

# Unified Integration Strategy 101

How to build an integration  
strategy outside-in and inside-out

Gert-Jan van Gisteren

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# Unified Integration Strategy

Getting in control  
of integration within  
a fast changing  
business- and  
market- context



# Prologue

**Imagine a world where you know the status of everything, know what every object is, what it can do, how it is used or what it needs to be useful. When we look around, that dream world is quickly becoming reality. The technology to realize the digital dreamscape, where data and information are everywhere and everything is smart and ready to serve everyone's needs, is already available. The reason that the technology exists is due to the fact the human race is fast transcending its analog perception of reality as it constantly aims to understand everything. With this understanding, we improve the quality of life and recreate our surroundings to serve our needs.**

**T**he digital revolution thrives on the fact that data is everywhere. This is not new, for as long as the universe has and continues to exist data will be everywhere. The laws of nature, as we know them today, state that data/information is never lost. However, this does by no means imply that we know how to get our hands on all of it and make sense of it all, but it is what we are aiming for now. For as long as humans are sentient, we hunger for data to create information and knowledge, and with it, improve our lives and feed our curiosity. The main reason for our success as a species is our ability to predict the future by combining data and information in order to extrapolate this into scenarios about what (we suspect) will happen next. With this

information, we devise scenarios where we can not only survive but also thrive and reshape the future. Thinking new things based on imagination has always had a basis in the data we have ingested and processed and the problems and challenges we think need solutions.

In the past ingesting, integrating and processing data into new information was an analog process mostly done by brainpower. The world, however, is changing ever faster. Especially over the last few decades, the world is rapidly digitizing all data sources and we are adding intelligence to everything in our surroundings. Processing this newly digitized data into useful information and making decisions is

also shifting from analog to digital. There is just too much input and our brains can no longer keep up with the sheer amount of (new) data sources, and with it, the integration and processing required to make sense of it all. When done correctly, these new digital capabilities automate many common processes, giving us humans' time and the possibility to move and change faster. We will be able to take more and better-calculated risks and function at a higher abstraction level. This gives us better and more precise predictions of the future and a way to better test and simulate our scenarios and strategies of coping with uncertainties.

This digitizing and processing of data is impossible to do without connecting and combining all our data-sources. Integration of data and information has become one of the most important basic digital capabilities that help us to understand the world and our place in it. Our entire digital economy would not function without something that helps us make sense of all the different protocols, standards and formats with which data is found, ingested, translated and stored.

The digital transformation of all the markets is changing the way communication, collaboration and business is done. No longer are decisions mostly based on the intuition of business leaders. Almost every move a business makes is heavily supported by data. Data itself has become a valuable and critical asset. New markets have arisen around the creation, gathering and commercializing of data. In its wake, digital integration of data- and information- sources has become a business critical capability. Not only does a good integration capability help organizations to connect all the internal processes, people and IT-systems, but more importantly, it connects organizations, their processes, products and services to the outside world and creates value networks that will replace the old market places.

Questions many organizations face today are: *How do we interact with our customers, vendors and stakeholders? Can we predict what our customers and market want or need? How do we create value together with our partners and other players in our network?* To get answers, the underlying question must be

answered: *How do we integrate with everything?* A holistic view is required where we define everything, recognize fundamental rules that govern the integration space and still respect the fact that businesses consist of domains and context that will differ greatly from each other. Somehow all these differences need to be glued together to create a robust and adaptable business. This Unified Integration Strategy aims to help you to create a hands-on plan to make your integration work. It offers a structure in rethinking the context, in which, a new integration strategy gives you a tool to get your integration- and information- house in order. On top of that, it aims to create an environment that is able to thrive, adapt and evolve its connections to the inside and outside world, making integration the key-differentiator instead of the main headache. This paper states that integration is, in its essence, a business capability. This business capability needs IT to create and manage most of the physical connections. If such a capability is not (yet) present in your company/organization then the first step should be to plan and organize for it.



# Executive summary

**Where do we start? Connecting everything to everything needs a plan and a strategy. This strategy framework gives guidelines and pointers on how to design a unified integration strategy. This integration strategy will help you structure your integration efforts in such a way that it connects to the business strategy and ultimately enables your business to be successful in a sustainable way. A Unified Integration Strategy aims to connect everything that is required to build, maintain, develop and innovate the integrations an organization needs. Integration is crucial for organizations to not only survive, but to function as a valuable exponent of its value network and connecting its proprietary and inside processes to enable a good functioning ecosystem. The content of this paper is a culmination of many years of experience of seasoned architects, integration experts and their best practices.**

**B**ecause of the ever faster changing technology and market conditions many companies and organizations are rethinking their mission and vision and this paper aims to put CIO's, IT strategists and Enterprise architects on the right track to meet the challenges of the complexities of integrating everything with everything. As a result of changing markets, technologies and society organizations evolve or change their value propositions and this has profound effects on the way they do business and how they connect to their customers, vendors and anything else in their ecosystem.

While there is arguably no one size fits all in integration technology, or software, every organization should have a holistic and unified integration strategy to address all the different connections to customers, vendors, their stakeholders and the market. In this paper functional patterns and a way of thinking about integrating as a complete ecosystem is discussed. The goal is unifying the internal business integration context and external connections to and from value networks. Most, if not all, businesses and organizations derive, and also add value from and to, the (value-) networks they are in.

Therefore being connected to it is, more often than not, vital for their survival and important for the vitality of the network and all its members. Good networks are robust, adapt easily to change and most of the time are not dependent on a single member. This cannot be said of most organizations, change is hard and most organizations have more than one single point of failure. If a business drops out of a network or cannot keep up, the value network will adapt and go on. That is why this strategy proposes to look both inside-out and outside-in, with the starting point of the external point of view being prioritized. Making sure an organization can do business is priority no 1, because value creation is more and more driven by, and depends on, the communication capabilities of the value network a business operates in, it is only logical to start outside-in.

The other point of view, integration inside-out, cannot be neglected and is often a much more complex challenge. Changing market conditions demand agility and adaptability of the business, its processes and its sourcing

strategy. The challenges therefor are much more people- and culture- dependent than architectural or technical. Legacy ICT is often hard to change and it seems almost impossible when the legacy processes and the culture operate at a slower pace compared to the outside world, or do not change at all. Often the first thing that needs to be addressed is the rate and frequency of change and this compounds the challenges. Balancing the transformational needs of processes, organization, people and technology requires excellent change management skills. Prioritizing integration in the change portfolio and IT roadmaps is necessary to maintain any kind of cohesion in the business processes and quality of data and information. This should not be prioritized at the expense of changes necessary to keep the business' license to operate or the developing of the organizations' market differentiating proposition. More often than not your efforts to add value to

your context will primarily be driven by the ability to do business (survive) and secondly fulfil your organization's purpose.

To be able to adapt as a business to a changing world, abstraction- and translation layers in the business- and ICT architecture are needed. These layers are necessary because system- and communication- details change more often than the overarching conceptual functionality. Doing this creates more stable systems and integrations and a less volatile change environment. It makes it easier to separate concerns and manage the details without disrupting the functional context. It also enables devising effective change management and sourcing strategies. This paper has a take on a roadmap and a strategy to implement a unified integration strategy as well as tips and tricks to look at change as a whole.



# Unified Integration Strategy

## What is it and why bother now?

The speed of change is still increasing and driven by technology. More than ever before entrepreneurs jump into the deep end of the technological pool of possibilities to create new opportunities that weren't possible before. A lot of them fail, but the ones that succeed are doing so in a big way and they are disrupting all markets. Outside-in businesses see their value chains change into value networks and their product-market combinations are changing into end-to-end services and/or experiences. Some examples are:

- Privately owned cars operated by a driver and public transport are changing into autonomous **transport as a service**
- Centralized industrial manufacturing of goods is changing into robotized decentralized discrete manufacturing
- Centralized energy supply, based on fossil fuels and large power plants, is changing in decentralized renewable energy sources and storage as a service.

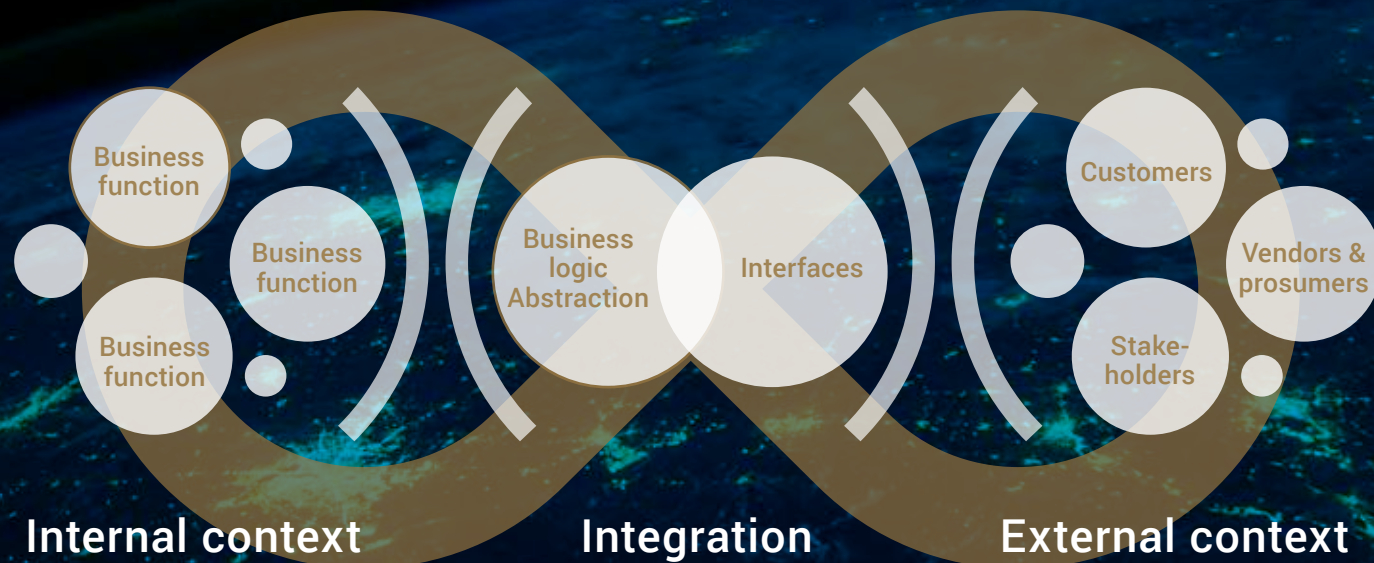
Automation and digital collaboration are changing the way that people work, and this is changing businesses from the inside out. Traditional hierarchies are eroding in favor of autonomous teams. A new, digital savvy, generation is changing the way work is done. Key success factors and governance follow and in turn this changes the way people collaborate, teamwork and ultimately business culture.

Driving the change of society, markets and businesses, is data; lots and lots of new and more easily accessible data. Data is the new oil and it is fueling the digital economy. Having access to all the data in your context gives you the opportunity to adapt to change and is a key success factor for any organization and its mission. What hasn't changed is that this data needs to be managed and transformed into information. Enter integration. All this data needs to be gathered, combined and brought together,

often from multiple systems, organizations and contexts, to create useful information. New markets and new ways of interacting with value networks and customers require continuous rethinking of the business strategy, and if there ever was a time to adapt and change the integration strategy, it is now. To quote Choudary: "To adapt to these new volatile market conditions and move on in the digital age businesses will have to rethink their business models and restructure operations to effectively make use of digital ecosystems and platform models" (Choudary, from Pipes to Platforms: <http://platformed.info/platform-thinking-networks-online>).

If data is the skin and bones of any information landscape then integration are the nerves and lifeblood of an information infrastructure. It connects the brain to the muscles that move the bones and the skin, where the muscles are the business and its





application logic. Integration is found at every level of the business, internal and external. How frictionless we can share and let data flow between applications, people, processes, will be the measure of how successful a business is.

Integration is perceived as an IT capability but what happens if we look outside-in and define integration as a business capability? Integration usually connects at the boundaries of IT-systems to other IT-systems, but what if they don't reflect the real boundaries of the business domains and ubiquitous language

barriers? Do we end up with the same points of integration and the same decoupling in our IT architecture if we consider these functional barriers? What about our processes, governance and compliancy? Looking inside-out and outside-in and letting the two worlds meet, without favoring one or the other, is what a Unified Integration Strategy is about. Making sure that IT gets the business where it wants to go and making sure that the ICT-engine of the organization has enough quality, so its performance, availability and adaptability fulfill the business needs is an art and a science at the same

time. If all requirements for integrating the insides and outsides of a business's context are met on paper then "making it so" might mean a total overhaul of the application architecture. While this is a direct consequence of the integration strategy, it falls outside the scope of this paper, but it should certainly not be ignored. Holding on to the current application architecture might hamper your integration efforts, and redesigning it should go hand in hand with redesigning the integration architecture.

# Fix the foundation before you start integrating

## Why enterprise architecture is the foundation for an integration strategy?

**R**ecognizing that integration is a (often THE) strategic key success factor for the business is the first step to organizing for it. The integration capability is preferably organized as a virtual organization component because it needs input and feedback from all business functions, departments and processes. Enterprise Architecture is the ideal organizer for this capability, because they are already in place to look at the business and its ecosystem as a whole. With enterprise architecture in the lead, the business capability integration can start to fix the foundation. The foundation in this case is not IT infrastructure, but describing the rules of the “game”.

Part of Enterprise Architecture (EA) is describing how the business fits in its environment. EA maps and predicts how the vision, mission and strategy of the enterprise interacts with the market, its competitors and society as whole. Next to describing the product, services and market combinations EA also designs the integration architecture strategy. Furthermore, how the enterprise gets and maintains its license to operate not only describes what rules to abide by but also lays the foundations for integration behavior with the customers, the market and society at large. High-level enterprise architecture principles like: “The business will be 100% compliant with national and international

rules and regulations” are helpful tools to set the boundaries for what integrations are possible and how these integrations are governed. This example seems like a no-brainer but for some business the amount of compliancy is business case driven. Examples are businesses like Uber or Airbnb that aim to disrupt existing markets. They will try to stretch the edges of what the law allows and, as a consequence, will have different integration strategies towards its customers and vendors than for example incumbents like taxi companies or hotel chains. Before starting integrating outside the boundaries of what the business controls, principles about compliancy, environmental impact, marketing strategy,

privacy, speed to market and the sourcing strategy should be clear and implemented in the business.

Enterprise architecture principles should describe what the integration boundaries are, what the rationales for the principles are and what the consequences of the principles are. At the right some examples of Enterprise Architecture Principles:

When describing the architectural principles for the enterprise and its integrations starting at the foundations and building from there is advisable. It makes is easier to make sure that contradictions in principles are spotted early and dealt with. Maslow's hierarchy of needs translated to business needs (from and excellent blog by: by Matthew Harrison & Catherine Firth from B2B international) is a good way of looking and devising a base of principles.

## PRINCIPLE

**The company is 100% compliant with national and international law.**

**Customers are an important integral part of product development. The lifecycle and features of our products are tested and directly influenced by customer testing and feedback .**

**Business functions that differentiate the business from the competition will never be outsourced. The sourcing of all other business functions is cost and risk based.**

## RATIONALE

The license to operate, our branding and customer trust for our business and products depend on staying within the boundaries of the law.

The commercial success of new products and features depend on customer acceptance and positive mouth to mouth advertising. The customer is an integral part of de company's product development lifecycle.

Important part of the companies branding is selling our products and services for lower prices than our competitors. Operating cost is a big part of the TCO of our product/market combinations and needs to be as low as possible.

## CONSEQUENCE

Life cycle management of every product, service and business activity must include a compliancy check before going live. Every change of laws or regulations will trigger a companywide compliancy audit on products, services and processes.

Products and new features will be brought to market as fast as possible (minimal viable products). A/B testing is used to gather feedback, pick winning concepts and steer product development.

Sourcing management is a strategic process that regularly assesses and benchmarks cost efficiency for all the sourceable plots. Every plot is designed in such a way that it can be either in- or outsourced without causing major disruption of the business.

Principles belong to a certain layer in de Maslow pyramid and the principles of lower layers frame every layer above. To prevent corruption and wrong or conflicting points of view of the principles the pyramid is always read and explained bottom up. In most principles pyramid constructs however, there will be conflicting rules, and managing and mitigating the consequence is key. Building this construct before you start should make clear what conflicts of rules and interests should be managed by Enterprise Architecture governance.



A raison d'être, corporate social responsibility, thought leadership

**SELF ACTUALIZATION**

**RECOGNITION**  
Brand, market leadership, diversification, expansion

**STRUCTURAL NEEDS**  
Enterprise reporting structure

**RELATIONSHIP NEEDS**  
Customer Intimacy, employee engagement

**DEVELOPMENT NEEDS**  
Growth, profitability, people, extended offers, marketing

**SURVIVAL NEEDS**  
Access to funds, core product promises, ability to transact, License to operate

**IMPLEMENTED BY:**

Corporate social responsibility, marketing

Business development, PR, marketing, R&D

Operations, HR, H&S, Legal, Purchasing, IT

Marketing, Sales, Account management, HR

Finance, marketing

Finance, Production, Sales, Legal

# The bigger context

## Defining market and customer integration requirements

**I**ntegrating into a value network starts conceptually at the vision, mission, strategy and goals of an organization and impacts why and how the business, at the borders of the business, connects to the outside world with the insides of organizations.

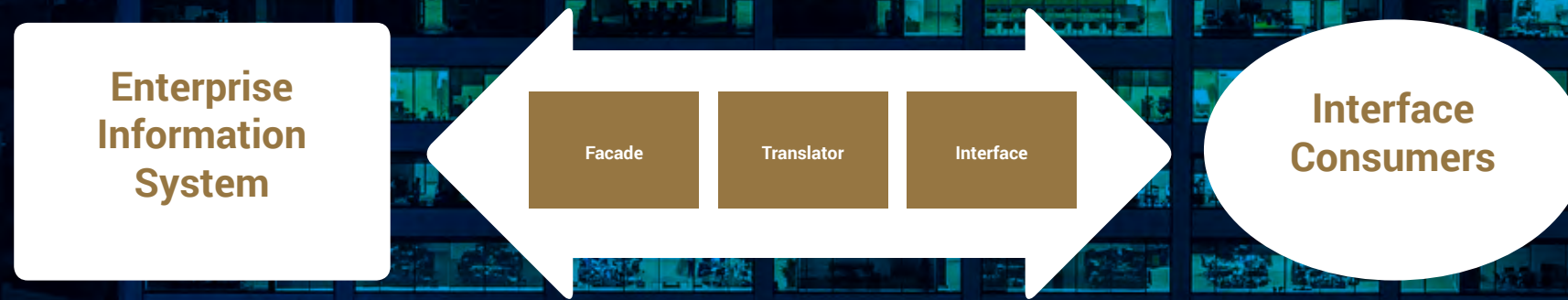
Next to compliancy, typically the market facing processes like marketing and sales, customer support and vendor management, are the first areas of engagement that require data and process integration. Most businesses have processes that start outside of the company, go through (part of) the company and either end, inside or outside the company. Other processes start inside the company and end outside the company or are a continuum where the business together with the market, stakeholders and/or customer continuously improve processes, products and/or services. To add to business complexity the boundaries that

used to define where an organization starts and ends are blurring. Technological- and software- developments in the last 20 years have made loosely coupled application architectures possible. This is a reaction to the rising need to change faster and faster. Smaller applications that can change autonomously without disrupting a larger context are dependent on state-of-the-art integration technology. Technology is now at a stage where it truly enables and even favors distributed and networked businesses and organizations. Knowing how and where to decouple information flows in IT architectures, cutting up processes and standardizing interfaces have become key success factors for most organizations.

Interaction between business functions and capabilities in large enterprises was traditionally solved by integrating processes and data in ERP systems. This was long believed to be an efficient way to manage

integration complexity, and under certain circumstances, it still is. This type of integrating, we now know, makes change expensive and slow. In parts of the business where requirements still change slowly, like financial or other administrative processes, this might still be a viable, if expensive, strategy. Premise for success for the whole business ecosystem is that these parts of the business must be decoupled from the rest so each domain can change autonomously, else the slowest mover sets the pace for the whole business.

Markets and society at large are changing at an almost exponential rate and what differentiates the company's products and services from the offerings of its competitors tend to change fast also. One of the most important principles therefore for integration is that **interfaces should be reliable, standardized and stable for consumers.**



Another very important supporting principle is that **interfaces should make underlying process intricacies opaque**. The user of an interface should not need knowledge of business rules or data models to be able to connect to the business through the interface. Interfaces are designed from the point of view of the consumer and connect to his needs instead of the needs of the data, process or the business logic. Consumers come in many shapes and forms: Developers, customers and also automated processes and machine-2-machine integrations. While the same data and even the same formats might be used for different types of

consumers of the same data, non-functional requirements, like performance, availability or security, might differ greatly and should be researched and analyzed. This might lead to more interfaces with different infrastructural or security solutions for the same data.

The needs of a consumer are part of, and are linked to, the value he creates. Understanding this value creation process outside the company is an important point of view when designing interfaces. Other points of view are the internal integration of business functions and process and data integration. These don't need nor want knowledge of the

external consumers data & process intricacies. Because of the different point of views and the opaque filter between inside and outside, interfacing and decoupling are multi layered. Thus, integration at the edge of the company's processes will have multiple interfaces points that are separated by business (transformation) logic in the middle. Separating the different contexts is therefore an important step in designing the integrations and should be done as part of designing integrations across application- or business- contexts and processes.

# Stakeholder integration within the context

Alignment of vendors, customers, markets, prosumers and other stakeholders



**M**ost companies do not operate in a vacuum or are not full stack across a supply chain and do not function as a singularity (monopoly) in their context. Businesses are almost always part of a value producing network and this network needs to be integrated in some way with the organizations processes. Next to value creation, these networks evolve and are driven by continuous improvement. Through feedback loops networks evolve their quality of communication, its products and services, enhance their value as a whole and reduce costs. By definition, these networks depend on a lot of stakeholders that deliver goods and services or are part of

the governing bodies. They do not function without some rules of engagement and different stakeholders have different needs. An important question that needs an answer is: "how do we integrate all the different needs of all the different stakeholders?"

Knowing the needs of the different stakeholders is key. Making a serious effort to assess how the stakeholders plan to use the integration through interviews and sounding boards helps. This however is not a onetime effort. Developing and maintaining interfaces needs, (automated) feedback loops which influence, improve and develop the functionality and features of the

interfaces. In principal, you should never implement a breaking release of an interface, but at a certain point in time it will be inevitable. Breaking interfaces cannot be done without a penalty to the services of the network. All the stakeholders of the, to be broken, interface will need to invest in keeping up with the new developments and thus need to prioritize this in their change portfolio's. Any party that is not capable (time, money, compliancy or other reasons) of changing its connection to the interface in time, will eventually drop out of the network. An important topic of the feedback loops, interviews and sounding boards is making sure that the lifecycle management policy fits the change capabilities of its stakeholders. What goes for the consumers of your interfaces also goes for yourself as a consumer of the interfaces of your value network, **keep up or drop out**.

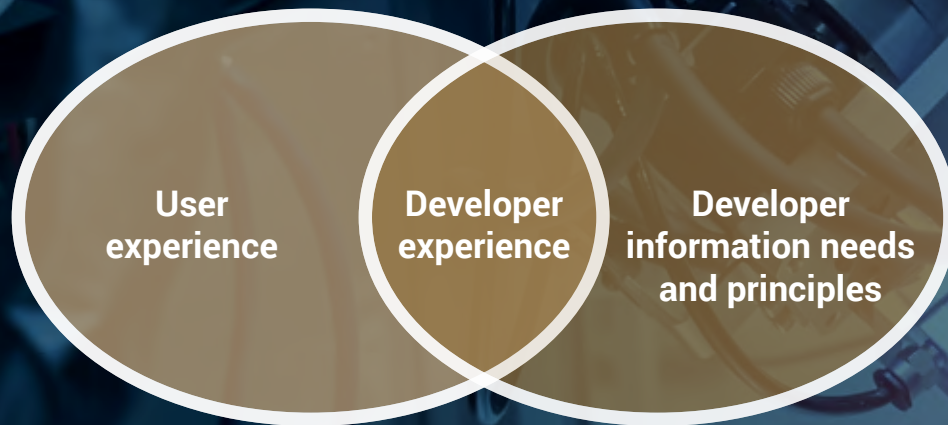
Where possible interfaces should be standardized even though stakeholders might have different wishes. Trying to tailor your interface landscape to every stakeholder is near to impossible; instead,

interfaces should be tailored to groups of stakeholders. Not standardizing from the start can however be a way to help innovations and integrations in new contexts. Meaning standardization is important but it can also hamper your business drive and speed to market. A balance between speed and maintainability is needed and in general doesn't start with a standardization effort, but the question of how fast a business must be and can be fulfilled. If and when standardization is needed then again looking outside in is the way to go and the needs of the stakeholders need to be balanced. Examples of stakeholders are consumers of the products of the business, vendors, investors, prosumers (consumers that also deliver services or products to the business), media, shareholders, etc. An important part of the balance is the economy of the interface and the operating model that governs that part of the organization for which the interface is important. Simply put, the benefit should outweigh the costs of integrating. Further on in this paper we take a look at operating models and their economy.

Different stakeholders might also have different security and privacy concerns and this should be assessed upfront, before any connection to the outside world is made. For some companies this is non-functional and they simply want to be compliant with the law in the areas where they are active. For others it might be a differentiating concern and this could mean they need a different interface. What goes for security and privacy goes for any non-functional requirement, for instance: volume of data, frequency of change or access, performance, availability and so on.

In practice, this will mean that most mature interfaces have too much information or data for any single consumer, but there is enough tailoring done to make them relevant for the different external contexts. In addition, a balance between volume and security aspects must be maintained. Making sure consumers are not receiving data that they have no rights to or are legally not permitted to see (for more details look at the OWASP security project). The same goes for internal consumers, although there is a slightly different way of looking at standardization.





There are two ways to look at the problem. First there are business functions (often also business domains) that are characterized by specific governance rules and ubiquitous language. Communication and integration between these domains abstract and translate specific data models and information between the ubiquitous language barriers.

The second way is looking at personas. A manager will have different needs than one of his reports or employees. Even if manager and employee are members of the same functional business domain, the employee will want data for operational purposes, the manager needs data for tactical and/or strategic purposes. Sometimes this means that the employee and the manager are using different data sets, but even if they are using the same data set, the interface can be very

different. A general manager will probably have the both types of integrations and this can lead to new interfaces that are aggregations of other interfaces.

Thirdly, in general, a lot of IT-interfaces are used by IT-savvy people and this brings a special kind of user to the doors of the business: the software engineer. The user experience (UX) for users of any information system differs greatly from developers' experience (DX). On top of that, software engineers are a chatty bunch and if you get it right, the word spreads and the interface will get lots of traffic and thus business opportunities. Interested developers will also engage in continuous improvement of the interface and your business. If you get it wrong, the interface will be ignored which will impact the business negatively in a big way.

The DX of the interface is the face to world of the business and one the most important key success factors for the business. No matter how good your marketing and sales apparatus is, the usage of your channels can make or break the business, and in an API (Application Programming Interface) economy this largely depends on the acceptance level of the engineers that use them. A business needs not only to engage with its customers but also with the enablers (software engineers) and this needs to be planned and implemented as a continuous improvement cycle with technical and functional feedback loops. In most cases it is worthwhile for an organization so setup a specific developer (marketing) program as part of its integration strategy with the goal of increasing acceptance levels of interfaces and to keep in touch with their developer community.

# Capabilities, Business functions and Sourceable plots

## Define capability and business functions boundaries to create sourceable plots

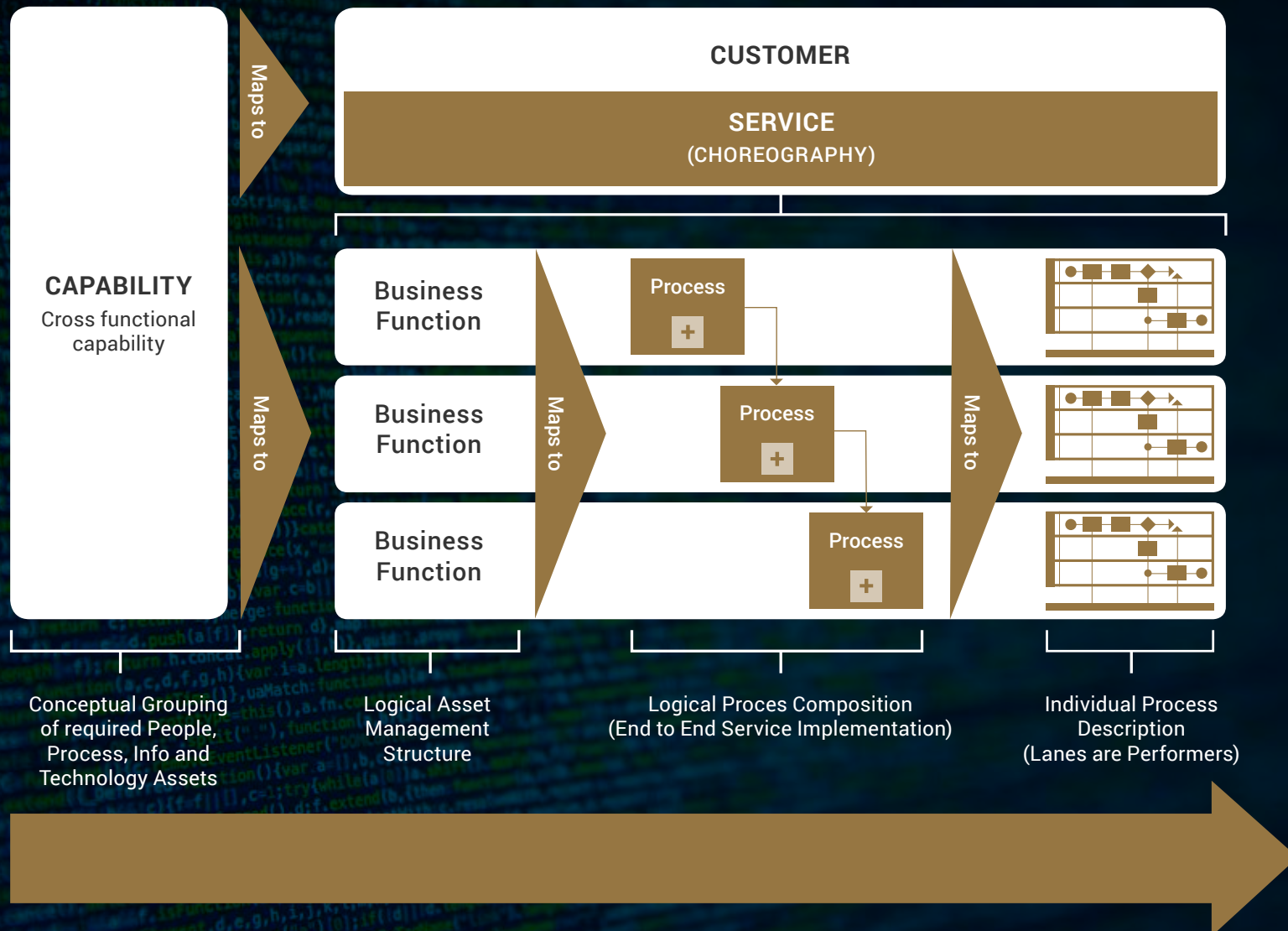
Capabilities are distinct from business functions. Capabilities represent the business abilities, needed and in place or wanted, that are realized by the organization and its resources (people, technology, processes and information) and are focused on specific business outcomes. The former is a complex way of addressing the fact that capabilities are not often recognizable as organizational structures. Business functions however, are more closely related to organization structure and how the actual work is done. Each capability occurs only once in a business architecture, (sub-) business functions can have more than one implementation in or across several different capabilities (next page shows a

schematic picture consistent with the TOGAF 9.1 Content Meta-model)

A capability's output is a business outcome and managing the outcome is the responsibility of the business. Business functions are implementations of work that can be in- or outsourced, without losing the responsibility of the business outcome. This responsibility cannot be outsourced without rethinking the governance models and the business architecture. If and how a business function can be outsourced depends largely on how strategic and volatile it is. If the business function enables innovation in a core capability of your mission and strategy it should probably not be outsourced. If the

business function doesn't have a distinctive character and isn't part of a strategic capability its sourceability depends on costs and quality available in the market and the maturity of the governance.

Before starting the design or overhauling an enterprise architecture, it is advisable to prioritize the creation, or an update, of the sourceable plots mapping. This is important because most interfaces have to manage dependencies on how the business is carved up, how functions are decoupled and what information is needed to still manage the business capabilities. Questions like "is the function managed as a service?" or "is the function itself not outsourced but the human



## CRITERIA



## MAX. SOURCABLE LEVEL

### INSIGHT

All knowledge is owned and maintained by internal employees and highly strategic for the organization. Extra insights and knowledge are procured through strategic (research-) partnerships. Sometimes new knowledge is acquired through temporary hires of specialists or high-level principals

### CAPACITY

All knowledge is owned and maintained by internal employees because of its complexity. Extra capacity can be hired at an operational level to maintain a flexible edge around a stable workforce. Typically the 70% (internal) / 30% (external) is observed as a best practice.

### EXPLOITATION

All activities should be under strict governance of the organization and all input and output should be under control of the business. Quality and performance are key-success factors and management of these activities is insourced while the workforce can be out-tasked or

### SERVICE

All activities can be outsourced as managed services and governed by Service Level Agreements. These activities are typically steered on cost, performance, availability and standardized output and should be highly standardized so relocation with little effort is possible.

resources are?" need to be answered, because these scenarios differ greatly in what information or data needs to be interfaced.

Business critical activities often require monitoring and real time information, because the organization needs to be able to react swiftly to unforeseen events. This has effects on how interfaces are designed, built and maintained. Secondary supportive functions that are steered and monitored with a lot less detail and in a lower frequency than business critical functions, require no real time information. Instead they rely on periodically provided Service Level Measurements and KPI's. Designing and managing the lifecycle of interfaces in this domain is vastly different from the business critical domain. The same goes for the Differentiating and Integrated domains, they have very different requirements for interfacing. Knowing what type of interface pattern and lifecycle management strategy is needed for each interface is a key success factor for setting up and maintaining the interface landscape.

Enterprise Architecture Principles should therefore also contain sourcing principles because the patterns of integration depend heavily on these.

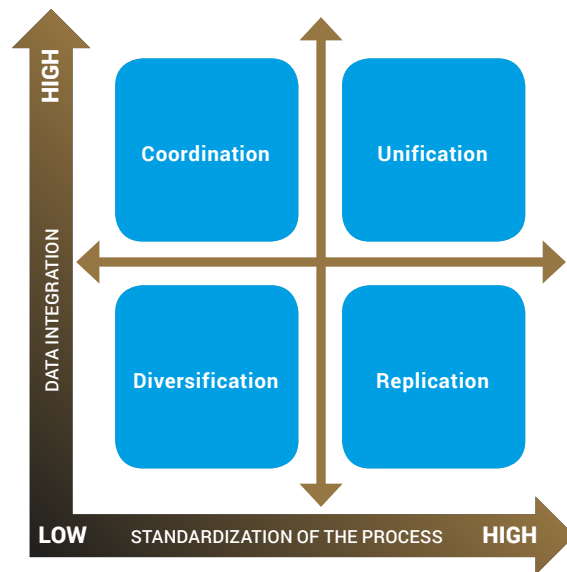
Many more questions can be asked before deciding what type integration is needed, but in essence, the four types of sourcing set the boundaries for most if not all internal processes and business functions.

#### **Examples of questions that the principles should address:**

- ✓ **At what sourcing-level can or should a capability be provisioned?**
- ✓ **Are competences more important than volume and what level of knowledge sourcing is possible?**
- ✓ **What is the influence of contract costs on the Total Cost of Ownership (TCO)**
- ✓ **How important and at what detail level is transparency needed in quality, availability and performance?**
- ✓ **What type of exit scenarios are needed to mitigate ending of contracts or collaboration?**
- ✓ **How much and what sort of dependencies does the sourceable plot have with other plots?**
- ✓ **Does economy of scale apply to the business function and is there a market for sourcing?**
- ✓ **What scenarios for integrating are viable and what are their TCO's?**
- ✓ **What non-functional requirements fit the business requirements for an interface? (e.g. performance, availability, security, volume, frequency etc.)**
- ✓ **Is cost the only driver for either in- or outsourcing?**
- ✓ **What are the exit-scenarios for a specific sourcing scenario?**

# Operating models

## Integration requirements for Operational excellence, Product Leadership, Customer intimacy



Thinking about interfaces is thinking about communication, digital and analog, standardized and non-standardized, frequent and predictable versus unpredictable, high and low volumes, synchronous or asynchronous and real time, near real time or batch. Making the right choices in this jungle of communication patterns is another key success factor for the business.

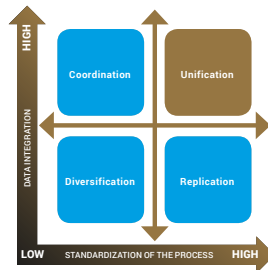
Some of the types of communication above are technology driven and change over time as technology evolves. For the business however a lot of how data and information

flows is not primarily dependent on technology but on the operating model that is used in a certain part of the company or that is used in (parts of) the value network.

In the excellent book: *The Discipline of Market Leaders* (1997) from Michael Treacy & Fred Wiersma, three major operating models are explained and each of those has impact on the information landscape and the integration capability. These operating models also predict the type of integration and they can be mapped on an operating model for integration (Ross et al., 2006)

**The operational excellence** operating model centers around efficiency, standardization and predictability.

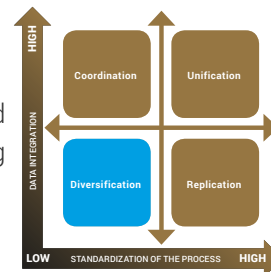
Automation of repeatable work and measurements of every step in a process helps the business to manage and drive cost down and improve quality. Operational excellence is typically used in businesses and value networks that move and sell commodities. Most of the time their unique selling point is low cost and homogeneity of products and services. For communication and integration this means that interfaces need to be efficient, highly standardized and stable. The data model within this operating model also needs to be stable and process complexity will be low. Architecture principles for integration center around cost, efficiency and stability. Interfaces need to be digital, low in complexity and be able to handle large volumes of data. Predictability of costs and use of resources is high so while the integration still need to be scalable they are not volatile. Above all else the availability and



performance of the integrations matter most and thus tuning of interfaces and the hardware they use are key. Information landscapes should be “build-for-failure” meaning that outage of resources should not lead to disruption of service. Next to having no single points of failure in the IT-architecture and building in redundancies, coping with failures is also done by reverting to defaults if a service fails.

**The product leadership** operating model centers around innovation and having a unique and/or the best product in a specific market. This

model centers around excellence and innovation. Efficiency and costs are not the highest priority. Agility and adaptability characterize the information landscape, and this also goes for communication and integration. Products and software tend to have a lot shorter lifecycles than in the operational excellence model. Interfaces in this landscape function as anti-corruption layers, as described by Eric Evans in his

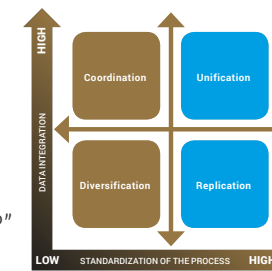


excellent book: *Domain Driven Design (2004)*.

In the ideal situation this makes the information landscape plug and play as far as applications and customer interfaces are concerned. While data models and processes are subject to continuous change and improvements, the business logic in general is not. This is important when thinking about integration. Business logic as decoupling point is probably the best way to center the application landscape around. Performance and availability are important, but adaptability is of the utmost importance and thus dependencies are abstracted to minimize their impact on changeability. This operating model compared to operational excellence also has more analog interfaces because stakeholder needs are hard to standardize and need more and diverse communication.

**Customer intimacy**

centers around the adagio if the customers say: “Jump!” the business only asks: “how high?” Cost, efficiency, standardization are of little or no concern.



Every customer gets a custom build solution. This can vary from unique products and specially tailored processes to a complete custom experience entirely aimed at a single person or entity. Typically, this means high value customers but not a lot of them. Volumes of data with digital integration are low and availability and performance needs are high. Adaptability is extremely high for customer facing processes, while backend processes can be standardized or outsourced as managed services. This model favors analog communication pre-sales and after-sales in feedback loops. Business intelligence and customized transactions are still automated as much as possible. A large part of external interaction is aimed at building on and improving customer experience. This impacts adaptability and changeability in a major way. Only for highly standardized communications it is worth digitizing but often this depends totally on what the customer demands. Even digitized interfaces might be one-offs and are not aimed at efficiency or cost but at convenience.

Most organizations do not have focus on just one operating model but two that are managed in separate parts of the business, e.g. back-office and front office processes. While often all three operating models are more or less present, having focus on all three is rare and hard to manage. Value networks are different; they often need to support all three operating models. Knowing upfront, before implementing an integration strategy, what type of businesses will use the interfaces is as important as knowing what operating model governs which part of your business. A lot of the non-functional requirements can be assessed from it. Next to the non-functional requirements the connections to different operating models also often determines how much change effort and what the frequency of lifecycle management activities will be per interface, which will directly impact the scaling of the parts of the organization that manages these connections.





# Connecting the insides of the organization

## How integration enables and makes business robust and agile

Until now we have been looking at integration outside-in. It is now time to look inside-out. Data coming into the organization or data that is generated inside the organization is the foundation for integrating with the external context. As discussed before often a business has to manage more than one operating paradigm in different sub-contexts of the organization. If we look at the organization as a value chain than we can separate the business in two contexts: primary and a secondary business processes. The primary context is where value is created in the market and the value network, typically manufacturing, engineering and the execution of commercial services belong in this domain. The secondary context

is more or less the governing and business hygiene domain, where typically back office functions like finance, legal and HR reside. It's important to recognize that these contexts are governed differently and have very different goals, objectives and KPI's and thus have very different integration needs.

In principal, the secondary business domain is mostly managed through an operational excellence operating model. KPI's and processes are aimed at repeatability, unification, auditability and transparency and they should be hassle free services for the primary context. Processes are standardized and (slowly) optimized through internal continuous improvement processes.

The secondary business domain consists of multiple business functions with each their own ubiquitous languages. Following domain driven design principles these business functions should manage their own data and services don't cross the borders of these domains.

In reality, a lot of businesses have implemented an ERP system where the integration between the domains is done in the database. Effect on the IT landscape is that they are hard to change because at a certain point the whole interface landscape became so complex its integrational intricacies have become opaque. Nobody really dares to touch them anymore, or



quickly change them, in fear of causing major damage to the business. Large scale, multi-year projects are often the consequence of this type of integration.

Every change in any database or any of the systems requires large scale testing by users of different domains, which is very labor, time and money intensive and prone to errors. In landscapes that rarely change this might seem a big disadvantage, because on average a large change will take anywhere from six months to two years.

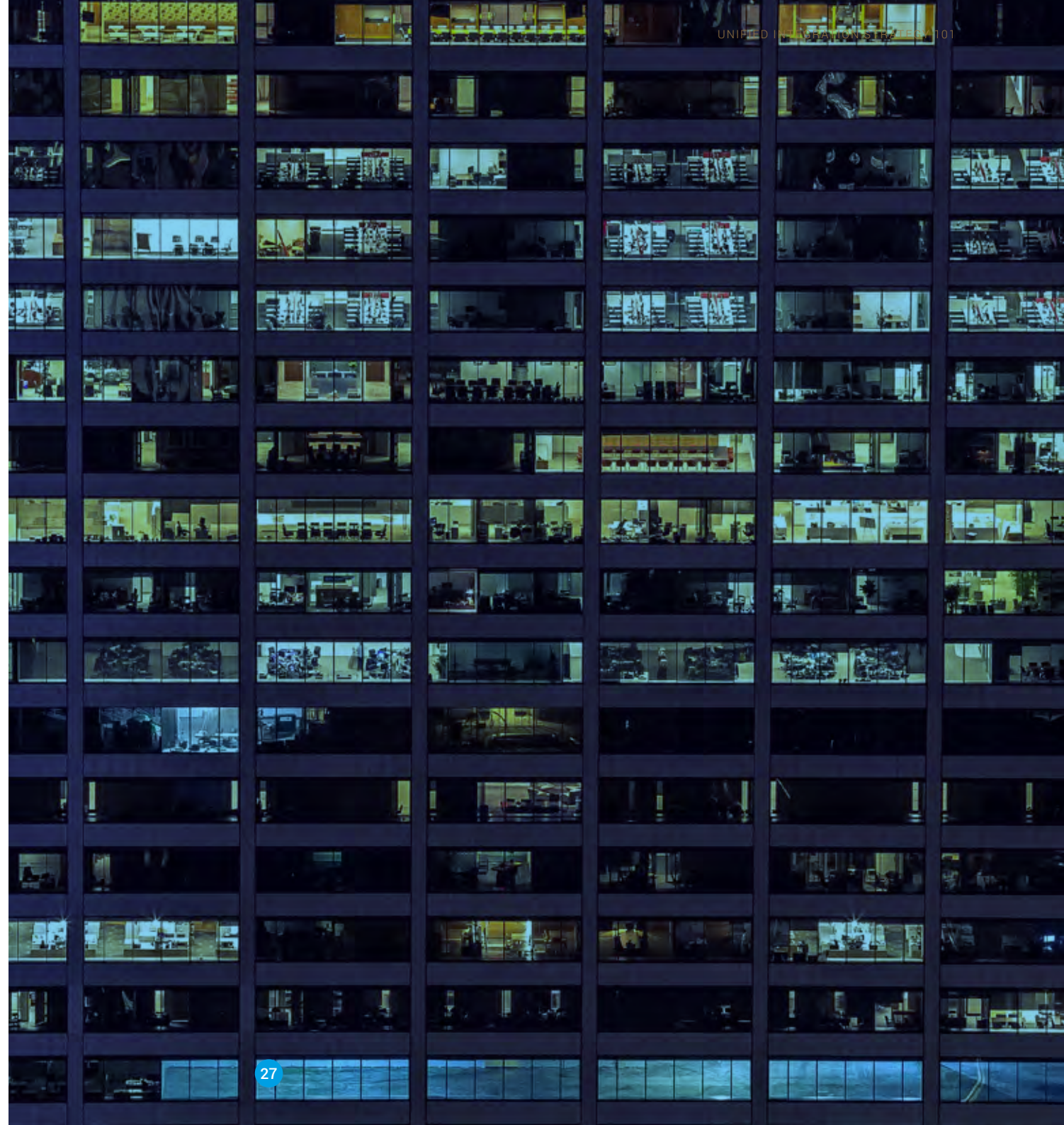
Therefore, it is better and safer, even if ERP systems are involved, to decouple the landscape along the lines of business functions and put anti-corruption layers between them that shield business logic from changes in the systems and that help to minimize the test and implementation efforts of new releases. A redesign of the application architecture where concerns are separated

instead of integrated on a data level is the first step. Often implementing multiple instances of the same application but using different functions and datasets is a necessary second step. When done right this loosely connects the different contexts by making them agnostic to each other and any other context by exporting business logic to the edge of the applications and making it explicit instead of being opaque somewhere in the data structure. In reality, this implementation of separation of concerns with ERP systems defeats the purpose of having them at all, because the integration of data across business functions was their major selling point. Having an ERP strategy is therefore a major part of your integration strategy.

In contrast, the primary context differs greatly from the secondary context, and should be managed differently. Even if operating models are not taken into account,

the primary context is directly influenced by the outside world. This impacts the need for speed and agility. Primary processes need to be able to change according to what clients demand and how the market develops. Still these contexts do not exist separately but work together. Data generated in the processes in the primary context often feed the secondary context processes, and vice versa. This enables goods and services flowing one way and money the other way. To be able to manage product- and services-portfolio's, production lines and marketing and sales information about finances, people and other resources is needed. Architecting and designing the integration between primary and secondary contexts begins with implementing business rules between the two and decoupling them in such a way that the primary and secondary contexts can change independent from each other. Even if the secondary processes are temporarily unavailable the impact on the primary

processes should be minimized. This can be done by adopting a defaulting strategy that takes over in the moment something is not available. This can be handled by the anti-corruption layer or designed as separate logic within services or even as separate services. This operational risk management strategy will enhance the complexity of the integration landscape but is crucial for availability and the quality of service of the IT-resources that enable the primary processes. Designing a defaulting strategy is no small feat and it should not be executed as an afterthought. As it has a profound impact on the integration landscape and the functionality of the interfaces and process-flows and -outcomes it should have priority over designing the interfaces.



# Connecting inside-out and outside-in

**Connecting the insides of the organization with the outside is like boring the channel tunnel, building the tunnel starts on both sides and you plan to meet in the middle. It's therefore important to know upfront what business logic will be in the middle.**

**I**n the architecture a decision has to be made if re-use of business logic is allowed or even mandatory or if a microservice strategy is adopted where little or no re-use is allowed. If the future or new IT-landscape is not a greenfield implementation and a lot of legacy is still in place,

re-use of business logic is a good option. It provides structure and consistency. Mature organizations, that know their domains, have a solid business architecture, are preparing for change, and decide to venture into a greenfield implementation, will get the chance to design the IT-systems and organization along the lines of the business functions (domain driven design) and then implement a modern microservice strategy. Startups and young organizations often opt to automate their back offices' processes with SaaS applications or outsource it as a whole and go for microservices in their primary processes. Their main concern is getting enough traction in their market and connecting their insides is, more often than not, a low priority concern in the beginning.

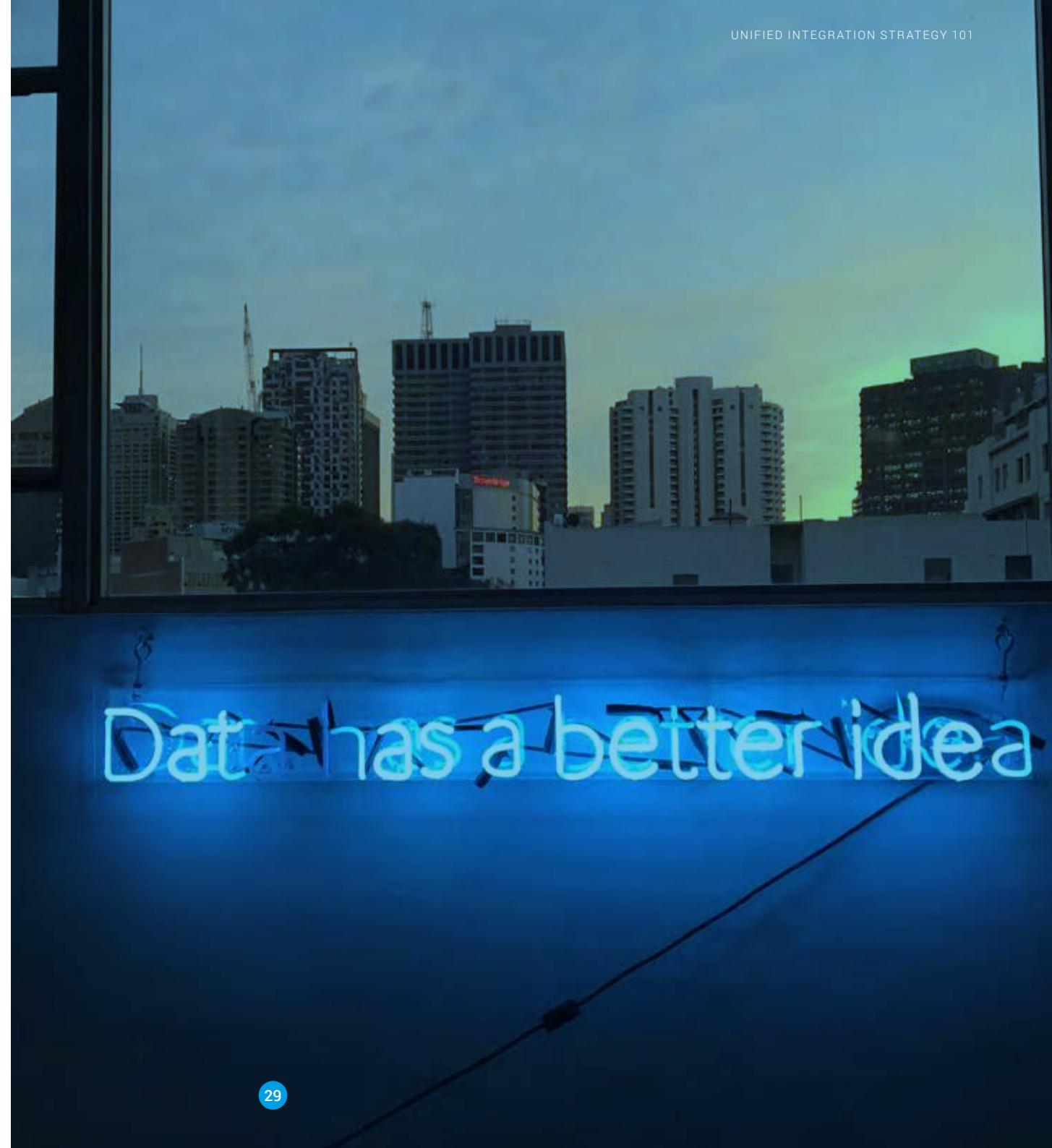
Whether or not all integration is in place, for both mature and new organizations the auditability of the data and transactions needs to be designed and implemented first, before building the interfaces. Especially in a loosely coupled architecture because the event sources need to be build and/or implemented before the interfaces can be connected and often determine the function of the interfaces.

Another product that needs to be designed and build before the interfaces go live is the developer experience for all the interfaces that are exposed to the outside world. Consistency of look and feel and functionality and information aimed at the consumers of the connections is very important. As stated above, developers are a chatty bunch and they will advertise integrations like API's with good DX in their community. Not only will your API's gain traction but dev's will engage with you through feedback loops to make your interfaces with the outside world better. You don't want to miss out on this upwards spiral of continuous improvement.



INSIDE OUT

Last but not least, and maybe the first thing that needs to be done is setting up management, monitoring and metrics of every interface. Every interface has its own business model, value proposition and customer segment. Questions like; Do consumers have to pay for a specific interface? How do we manage traffic? What level of performance and availability are needed for a specific interface? What persona or customer segment will use this interface? and so on need to be answered. It is paramount that the organization has a clear understanding of the costs and (monetizing-) potential of each interface. Designing and setting up interface management so data volumes, consuming frequency, availability, performance, security, privacy and costs can be monitored and managed is a key success factor for the entire interface landscape and makes or breaks your ability to successfully engage with customers and your value network.



# Integration principles

## Setting the boundaries for engineering freedom

As mentioned earlier, enterprise principles are needed to set the boundaries of what, how and why interfaces are built and handled. Counter to how principles are often handled, the be-all and end-all of the integration landscape, these principles should not be set in stone and are certainly not forever. As society, the market, your value network and technology change and evolve so will your principles. There is also no one basic definitive set of principles for integration that can be used by any organization. The only general rule that applies is that principles must fit your strategy and they guide design, development and exploitation. For example, principles for organizations that are heavily regulated will have very different principles than less regulated and/or free market business. For instance, for a heavily regulated business providing a level playing field to the consumers of its interfaces might be

more important than the availability or performance of the interface.

Back office (e.g. finance, HR, legal, etc.) processes will often be governed by a different set of principles than your primary processes. E.g. In a free market with little regulatory influences, agility and the ability to adapt might drive your business and thus principles should enable this. Back office processes on the other hand typically require less adaptability and should be more stable, reliable, auditable and secure because compliancy with laws and regulations are still often a priority.

A good set of principles should enable your business strategy as well as lower risks and help manage costs. So, principles should also be subjected to risk and cost assessments. Agility is nice, modern and sometimes hyped without a reason, but it's often seen by IT people as the most

important aspect of any implementation. However, as a rule of thumb, the more agile a landscape becomes the more complex and expensive it becomes and the more difficult it becomes to manage risks and security. In general, there will always be trade-offs between agility, stability, cost and security.

As this paper is about a unified integration strategy the whole of the principles for the different business domains should be considered. No environment can be governed by one set of rules and principles. This means that principles from different domains might (and in practice will), contradict each other. A simple matrix will help out here. Put all the principles on the X and Y-axis and put crosses on the intersections of the principles that contradict each other. With the insight of the contradictions a new set of guiding principles can be made, describing what

should be done and sometimes which principles prevail in what circumstance. As this will change regularly for different situations and point-of-views it is important to keep record of what is decided in what circumstance and how that worked out. This will help and guide you to improve on the principles and also helps projects and management to understand the consequences of the decisions they make regarding interfaces.



# Implementing a Unified Integration Strategy

## Implementing or changing integration in live environments

When the groundwork is done, the plan and roadmap for implementing, augmenting or changing your interface landscape can be made. As organizations almost never have the luxury of building a greenfield environment, focus should be on planning for as little disruption of the running business as possible. Next to knowing which interfaces need to be delivered, a risk assessment needs to be done and mitigating actions should be planned for in advance. Planning is not setting an end date and then working towards the goal. This will almost always lead to compromises that in the end will diminish the governance effectiveness and power of the architectural guidance. If

time is an issue then either you started too late or you haven't been paying attention to what legislation or market developments where coming your way.

Only when your license to operate is endangered by time constraints might you want to compromise in favor of a deadline. The reason why in all other cases time is not the deciding factor for design or building interfaces is that they are in general hard to change and have a high risk of disrupting important business processes if they fail. Interfaces should, where possible, be built quickly and be economical to maintain and change, but above all be robust and fit for purpose. Cutting corners because of time constraints is always a bad strategy.

Mitigating risks starts as early as possible, but in general it can start no later than when the design process starts. In conjunction with designing interfaces, setting up feedback loops with its consumers should be done as early as possible. Especially interfaces with the outside world should have at least one beta release where consumers can try out the (non-)functionals. For existing interfaces, a "canary-in-the-coalmine" or "blue-green" release strategy is advisable. Controlling who or how many consumers can use the changed interface and having a backout scenario in place will minimize the risk of losing business or disrupting processes that are handled throughout your value network.





Big bang releases are hard and should only be done if there is no alternative. Big bang interface implementations should be handled as greenfield implementations. Introduce the new interface by starting with a beta release and try to get as much feedback as you can to ensure you minimize risks for the go live

moment. Allow professionals to test security and all non-functional requirements and have a backout tactic for if the implementation should fail. The nightmare scenario is, of course, often not the failure at go-live, but an interface failure that goes undetected for days or weeks. Make sure you have this risk

mitigated, if possible, up front. It might even be necessary to temporarily forgo on the normal service levels. This can be done upfront by addressing it in the usage rules and regulations of the interface.

# What about tools and vendors?

## Generic tool and vendor choices

**W**ithout going into benchmarks of different tools, brands and vendors we can assume that most top tier vendors and or brands can deliver the types of integrations (patterns) that are needed by most business and organizations. This doesn't mean that the differences between brands are trivial. What

separates them is vision, the innovation roadmap, costs, ability to execute and last but not least being proprietary or open source. In a world where technology enables more and more distribution, separation of concerns, artificial intelligence and self-service integration, brands have to follow the trend or even lead the way.

Important questions to ask when selecting the right tool for the job are:

- Do you have the vendor/brand or tool-stack with the right vision, fitting your strategy, behind it?
- What is the exit-scenario and how is the vendor and/or technology lock-in managed?
- What, how and when is planned on the roadmap and product development side of the vendor?
- Is the brand/product moving towards the Edge of the architecture?
- Does the architecture of the tool fit in the architecture and capabilities of your landscape?
- What and how are resources used by the tool and how does it scale?
- Can the tool scale to zero and how much fixed infrastructure do you need?
- Is IPaaS an option and does it fit your deployment model?
- How much redesign is needed of old interfaces and does the tool help with that?
- What are the risks involved with using and/or moving to this tool?
- How much onetime and recurring cost will you have in the coming 5 years?
- How much human resources are needed during transition and during the exploitation phase?
- How big is the external knowledge base and how many external consultants are available to help you if you can't provide the resources yourself?
- How much training is needed to get your organization up to speed?
- Are you planning to use a managed service or outsource activities for developing and exploiting integrations (yes/no and if yes how much and what will be your responsibility and what needs to in place to manage this from your side)
- How will integration be organized? Integral part of DevOps teams (distributed) or centrally in an integration competence center?
- What type of integrators have to work with the tooling? (citizen integrator, app developer (self-service) of integration specialist)
- How much self-service is needed for your dev's and does the tool enable that?
- If you are considering Open Source will you still use a vendor, and/or will you become a contributor and is your organization capable of using upstream tooling without a vendor?
- What are the technical limits and known weaknesses of the tool?
- Can the tooling be used on-premise, in the cloud and/or in hybrid scenarios?
- Are there any compliancy or regulatory restrictions that need to be taken in to account?

Above are, by no means, all the questions that need to be answered. If integration is not your main area of expertise, it often helps to hire a professional to help with selecting a tool that fits within your strategy and architecture.

# Organizing the integration capability

## Centralized versus decentralized integration engineering and implementing a Unified Integration Strategy that fits the organizational requirements or the other way around.

**H**ow integration (dev & ops) is organized depends mostly on the speed of change that is needed for the business domain and their internal and external interfaces.

A centralized integration competence center has the advantage that scarce knowledge is available for the whole organization. The downside is that in general it creates an extra transfer and single point of failure in your Dev process. It also creates a queue for changes which often leads to portfolio discussions about priority for projects. The downside of physically centralizing knowledge and work is

that it slows projects down, and keeps the scarce integration knowledge in one central place as opposed to spreading the knowledge across the organization and over time decreasing the scarcity. Queues of work will form and every transfer point by default will have loss of information. Typically centralized functions will also build their own rules of engagement and governance bodies to manage the target architecture and this will inevitably lead to escalations that begin with the dev's and often escalate, ending up with decisions being taken by management. Management often have a different view on what is needed (not based on detail knowledge

of architecture or technology, but based solely on cost, efficiency and corporate politics). Still many organizations work this way and if your organizations' governance resembles a command & control paradigm it might work. Even though it's not fast, cheap or cost effective, it does ensure some sort stability and auditability. From experience, with lots of organizations that use this model, typically only 10% of budgets and time are spend on engineering and 90% is spend on governance, planning, communication and testing. Decentralizing the integration capability to the teams that develop business software is much harder than centralizing it. The benefits,

however, when done right, outshine the benefits of a centralized model. The speed of change is much higher, less costly and projects can plan their throughput with much less planning for governance and communications delays. Due to the fact it diminishes the influence of the old powers that be, it's much harder to change into this paradigm. Communication in a distributed operating model, if done correctly, will also be a lot more effective because there is at least one less transfer point to consider. Typically, this way of organizing has a better distribution of money and effort. Depending on the architecture of the applications, projects will spend up to 70% on engineering and 30% on governance, communication and testing, which will cut the average cost of integration by 50% or more. The downside is that distribution will need more highly skilled engineers that understand the complexities of the IT landscape and the impact of changing or adding interfaces. In addition, a much higher degree of freedom on tools and design needs to be given to the dev's, which seemingly makes the job of the architects much harder, especially if the organization has strict governance policies on architectural patterns, tools and standards. To resolve this, mostly political challenge, the

architectural governance needs to be loosened and power shifted to a different and higher level. Architects will have less control on the details and will need to move to another level where they can design and govern the landscape at a higher abstraction level. The focus of the architects will be more on alignment between business- and IT-strategy and business outcomes and less on technology. A lot of the old architectural work will shift to the senior dev's. They will need to understand the impact of the changes on a much broader scope than just their project, whilst still staying within the boundaries set by the architects on an enterprise level.

Moving from centralized to a decentralized paradigm for integration is very hard, especially because of the political power that the centralized functions and its professionals have built over the years. It takes years to do and often fails. Experience teaches us that speed and momentum are absolutely essential and make or break the change to a new paradigm. The speed of change needs to be faster than the organizations immune system can react.

What seems to work best is identifying a small group of people, at the edge of the

organization, to act as change agents. These change agents are then distributed across the new teams within the organization structure. The group initially operates autonomously outside the "old" hierarchy and reports directly at C-level. These new teams split in two, like cell-division, after 3 months and pull people in again to these new teams. This helps with spreading the new culture, standards, way of working and work ethics. A warning should be issued here: No paradigm should be treated as a dogma. This creates zealots that will produce new command and control structures and new bureaucracy that will hinder the perpetual change and creation of an agile organization. Prepare for a hybrid integration capability and organization and whatever is needed to counter the immune system of the organization. In a hybrid situation a small tactical central group will be in the center and solve new problems and sponsors or initiates innovation. Part of their job is designing and providing self-service integration capabilities for the Dev's in the agile teams. They also advise them on complex problems and continuous improvement of the integration services. The operational integration capability is distributed to wherever it is needed (mostly the application teams).

# Devising a Unified Integration Strategy

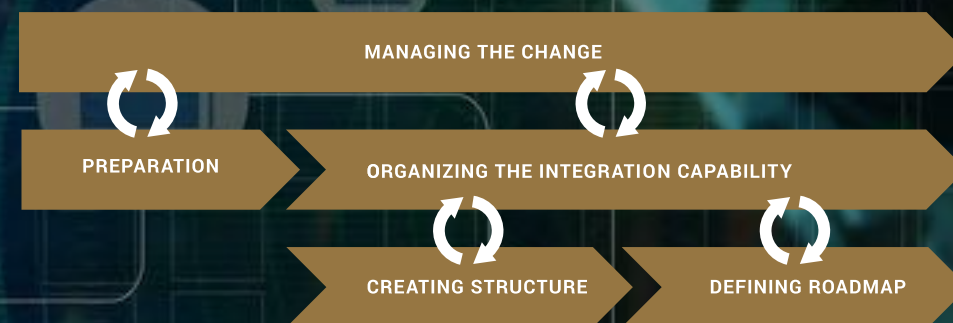
How to setup an integration strategy that enables technological, architectural and organizational change

Setting up a Unified Integration Strategy means that all the aspects of what and how makes integration work need to be taken into account. It starts with a scan of what type of

integration and its organization fit the characteristics of the needed integrations, outside and inside the organization and connecting them. This means a structure

and a whole “grocery” list of activities will be needed to create and/or fix the foundations for integration:

## SETUP & MANAGE FEEDBACK



## PREPARATION

Setting the stage is the first step in devising a Unified Integration Strategy. It starts with creating a view of the needs of all stakeholders and aligning those with the different characteristics and other strategies within the organization. At the right a list of actions that help with preparing for a Unified Integration Strategy:

ID	ACTION
P01	Market- and Stakeholder analyses to assess importance and value of the interfaces and what are the business benefits” of value-creating interactions?
P02	Interviews with stakeholders to assess the future needs of the internal organization and the external integrations in terms of innovation, functional needs and speed of development
P03	SWOT workshop, with internal and external stakeholders
P04	Connect the business- and value network strategies to the integration strategy and get feedback from the stakeholders on how value streams through the network of information consumers
P05	Assess conceptual information loss at key connection points by simulating information transfer between the stakeholders and discuss mitigation measures for the organization and the value network
P06	Risk assessment workshop with internal and external stakeholders
P07	Create outline business cases for connecting with the value network and decide which integrations need to monetized and which will be free of charge for the consumers
P08	Create a code-of-conduct together with the value network that describes how, when and how much the integrations will be used and under what conditions. Also describe responsibilities and high-level consumer services
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## CREATING STRUCTURE

When the strategic context is clear, the next step will be creating a frame of mind and the basic governance framework to help implement the Unified Integration Strategy:

ID	ACTION
S01	Prepare a business capability- and business-functions mapping and create a mapping where the borders are set by ubiquitous language of said business functions
S02	Create sourcing principles linked to the business strategy
S03	Create a sourcing map with sourceable plots based on the business functions and ubiquitous language mappings
S04	Workshop to create the integration principles fitting business capabilities and functions (Separate primary- and secondary- business context initially and merge them afterwards in the integration principles matrix)
S05	Prepare a business principles Maslow pyramid and mix in integration principles abstracts
S06	Create an integration principles matrix to assess possible contradictions and mitigate them
S07	Set-up an integration governance framework (this is not necessarily an organizational structure or a manual process). Think along the lines of automated checks and periodic audits based on Enterprise integration principles, standardized integration patterns and fulfillment of business goals & outcomes.



## DEFINING THE ROADMAP

When the strategic context is clear and the necessary structure is in place we move on to planning. The next step is to start creating the roadmap to execute the changes needed to enhance, change or create your integration capability.

Planning, organizing and starting the integration capability in this way should be done quickly. Organizations that do this successfully tend to move from planning to execution in 3 weeks or less. They use a short pressure cooker period to create focus and move from centralized to decentralized swiftly, using cell divisions (splitting teams in 2 two and pulling new people in) every 3 months to grow the model quickly.

ID	ACTION
R01	Assess the current toolset for integration and the fit to future integrations
R02	Assess the current organizational integration capabilities to create a baseline (IST)
R03	Make a gap-analyses that describes what needs to be done to get from the baseline to the SOL situation
R04	Assess the current integrations and application implementations against the business functions and ubiquitous languages borders
R05	Describe the impact on the current application landscape if you are planning to move to an optimal Domain Driven Design functional landscape
R06	Plan to change the “low-hanging-fruit” and mission critical parts of the application landscape in order to make the information architecture fit-for-purpose and agile where necessary
R07	Define what type of integrations (patterns and technology) are needed across the business functions and ubiquitous language barriers
R08	Assess the value network processes and define which business functions are connected to the outside world and what integration patterns should be used
R09	Prioritize integrations or bodies of work for integrations that ensure the organizations license to operate
R10	After the previous prioritize fixing that part of the architecture (integrations and applications) that connect to the value network out-side the organization
R11	Whenever it is needed to make an integration to the outside value network function prioritize that over internal integrations
R12	Plan to connect the internal systems with no direct link to integrations that take part in the value network outside the organization (lower priority than the above)

## MANAGING THE CHANGE

By far the most difficult part of the Unified Integration Strategy is managing the change. If simplified greatly it all revolves around one important rule of thumb: Keep a high momentum of change or fail. So, all of the above must be done at a fast pace and organizing for speed is a key success factor. While communication to all the stakeholders is important, it can also put sand in cogwheels of change, therefore momentum is priority number 1. While it might seem a no brainer, getting C-level sponsorship and backing is absolutely crucial, because integration is not the most sexy and visible capability. The organization will complain if it doesn't work, but in general will have nothing to spare in time, money and focus when the capability is getting ready for the future. Because managing change is more an art form than a science it is very dependent on the environment that is changing. Below are some generic pointers that help in most environments:

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# Final thoughts

Setting up a Unified Integration Strategy is no small feat. And there is only so much that can be written in a white paper, before it starts to feel and look like a book (something I might take on the future). In my experience there are always more roads that lead to Rome and such is also the case for setting up a modern integration capability. In my experience, the gest of a successful Unified Integration Strategy starts at what has been discussed above.

The entirety of what is discussed in this paper is based, not on scientific research and double blind testing, but on hundreds of years of combined experience by IT- and business- professionals. The world is changing fast, new communication and integration strategies appear all the time,

everything is getting digitized and smart and innovative technology disrupts everything, so this strategy will have to change with it. One of the most important questions I have pertaining to integration is how fast Artificial Intelligence and Integration as a Service will change IT and society as a whole. Will integration become insignificant or even an afterthought, simply because application landscapes will integrate themselves? We will have to wait and see when and if this happens. My personal take on this is that it will take at least another 5 to 10 years before integration is automated in such a way that it is no longer a technical or functional challenge for organizations.

Finally, for now I think that fit-for-purpose integration is still the key success and

survival factor for almost every organization. Creating a Unified Integration Strategy is something that most organizations need outside help with, from integration- and architecture- specialists. They bring with them the outside-in point-of-view that is needed to not only connect to your value network but to keep it alive with a living and breathing integration lifecycle management process. While that process in itself is a tactical and operational process and has not been discussed at length in this paper, it can make or break your connection to the outside and inside world, and its complexity should not be underestimated. Like this strategy, it should be unified and integrated with operational and tactical processes and enable the strategic goals of your organization.



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