The Three Drivers of Innovation
– What is the Related BPM/EA Readiness?

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Organisations across all verticals are eager to innovate various facets of their corporation. This clearly demonstrates that a reactive, GFC-triggered focus on cost savings is increasingly complemented with more proactive initiatives aiming towards top line growth.

We define innovation generically as ‘a novel contribution that produces value’. This definition leaves it open where the novel contribution actually comes from, i.e. bottom-up or top-down, from within or from outside the organization, via idea engineering or as a result of an Eureka moment.

Following a short classification of different types of innovation, this paper has the aim to better understand the three main drivers of innovation, i.e., problems, constraints and opportunities. Each of these leads to different requirements for Business Process Management (BPM) and Enterprise Architecture (EA).

Depending on the type of innovation, four main forms of innovation can be distinguished (Fig. 1).

**Product innovation** has been the classical and nowadays reasonably well understood centre of attention. Product development processes and various product-marketing methods (e.g., morphological box) have facilitated the structured design of innovative products. Economies of scale are built into this type of innovation by reusing existing architectures and processes when designing new products (‘design for (existing) processes’).

**Service Innovation** has grown in popularity due to the comprehensive digitalisation efforts in industries such as government, retail, finance or entertainment. While many lessons can be learnt when services are regarded as products, the close involvement of customers, the ease of global service distribution, service delivery via mobile channels and the long tail in the service development process provide unique challenges and opportunities.

**Process Innovation** has been a mainstream BPM activity since Thomas Davenport published his book nearly 20 years ago. However, the assumptions of Davenport, and Michael Hammer, with regards to large-scale process renewals have been the exception. Far more popular have been incremental, analytical and reactive process re-design activities with a strong focus on process analytics (e.g., Six Sigma).

**Business Model Innovation** is maybe the most significant of all four types of innovation. Osterwalder’s popular Business Model Canvas is a comprehensive summary of the variables that
exist when reflecting on new business models covering amongst others business partners, resources, cost structures and revenue streams (Osterwalder, Pigneur 2010). This canvas also shows the tight coupling of these four types of innovation. New products and services will often require, at least in parts, process innovation and might provide opportunities for new business models. Dell and Amazon are good examples, where new processes, not new products, have inserted innovation into the traditional business models of organisations selling books or computers. This demonstrates the transformational power of designing innovative processes (and related services) in markets with matured products.

Depending on the scale of an innovation, core, adjacent and transformational innovation can be differentiated (Nagji, Tuff 2012) (Fig. 2). Core (aka transactional) innovations lead to minor changes of products/processes/assets and hardly open up any new markets or customer groups. On the opposite side, transformational innovation leads to substantial changes, in most cases entire new products/processes/services and new markets/customers. Adjacent innovations are medium-scale innovations in between core and transformational innovations.

![Fig. 2: The Innovation-Ambition-Matrix (Nagji, Tuff 2012)](image)

Core innovations tend to be singular innovations, e.g. simple product or process innovations. The more an innovation combines multiple types of interrelated innovations, the higher is the likelihood that an innovation will be adjacent or even transformational in nature.

Innovation management can be regarded as an essential dynamic (transformational) capability of an organization. In this respect, it is similar to project/program management or change management. Like all business transformations, innovation initiatives need to be embedded in a strategic context, i.e. there needs to be a sense of urgency. These possible drivers for innovation can be classified into three categories, problems, constraints and opportunities.

**Problem-driven Innovation**

Innovation driven by a problem (e.g., a bottleneck, an unsatisfactory processing time, high costs of service delivery) is the classical case where a novel, value-add contribution is sought in reaction to an identified issue. In process terms, we could call this the classical process improvement scenario. An identified concern with the status quo is described in so-called as-is models, it is located in the Enterprise Architecture and a set of well-defined analyses techniques (e.g., lean management, Six Sigma, theory of constraints) are deployed by qualified business analysts. Various facilitation techniques, common practices as materialised in reference models...
(e.g., SCOR) and brainstorming-like facilitation techniques are then used to develop a to-be scenario that (hopefully) eradicates the problem.

Problem-driven innovation can be characterized as reactive and reliant on the problem to manifest and to be perceived. If the problems to be addressed outweigh the organisational capacity to respond, the focus will be on fire fighting leaving little room for considering proactive innovation. Problem-driven innovation tends to be transactional (process) innovation as new products, services or even business models are typically not derived from an attempt to fix an issue.

Examples for problem-driven innovation are:
- using electronic signatures to avoid paper consumption in administrative processes (problem: lack of sustainability);
- implementing a problem management database to deal with recurring incidents (knowledge management problem);
- outsourcing the IT helpdesk to an external provider (process/financial problem).

Problem-driven, core innovation is well-understood within the BPM and EA community and at least in the phases of problem definition and analysis, not so much in the generation of an appropriate response, well supported by a wide range of well-documented methods, tools and techniques. Problem or issue registers are used to characterize (e.g., severity, owner, milestone) and monitor the problem resolution.

Successful problem-driven innovation ultimately overcomes the problem and its impact can be measured by the extent to which this problem caused issues. However, in most cases it can be expected that involved stakeholders will be rather relieved than excited about the impact this innovation will have on their organisation.

**Constraint-driven Innovation**

Innovation driven by a constraint describes cases in which boundaries exist within the context of an organization that limit the ability to undertake “regular” routines. Instead, a constraint within the context ‘forces’ the organization to identify and adopt novel ways of running its business processes, or sparks novel product or service designs. These constraints can me macro-economic developments (e.g., changes in the exchange rate making export or import more difficult) or company-internal development (e.g., budget cuts). Unlike problems, constraints cannot be eliminated, but an organization has to adopt to these constraints.

Though constraints mean restrictions they can be an inspirational source for innovation as they put pressure on an organization. Organizations with constraints have the potential to be more innovative than those without if they convert the need to adopt into a constructive and successful innovation process. As a response the concept of reverse innovation (aka trickle-up innovation) has emerged (Govindarajan, Trimble 2012). In these cases organizations are going overseas in a search for constraints that they cannot find at home. Once the innovation took place overseas, they bring this innovation back into their home country.

Examples for constraint-driven innovation are:
- the development of the mobile banking system M-PESA that was successfully deployed in Kenya as an innovative response to the limited access to banking infrastructure (constraint);
- the virtual store of TESCO in South Korea, an innovation that facilitates retail shopping for time-constrained customers at public transport hubs using a solution consisting of smart phones, QR-scanning and home-delivery logistics;
- the sophistication of cheque processing systems in the Brazilian banking system, a response to the previous hyper-inflation (constraint) that enforced fast processing of financial transactions (F. Montes-Negret, R. Listfield 1996).
Constraint-driven innovation demands a context-aware organization that understands its environmental setting and internal operations (Rosemann et al., 2008). Context-aware organizations do not only understand what context matters, but also how it matters to their organizational systems, Enterprise Architecture and business processes. In other words, they are able to relate elements in the context (such as stability of the financial system, geographical dispersion of markets, weather patterns etc.) to elements in their organizational systems (technical architecture, product and service models, processes, workforce, etc.) and thus have an understanding of impacts, barriers – and potential solutions.

**Opportunity-driven Innovation**

Innovation driven by an opportunity describes cases in which innovations are borne not out of necessity but out of the realization of a possibility. Here an understanding emerges that some advancement within or outside the organization can lead to the emergence and development of an innovation. Unlike the reactive forms of problem and constraint-driven innovation, opportunity-driven innovation is proactive and in many cases an option and not a necessity.

This form of innovation requires translating the affordances of specific technological opportunities (e.g., social media, mobile application, RFID) or other opportunities (e.g., usage-based pricing, commercialisation of idle resources) into capabilities. Social media, for example, provides the capability to broadcast and to democratize information and processes (“everyone participates”). These capabilities need to be studied in terms of their relevance or even disruptive potential for an organization (see social media activities of organizations such as Burberry or Best Buy).

Examples for opportunity-driven innovation are

- the Kaching application of the Commonwealth Bank of Australia which allows users to transfer funds from their smartphones within their Facebook network improving the convenience of its services for retail banking customers;
- Curtis Kimbell, owner of Creme Brulee Cart in San Francisco, who uses Twitter to make his very own sales process more location sensitive by tweeting his current location to his nearly 22,000 followers;
- electronic collars on cattle monitored via satellite allow to control straying cattle by sending a mild electric shock when they leave the defined perimeter, a showcase example for emerging national broadband networks.

These innovations rely on the creativity to convert new capabilities (e.g., the ability to inform 1,000s of ‘followers’) into a value proposition for the own organisation (e.g., a cost effective way to inform potential clients about the proximity of a mobile sales cart). Opportunity-driven innovation occurs when an organisation understands how to capitalize on such emerging affordances. The more the opportunity matures, the more risk-averse organizations will start to adopt it. As such, opportunity-driven is in comparison with problem-driven or constraint-driven innovation the type of innovation with the highest potential for disruption.

Opportunity-driven innovation is characterized by the attributes of innovation capability and innovation latency. Innovation capability refers to the potential of emerging technologies to spark innovation in an organization on basis of their affordances. The question is what new capability is provided by a technology that could yield novel ways of working, products or service models in an organization. A typical example is the capability of mobile technologies to provide location-based information - which can provide the ‘ability to locate’ to organizations. Whether or not this potential is realized then is a question of innovation latency (Fig. 3) – the time required by organizations to identify the innovation capability of an emerging technology (data latency), the time required to analyse the innovation potential originating from that capability (analysis latency) and finally the time required to reach a decision about capitalizing on that innovation potential (decision latency).
The Preparedness of BPM and EA for the Demand to Innovate

The truth (or better, our interpretation of it) is that Business Process Management and Enterprise Architecture support innovation and innovation processes quite poorly. The main reason for this is that available tools, methods and techniques concentrate on the design, analysis and execution, not on the act of innovating processes and systems. For example, there is, to the best of our knowledge, not a single BPM tool that proactively guides its users on how to improve a process. This is quite surprising as the ground-breaking book by Michael Hammer postulated fundamental ‘Business Process Reengineering’. However, the author himself also admitted that the book itself provided limited guidance on how to actually come up with the improved process design.

Working with many organizations, we have found that most repertoires of BPM and EA knowledge and techniques are skewed towards analytical approaches and internal foci as evidenced in a good track record in Lean, in Six Sigma or EA frameworks. As a consequence, organizations have achieved highest levels of maturity in core, problem-driven innovation. The reactive and often incremental nature of these innovations, however, also meant that most redesigns hardly lead to entire new, disruptive product, service, process or even business model innovations. A fact that may explain the rather limited credibility of many BPM and EA initiatives.

Being able to also make contributions to the corporate ‘innovation as a service offering’, BPM and EA professionals need to broaden their toolbox. To be innovation-ready, it will not be sufficient to have a team undergo Six Sigma Black Belt training alone. Techniques that allow correlating processes and entire Enterprise Architectures with contextual factors are important to capitalize on the potential of constraint-based innovation potential. Opportunity-driven innovation demands capability-based planning approaches and a more abstract, innovation pattern based approach.

The increasing interest in innovation, however, provides also a tremendous opportunity for the BPM and EA professionals as there be a high demand to shape an innovation process that reduces existing innovation latencies. Defined as disciplined imagination, the challenge in these types of processes will be to get the balance between well-defined transactional activities (e.g., crafting the business case) and the required freedom for creative, disruptive and lateral thinking right. Shaping effective innovation processes will demand all the typical BPM/EA activities such as resolving appropriate process ownership, identifying involved data and systems. Enterprise Architects will be asked to extend existing architectures that are classically concentrated on capturing the operational (transactional) capabilities of a firm with a stronger focus on the

Fig. 3: Innovation Latency
dynamic (transformational) capabilities, and need to address how these are best embedded in the overall architecture.

**Some Final Words**

Innovation closely correlates with ambition. If key stakeholders and decision authorities are not committed, or pressured, to develop and deliver innovations that truly excite (rather than meet expectations), the innovation process can shape up like Sisyphus trying to bring that big boulder up the mountain only to see it rolling back down over and over. An organization not only needs to commit to becoming innovative, but it needs to embed innovation as an ambition – an objective, a goal, a performance indicator and a measure. Thus, successful innovation will require a ‘sense of urgency’ and capitalizing on problems, constraints and opportunities that inspire innovation. The effective innovation process itself will rely on a supportive organizational culture and methods, architectures, systems and tools that appropriately facilitate this process.

Business Process Management and enterprise Architecture are two essential disciplines that can provide the required discipline and holistic view to innovation. However, this requires substantial extensions of current methodologies and frameworks, and a higher appetite to provide a proactive, transformational service to the organization.

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