RESPONSIVE ENTERPRISE –
THE FUTURE OF THE ENTERPRISE

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Experience is not merely a buzzword today, it is quickly becoming a key differentiator in the digital world. Parameters such as quality, pricing, service, and more, which previously were the key expectations are now becoming the norm and customers now expect more in the form of an enriched experience. Customers are no longer just expecting a promotional offer for a product, rather they expect more value. This ask for improved experience is not just from external customers, internal stakeholders too expect systems that respond to their information needs in a manner that is most natural to them.

These changing dynamics call for a responsive enterprise – one that knows and anticipates the needs of its users at any given instance and responds to these needs by mining a wealth of information that is available across the enterprise and outside. We believe that enterprises are adopting this approach to primarily change the way they engage with customers. However, the same approach is applicable to the knowledge worker within the enterprise. So this phenomenon is applicable to the entire enterprise. This will require the emergence of data platforms that are aware of people and context and are able to respond in a timely and effective manner.

We can't reiterate enough the importance of this approach. A leading analyst and research firm predicts that by 2017, about half of consumer product investments will be redirected to customer experience innovation.

So what does experience really mean?

Experience could mean different things to different actors in the information value chain:

Customers expect an experience which is personalized to him/her and takes into account his/her interests, routine, personas, current needs, location, etc. Essentially, technology that is aware of him/her and responds in an appropriate manner.

Imagine walking around in a busy shopping district and being able to get information about the price of a product you are looking for in all the nearby stores along with an estimated wait time based on current length of checkout queue.

Contact centre executives within the enterprise, who play a key role in driving customer experience, expect a 360 degree view of the customer to be available at their fingertips so as to serve the customer better. They also expect systems to generate personalized recommendations to help solve the customer problems or sell new products.

Consider an intelligent platform that can dynamically generate questions based on customer responses to prior questions to identify the problem and resolutions faster, by leveraging the vast amounts of information available about the customer, products purchased, current location, and other machine-generated data.

CXO's expect actionable information to be available to them anytime, anywhere.

Traditional means of static KPI dashboards that are delivered to mobile devices are a norm in the current age. CXO's now expect an intelligent platform that can answer questions, generate predictions, and provide recommendations when asked.

Imagine a scenario where CXO's not only gets a KPI dashboard on his mobile device but the report is actually able to talk through key highlights and delivery of prescriptive insights. Augment this with a capability that allows CXO's to ask questions off the dashboard and it responds with the requested information, just like a real personal assistant.

Knowledge workers (Data analysts and data scientists) often have a difficult time finding the right data to analyze. With more and more avenues of data getting added in the digital age, this problem is increasing exponentially. Knowledge workers expect the new-age platforms to provide visibility to all the available data sources along with enough metadata information to know

where the data comes from, who uses this data, and how.

Imagine a data analyst having a catalog of all the data assets available along with lineage and usage information of each of the entities within this catalog. Furthermore, if he is able to bring the data from these sources at the click of a button and start analyzing it, it would certainly redefine his experience around analytics.

With distributed platforms today spawning over into thousands of nodes, the job of a system administrator is becoming very challenging. Intelligent platforms that can monitor systems at scale, self-heal, and generate timely alerts when intervention is needed, are capabilities that enrich the experience of administrators.

Challenges in building a responsive enterprise

The key challenges in meeting the above expectations of various actors stem from the traditional BI problems such as data silos, lack of enterprise data catalog, lack of common definition of entities, etc., which have been compounded by the volume, velocity, and veracity of challenges that big data brings in.

- Most of the BI initiatives do not result in the expected benefits because there is too much focus on bringing all data together and not enough on making data easy to consume

- Most enterprises adopting big data are still leveraging it for specific use cases such as ETL offloading, predictive analytics, customer analytics, etc., instead of taking a broader view and creating data assets that can be leveraged to deliver an enriched experience

- Most initiatives around experience focus primarily on customers and very few address the needs of internal stakeholders. Improving internal stakeholder experience is as important as improving the external ones, since they play a key part in keeping the customer happy

- While visualization techniques are improving, the way information is presented today, demands that customers be tech-savvy to an extent to get the answers he/she needs

Building a responsive enterprise

We believe that enterprises of the future would be a combination of software and people.

- Software that is knowledgeable about the context of each actor in the information value chain, continuously learning from data, and enabled to actionize business decisions.

- People who by merely consuming information are making the software smarter and taking decisions that are outside the realm of the software.

Key capabilities that drive a responsive enterprise are:

- **Continuous contextual engagement**
  Constantly being aware of the context of the information consumed and engaging with the consumer based on this context.

  Airports of the future are engaging travelers at every stage by alerting them about delays, recommending the right time to start, routes to take based on traffic conditions, informing them about the closest lounges and coffee shops within the airport, etc., thus delivering an experience which is completely contextual to the customer.

- **Event-based interaction**
  Interactions driven by specific events instead of templates.

  Customers reaching out for support have smart software responding and resolving problems based on the wealth of data available to them, thus cutting down long IVRs and waiting time in customer service queues.

- **Cognitive decision-making**
  Machine learning-based software that can actionize business decisions.

  Smart supply chain decision systems powered by software algorithms can take decisions on alternate order fulfillment options to meet customer delivery dates by considering multiple parameters such as cost, distance to ship, logistics, delivery commitments, etc.

- **Talking data**
  Systems that can understand data constructs and deliver business insights without human intervention and natural language interfaces enabling users to interact with systems just like humans. Customers receiving a report of their credit card statement which can also talk through the highlights and provid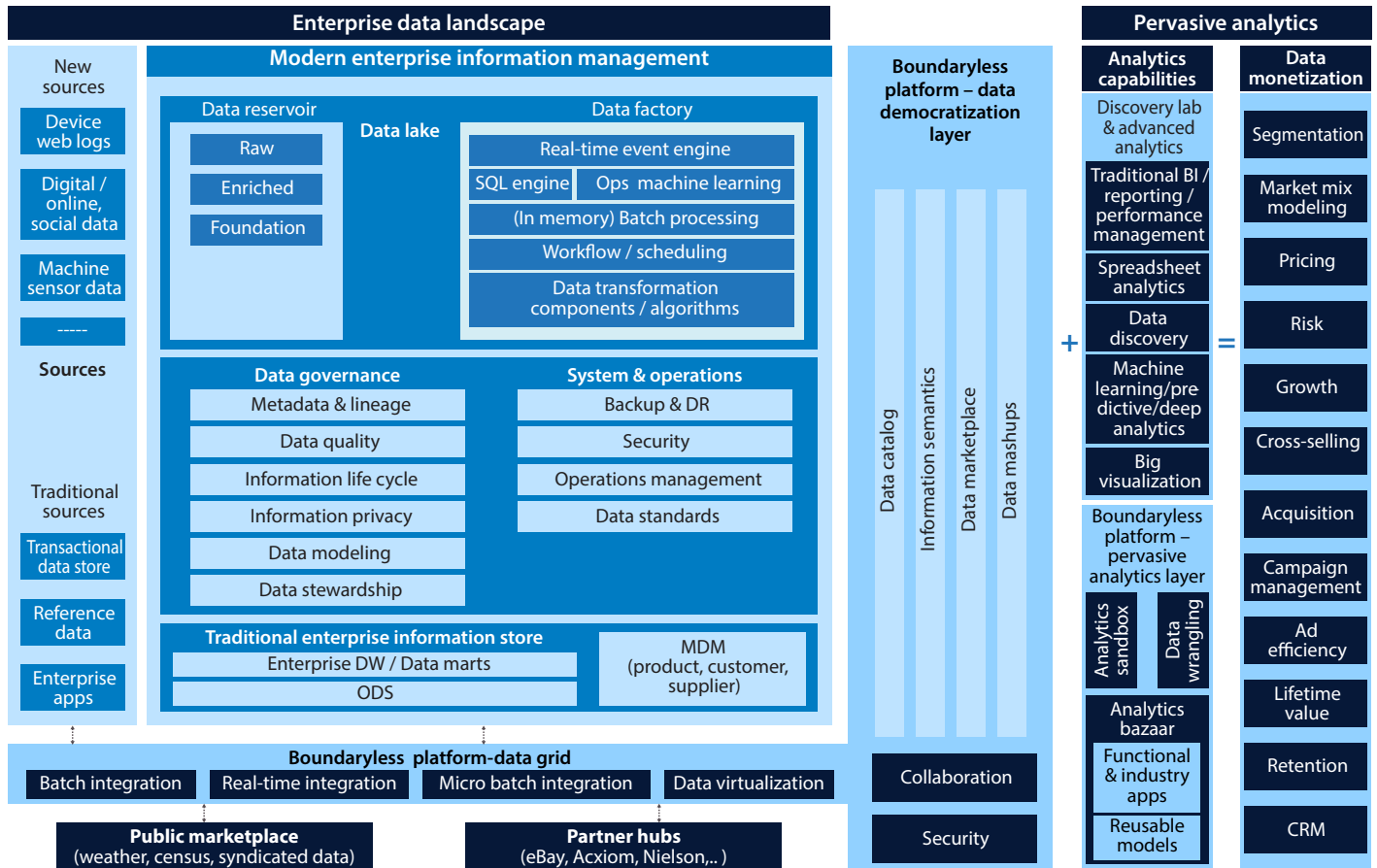e answers to their queries around specific transactions. This would replace lengthy statements with a table of transactions that a customer has to make sense of.

- **Consumer experience**
  Software- and people-approach to system design with experience being a core tenet for all software platforms.

  The vision of a responsive enterprise is to make data platforms come alive and inanimate objects such as companies become partners in the daily life of a human. Platforms can take decisions, interact with people contextually, and respond to every query posed by humans. Digital assistants such as Siri are already doing this by accessing a wealth of information on the Internet but the future is for such interactions playing the primary role in business scenarios.

One of the key impediments in building a responsive enterprise is information boundaries drawn across different data assets due to historical reasons. Realizing the boundaryless vision will require the breaking down of these physical, process, and organizational boundaries. It will be achieved by building the data and analytics foundational blocks and implementing it with the right structure and processes.

Enterprise data landscape

Modern enterprise information management

Data reservoir
- Raw
- Enriched
- Foundation

Data lake

Data factory
- Real-time event engine
- SQL engine | Ops machine learning
- (In memory) Batch processing
- Workflow / scheduling
- Data transformation components / algorithms

New sources
- Device web logs
- Digital / online, social data
- Machine sensor data
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Sources

Traditional sources
- Transactional data store
- Reference data
- Enterprise apps

Data governance
- Metadata & lineage
- Data quality
- Information life cycle
- Information privacy
- Data modeling
- Data stewardship

System & operations
- Backup & DR
- Security
- Operations management
- Data standards

Traditional enterprise information store
- Enterprise DW / Data marts
- ODS

MDM (product, customer, supplier)

Boundaryless platform-data grid
- Batch integration
- Real-time integration
- Micro batch integration
- Data virtualization

Public marketplace (weather, census, syndicated data)

Partner hubs (eBay, Acxiom, Nielson,..)

Boundaryless platform – data democratization layer
- Data catalog
- Information semantics
- Data marketplace
- Data mashups
- Collaboration
- Security

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Pervasive analytics

Analytics capabilities
- Discovery lab & advanced analytics
- Traditional BI / reporting / performance management
- Spreadsheet analytics
- Data discovery
- Machine learning/predictive/deep analytics
- Big visualization

Boundaryless platform – pervasive analytics layer
- Analytics sandbox
- Data wrangling
- Analytics bazaar
- Functional & industry apps
- Reusable models

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Data monetization
- Segmentation
- Market mix modeling
- Pricing
- Risk
- Growth
- Cross-selling
- Acquisition
- Campaign management
- Ad efficiency
- Lifetime value
- Retention
- CRM

The key building blocks of the boundaryless data architecture that deliver the capabilities needed for a responsive enterprise are:

- **Data grid**
  That can seamlessly integrate data across different data sources and feed in real-time data that is an imperative for contextual engagement, event-based interaction, and cognitive decision-making

- **Data democratization layer**
  That enables easy access to enterprise data assets by cataloging, abstracting, and democratizing data for consumption. This enables the analytical engines and other intelligent apps to consume data in a unified manner that helps in cognitive decision-making

- **Pervasive analytics**
 The core analytical engine that is capable of complex event-processing in real-time and learning from data to deliver event-based interaction and cognitive decision-making

- **Modern enterprise information management layer**
  Which serves as the underlying data platform that stores and manages all the data that drives the responsive enterprise

- **Multitude of consumption interfaces**
  That support natural language interfaces for information delivery
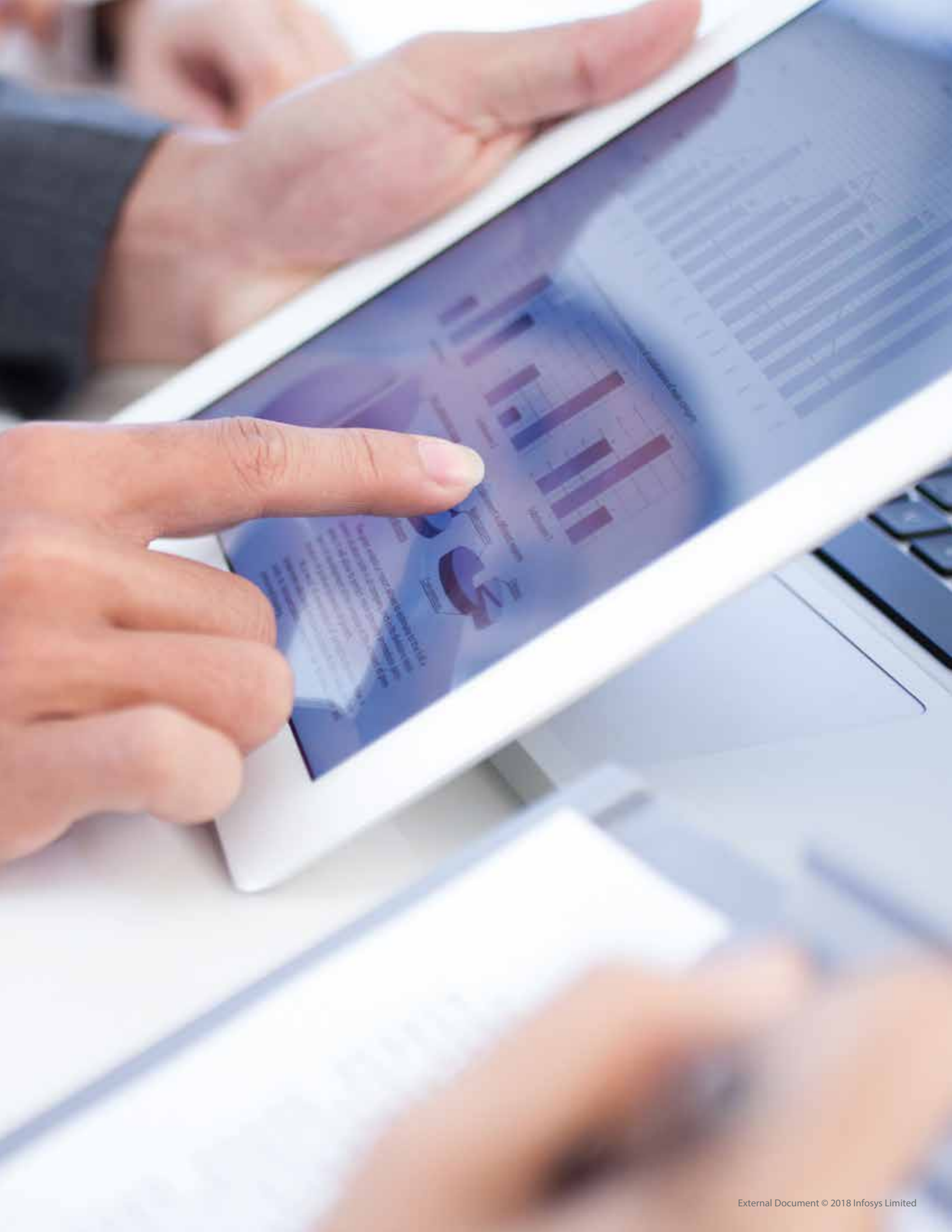
With technology advancements in areas such as cloud data platforms, IoT devices (sensors, wearables, smart implants, etc.), predictive and pervasive analytics, machine learning, location-based services, real-time, complex event-processing, natural language querying, IOT, etc., building a responsive enterprise is in the realm of the possible.

This is not only going to change customer interactions with an enterprise to a level that has not yet been envisioned, it will also lead to the creation of a new job function called data experience engineers who will be responsible for engineering these customer and employee experiences.

Understanding customer behavior and being responsive to their needs anywhere, anytime, and in any channel is important for an organization to be a responsive enterprise. The right data and analytics strategy, future state architecture, and data governance will make the responsive enterprise a reality.

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