Multi-channel enablement BPM way - beyond enterprise boundaries

Executive summary

"Traditional consumer-focused channels are heading towards extinction" - Forrester.
It's time enterprises took a re-look at their consumer engagement strategy. Today's enterprises are constantly seeking to make their business performance and processes to be more customer-centric. Acceptance of constant change has become the new normal. Organizations must adopt an 'outside-in' approach, which means looking from a customer perspective, taking into consideration the effect of systems of engagement comprising social, mobile, cloud, web, API, email and call centers which have become critical in the current digital revolution. Business Process Management (BPM) based process applications have evolved from being mere back-office processes into customer-centric processes. They drive collaboration between employees, customers and partners, spanning organization boundaries and deliver business processes participation through various channels. Processes that originally resided within an application have now begun to extend beyond traditional application boundaries. These business processes are not confined to just one set of data or one discrete information system. They are better described as multifaceted implementations of real-world activities - logically organized into steps that span multiple IT systems, departments, channels and touch-points.

With enterprises being challenged by segmented customers distributed between various systems of engagement, enterprise architects and technology practitioners must develop solutions that improve customer experience and also manage the business complexity where processes span organizational boundaries along with a multitude of overlapping touch-points. Successful organizations have refined their enterprise architecture, made processes dynamic and provided unified experience that enables customers to participate and engage anywhere, anytime.

This whitepaper provides a view on how enterprises can leverage BPM, Service Oriented Integration (SOI) and Event Driven Architectures (EDA) to develop agile business processes and provide seamless engagement experience to their customers. It also focuses on how enterprises can drive innovations leveraging SMAC (Social, Media, Analytics and Cloud) to make processes more dynamic and customer-centric. This in turn will enable their business processes to collaborate seamlessly between IT team, business stakeholders, customers and external partners.

Approach to successful multi-channel engagement

Complexity associated with multi-channel engagement can be eased by a multi-dimensional approach from the enterprise architecture point of view. Although we know

that there is no silver bullet available to meet the above requirement, we could address some of the challenges by planning and aligning the organizational initiatives under certain common agreed tenets and practices.

- Making process as forefront of the problem by adapting process oriented approach for solving business problems rather than having application development-centric approach.
- Enable and extend the business processes hosted in the packaged applications to be more adaptive for multi-channel consumption. Flexibility and adaptability is key to enable business processes across various channels.
- Determine the interaction channels that your customers, employees and partners expect to offer and the ones that are aligned to your enterprise strategy. Evaluate types of issues that one might encounter while dealing with the associated channel requirements.
- Proposed a solution considering the key technology, design elements and constraints for each channel of interaction. Every business and IT initiative must be viewed from the customer experience view-point (both external and internal) and the kind of consumption channels that must be supported.
- Driving process innovation through social collaboration as more than 90% of the customers rely on social media for word of mouth endorsements and

recommendations. Enterprises must look at leveraging social channels to create relationships with customers and partners; to drive revenue growth and innovation by making processes more receptive and adaptive to social events.

- Enabling Business Process as a Service (BPaaS). Historically, enterprises have built applications and processes with a managed development environment. With the advent of cloud this approach is no longer a sustainable one. Enterprises can quickly build process applications through mash-ups by leveraging libraries or pre-built processes hosted by other providers. It is also an opportunity for enterprises to harness additional revenue streams by providing process-based services like Amazon.

Processes at the helm

Process-centric approach

Process-centricity advocates creating value by involving a customer in the processes rather than keeping him isolated. Process-centricity is a predominant shift in thinking, which is viewing an organization from 'outside-in' i.e. a customer centric view, as opposed to the traditional task-centered approach of viewing the organization from 'inside-out'. To provide an engaging experience to the customers, processes must be designed to be consumed seamlessly, both internally and externally, through one or more interfaces, encompassing all systems of engagement.

The BPM way to solve business problems

Organizations initiate multiple initiatives to meet business challenges and also improve the value of the products offered to their end customers. In many cases, these initiatives may lead to development of new applications or procurement of off-the-shelf solutions. Advantages of these packaged solutions are quick ROI which keeps business stakeholders happy. But over a period of time, it may lead to inflexibility and not align with the business roadmap. This creates a situation of force-fitting the ready-made solution or compromising on the intended business process. Developing new customer applications the traditional way can be compounded by a multitude of problems - starting from vendor/ IT team engagement to delayed deliveries.

Business Process Management (BPM) helps overcome some of these business challenges. The proposed approach advocates engaging business from process definition through to the implementation stages, thereby developing and fulfilling business and customer aspirations. Process-oriented approach provides the flexibility to make changes as needed, without delays,

saving business groups from huge costs or losses. The approach also provides measurable metrics which can be utilized to drive improvements.

Continuous improvement provides a structured approach to develop customer-focused processes that achieve business objectives and can be continuously improved using empirical methods. Organizations can create processes that are 'built to change' and have an 'outside-in' focus. This introduces a paradigm shift for organizations that have been IT focused and/or are used to hierarchical management approaches, and may have become too used to building processes with an "inside-out" and "built to last" focus.

> 'Every prospective application development initiative at an enterprise can be looked at as an opportunity to do it in BPM way. Though it is not an out-of-the-box solution still it provides the flexibility and agility that adapts to business changes and drives innovation within an enterprise'

Engaging customer with business processes

Adopting customer-centric thinking involves engaging customers with a personal touch across various engagement channels. Business processes must be designed to be consumed across various channels outside the enterprise by customers, partners etc. The interaction mechanism with processes should be enabled to handle complexities associated with diversified touch points and provide instant access to services/products with seamless, insightful experience.

The foundation for building such a seamless experience can be planned by defining an enterprise services layer which builds proxy services called 'Business Process Services'. One or more processes in an enterprise can be associated with a business process service. Consuming applications or channels of engagement can invoke the business process by calling an associated business process service. The proxy service can also enforce security and enterprise compliance before allowing other channels to access the processes. Such proxy services are typically hosted in an Enterprise Service Bus (ESB) environment.

Below example is a depiction of this technology stack from an insurance domain perspective.
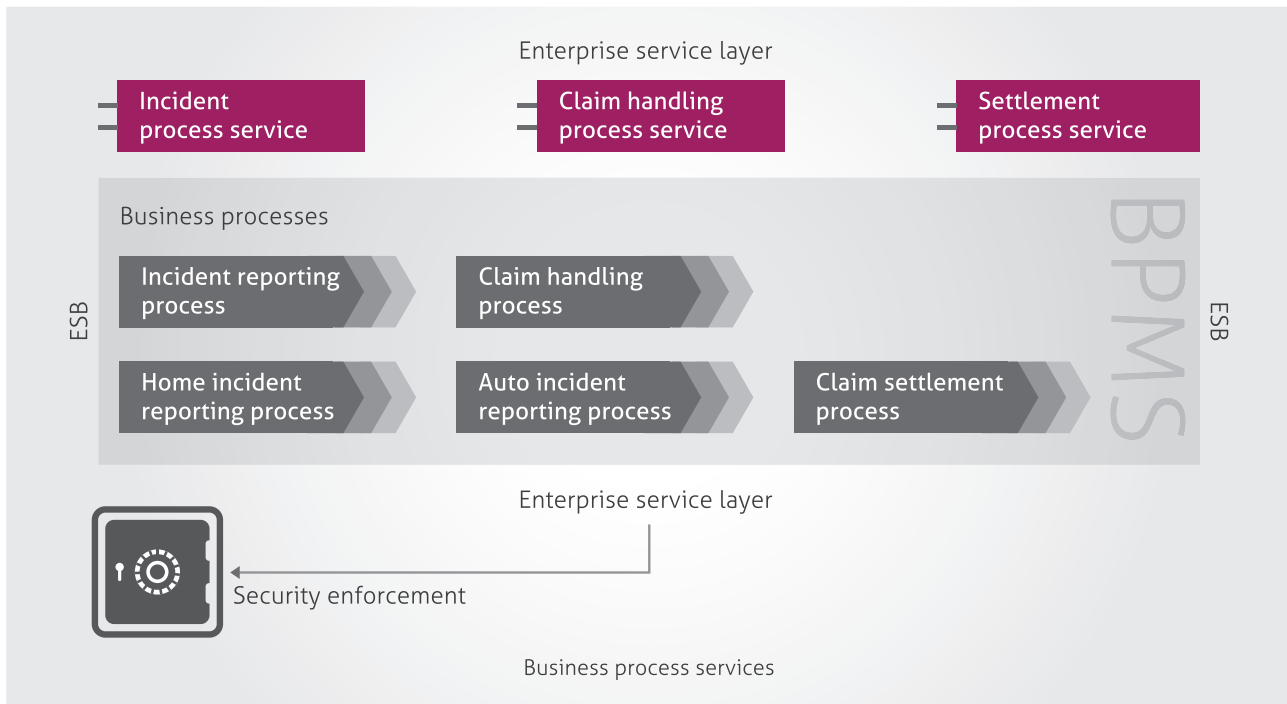
'Flexibility of consuming the process by multi-channels requires building necessary services foundation, typically established through an ESB layer. Processes can be accessed through proxy services called Business Process Services hosted in a SOA environment.'

Engaging with enterprise assets

Challenges of packaged applications
Packaged business applications for ERP, CRM and other specific business functions help customers significantly initially by providing higher transaction efficiency and competitiveness. These business applications streamline the functional business processes and standardize business operations across multiple locations. As organizations innovate and redesign their business models to compete in the market place, they face several challenges. Some of the core ones are:
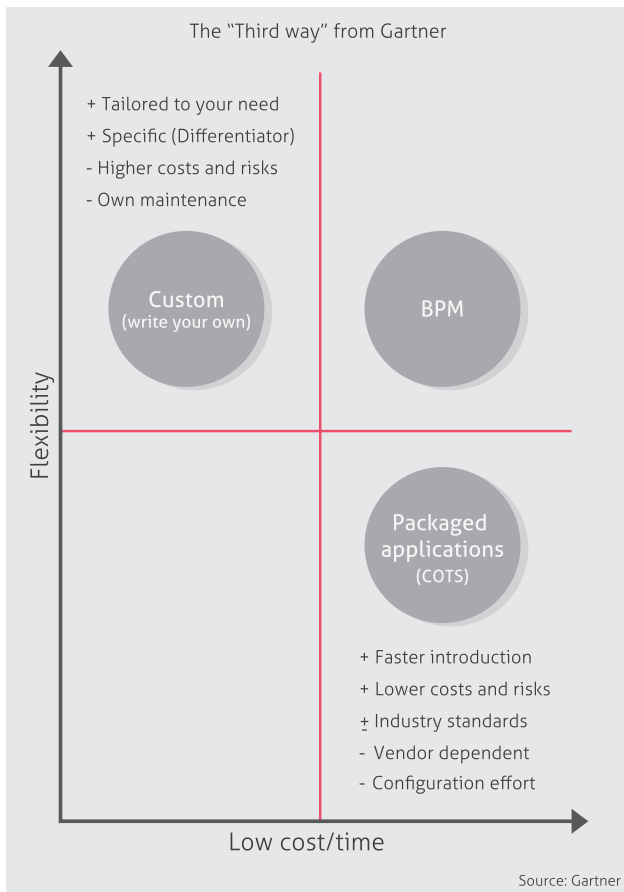
- Often processes are cross-functional, cutting across various business functions and departments. It creates difficulties in collaboration due to the nature of siloed implementation adopted by ERPs.
- Packaged applications may not be equipped to enable processes across various channels like mobile and may need to deal with unstructured collaboration through email, documents and social content. This is predominantly due to the generic nature of packaged applications that are built to operate in enterprises.

- Business processes embedded in the applications are difficult to extend, modify and externalize. It consumes a lot of time, effort and cost.
- Lack of real-time visibility and measurement makes it difficult to get insights to drive improvements.

Organizations will not be able to entirely replace packaged applications as they handle core business operations and transactions. A lot of effort is expended across business functions in building, customizing and adopting these purpose-built business applications. Enterprises have to leverage them and yet adopt technology best practices to transform these business applications into agile and innovative solutions.

Leverage BPM systems to transform packaged applications
Business Process Management Systems (BPMS) provide the required flexibility to unlock business processes from business applications and making them flexible, adaptable and dynamic. Furthermore, BPMS do not require huge cumulative multi-year investments to manage customizations, changes and extensions as in the case of packaged applications.
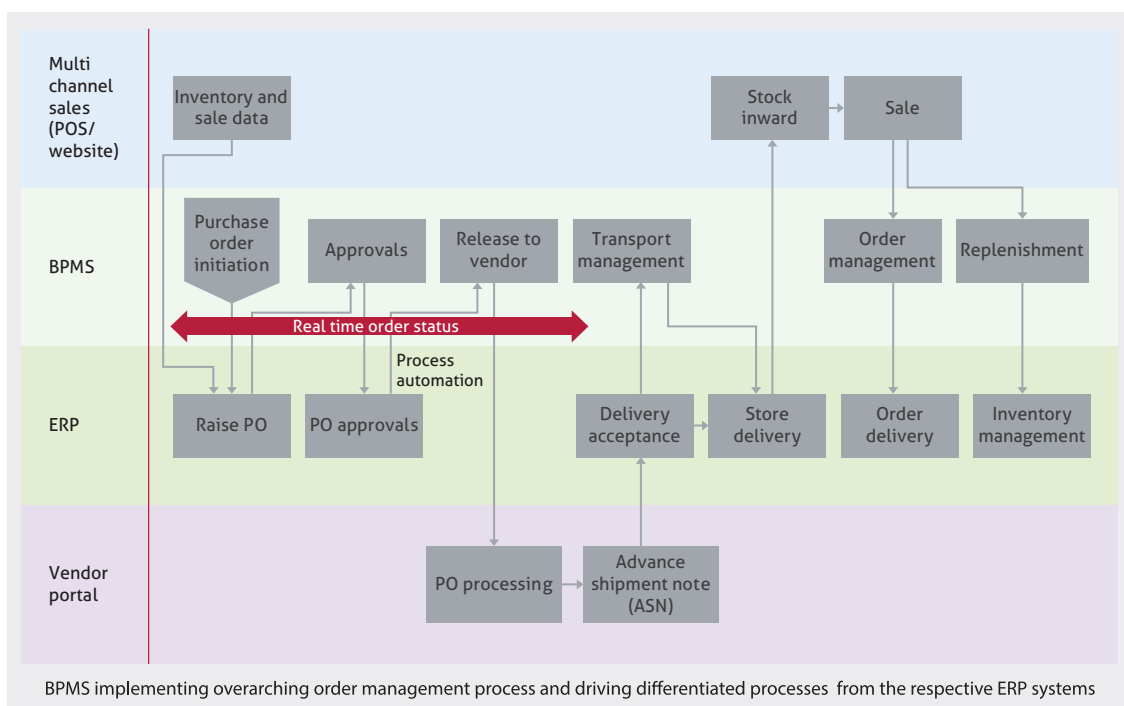
While the emphasis is not on replacing packaged applications to BPMS, it is primarily directed at optimizing processes by leveraging BPM capabilities. Transform packaged applications by making them more insightful, accessible and innovative.

The "Third way" from Gartner

+ Tailored to your need
+ Specific (Differentiator)
- Higher costs and risks
- Own maintenance

Custom (write your own)

BPM

Packaged applications (COTS)

+ Faster introduction
+ Lower costs and risks
+ Industry standards
- Vendor dependent
- Configuration effort

Flexibility

Low cost/time

Source: Gartner

BPMS can be used to receive and send events from or to business applications for suggestive or corrective actions. E.g. process hosted on BPMS can identify trends, by analyzing the events and event-patterns from various channels, and can trigger a sales planning process in an ERP that can lead to a focused marketing campaign. Process implementations can also leverage business monitoring capability provided by the BPMS to monitor, measure and improve end-to-end business processes.

As another example, typical order management process involves collaboration between several business units and involves integration with various systems such as ERP, WMS, POS, sales channel (web portal, POS), vendor portal and other process applications. The order management process is initiated when an order is placed by a customer through web or when stock needs to be replenished at the store. Based on the sales order, a purchase order is raised against the supplier, which involves triggering the purchase order (PO) process in the packaged application. Once the PO is generated, the control can be passed back to BPMS where the purchase order approval can be automated based on various business rules to expedite the delivery. Once the order is released to the supplier, BPMS can transfer the control to other packaged application where transport planning, advance shipment note and the actual delivery are conducted. This also involves sending the process data from BPMS to other packaged applications to establish the context and continue with the rest of the processing.

The overarching business processes within the enterprise, which have multiple touch points across various channels can be moved to BPMS and the core operational process can still run within the purview of the business applications. This way BPMS can act as a front-end to various external engagement channels and drive the overall end-to-end business processes.

BPMS implementing overarching order management process and driving differentiated processes from the respective ERP systems

Multi-channel engagement of process

Channel specific considerations

Consumerization of IT has led to the emergence of various digital mechanisms using which customers, employees and partners engage and deliver business capability. It has become imperative for enterprises to enable their processes across various channels to provide seamless engaging experience to customers and business. With the advent of 'Internet of things', we will see business processes getting triggered from Radio Frequency Identification Tags (RFID). Future platforms must thus have the ability to sense and trigger processes from a wider spectrum of inputs that exist outside the organization. This would invariably mean designing architectures that deliver business services across multi-channel engagement, considering technology bottlenecks caused by various channels.

We shall now explore some of the considerations that each channel will impose and the seamlessness needed to provide uniform and insightful experience to customers, business workers and external partners.

> 'Enabling business processes for a mobile or a tablet is no longer a differentiator but a must-have capability to be able to sustain the current competitiveness. In the digital revolution of IT landscape, mobile is no longer an engagement channel but the platform that enterprises must adopt to stay afloat.'

- **Mobile:** Enabling business processes for mobiles and tablets is no longer a differentiator, but a mandatory capability for sustenance in the current competitiveness. In the consumerized IT landscape, mobile is no longer an engagement channel but the platform that enterprises must adopt to stay afloat. Developers must be able to write process applications that can be delivered to desktops, smartphones or tablets without any additional work. In addition to these platforms, BPM-based process applications that will be able to utilize the native capabilities of the device (GPS etc.) to deliver context-driven business processes, must be developed. Challenges posed by this channel like security, supporting multiple devices from different platforms, caching etc. needs to be addressed while designing the system.
- **Web:** A reputation for excellent customer service can drive revenues and act as a brand differentiator. Astute retailers earn that reputation by transforming their online self-service processes into highly interactive and branded customer experiences. Almost every

service provided to the end customer is expected to be available through the web channel with user experience-driven business processes. With Bring Your Own Device (BYOD) becoming a norm, enterprises must provide the right platform for their customers, employees and partners to collaborate and be productive .

- **Email:** This is one of the channels frequently used by enterprises for sales transactions, order taking, marketing, promotions and deals etc. Enterprises today leverage reputed mailing services like Constant Contact to send email promotions to validated accounts. Important business processes like customer complaints, discrepancies and exceptions that utilize emails can be made more responsive by triggering processes to take meaningful actions. The solution helps manage unstructured communications like email to be more engaging with the end user.
- **Social:** Enterprises are reaping the benefits of using social channels for their innovations. Enterprises are using this channel effectively to devise their marketing and sales strategy, feed new product designs, new launches and feedback mechanisms etc. Business processes that drive these capabilities must be receptive to social events and should drive the collaboration involving customers, agencies and internal business teams.
- **Web API:** Enterprises are considering new revenue models by enabling Business processes as Service (BPaaS) by hosting their processes on the cloud. It is also providing an opportunity to enterprises in building cost-effective and quick time-to-market of their process applications by leveraging the pre-built processes available over the Web leveraging API. This involves managing complexities associated with unpredictable external environments and managed internal environments.

There are other considerations which are uniform across all channels like consistency in delivering a particular service. Customers demand consistency – online, on the go, and in the store. If a customer selects a product while shopping with a smart phone, they expect the transaction to continue when they resume the session on their desktop. If the shopping experience is difficult or disjointed, chances are that the customer will move over to a competitor. Multi-channel engagement must not be looked at only as a technology/solution challenge. It also presents great opportunity for a business to offer differentiated experiences and services, leveraging the strengths of individual channels.

Designing the multi-channel delivery solution
While the earlier sections focused on ways in which business process can be made flexible for enterprise consumption, this section provides design considerations and technology choices that can be adopted to deliver the process consistently across all channels. SOA layer forms the foundation for the multi-channel delivery solution which shields business processes by enforcing and handling channel-specific considerations and constraints. The delivery model discussed here advocates a service-based engagement platform that involves modelling service and process implementations from a simple customer engagement perspective via a phone, web or POS system.

> 'Type of interactions can be categorized based upon the nature of engagement. We could broadly classify these interactions as structured, collaborative and ad-hoc/un-structured. Multi-channel delivery of processes must include technology and design considerations that have implications on how the processes can be delivered and consumed efficiently.'

The type of interactions can be categorized based upon the nature of engagement. We could broadly classify these interactions as structured, collaborative and ad-hoc/un-structured. Structured engagements are usually web, POS or mobile-based. Collaborative engagements involve on-the-fly exchanges and discrete communication, for e.g. social media. Ad-hoc or un-structured engagement involves impromptu communication using emails, phone and messenger, etc. While design for structured collaboration can be managed with off-the-shelf products and app servers, other models of engagement require certain design and technology considerations that needs to be planned internally. Every channel throws a different challenge. E.g. the same business process which delivers in the web channel needs fewer data requirements with a sale-down functionality

in a mobile channel. Similarly, security requirements of a web channel would be different from a service delivered through a mobile or an email.

In order to support multiple modes of engagement, the solution requires defining channel-centric gateway that implements/meets channel specific needs. This forms the core of the design and a basis for multi-channel delivery system. Typically, channel-centric gateways require application servers e.g. mobility app servers for mobile and mobile app channels, web application servers for web channels. These application servers provide capabilities that address channel specific challenges, for e.g., handling push notifications from mobile channel and sending notifications to different push servers.

To handle collaborative engagement, the channel-centric gateway must be capable of connecting social content through native APIs, custom-built or connectors. The channel-centric gateway needs to leverage security enforcement mechanism - taking care of channel specific needs like OAuth, WS-Security etc. The SOA layer would complement the channel-centric capabilities by provisioning the enterprise services and processes either through HTTP(S)/SOAP or through JSON.

While certain capabilities required by the channel-centric gateways can be built internally, the onus is on out-of-the box solutions offered by commercial and open source vendors.

Some of the traditional BPMS are primarily designed to address structured process flows. By combining the capabilities of channel-centric gateways and SOA capabilities, we can incorporate capabilities within the process applications to listen to ad-hoc events and respond to unstructured invocations through emails and social channels.

Structure of a multi-channel delivery system
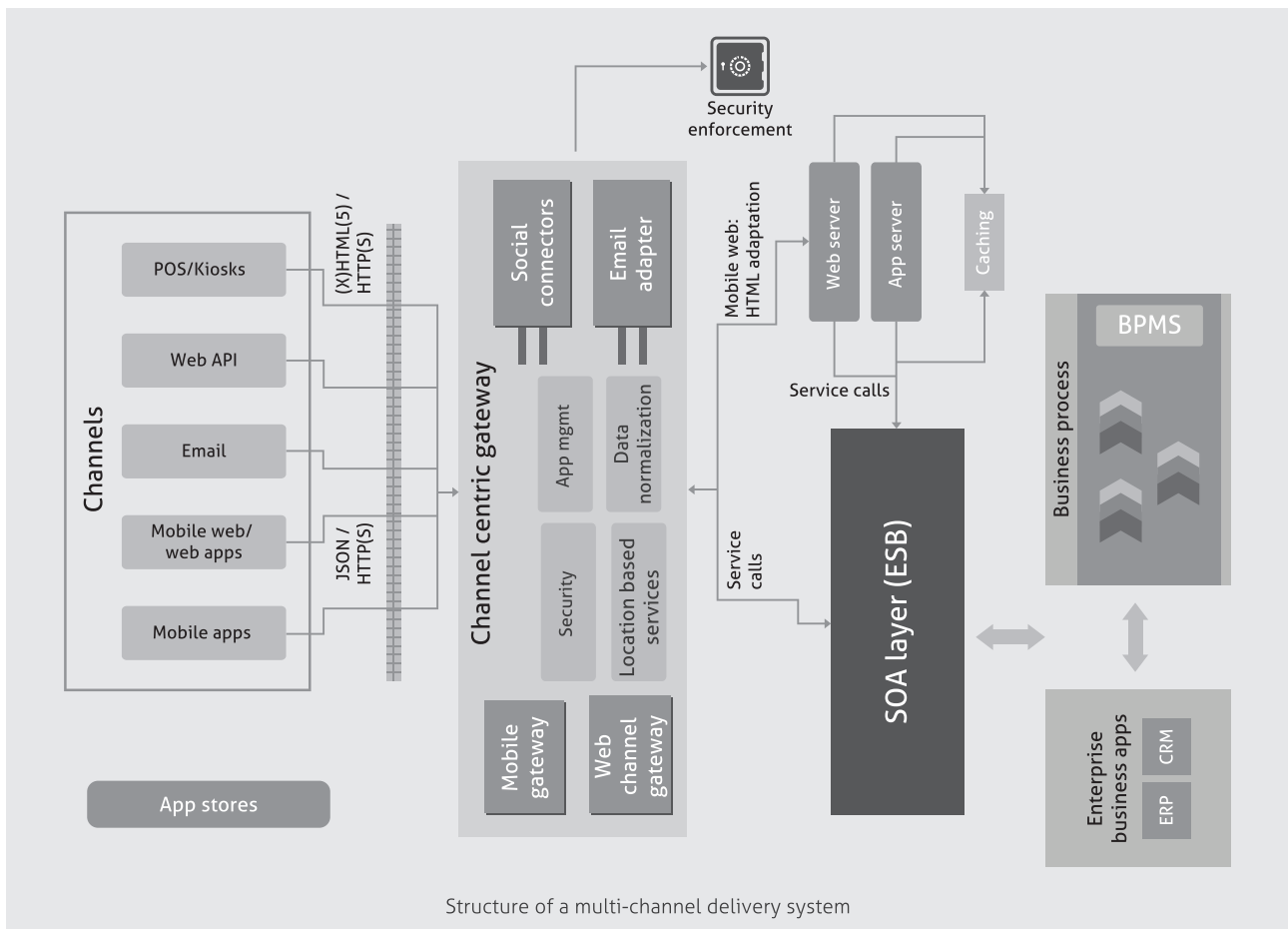
The overall solution can have financial and technological implications that must be addressed from an enterprise IT strategy point of view. Depending upon the size of the enterprise and the solution needs, technology choices can be made between open source and vendor-based. SOA layer will be one of the critical elements of the overall solution, followed by the BPMS and channel-centric gateway technology components. Some of the vendors offer BPMS suites which have SOA technology elements embedded into them. These provide dual advantage of overall operational (with a single stack establishment) and cost effectiveness. The channel-centric gateway technologies are considered based upon the channel priorities and how an enterprise wants to engage with its end consumers. Enterprises can build the channel gateway based on a specific channel and gradually upgrade the capabilities to meet other channels. Some of the capabilities required for certain channels like mobile and Web API can be custom-built leveraging app server technologies like Java and .Net.

Managing the contextual collaboration data
One of the primary goals of an effective multi-channel delivery system involves delivery-consistent experience across all delivery channels. E.g. a premier customer opening the promotion link delivered through the email channel realizes that the promotion code is invalid during the check-out. This should trigger an exception flow to the customer representative who could then call the customer and complete the buy transaction. This involves passing contextual process-driven data across various channels. Solutions must consider aggregating the contextual information across each channel to provide unified engagement experience to the customers.

Enabling processes with the social quotient
There are primarily three ways how BPM can be aligned with social collaboration. Social process discovery, shared development and social process guidance are the primary patterns that are involved in social collaboration. Among the three given patterns, social process guidance represents greater opportunity for enterprises to drive better outcomes for customers and employees. For e.g. an enterprise may want to design a new product and wants inputs from a specific customer base or agency on the improvements.

'Social readiness of the BPMS is catching up. Enterprises must find ways of engaging their business processes with social channels. Event-driven approach is one of the ways we can make processes ready to receive and process social events.'

The business process can be designed in such a way that the tasks for social participants can be defined as decision points by enabling processes to receive real-time events through social channels. Business process can be modeled with activities that act as listening posts. Social connectors can be configured to various social channels to capture critical conversations and feed the decisions and outcomes to the underlying business processes. We can also leverage natural language processing services to decipher social conversations by looking for key words that have greater relevance to the process outcomes.

Social content can also be used to extract valuable insights and infuse those insights into key decisions and business processes. Information from the social conversations can be interpreted to identify potential customers, and an invitation for the customer to become a part of the new promotions can be sent. The most important and challenging part is converting the insights interpreted during social conversations into impactful actions. This involves combining the social events with process analytics and leveraging complex-event processing technologies to take meaningful decisions.

Business process as a service, leveraging Web API
When business processes are utilized across enterprise boundaries through API, the control is not at the UI level but at the cutting-edge level where security enforcements or a digital handshake needs to be established. Through Web APIs, we can enable business processes like insurance risk based services, product catalogs, twitter feeds etc., for public consumption. Web API can be consumed by any channel including web browsers, mobile and external applications.

Web APIs are a new generation of services that are focused on building business process applications for external consumption. Some of the new genres of BPMS products come with Web API capabilities. For those BPMS which do not support, we can leverage the capabilities of ESB and channel-centric gateways to enable the functionality. The Web APIs primarily focus on security, compliance and compatibility with standards-based external systems. Managing Web API is key to extending enterprise-reach to new channels for enabling business process as a service.

Summary
Organizations can drive innovation and provide a seamless engaging experience to their customers, employees and partners by delivering business processes across various channels. Enterprises can benefit by adopting process-centric view of their business initiatives. Organizations can become agile by leveraging BPMS and transform their existing business processes implemented within the packaged business applications. A multi-channel delivery solution can leverage SOA to provision enterprise business processes across various channels. The solution offers a view of various technology considerations, channel-centric needs and leveraging out-of-the-box solutions provided by various vendors. The thoughts and insights presented in the document are based upon industry best practices, trends and experiences from delivering such solutions for various customer engagements.

Key reference documents

Document name	Author(s)
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