice the crossing from zone one, via two to zone three. But in our IT-driven situation where business and IT-worlds collide, this crossing is a struggle. Commuting is largely instinct, based on experience; if a problem on your track is reported, you are smart enough unless map reading is not your strength, to consider and evaluate alternate tracks that will get you to your destination. Designing a service, however, is not instinctual.

The Subway map is used as a powerful concept to help everyone in a business to understand how major business changes can be better supported to achieve program goals. As with all destination maps, there are many ways to get to the place you want to be; the reality is that the destination may be common but the route we choose will be different because we want to see, or in the case of a capability, achieve different things. More detailed versions of the same Subway Map can be made to assist program management.