Whitepaper

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Process-led Digital Transformation

Realizing the Composable for Agility, Flexibility, Innovation and Efficiency

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Abstract

Most organizations have stated their digital transformation journey, moving towards a “composable enterprise” that adopts seamlessly to changing business conditions. However, how can this transformation happen without overwhelming the organization? Process-led digital transformation provides an answer to this question. It helps to prioritize processes to achieve best value, touch the process during the transformation the right way and sustain the achieved results. Process-led digital transformation helps to standardize, optimize and innovate processes, as required by the overarching strategy.

This whitepaper is based on a previous article [0] as well as a series of related workshops and presentations.

Keywords

AI, Business Process Management, Composable Enterprise, Digital Transformation, Innovation, Optimization, Process Design, Process Governance, Reference Models, Standardization.

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Chapter 1

Process-led Digital Transformation To Master the Journey towards the Composable Enterprise

Most organizations have started digital transformation initiatives [1]. The desired result is often described as a “composable enterprise” that can adjust seamlessly to changing business conditions [2]. However, how can this transformation happen without overwhelming the organization? Process-led digital transformation provides an answer to this question.

In the first section of this whitepaper key characteristics of the composable enterprise are described followed by a short discussion of main challenges in realizing this concept. Then it is explained how process-led digitalization addresses this situation. The following sections walks through the phases of the process-led transformation approach, from setting the appropriate priorities through design, realization of the digital processes to the sustainment of the achieved results.

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Chapter 1.1

The Composable Enterprise as Transformation Outcome

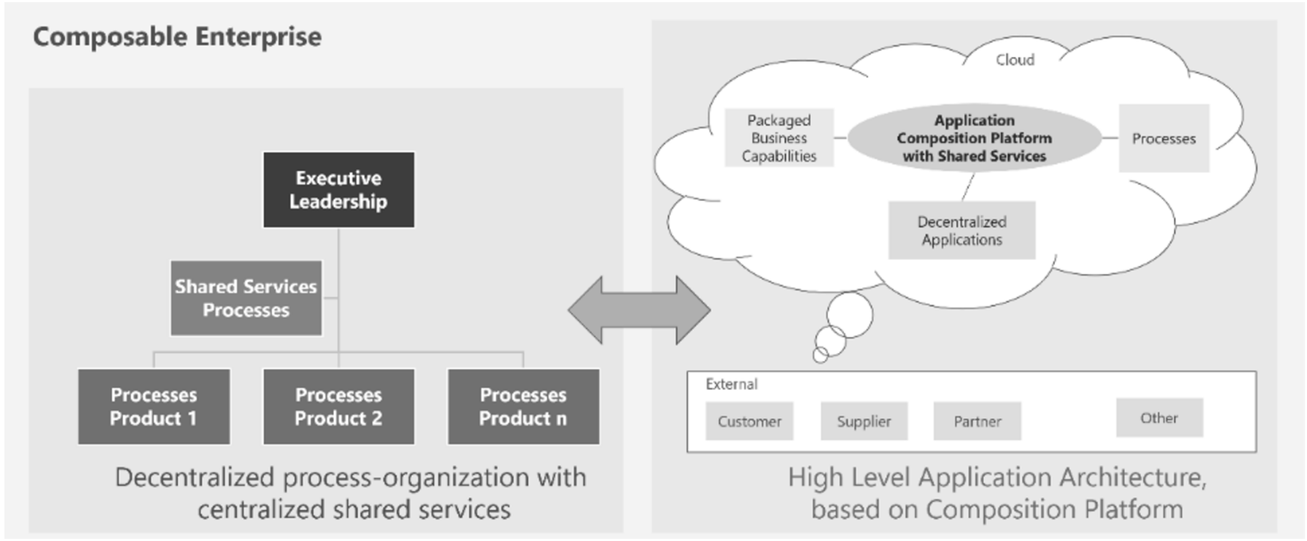
The composable enterprise is a company that is agile, flexible, innovative and efficient through a combination of an appropriate information systems architecture and a decentralized process-oriented organizational structure [2]. This concept was initially introduced by the industry-analyst Gartner Group with a focus on the digital technologies involved [3]. Prof. Dr. Dr. h.c. mult. August-Wilhelm Scheer added the organizational component and expanded the overall integrated vision. A composable enterprise componentizes its business process and technology capabilities. This allows to quickly assemble components to new processes with appropriate information technology (IT) support as response to a changing business environment.

Core of the technology architecture is the move from large mega software systems to smaller software components, referred to as Packaged Business Capabilities, and an Application Composition Platform supporting a no or low code developed of the business capabilities as well as the required integration and workflow capabilities [2]. This allows a fast adjustment to changing market conditions and related technology requirements. The organizational structure is process-oriented to achieve the desired agile and flexibility as well as the focus towards the market.

A Shared Services organization supports the decentralized product units to enable the desired resource efficiency. The product units are organized in end-to-end processes so they can adjust quickly and deliver best value to clients [2].

The described key components of the Composable Enterprise are visualized in figure 1 [2]. In the next section we briefly discuss key challenges to realize this vision.

Figure 1: Key Components of the Composable Enterprise [2]



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Chapter 1.2

Key Challenges Realizing the Composable Enterprise

Moving toward the Composable Enterprise means a company-wide transformation. According to Scheer, this is realized through an approach structured in 8 phases [2]:

1. Enterprise Analysis
2. Innovation and Business Model
3. Composable Process and Enterprise Architecutre
4. Application Composition Platform
5. Development and Implementation
6. Execution
7. Insights through Mining
8. Improvement Actions

In the Enterprise Analysis stage, the fundamental needs for the transformation are determined based on client, partner, supplier and other market requirements. On this basis, the strategic innovation requirements are identified, and an appropriate business model is defined. The process and enterprise architecture define how the business model is realized, aligning business process flows and related technology components. Entrance point into the process hierarchy is the operating model, identifying the processes necessary to realize the business model. Key for the realization of the processes is the Composition Platform. It allows the low or no-code development and implementation of the re-usable business capabilities; hence, the required software components as well as their integration and use in the process flow are based on appropriate data models. After the implementation of a process type, specific process instances are executed based on the process design and the underlying technology infrastructure. The ongoing process execution is controlled using the insights from process mining systems providing the necessary performance and conformance information. This allows the definition of necessary improvement actions. These can be either executed though the different end-users or in focused improvement projects if larger changes are required. Steps 3 to 8 form the ongoing business process lifecycle.

Going through this entire approach for all business processes of an enterprise is in most cases not practical since it very likely overwhelms the company. Many organizations avoid “boiling the ocean” and look for a more focused incremental approach, realizing the overall vision and strategy in manageable steps [4]. Scheer recognizes this and gives hints how to address this situation, for example by starting with one product unit [2]. However, even transforming an entire product unit can be too challenging for a company. The transformation has to be organized in smaller steps. These steps can be defined in form of a process-oriented approach, allowing the incremental realization of the Composable Enterprise. Process-led digital transformation specifies how individual business processes can be prioritized and put in place, targeting best value while still working towards the overall vision of the composable enterprise [5, 6].

The journey towards the Composable Enterprise on a process-by-process basis can be further simplified by providing guidance for the process design. This makes it easier to “touch” processes the required way. It helps to minimize resource and related budget needs for the transformation initiative. Companies can avoid “re-inventing the wheel” since they benefit from existing experiences and good practices. Therefore Process-led Digital Transformation defines how to apply different design paradigms within the overall approach to realize the Composable Enterprise.

Process-led digital Transformation builds on the vision developed in phases 1 and 2 of the overall approach defined by Scheer [2] to ensure that all process transformation and improvement initiatives are aligned and realize the overall strategy. It guides through key steps of the transformation journey and specifics of the phases 3 to 8 of the overall approach further from a business point of view.

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Chapter 1.3

Process-led Digital Transformation to Organize the Transformation Journey

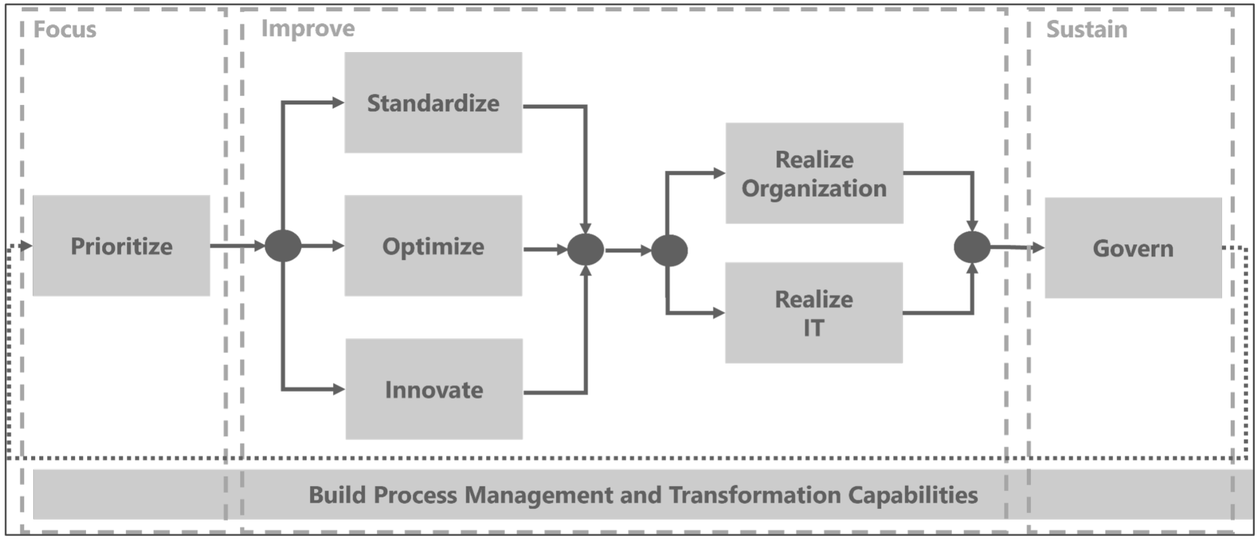

Figure 2: Process-led Digital Transformation Approach

Process-led Digital Transformation structures the overall enterprise-transformation into smaller initiatives, aligned with the specific company context. It starts with a prioritization of processes identified through the operating model and the underlying process hierarchy. Hence, it uses the results of phases 1 and 2 of Scheer's approach as a starting point to set realization priorities for the following phases. It delivers a roadmap to guide the transformation considering available resources. The process design approach distinguishes standardization, optimization and innovation. Hence, it defines how to touch the processes to make them a component of the future Composable Enterprise while delivering immediate value. The process design lays then the foundation for technology and people-based implementation of the processes and the definition of a governance structure to realize the expected value and initiate ongoing change initiatives when required. Design and Realize address phases 3 through 5 of the Scheer's approach. Phases 6 and 7 are specified in the Sustain step. In parallel an organization guilds the required transformation capabilities to be prepared for the continuous transformation activities.

The approach of Process-led Digital Transformation is shown in Figure 2. The following sections discuss key components of this approach.

The approach for Process-led Digital Transformation combines the general phases to realize the Composable Enterprise with the appropriate elements of Value-driven Business Process Management to operationalize the approach further [4, 7]. It focuses transformation activities on business outcomes to deliver short-term value while realizing the long-term vision of the composable enterprise. It uses the business process management capabilities to derive value systematically [8].

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Chapter 2

Prioritize

The incremental transformation requires a systematic prioritization approach to identify the processes that deliver best value to the organizations through the digitalization initiatives. The prioritization and selection of business processes for the digitalization is based on the Targeting Value approach of Value-driven Process Management [9]. It uses the overall enterprise analysis, business model and operating model as starting point.

This provides the understanding of the company context and the end-to-end processes. These processes are then evaluated based on their impact on the company strategy and their maturity level. High impact low maturity processes are best candidates for the immediate transformation initiatives They help most realizing the strategic goals of the company. The short, mid and long-term transformation initiatives are then defined in the transformation roadmap, outlining the journey towards the Composable Enterprise.

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Chapter 2.1

Understand the Context

The operating model of a company identifies the top level then end-to-end business processes. It normally consists of 8 to 12 processes [4]. This is the first level of the process hierarchy, either delivered through pre-work to prepare for the Composable Enterprise or defined as starting point for the prioritization exercise. Depending on the size of the organization and the differences between products, the operating model may have to be defined in two steps: Level 0 identifies the end-to-end processes per product unit as well as the support service processes, level 1 ten details the product unit processes. Figure 3 shows an example for the definition of an operating model for a technology manufacturing company with one main product line.

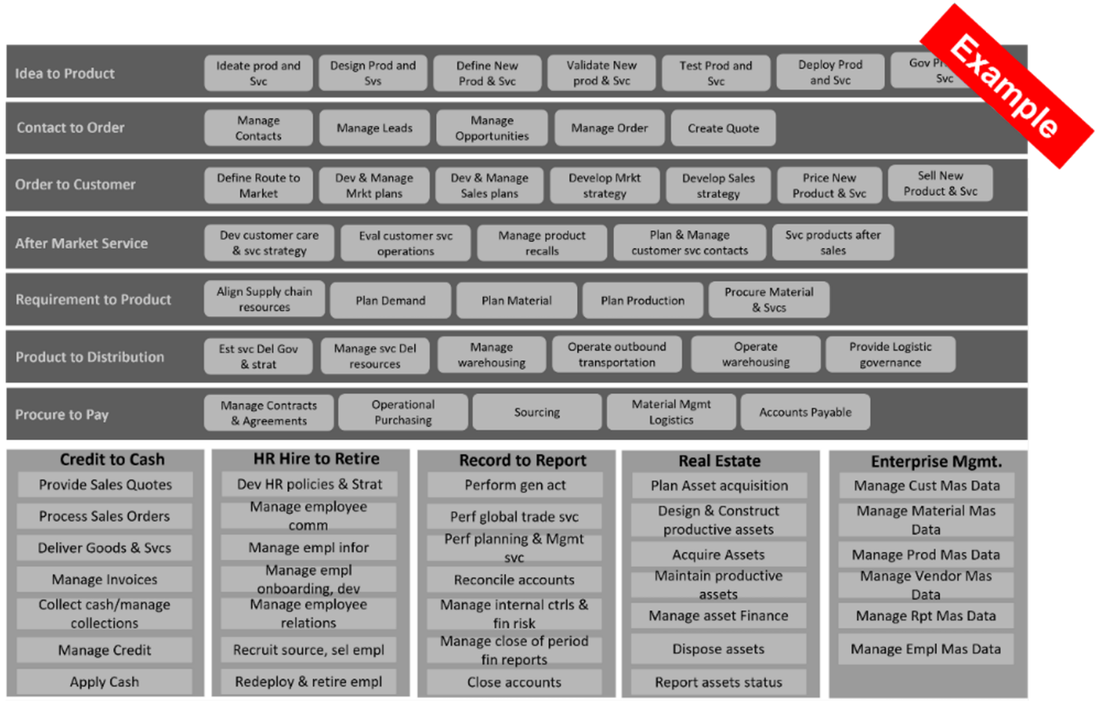
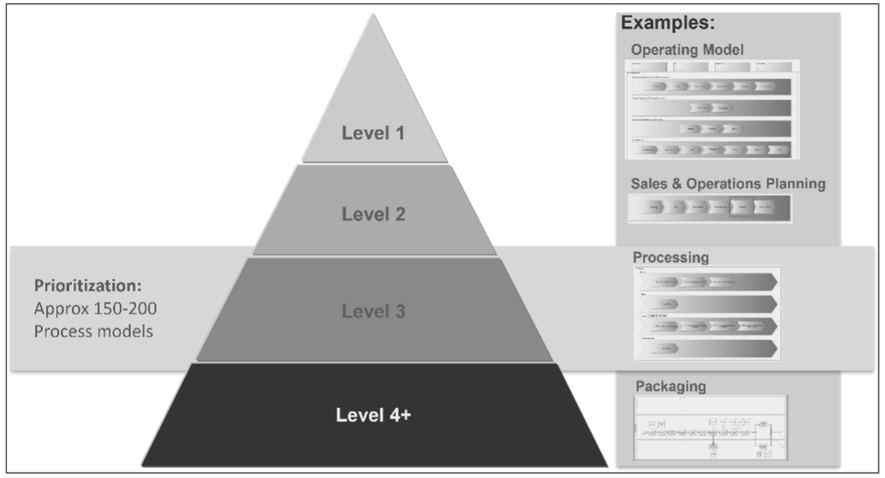


Figure 3: Example of an Operating Model for Technology Manufacturing Company

The operating model is then decomposed until level 3 where the whole organization is described through 150-200 processes [4]. This level has proven the best level of detail for the prioritization of processes. It is detailed enough to allow the identification of specific high impact processes but still high level enough to avoid getting lost in details. It provides the necessary end-to-end context while allowing to focus on what matters most. Figure 4 illustrates the hierarchical decomposition.

The level 3 processes are evaluated to set appropriate priorities based on the strategy of the organization and the overall goals for the Composable Enterprise. This is done through a process impact assessment.

Figure 4: Hierarchical Decomposition of Operating Model to prepare for Prioritization Activities



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Chapter 2.2

Targeting Value

The business strategy is operationalized through a value-driver tree. It identifies the overall company priorities, decomposes those into goals that are then further specified through measurable value-drivers. Value-drivers describe the 8-12 operational objectives an organization has to get right to deliver on its strategy. These value-drivers are used to evaluate the impact of the difference level 3 processes. Figure 5 shows an excerpt of a sample value-driver tree.

In a next step, the impact of each level 3 process on each value-driver is defined. This can be done through a detailed formal analysis or through stakeholder interviews. In practice, stakeholder interviews have proven to be efficient and sufficiently accurate. The total of the individual impacts of a process on each value-driver represents the overall process impact. This allows to identify the 15-20% of the high impact processes of an organization. These processes are most important for the strategy execution of the company and are therefore prime transformation targets. The process impact assessment is visualized in figure 6.

Then a process maturity assessment determines how well a process is currently executed. High impact low maturity processes are the first transformation targets since the initiatives will deliver best value for the overall strategy.

Some of the 80%+ commodity processes may be included in a first transformation steps, for example when they are on a very low maturity level. This maturity assessment can be also conducted through stakeholder interviews or the use of process management tools, especially analytics tools.

Figure 5: Example of a Value-driver Tree

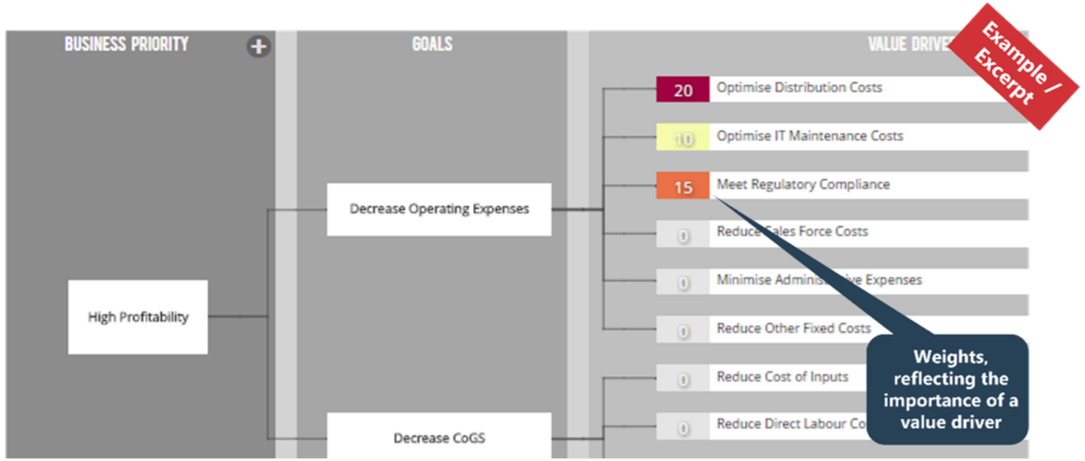
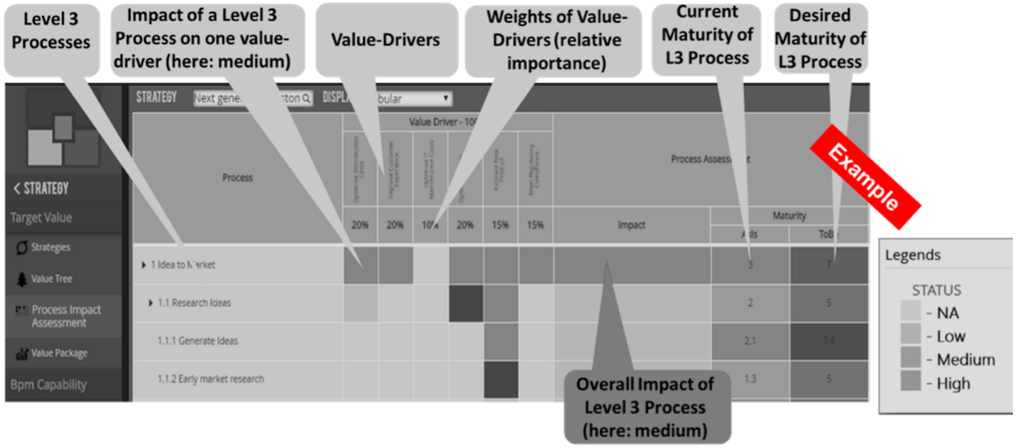


Figure 6: Example of a Process Impact Assessment



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Chapter 2.3

Define the Transformation Roadmap

Once impact and maturity of the level 3 business processes is identified, specific transformation projects or “work packages” can be defined, reflecting those process priorities. Therefore, the transformation effort of potential process transformation options is roughly estimated. The processes are then segmented into transformation waves, reflecting the company’s capabilities to address digital transformation projects from a resource and budget point of view. Figure 7 shows an example of such a transformation roadmap.

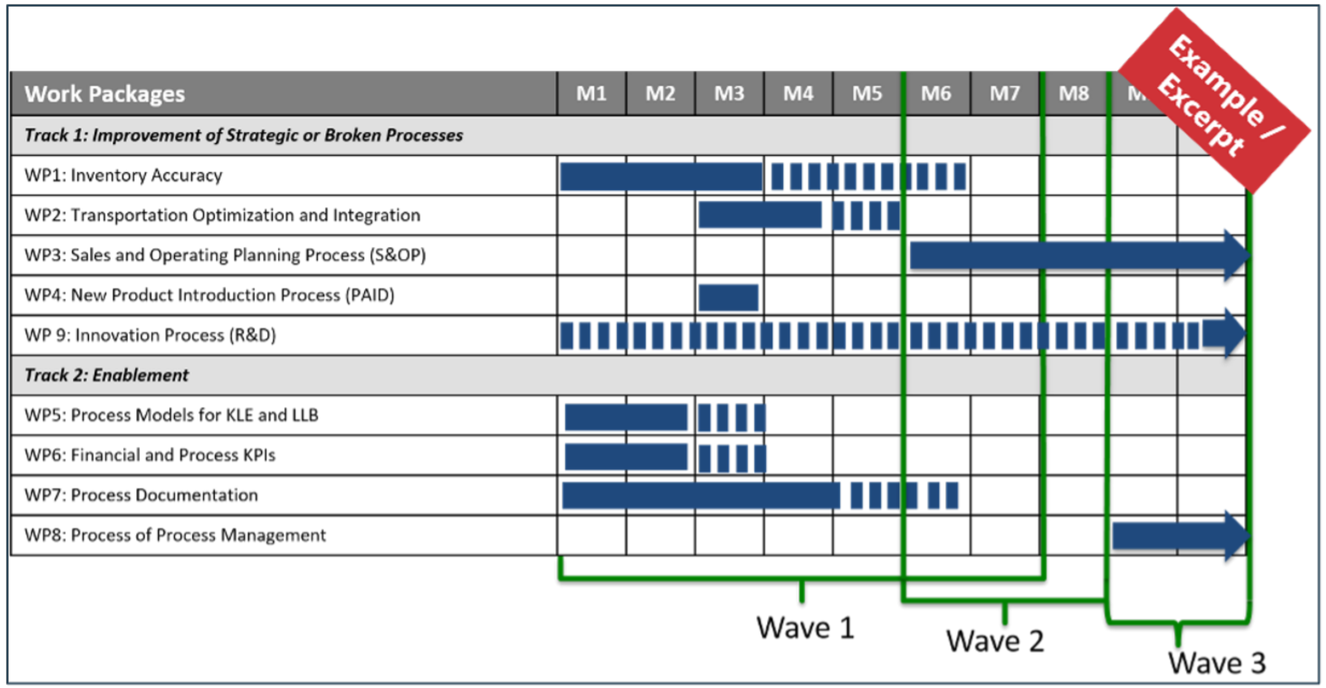

Figure 7: Example of a Transformation Roadmap

The transformation initiatives in wave 1 are directly started, wave 2 are planned initiatives. Future, less specifically defined initiatives, are part of wave 3 that serves as “parking lot” for the digitalization activities that will be evaluated further at a later point of time. This leads to a rolling adjustment of the transformation roadmap.

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Chapter 3

Design

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Chapter 3

Design

The to-be design of the processes in scope lays the foundation for the realizing the expected value from the digitalization. The design reflects the business impact of the digital technologies defined in the enterprise architecture or helps to identify additional technology support. In most cases, the capturing of as-is processes and their analysis is required as input for the design and to develop or validate the business case as well as prepare the people change management.

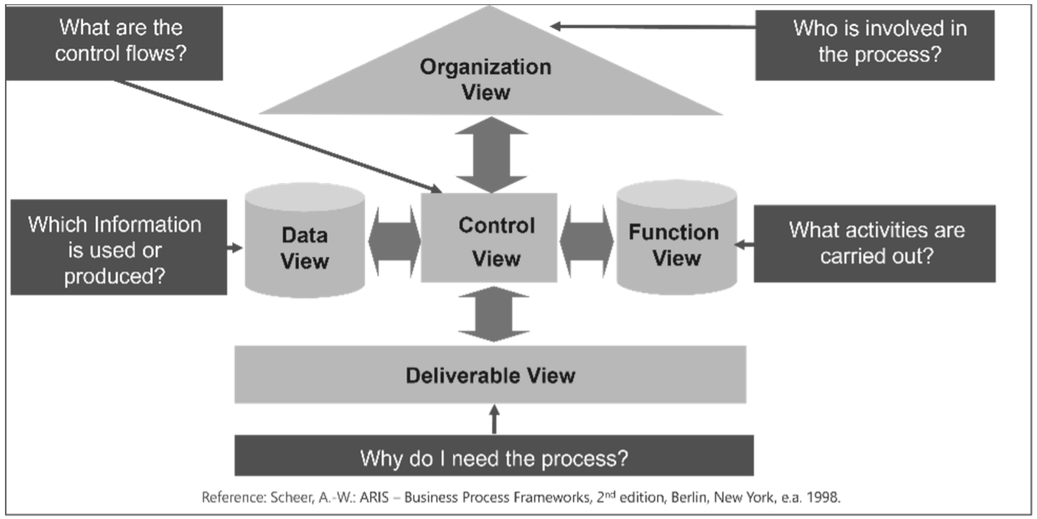
The process design documented in process models becomes a key asset for an organization. Since many digital technologies are delivered through the cloud [10], the assets that stay in the company are the resulting business processes [11]. These process assets are produced as side-effect of a process-led digital transformation and housed in process repositories enabling the simple and effective re-use.

Depending on the transformation goals and the company specific context, the process design is used to standardize, optimize or innovate processes. An organization defines which design paradigm to choose to achieve the defined objectives. The following discussion helps to understand the key options as basis for the decision. This helps to streamline the journey towards the Composable Enterprise vision.

The process design leverages the ARIS framework developed by Scheer to ensure a systematic approach [12] and address all aspects of a process. It outlines key components of a business process and their relations, as shown in figure 8 [11]. Each component of the business process can be described on the business level and the information technology level, addressing the digital realization of the process components.

Main modelling method is the industry standard BPMN [13]. This allows a process description of business level by using a small subset of the method as well as a further specification on IT level to drive the configuration of the composition platform and the development of the business capabilities as well as their integration.

Figure 8: ARIS Framework



The core process models in BPMN are complemented though information models addressing individual ARIS views, such as data models. This allows addressing aspects that cannot sufficiently described in BPMN.

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Chapter 1.1

The Composable Enterprise as Transformation Outcome

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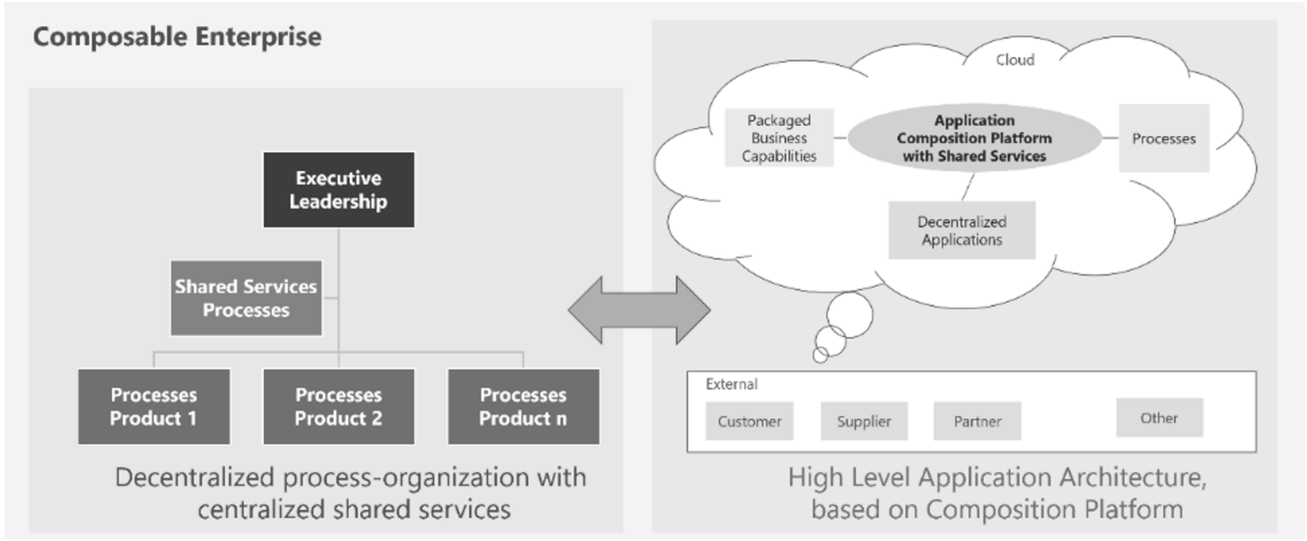

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Chapter 3.1

Identify the Design Approach

The decision if the initial transformation is about standardization, optimization, innovation or a combination of approaches depends on the specific objectives of the organization. The overall approach how to “touch” the process must be defined before moving into the process design.

In many cases, starting with a standardization initiative is beneficial since it simplifies the digital transformation while delivering initial benefits, such as agility or the reduction of IT maintenance cost [14]. Typical examples that trigger a standardization are the following:

- Consistent Customer Experience across Business Units
- Compliance Requirements
- Reduction of IT Maintenance Cost through System Consolidation
- Simplify Company-wide Future Adjustments of Processes

Basis for the standard could be good existing practices or processes based on existing business capabilities provided through the composition platform. The standardization initiative is often followed by a further optimization project to realize the full potential of the digitalization.

High impact processes with a low maturity level may justify starting with optimization activities before standardizing across locations or even different business units. Typical triggers for a start with optimization are the following:

- Efficiency improvements, especially cost and cycle time reductions
- Quality improvements, e.g. increase of service level or reduction of rework
- Increased scalability

The optimized process can be used as a reference model for a potentially following standardization.

Disruptive changes through new business models and corresponding operating models may require new or significantly changed processes, delivered through appropriate process innovation [15]. Business process innovation is often triggered through the following topics:

- Business model changes that require new high impact processes, e.g. to support new products, markets, channels or address new competition.
- Market changes that require new or significantly enhanced processes.

If this innovation is relevant for different areas in the organization, a standardization initiative can be used to drive the roll-out of the new processes.

Chapter 3.2

Standardize

Process standardization [14] can be used to support the creation of central services through a shared service organization, create consistent practices across different locations of a product unit or even to leverage synergies between product units. Hence, the standard processes may occur only once on corporate level or multiple time in different business areas.

Process standardization focuses on identifying a standard that addresses the defined goals while minimizing performance reductions through its roll-out. Process simulation can be used to clarify the standardization impact.

Many standardized processes still require variations to reflect specific needs, for example due to different legal regulations in locations of international companies or product specifics. The level of detail of the definition of the standard determines the degree of freedom in applying the standard. In some processes this freedom may be minimal to enforce compliance requirements, in others larger, for example to manage customer relationships in a specific cultural context. The level of abstraction defines how a standard process is executed, which specific digital technologies are used. It could, for example, request the re-use of defined business capabilities, hence existing software modules, and a specific composition platform or the leverage of a defined ERP systems. The process standardization approach [15] is illustrated in figure 9.

Standardization is accelerated through the use of process reference modes. They reflect, for example, the impact of digital technologies or industry best and common practices. Those models can be company specific or procured externally, for example, from consulting companies or industry organizations [11, 16].

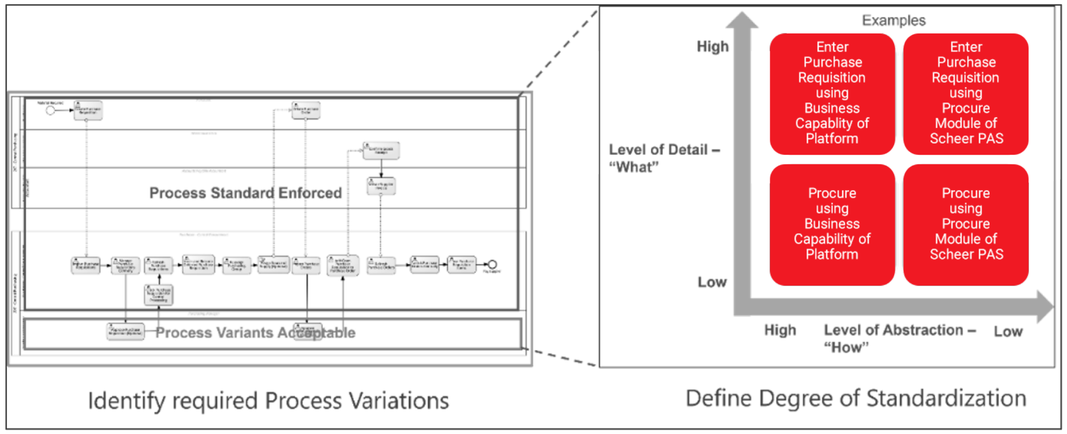

Figure 9: Process Standardization Considerations

A major technology manufacturer, for example, was able to standardize the processes of five locations managing technical aspects of customer orders based on existing good practices and related application software. This resulted in reduced cycle by over 30%, a consistent customer experience and higher agility for process adjustments.

Process standardization can be considered a specific form of optimization. Improvements are mainly achieved through the consistent execution of a group of processes instead of best performance of one single process.

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Chapter 3.3

Optimize

The term “optimization” is commonly used, however, slightly misleading since it is in a process improvement context difficult to define what an optimum is. In the context of process-led digitalization the term is used to refer to an improvement of an existing process that is consistent with the defined goals. The optimization starts with capturing existing processes, goes through a thorough analysis to identify the improvement opportunities and defines the to-be state realizing those improvements. The ARIS framework can be used to identify possible improvements systematically by identifying opportunities regarding all views on a business process [11]. The to-be processes leverage the identified digital technologies, such as the composition platform or existing and planned software business capabilities. The to-be design can be accelerated leveraging process reference models as starting point [16]. Those models are then modified to address the improvement opportunities.

The effects of improvements are validated through thorough process simulation, in general of different alternative process scenarios. An insurance company, for example, found, that the automation of their underwriter process using a no-code platform and developing appropriate business capabilities would reduce cost by over 40% and increase scalability by a factor 9.

Another insurance company discovered through simulation of different scenarios that the cost related to placement and policy servicing can be reduced by over 50%. It was also determined through the simulation that over 60% of the required business capabilities for the automation are already available through their composition platform and that most of the additional capabilities were already in the plan for upcoming development projects. Hence, the process-led digitalization delivers significant value – and moves the company towards the Composable Enterprise. The simulation results are illustrated in figure 10.

Placement and Policy Serving Benefit Summary

Placement		Policy Servicing		Overall	
As-is Costs	To-be Costs	As-is Costs	To-be Costs	As-is	To-be
$819,700	$445,990	$293,191	$97,608	$1,112,891	$543,597
46%		**67%**		**51%**	
$373,711		**$195,583**		**$569,294**	

Placement and Policy Servicing - Capabilities Required

Capabilities Identified	Existing Business Capabilities	Business Capabilities in Backlog	Gaps Identified**
42	21	14	7
Cost Realization^	$370,962	$119,544	$78,789

Figure 10: Simulation for Placement / Policy Servicing – leveraging existing Business Capabilities

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Chapter 3.4

Innovate

Process innovation can be achieved by leveraging a design thinking approach. Using process management techniques this approach is operationalized [17]. Stakeholder journey maps provide an outside in view on processes, reference models are used to transfer practice from one sector into another, and the evaluation of different process scenarios enables an agile realization approach. The operating model and related process hierarchy provides the context for supporting story telling about the impact of the innovation. These components of an innovation initiative are shown in figure 11.

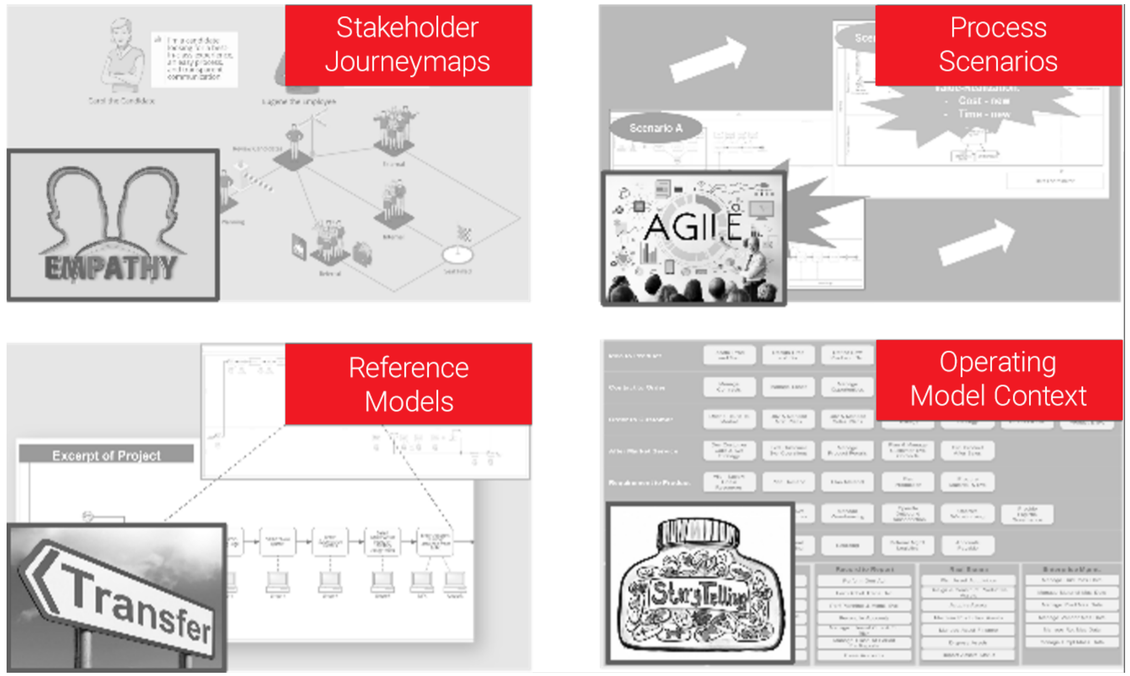

Figure 11: Applying Design Thinking for Process Innovation

The process scenarios provide the opportunity to check the business impact of new technologies. Artificial Intelligence (AI), for example, can be brought in the context of a business process. This enables the validation of the business impact of AI [18] and a systematic roll out across the organization.

A biologics company used elements of this approach to reduce their document related compliance issues by over 90% through the roll-out of new simple digital checking tools. This process innovation is in most cases applied in product specific high impact processes that are important for the competitive positioning of an organization.

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Chapter 4

Realize and Sustain

The design of the process types is the foundation for their implementation, execution and control of specific process instances. We discuss this implementation briefly from a business point of view since the technology side is outlined in the overall approach [2]. Details are technology specific or covered through existing project management approaches. Appropriate process governance is required to sustain achieved results and leverage the agility and flexibility achieved through the digital technologies, especially the Composable Enterprise.

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Chapter 4.1

Implement

The to-be design is used as guideline for the configuration, development and integration of the required software components, leveraging the technology and software information of the enterprise architecture [2]. This addresses specifically the use of the composition platform, available business capabilities and, if applicable, integration of external systems, such as ERP packages. It provides the top-level requirements for the development of new business capabilities which can be delivered either through business departments in case of simpler adjustments or a specialized IT department. The outlined process control flow helps to identify the integration requirements. The required integration of various software components is in many cases a key challenge requiring sophisticated capabilities of the platform.

The same process design is used to drive the people change management, ensuring the alignment of people and technology capabilities [4, 11]. The to-be processes provide the basis for the necessary information, communication and training activities. The identification of the differences between as-is and to be processes is an indicator for the significance of the change, hence, helps to prepare for the right degree of change management. This process-led change management approach helps to create culture of cross-departmental collaboration and the focus on value to external and internal clients.

This approach for integrated technology configuration and development as well as people change management is visualized in figure 12.

The systematic implementation of business processes requires an aligned process and software architecture. This synchronization between a technology and a business view on the process can be achieved through an appropriate governance of the underlying tools with the different information models, often a process modelling and enterprise architecture tool. Figure 13 illustrates this integrated approach to process and software architecture.

Figure 12: Integrated Technology Implementation and People Change Management

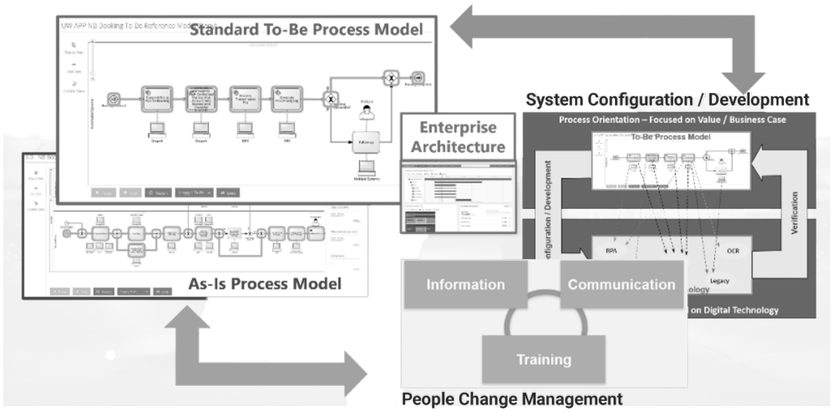
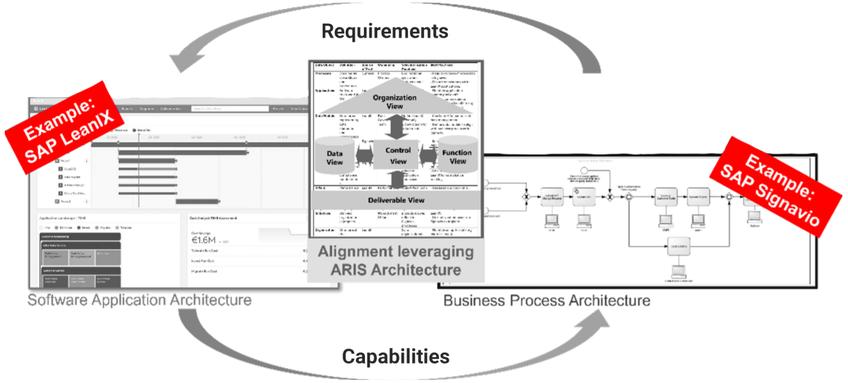


Figure 13: Aligning Software and Process Architecture for effective Process Implementation



Chapter 4.2

Govern

Process governance organizes the ongoing management of the business process to realize the expected value and trigger new improvement or transformation initiatives in case of changes in the business environment [4, 19]. Hence, appropriate governance helps to benefit from the agility and flexibility that the Composable Enterprise provides.

At the core of the governance approach is the definition of the process ownership and related accountabilities. To make this work, the process related goals and how they are measured is defined. Appropriate knowledge about the process and the necessary insights enables fast well-informed decisions and related actions. The process governance is guided through the process definition in the operating model and the strategic priorities, reflected in the enterprise-wide value-drivers.

The governance approach is realized through and overall governance model and the related detailed governance processes. Figure 14 shows an example of a governance model for a mid-sized biologics company.

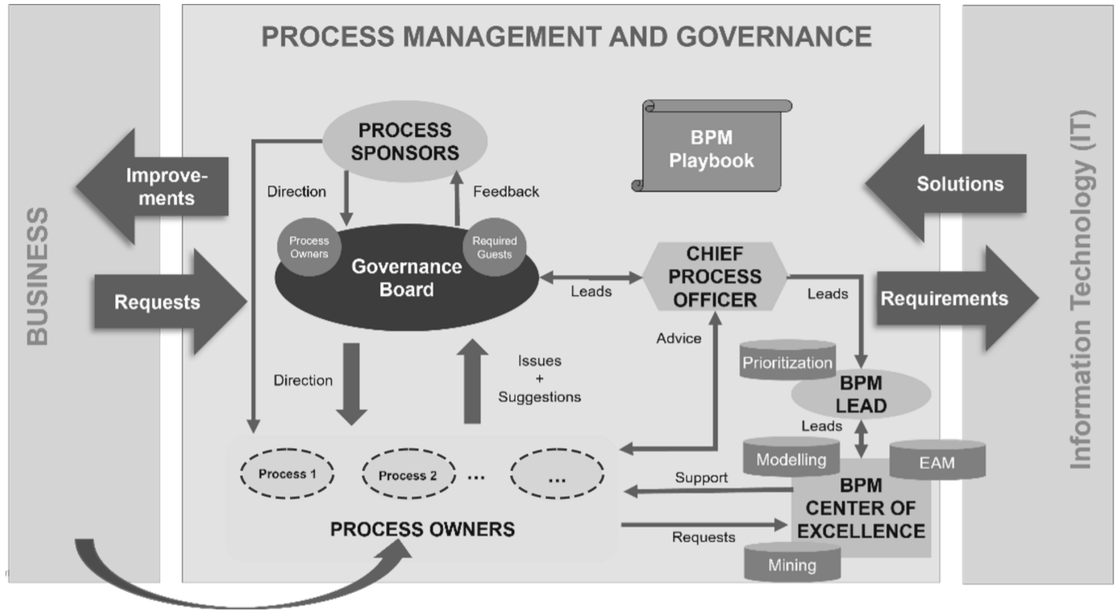


Figure 13: Example of an overall Process Governance Model

The dynamic of today's business environment and the related agility of the Composable Enterprise require a digitalization of the governance processes themselves [19]. Process modelling and repository tools as well as mining applications for performance and conformance management play a key role. These tools are used to support the governance processes that are defined as component of the overall process of process management.

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Chapter 5

Continue to Enhance the Journey

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Chapter 5

Continue to Enhance the Journey

Process-led Digital Transformation or components of the approach have been applied in numerous successful initiatives in practice. The approach allows a controlled way to transform the enterprise without overwhelming the organization. The process-orientation enables a consequent focus on business value. To continue to enhance the transformation journey more research is required, for example in the following areas:

- Value-driven use of Artificial Intelligence (AI) for the approach itself, for example through intelligent modelling or mining tools, as well as an enabler of process innovation for operational business processes.
- The transition from defining new disruptive business model into am appropriate operating model and the underlying process hierarchy.
- Aligning the governance of various processes to an overall governance approach the realizes the required agility and flexibility systematically.

Process-led digitalization enables an ambitious but pragmatic company transformation. It paves the way to the Composable Enterprise.

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Chapter 6

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Scheer IDS

Chapter 7

the process experts

About Scheer IDS Americas

Scheer IDS Americas helps organizations achieve the right Process Performance and Digitalization by establishing and applying business process management (BPM) capabilities. Through consulting and education solutions, Scheer IDS Americas delivers rapid process improvement and transformation, business process management capability building, and integrated enterprise architecture management. Scheer Americas' approach includes enabling process and data governance and implementing tools for process modeling, repositories, and process mining. With a focus on discipline and structure, Scheer IDS Americas helps businesses build the right BPM framework to drive long-term success. Scheer IDS Americas is part of the global Scheer Group organization, which has been delivering process solutions for over 40 years.

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Chapter 8

About the Author

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Dr. Mathis Kirchmer is a recognized thought leader and practitioner in the field of Business Process Management (BPM) and Digital Transformation. He is a Managing Director of Scheer IDS Americas, formerly BPM-D, a consulting firm specializing in performance improvement and digitalization through the discipline of BPM. Previously, Dr. Kirchmer served as Managing Director and Global Lead of BPM at Accenture, as well as CEO of the Americas and Japan at IDS Scheer, a company renowned for its process modeling software and process consulting expertise.

With decades of experience, he has led numerous transformation and process improvement initiatives across industries worldwide. He has authored 11 books and published over 150 articles. For more than 20 years, he has been an affiliated faculty member at the University of Pennsylvania and Widener University. He was awarded a research and teaching fellowship from the Japan Society for the Promotion of Science.