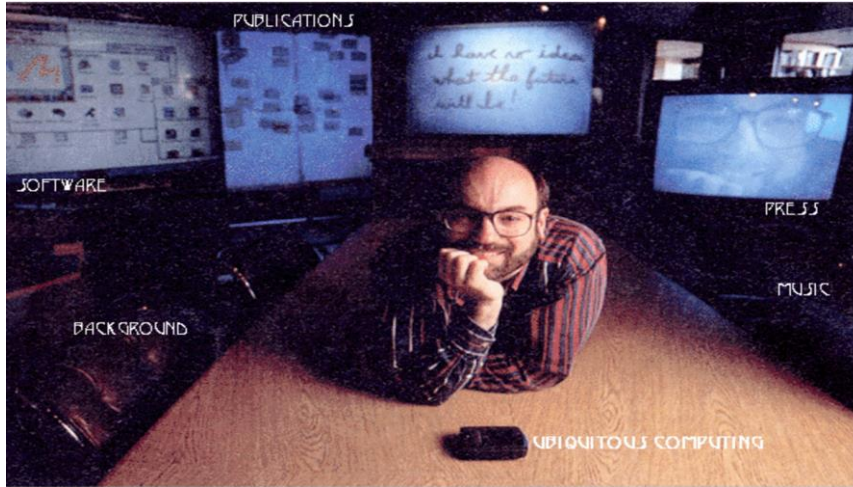# How Does IoT Fit Into Your 70-year Old Factory Floor?

Supreet Oberoi

supreet.oberoi@oracle.com
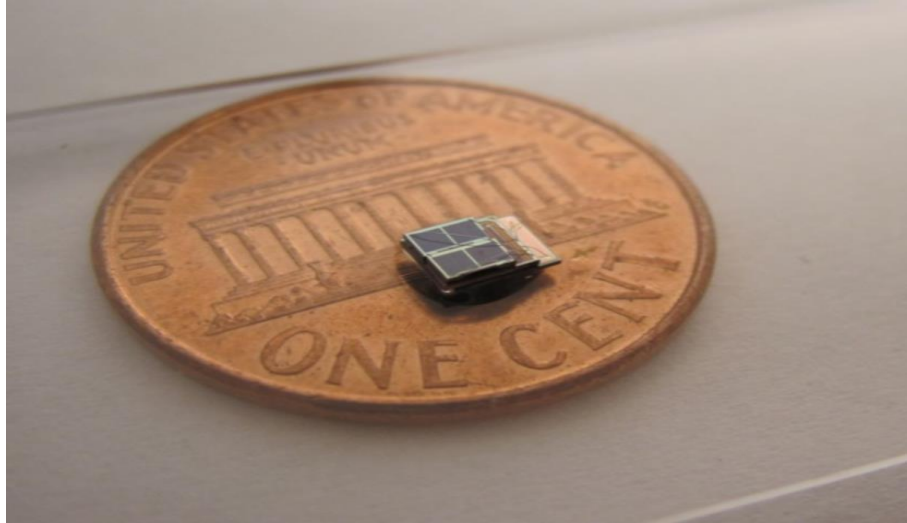
VP, IoT & Big Data

Enterprises Are Ready To Engage IoT

"The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it."

*Mark Weiser, **1988***

Enterprises Are Ready To Engage IoT

"We review the key elements of the emergent technology of "Smart Dust" and outline the research challenges they present to the mobile networking and systems community,.. "
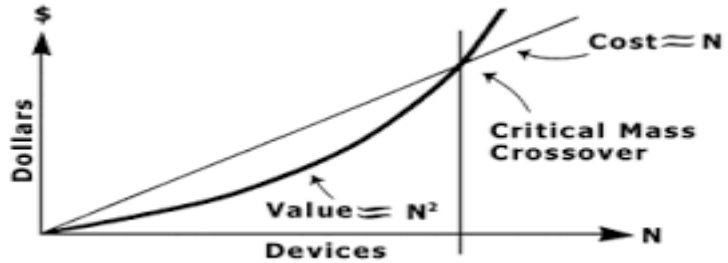
Pister et al., "Mobile Networking for Smart Dust", 1999

ORACLE®

Enterprises Are Ready To Engage IoT

"U.K.-based Raspberry Pi Foundation has now sold 10 million of the things"

2012-2016

ORACLE®

Enterprises Are Ready To Engage IoT

2017

Lesson #0: Build a Plan For ROI

Source: Bob Metcalfe Illustration

Metcalfe's law: *value of a telecommunications network is proportional to the square of the number of connected users of the system*

Residents simply sign up for ReachNow ***service*** *and* ***pay only as they use the vehicles***. *They then pay 41 cents per minute and there's no sign up or annual fee.*

Lesson #1: Secure Every Touch point

TRUSTED DEVICES

- Security mechanism provisions and manages trust relationships with devices – uses OAuth2
- Uniquely assigned device identities disallows reuse of security credentials across devices

NON REPUDIATION

- Enforces authentication prior to communication with any device or enterprise software, enabling proof of origin of data
- Short-lived authentication tokens with configurable expiration time

SECURITY LIFECYCLE

- Secure, managed state transitions to control access from devices
- Restricts types of IoT Cloud Service operations that device can perform in a given state

DATA SECURITY

- Transport level security for all communication to ensure data integrity
- Role-based access control to data-at-rest to ensure authorized access to data

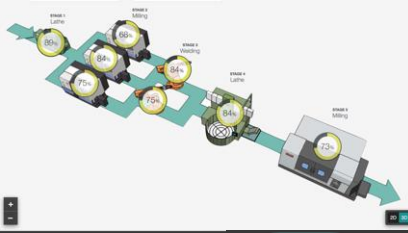# Lesson #2: Reduce Risk With Turnkey Solutions

Asset Monitoring

95% Asset Availability   1 Open Incidents

For monitoring assets, their utilization, availability, and data from connected sensors

Production Monitoring

2% Down   78% In Use   3h to 5h ago

Manufacturing factory floor equipment monitoring and prognostics

Fleet Monitoring

Posted Speed: 65
Current Speed: 59

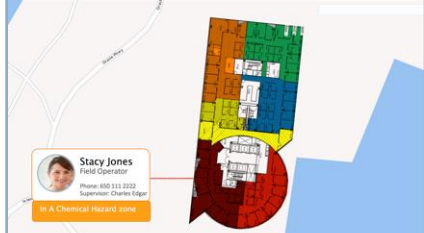65 Speed Limit   59 Current Speed

⚠ Tire Pressure: Low

68% On Track   5% Down   3 Driver Alerts

For medium sized business who have fleets of vehicles (trucks, buses, maintenance vehicles, delivery vehicles)

Connected Worker

Stacy Jones
Field Operator
Phone: 650 111 2222
Supervisor: Charles Edgar
In A Chemical Hazard zone

21 Over Time   3 Evacuation risks   0% Unsafe Zones

For tracking employees in Mining industry, Engineering and Construction industry

Lesson #3: Pick A Vendor With A Rich Iot Ecosystem

SI Partners	Connected Worker Smart Factory, Facilities Mgmt. **accenture**	Fleet Management Smart Service Utilities **L&T Infotech**	Connected Car Asset Management **KPIT**	Digital Field Service **WIPRO** Applying Thought
		Asset Tracking **Cognizant**	Asset Monitoring, IIC Test Bed **TATA CONSULTANCY SERVICES**	Fleet Management **LOCHBRIDGE**
			Smart Factory **NEC**	Remote Equipment Monitoring **Ephlux**
				Smart Logistics **Hitachi Consulting**

Real-time OS & Device Management **WIND** (intel)	OPC UA Industrial Connectivity **MatrikonOPC**	Building / Industrial Connectivity **TRIDIUM Honeywell**		
Industrial Gateways **janztec** Industrial Computing Architects	Industrial Gateways **EUROTECH**	Industrial Gateways and Sensors **ADVANTECH** Enabling an Intelligent Planet **mobica**	Industrial Automation **Rexroth** Bosch Group	
IoT OS & Device Management **ZENTRI**	IoT Security **gemalto** security to be free	Smart City Gateway **Aricent**	Wireless Connectivity **cisco Jasper**	Device and Technology Partners

Lesson #4: Reduce TCO for IoT Projects

Integration Cloud Service

- Rapid integration with wide range of cloud and on-premise applications

- Protocol conversions (e.g., RESTful to SOAP) and data transformations (e.g., JSON to XML)

Storage Cloud Service

- Secure, scalable, long-term storage of IoT data

- Integrate data for processing in big data analytics (Big Data Discovery Cloud Service) and big data processing (Big Data Cloud Service)

Mobile Cloud Service

- New enterprise services/APIs for mobile consumption

- API abstractions for external consumption

BI & Data Visualization Cloud Services

- Extend real-time analytics with powerful BI applications for agile analysis

- Create compelling data visualizations for fluid, interactive insights