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Enterprise Architecture 2020 - "Beyond" Enterprise

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Abstract

In the early days of reckoning, technology simply automated the manual processes with greater efficiency. As the technology is evolving, enterprises have come a long way and are witnessing very interesting trends with new innovations and capabilities which work towards efficient utilization of enterprise resources, streamlining the business strategies, and giving a cutting edge in competitive business world.

The key for enterprise architects is to create not the perfect or most elegant architecture for the moment, but the most adaptable architecture for the future.

This paper will explore the various challenges that current enterprises are facing and provides a future enterprise that can leverage the existing system with the new factors pitching in, to overcome these limitations. As the enterprises are evolving, the architecture itself is maturing and these alterations are driving the enterprise capabilities. The paper will highlight the new architecture model that would help in building the enterprise that sustains the need of the decade. The conceptual as well as the logical model presented, would serve the associates with greater insights on the resolution of these dimensions. This document describes an overview about the future-state architecture and a road map defining the initiatives to align with business processes.

Challenges in the current enterprise

Regardless of the industry and business, magnitude of the future dimensions are transforming the technology platforms, hence providing modern capabilities to current business processes in fundamental ways — reshaping the security, loyalty, support, public service, supply chain, talent, and other critical functions.

The challenges have been categorized into the four different factors

Vision: Today's architecture is confined to a very few customer footprints. With the rapid marketing and demographic changes, and the need to respond quickly to market demands, business strategies are becoming more complex - companies need to take a more customer-centric, cross-enterprise view. The vision of the future enterprise should be to concentrate more on the market place, our communities and channel affiliations. It should be able to capture a holistic view of the customer needs by congregating the values from them.

Strategy: The Strategy component focuses on the complexity factor - volume and ragged systems, data governance and data standards. The challenge that lies in the integration plate is to work on data and its context, technical attributes, schema, and how it can be used effectively. Enterprise architect has to come up with enterprise-wide governance rules, quality check, and standardization mechanism that can be applicable on any type of data - in structured, unstructured, or semi structured form.

Technology: Cloud service and enterprise mobility are the two such aspects which is driving technology changes. Though these factors are operational in the current enterprise, need is to be more matured. Anytime, anywhere access to information and realization of business benefits like better customer service, employee satisfaction, new business opportunities, and reduced operating cost are crucial drivers to implementing enterprise mobility across industry verticals. The primary challenges come down to three C's – cost, complexity and corporate data security.

Decision making: This particular category rivets the real-time analytics need. The challenge becomes the integration of the various technological pieces, tuning the system to ensure consistent performance, and scaling through the entire stack and providing consistent management and monitoring across the entire stack. Rapidly increasing use of large-scale and location-aware social media and mobile applications are driving the

need for scalable, real-time platforms that can handle streaming analysis and processing of massive amounts of data.

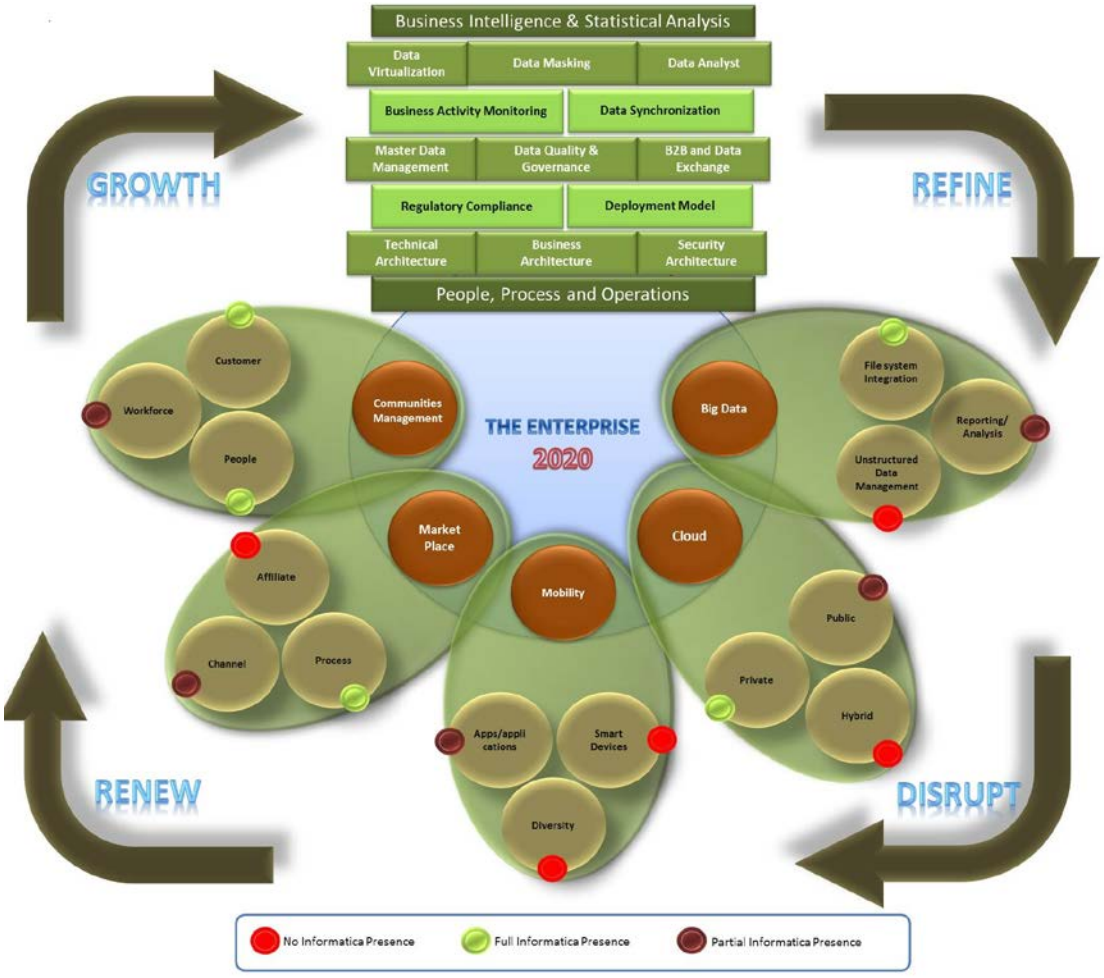
Enterprise Architecture Framework

Keeping in mind the above challenges, the future enterprises should ensure the right balance between IT efficiency and business innovation permitting the closest possible synergy across the extended enterprise. Not only this but the framework should be generic enough to overcome any barriers that we face in today's era. In essence, the enterprise we would be discussing below ought to be self-renewing and diverse to cover up the above provocations.

Life cycle of an enterprise:

The enterprise architecture we are proposing should encapsulate itself within four stages — growth, refine, disrupt, and renewal of life cycle. So in a way we can say, **enterprise never dies**.

The below paradigm depicts the future-state architecture design



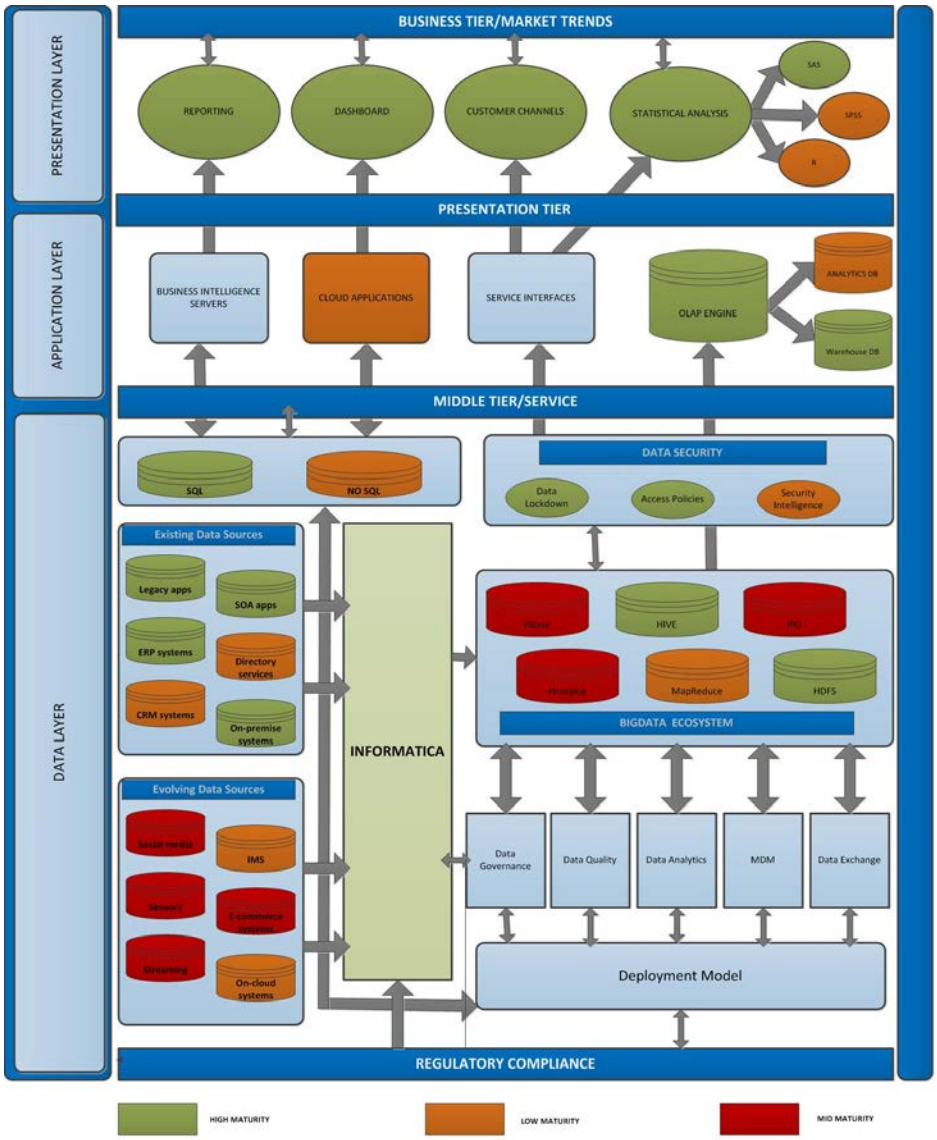
The Enterprise Architecture 2020 - "Beyond" Enterprise

Growth and refine: Growth and refinement defines the young stage where enterprise architecture has started providing business benefits as per latest trends and processes incorporated within the framework. The enterprise is intelligent and possesses elasticity in a way that it can adjust to the changing needs of enterprise; can be technical, can be business processes so as the enterprise should remain modern.

Disrupt and renew: Disrupt is the stage where a high point is achieved; enterprise architecture is pretending itself to be old. New challenges come in its way which requires renewal of business process, technical aspects, and technology stack for the framework. Then, renewal or oil change phase comes in considering the modern benefits and business support.

Logical Model of the Enterprise

Logical data models help to define the detailed structure of the data elements in a system and the relationships between data elements.



Logical data model for enterprise 2020 represent three layers

Presentation layer: This is the topmost level which depicts the data presentation mechanisms across enterprise wide business processes and provides data/information to serve different business processes, operations and applications.

Application layer: This layer represents logical relationships among different components of technical and information security architecture.

Data layer: This level defines the integration architecture. It should also possess smart integration mechanism, modern storage capabilities and intelligent enterprise wide data model.

With vision 2020, we should equip ourselves with ample amount of services, technologies and knowledge among business process, operations and technocrats since all the three layers represented in logical model will face smart advancements.

The Enterprise Architecture Framework extended

Enterprise Architecture Framework 2020 is designed to focus upon the fact that the architecture should know **everything about enterprise data** — correctness, availability, accessibility, quality, reusability, integration, and processing mechanism. The mechanism of presenting information should be independent from the systems one can use — here we mean, the processed data or information should be readily available (velocity of processing) at one platform where the presenting devices (cloud, smart devices, traditional reporting systems, and portals) could fetch the information.

Considering the above-mentioned points, we come across with an enterprise-wide architecture where we have an enterprise 2020 needs — people, process, and operations being driven by modern IT world consisting of different data/information silos — Big Data, Cloud systems, Mobility, Marketplace, and Community management. The modern integration layer should be dynamic and capable to define data relationships and data models, security border, and rules governing how, when, where data is used to ensure data is truly understood.

The proposed framework benefits

The proposed framework speaks more about generating the information by optimizing the current landscape of enterprise IT. The focused areas include:

- Modern data silos
- Efficient data warehouse
- Customer behavior and predictive analysis
- Data-centric security

The categorization of these above-mentioned subject areas will help us fathom the various dimensions that would serve the entire enterprise. These factors grouped together will solve the major technology/business needs currently faced by the customers/potential users.

Modern data silos — Source and consumer systems

Big Data systems

As organizations have grown, the data associated with them also grew exponentially and today there are lots of complexities to their data. Most of the big organizations have data in multiple applications and in different formats. The data is spread out so much that it is hard to categorize with a single algorithm or logic. The unique challenge here is to make sense of all the data coming in from different sources and deriving the useful actionable information out of it.

For enterprises of all sizes, data management has shifted from an important competency to a critical differentiator that can determine market winners and has-beens. Big Data refers to technologies and initiatives that involve data that is too diverse, fast-changing, or massive for conventional technologies, skills, and infra-structure to address efficiently. Specifically, Big Data relates to data creation, storage, retrieval, and analysis that is remarkable in terms of volume, velocity, and variety.

- **Volume:** It is the size of the data which determines the value and potential of the data under consideration and whether it can actually be considered as Big Data or not.
- **Variety:** Variety is the category to which Big Data belongs to and is a very essential factor that needs to be known by the data analysts. This helps the data analysts to effectively use the data to their advantage and thus upholding the importance of the Big Data.
- **Velocity:** It refers to the speed of generation of data to meet the demands and the challenges which lie ahead in the path of growth and development.

Big Data is not just about lots of data, it is actually a concept providing an opportunity to find new insight into your existing data, as well as guidelines to capture and analysis your future data.

Cloud systems — Data storage, cluster enhancements, and data virtualization

More the systems talk in enterprise ecosystem, better the understanding user can get.

Retrieving information from different medium, processing that information, and making the processed information available to business in easy-to-access and timely manner from different medium, all these processes together lead to opt cloud-based services and enterprise software solutions market is heading towards these offerings. Every player in the fray is jumping onto the movement.

Hosted, private cloud, community cloud, and public cloud offerings form the order of the day. However, it should be noted that the players who have designed solutions based on the principles of service-oriented architecture and multitenancy are in a much better position to offer truly cloud-based offerings. The vision here is to bring together all the mentioned cloud systems together bounded by different layers of security as applicable. This requires leading-edge integration platforms to eliminate inefficiencies and obtain objective of interoperability. Real-time cloud application integration will play a major role which would include process integration, human workflow, and guided screen flows.

Efficient data warehouse — Quick and good quality result

Processing the social media data to quality information

Know the likings of your customer and target business accordingly

Social networking websites known for people and workforce integrations make it easy to meet people on a personal or professional level. Economists, academics, governments, and organizations of every kind have been using Web data services by providing personal information using blogs, chat, email, or instant messaging; one can meet new friends and communicate with others who share their interests; marketing and advertisements of business, etc.

There is a huge volume of data available worldwide which, if processed appropriately into information, helps business to take right actions at right time, thus getting business closer to the end customer. The vision here is to effectively and quickly gather right information and make it readily available by defining an integration framework which takes complexity out of process, leaving more time for analysis and decision making.

Widens the sampling for good quality analytics

Just because data analysis can reveal interesting trends does not make those trends useful to your business.

While there is a lot of buzz around the ever-growing data, what matters is how can organizations separate the relevant information and derive actionable insights. This is where the role of analytics becomes even more important. Good data and sophisticated analysis can provide insight of enterprise business and helps in business decisions. For effective decisions, one must be empowered to interpret and act upon available data trends in a manner relevant to their business goals, customized for their company, in their industry, in their town, with associated government policies and business rules.

An easy-to-use analytic solution should incorporate the innovative method that enables to apply both business rules and analytic models to the business processes. Forecast, plan, and anticipate quality issues like never before. One can provide scoring solutions, meet supplier demand, and develop strategic options with unmatched business relevance, all with defined user roles and accompanying privileges company wide.

Customer insights and market behavioral analysis

Market behavioral analysis

Companies already incorporating business intelligence strategies into daily operations are likely to have a go-to platform of choice. This is largely because simple access to information does not necessarily guarantee the ability to enforce change. Employees and executives both want a personalized interface that makes analyzing and applying data easier and less ambiguous.

Mobile BI will flourish: Before the smartphone and tablet revolution really took off, decision makers had the ability to monitor and minimize the use of mobile gadgets in the workplace. Today is a different story; especially as bring your own device (**BYOD**) and other mobile initiatives continue to gain momentum. Unfortunately, not everyone uses the same smartphone or tablet, forcing decision makers to find innovative ways to support mobile BI activity without jeopardizing security or efficiency.

Cloud shall gain momentum: The adoption of the cloud technology in the BI landscape is still relatively slow. This is because most decision makers recognize the cloud more as a "nice-to-have" tool for BI, not necessarily one that is crucial to success. As organizations become more familiar with the cloud in the coming years, it will eventually turn into a routine BI deployment platform instead of a differentiator. This is because decision makers will demand the ability to review and analyze resources across multiple hosting environments, including those onsite and ones managed in the cloud.

Social capabilities tend to expand: The recognition that social tools can be used for more than sharing pictures and "liking" things on social media is becoming more common in the private sector. This understanding will eventually encourage companies to use social resources for BI and other analytic capabilities, giving decision makers the ability to share information with colleagues at any time.

Customers insights

With the wealth of information that is at one's fingertips today, it becomes crucial for businesses to sift through the huge volumes of data and arrive at what truly adds value for them. Getting the right customer insights is possible if you correctly capture the data, measure it, analyze it, and act on the insights derived.

- **Capture:** Data pertaining to customer interactions can be captured through calls, Web chat, email, self-serve, and numerous other channels. This information, when captured verbatim and mined correctly, leads to valuable insights in the areas of channel optimization, competition, and opportunities to increase revenues.
- **Evaluate:** After capturing customer emotion and sentiment, companies need to carefully note the content of the transcripts and recordings to measure the data collected and derive insights into customer behavior.
- **Examine:** By analyzing the data collected from customers on their satisfaction levels, companies can understand the customer's overall experience with their brand at all touch points. 360-degree view of the customer experience can be figured out by classifying the customer feedback into various buckets namely processes, price and productivity, products, or Web strategies.
- **Act:** The analysis of customer data will help companies understand customer "pain points" with their products and processes, which will translate into actionable insights that can go into developing effective strategies.

Data-centric security

Data-level security

Traditional models of data protection have often focused on network-centric and perimeter security, frequently with devices, such as intrusion detection systems. But this approach does not provide sufficient protection against privileged users, or other insidious types of security attacks. Many enterprises use Database Audit and Protection, and Security Information and Event Management solutions to gather together information about what is happening. However, monitoring and event correlation alone do not translate into data security. Therefore, any data-centric approach must incorporate strong access controls, and security intelligence to protect data in the cloud and provide the requisite level of security.

An effective cloud security solution should incorporate three key capabilities:

- Data lockdown
- Access policies
- Security intelligence

First, make sure that the data is not readable and that the solution offers strong key management. Second, implement access policies that help ensure only authorized users can gain access to sensitive information, so that even privileged users, such as root user, cannot view sensitive information. Third, incorporate security intelligence that generates log information, which can be used for behavioral analysis to provide alerts that trigger when users are performing actions outside of the norm.

Secure applications within the enterprise ecosystem

Meeting your needs — with the right device.

Execution and monitoring the jobs everywhere with the help of a smartphone/tablet will be called the future of DW implementation and maintenance. This mobile DW will overcome the limit of traditional data warehousing system by omitting the location and architectural constrains which can drastically improve the productivity and user friendliness. Having this architecture and cloud-based mobile, DW network will bring the revolution to the era of data warehousing. **Informatica Vibe -** Map once and deploy will anywhere, is one such engine which can be embedded into applications, middleware infrastructure, and devices - wherever you need to access, aggregate, and manage data. However, it is yet to be implemented full-fledged.

Conclusion

This is an information age wherein we stimulate thinking about using automated technologies to do things that could never be done before, and enterprises that adapt to this reality will outperform (and outlive) those that do not, will become outdated. In this era, architecture must be thought of not only as a way of reducing other costs, but also as a strategic information asset to be used to shape and reshape the enterprise at our will.

The proposed enterprise architecture is designed to cater to the needs of the end customer providing them the following benefits:

- Ability to create and maintain a common vision of the future shared by both the business and IT communities, driving continuous business/IT alignment.
- Providing a stronger technology infrastructure at the central technology core.
- Faster, simpler, and cheaper procurement.
- Increased flexibility for business growth and restructuring.
- Faster time-to-market for new products or even operational innovations.
- Increased agility by lowering the complexity barrier.

- Reduced solution delivery time and development costs by maximizing reuse of enterprise models.
- Bridging of the business strategy and implementation gap.

Growth is never by mere chance; it is the result of forces working together.

Citations and External References

- http://www.informatica.com/in/vision/harnessing-big-data/hadoop/
- http://cio.umich.edu/strategic-planning/architecture-benefits.php
- http://www.gartner.com/newsroom/id/2209615
- http://www.informatica.com/au/Images/03045_6485_why-informatica.pdf
- http://blogs.informatica.com/perspectives/2012/06/07/how-do-you-enable-mobility-in-the-enterprise/#fbid=r3BhcuLFnUW
- http://www.informatica.com/au/resource-library/
- http://www.thehindu.com/todays-paper/tp-features/tp-opportunities/choosing-the-right-customer/article5832257.ece