About ZK Research

• Founded by 30+ year veteran industry analyst Zeus Kerravala
• Exclusive focus on technologies that enable digital transformation
• Analyst, consultant, keynote speaker
• 10+ years at Yankee Group
• 15+ years in corporate IT and consulting
• Holds many technical certifications
• Regular contributor to Network World, CIO, CSO and others
The IoT Era Has Arrived

• Internet of things is more than just connectivity – it’s the coming together of people, process data and things
• Estimated to deliver $10 - $20 trillion in economic value over the next decade
• Will forever change the way we work, live, learn and play
• Has been widely regarded as “M2M” in certain verticals but has now expanded into other industries
Drivers of IoT

• Low cost sensors. $10 -> $0.50 in 10 years
• Robust and pervasive WiFi / cellular
• Bandwidth costs continue to fall
• Standardization to IP
• IT / OT integration
• Cloud / edge computing
• Artificial intelligence / machine learning
• GPU computing
• Machine learning
IoT Devices To Hit 80B By 2025

ZK Research 2017 IoT Device Forecast
## IoT Use Cases By Vertical

<table>
<thead>
<tr>
<th>Vertical</th>
<th>Use Cases</th>
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<tbody>
<tr>
<td><strong>Public Sector</strong></td>
<td>Smart cities from connected infrastructure. Better security, reduced traffic congestions, cost savings from connected lighting.</td>
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<tr>
<td><strong>Automotive</strong></td>
<td>Real-time analysis of driving behavior, remote vehicle diagnostics. New customer services, proactive notification of maintenance, reduced pollution.</td>
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<td><strong>Retail</strong></td>
<td>Connected inventory, greater knowledge of customers. Personalized and predictive services, optimized inventory management, social innovation.</td>
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<tr>
<td><strong>Manufacturing</strong></td>
<td>Smart sensors and digital control systems. Faster response to fluctuations in demand, maximized efficiency.</td>
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<tr>
<td><strong>Oil and Gas</strong></td>
<td>Connected infrastructure. Reduction in operating costs, proactive maintenance, lower fuel consumption.</td>
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<tr>
<td><strong>Facilities Management</strong></td>
<td>Connected buildings, smart lighting, fire and cooling systems. Reduced carbon footprint, significant cost savings from optimized resource utilization, preventive maintenance.</td>
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<tr>
<td><strong>Supply Chain</strong></td>
<td>Real-time tracking for inventory. Proactive problem resolution, operational efficiency.</td>
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<tr>
<td><strong>Healthcare</strong></td>
<td>Remote monitoring of patient equipment, presence status and inventory management. Faster and more accurate patient care, cost savings, improved clinician productivity, lower insurance costs.</td>
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<tr>
<td><strong>Utilities</strong></td>
<td>Connected meters, smart grids. Automated meter reading, significant cost savings, lower cost services.</td>
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Businesses should seek a fast ROI from IoT deployments.
Analytics Drives IoT Value

Q: Which type of analytics does your organization use on IoT data?

Increasing Business Value

- 75% Reactive: What happened
- 64% Diagnostic: Why it happened
- 57% Predictive: What will happen
- 51% Pre-emptive: What should be done

Machine learning requirements
The Importance Of IoT Analytics

• IoT creates massive amounts of data – analytics can “connect the dots”

• Enables businesses to discover new insights to create new business models, change operations or improve customer service

• Improves business agility to adapt to market trends faster than the competition

• Speeds up the ROI for IoT
IoT Analytics Should Be Collaborative

Which of the following has primary responsibility for IoT analytics in your organization?

- Engineers and analytics equally: 30%
- Analytics: 24%
- Engineers: 15%
- IoT vendor: 14%
- Consultants: 12%
- Other: 5%
Business Look To Vendors For Tools

Where do you plan to get your IoT tools from?

- Home grown: 22%
- New tools: 31%
- Open Source: 44%
- IoT platform: 53%
- IoT hardware vendor: 57%
- Existing analytic tools: 65%

No dominant strategy for IoT analytic tools exists.
On average businesses will use 3 tools.
Wide Range Of Analytic Tools

• Data virtualization
• Integrated into IoT platforms
• API management
• Messaging middleware
• Data replication
• Extract, transform and load tools
• Mobile application development platforms
• Many others...
Use Of Digital Twins Growing

What are your organizations plans with respect to digital twins for IoT analytics?

- Green: Currently using
- Blue: Planning to use within a year
- Dark blue: Planning to use within 2 year
- Light blue: Planning 3+ years
- Navy: No plans
- Orange: Unaware of digital twins
Recommendations

• Evaluate business problems to determine which type of analytics to use

• Don’t be afraid to use existing analytic tools – IoT is new but analytics are not

• Invest in machine learning

• Focus on predictive and pre-emptive analytics

• Perform analytics where it makes the most sense – at the edge, on the device, in the data center or in the cloud

• Built IoT analytic teams
Thanks!

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