The Velocity Of Business Requires In-Memory Computing

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Planning, implementing, or expanding the use of **in-memory data platform**.

73%

Base: 1,805 global data and analytics decision-makers
Source: Forrester Global Business Technographics Data And Analytics Online Survey, 2015
#Priority
Customer experience is a top business priority over the next 12 months

- Improve the experience of our customers: 75%
- Improve our products/services: 73%
- Reduce costs: 66%
- Improve our ability to innovate: 65%
- Address rising customer expectations: 64%
- Increase influence and brand reach in the market: 64%
- Improve differentiation in the market: 58%
- Better comply with regulations and requirements: 54%
- Create a comprehensive digital marketing strategy: 53%
- Create a comprehensive strategy for addressing digital technologies like mobile, social & smart products: 53%
- Better leverage big data and analytics in business decision-making: 52%

› Base: 3,005 global data and analytics decision-makers
› Source: Global Business Technographics Data And Analytics Online Survey, 2015
For you
For all
For segments
For you

CRM
Hyper-Personal, Real-Time Digital Experiences

Personal Relationships
Mass Production

Customer Experience
1800 1900 1950 2000 2015
Customers want and increasingly expect to be treated like celebrities.
Celebrity experiences must:

- Use analytics to learn customer characteristics and behavior
- Detect real-time context
- Adapt applications to serve an individual customer
How can Spotify use location and accelerometer data generated by customers’ while they listen?
Building celebrity experiences requires a real-time architecture.
#In-Memory
Ubiquitous, near-zero latency for even the most complex data and compute operations.
Technologies that are principally architected to use chip-based memory to accelerate the performance of data access and applications; and reduce the complexity of app development.
Why not just pop your data in-memory?

“Using your best estimate, about how much data is currently stored in your company?”

- Structured data from transactional system
- Semi-structured data
- Unstructured data

<table>
<thead>
<tr>
<th>Category</th>
<th>Don't know</th>
<th>None</th>
<th>&lt;1 TB (terabyte)</th>
<th>1 TB to 9 TB</th>
<th>10 TB to 99 TB</th>
<th>100 TB to 999 TB</th>
<th>&gt;1,000 TB (terabyte)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage</td>
<td>9%</td>
<td>11%</td>
<td>10%</td>
<td>23%</td>
<td>22%</td>
<td>23%</td>
<td>28%</td>
</tr>
</tbody>
</table>
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Streaming Analytics

Scale-up Database

Data And Compute Grid

Clustered Database

General-purpose data processing cluster
#FastData
All data starts out fast, but is often only used after it becomes big data at-rest

- Rich transactional data from portfolio of dozens or hundreds of business applications
- Usage and behavior data from web and mobile apps
- Social media data
- Sensor and event data from IoT devices
- Data economy – firms buying and selling data
Performance should not limit design decisions.
Scale should not limit design decisions.
The performance vagaries of accessing data silos can be eliminated.
Confidential information must be secure.
In-memory must fit and work seamlessly with existing architectures.
In-Memory technology speeds application development by reducing architectural concerns.
#FastAnalytics
Three kinds of analytics are essential to create predictive apps

Past
- Learn
  - Historical Analytics
    (Traditional Analytics)

Present
- Contextualize
  - Real-time Analytics
    (Advanced Analytics)

Future
- Anticipate
  - Predictive Analytics
#FastPrediction
Customer

Predict characteristics, behaviors, likes, and needs.
Use in-the-moment context to predict next-best-action.
#Sensors
Apps are blind – use sensors to make them see.
If you can measure it, then you can use it.
## Sensor taxonomy

<table>
<thead>
<tr>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological sensors measure the states of living organisms, including body</td>
<td>Nike’s Fitbit, Scanadu’s Scout, Mimo onesie, and NTT DOCOMO’s Gyuonkei</td>
</tr>
<tr>
<td>temperature, skin conductivity, brain activity, and blood pressure.</td>
<td></td>
</tr>
<tr>
<td>Machine sensors measure the workings and conditions of human-made</td>
<td>GE’s ANSI smart meters, the train and track contact sensor in the Hong</td>
</tr>
<tr>
<td>objects, including oil temperatures, engine vibrations, and component</td>
<td>Kong-China railway, and Progressive Casualty Insurance’s Snapshot</td>
</tr>
<tr>
<td>integrity.</td>
<td></td>
</tr>
<tr>
<td>Environmental sensors measure the state of the world around us:</td>
<td>Salinometers, mass spectrometers, and seismometers</td>
</tr>
<tr>
<td>temperature, air pressure, humidity, soil quality, water toxicity, and</td>
<td></td>
</tr>
<tr>
<td>more.</td>
<td></td>
</tr>
</tbody>
</table>
## Local or remote

<table>
<thead>
<tr>
<th>Access modes</th>
<th>Definition</th>
</tr>
</thead>
</table>
| Local access     | • Sensors which are contained within the same device as the application making use of them, where the data does not need to be transmitted over an external server or network  
                  • Example: A smartphone’s accelerometer, GPS receiver, camera, and microphone are all direct access sensors                                                                                      |
| Remote access    | • Freestanding or bundled groups of sensors where the data must be transmitted over a network to the software that will make use of it                                                                        
                  • Example: A Nest Labs thermostat or a Dropcam digital camera which are interfaced with through cloud services                                                                                   |
Fantasy becomes reality at Universal’s Wizarding World with RFID sensor packed wands.
#Location
Location means latitude, longitude, and altitude.
Velocity represents speed and direction.
Orientation is the position relative to normal.
Location can have more value when augmented with both real-time and referential contextual information.

**Referential Context**
(examples)
- Address
- Business name
- Event
- Road
- Sale
- Weather forecast

**Real-time Context**
(examples)
- Time
- Relative humidity
- Heart rate
- Pressure
- Sound level
- Brightness
What if you knew your customers were “show-rooming” when they walked through your store?
#FastApps
Design apps that are always aware.

Define events gleaned from monitoring sensors, patterns, and individual profile to trigger intents.

Define intents to know when the app may be useful to the user.

Define the actions that the app can take for the individual user.

Event

Event

Event

Event

Intent

Intent

Intent

Possible intents: play golf, play tennis, lunch at the clubhouse, or pick up spouse.

Possible actions: confirm tee time, reserve court, reserve table, text spouse.

Smartphone GPS detects that you are at a golf course.

Source: Forrester report “Predictive Apps Are The Next Big Thing In Customer Engagement”
You must use in-memory platforms to detect, predict, and act in real-time.

Source: Forrester report “Predictive Apps Are The Next Big Thing In Customer Engagement”
In-memory technology is the industrial-strength, real-time glue that makes it all work together.
#Priority
Streaming Analytics

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#Opportunity
What is you had ubiquitous, near-zero latency for even the most complex data and compute operations?
What if you had ubiquitous, near-zero latency for even the most complex data and compute operations?

1. Walk through critical or challenging business processes
   - At each step of the business process ask how in-memory could improve the process

2. Walk through customer journey to improve digital experience design
   - At each step of the customer journey, ask how in-memory could help create a dazzling, new customer experience.
Thank you

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