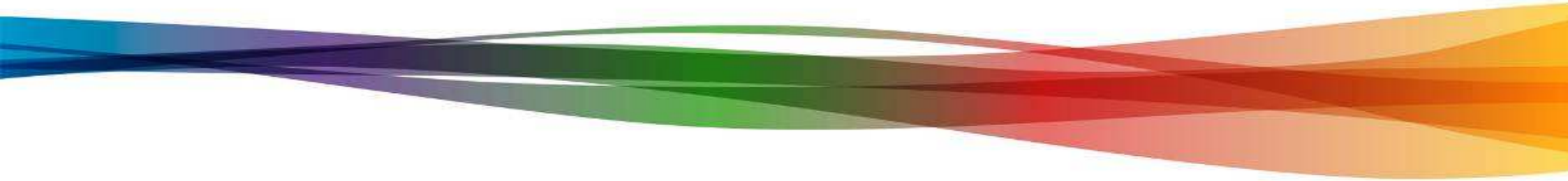

# “Connected Life” for Big Data

Joe Speed

IBM m2m Leader

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# Market opportunity for “Connected Life”

**“Connected Life” forecast $4.5T in 2020**

•Connected Life is everything that is connected cars, mobiles, cars, buildings, sensors, et al.

•2012 7B connected things

•2015 15-20B connected thing

•2020 40-50B connected things

| Top Ten Connected Applications in 2020 | Value to the Connected Life |
|---|---|
| 1. Connected Car | $600 billion |
| 2. Clinical Remote Monitoring | $350 billion |
| 3. Assisted Living | $270 billion |
| 4. Home and Building Security | $250 billion |
| 5. Pay-As-You-Drive Car Insurance | $245 billion |
| 6. New Business Models for Car Usage | $225 billion |
| 7. Smart Meters | $105 billion |
| 8. Traffic Management | $100 billion |
| 9. Electric Vehicle Charging | $75 billion |
| 10. Building Automation | $40 billion |

http://www.gsma.com/newsroom/gsma-announces-the-business-impact-of-connected-devices-could-be-worth-us4-5-trillion-in-2020/

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## HTTP is last century's technology

1. not designed for wireless
2. slow, fragile and kills batteries
3. obsolete synchronous request/response model
4. no quality of service (QoS), no reliable messaging
5. poor solution for mobile, push marketing, automotive
6. not green, requires 1,000 HTTP web servers to handle what can be done w 1 rack of latest technology

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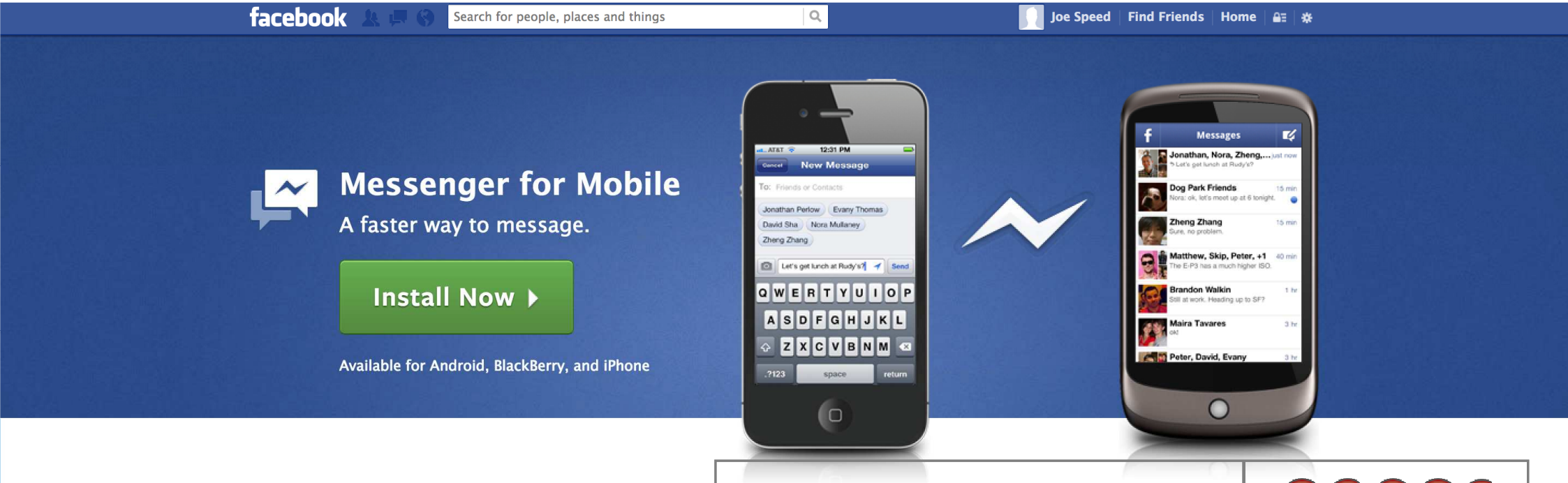



## Facebook Messenger

FACEBOOK

★ ★ ★ ★ ½ (567, 240)

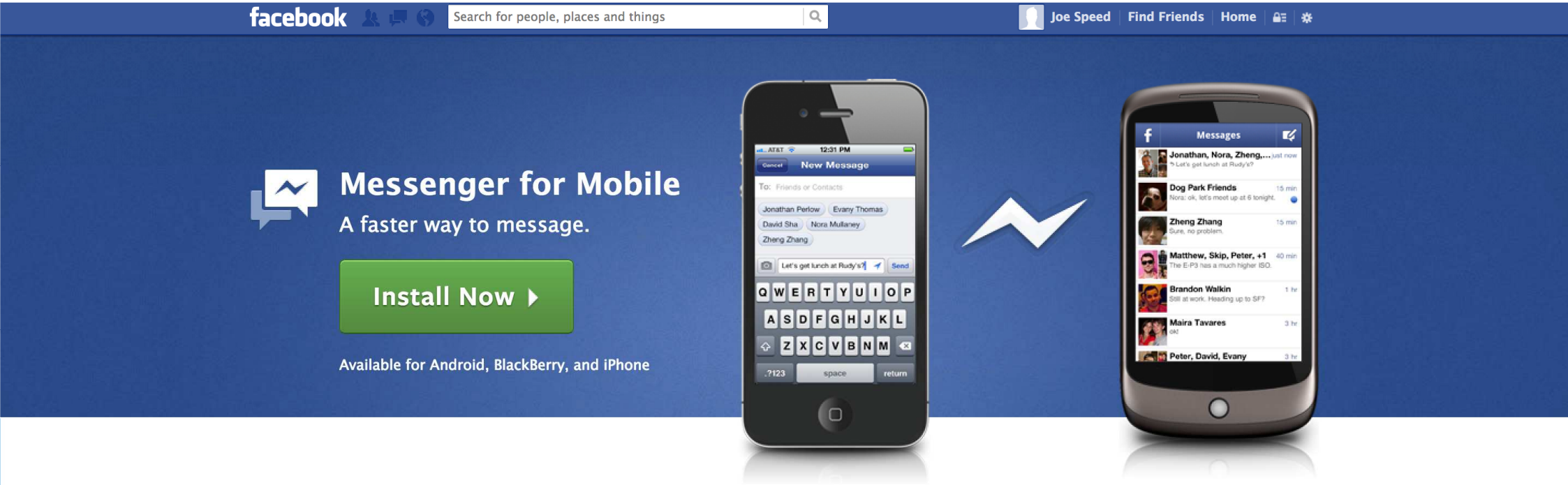
| Verizon Wireless Overall Rating | ●●●●● |
|---|---|
| Security | ●●●●● |
| Battery Consumption | ●●●●● |
| Data Usage | ●●●●○ |

- 600M mobile users, highly rated, **very fast, very low battery use**
- **Speed of its user experience is a big competitive advantage**

Source: https:/facebook.com

Source: https://play.google.com/store/apps/details?id=com.facebook.orca

source: http://support.verizonwireless.com/information/app_ranking/apps/facebook-messenger.html




"... performance improvements designed to make your messaging experience even better. To do this without killing battery life, we used a protocol called MQTT ... designed to use bandwidth and batteries sparingly... phone-to-phone in hundreds of milliseconds, rather than multiple seconds."

- Lucy Zhang, Facebook Engineer
www.facebook.com/lucyz

# m2m engineered for mobile

- **lightweight publish/subscribe** w QoS
- reliable mobile, “last will & testament”
- **Open Source** eclipse.org/paho mqtt.org
- **Open Standard** oasis-open.org
  SAP, Software AG, Cisco, Red Hat, TIBCO,
  Axway many AMQP brain trust joined 3/13

- **93x** faster mobile throughput
- **11.89x** less battery to send
- **170.9x** less battery to receive
- **1/2** power to keep connection
- **8x** less network overhead
- **50µs** app-to-app on fast network

| | HTTPS | MQTT |
|---|---|---|
| receive / hour | 1,708 | 160,278 |
| % battery / msg | 0.01709 | 0.00010 |
| send / hour | 1,926 | 21,685 |
| % battery /msg | 0.00975 | 0.00082 |

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Source: http://stephendnicholas.com/archives/1217

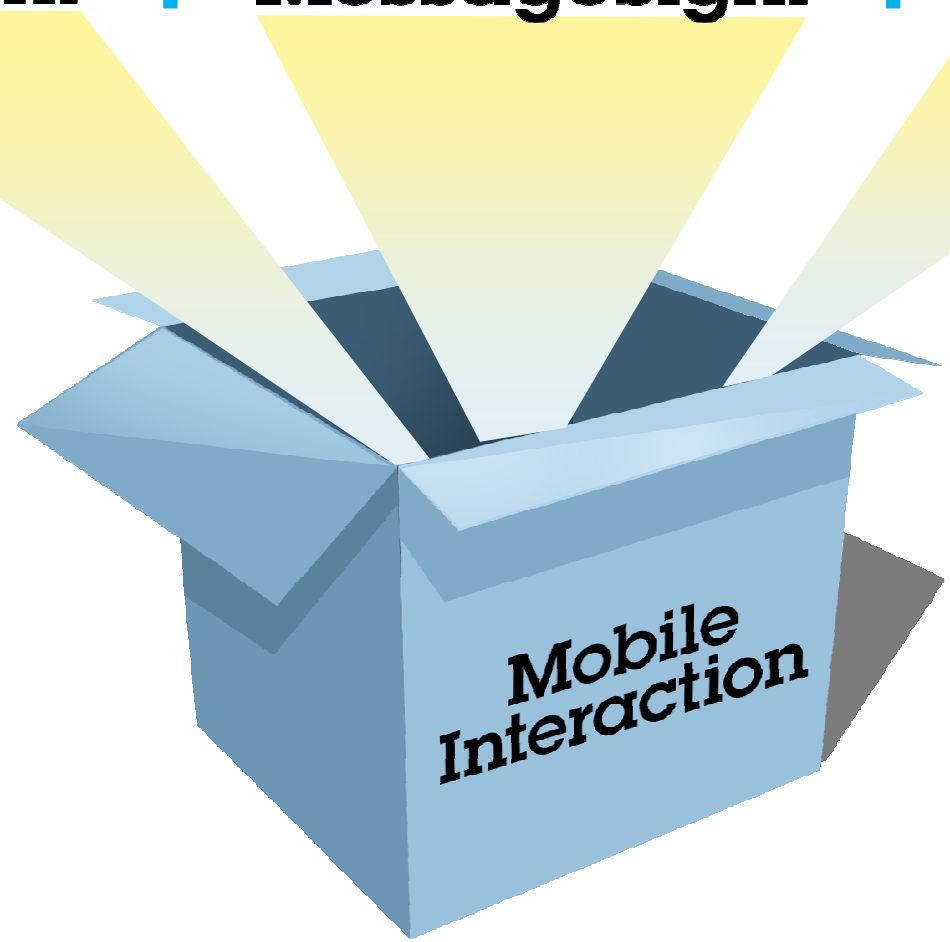
## “response time = revenue”

- Amazon says **100ms delay costs 1% revenue**
- Google says +0.5 second **drops user traffic 20%**
- Retailer discovered **halving response time increased online revenue 219%**
- **Slowdowns** cost 2x more revenue than outages
- Marissa Mayer said of Google’s performance: **"Users really respond to speed. Speed matters. People do not like to wait. Do not make them.”**

***Latency is everywhere and it costs you sales***

sources: gomez, strangeloopnetworks

Worklight + MessageSight + Streams



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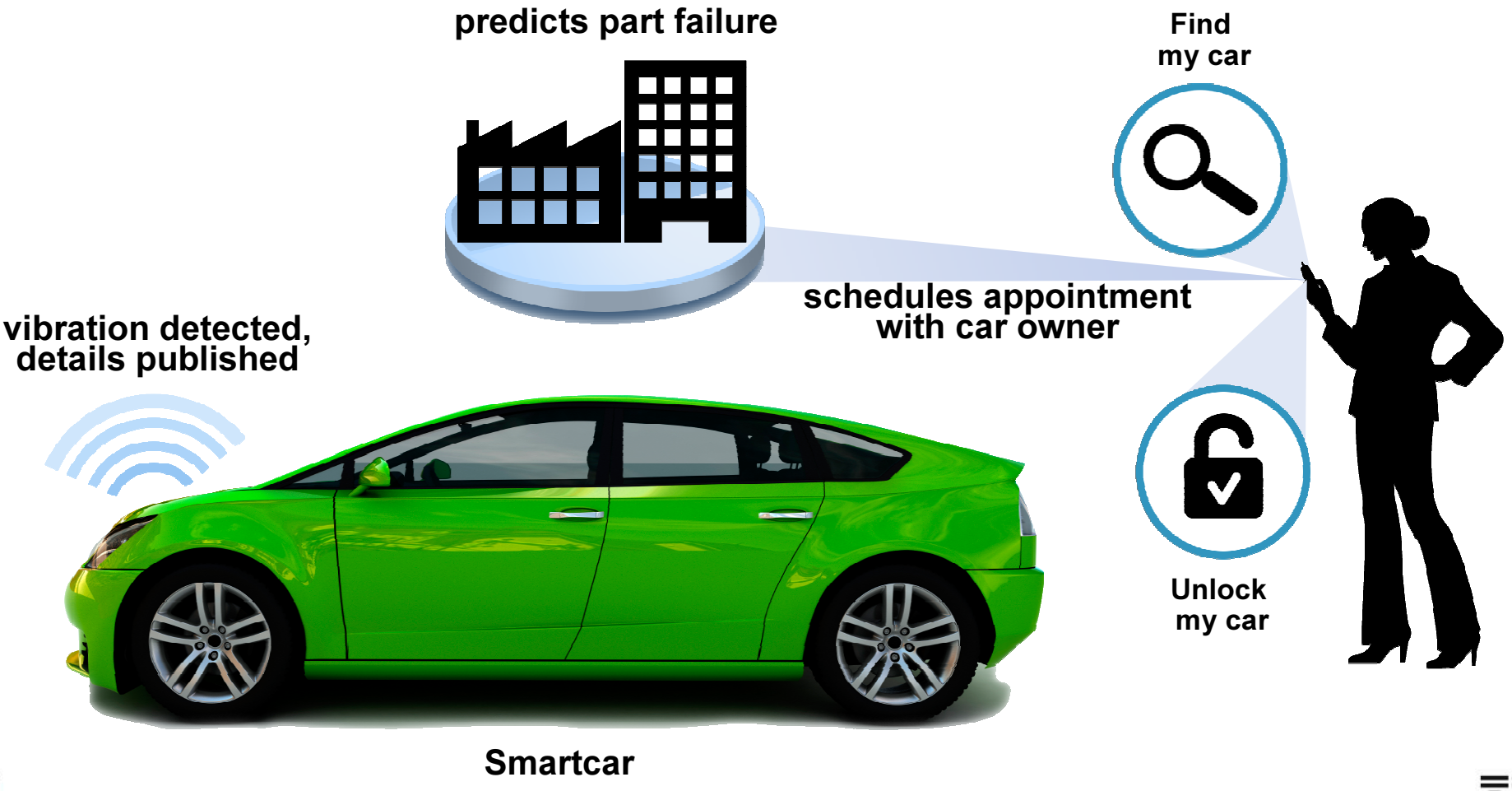
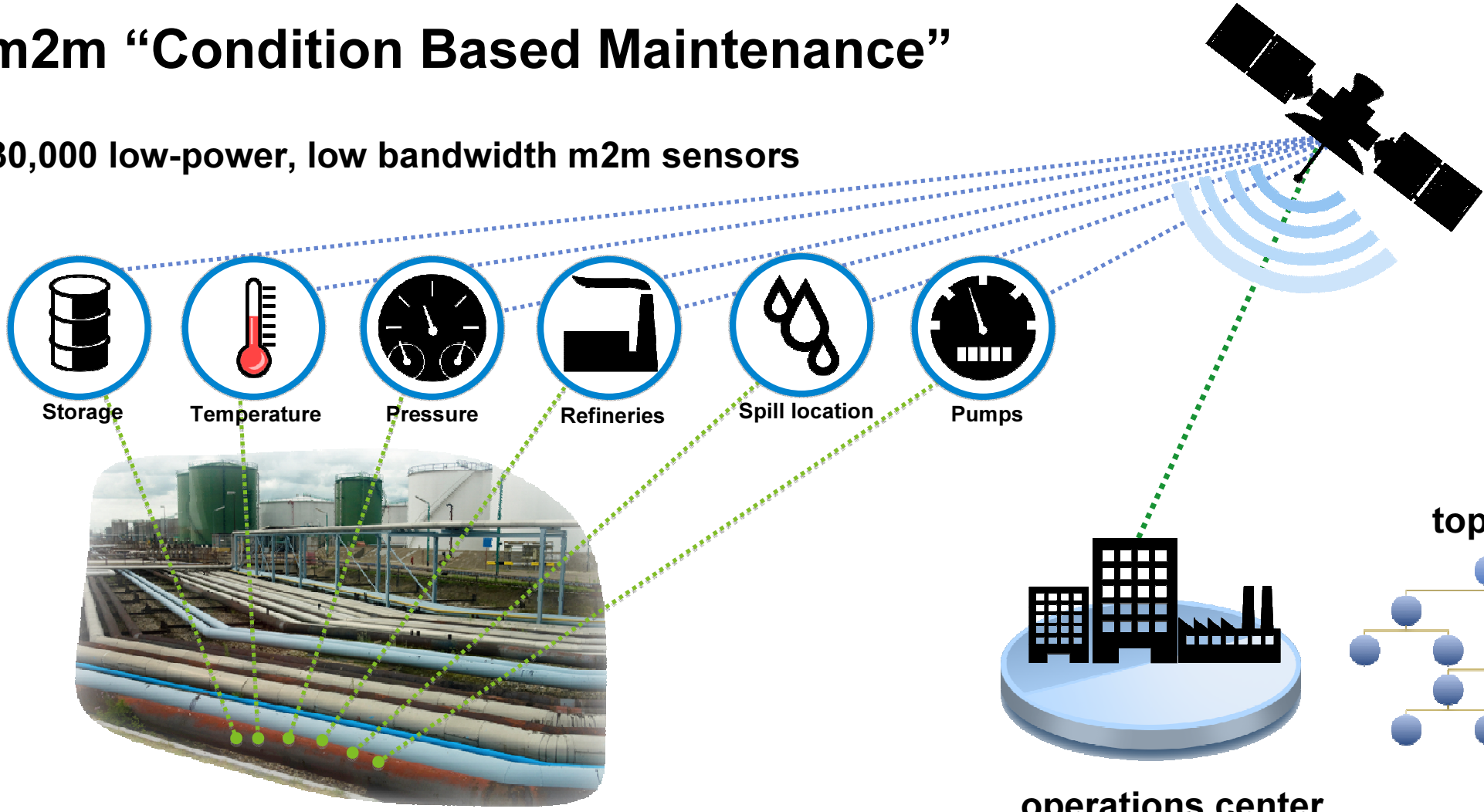
# m2m “Connected Car” for telematics, infotainment, mobile



# m2m “Condition Based Maintenance”

**30,000 low-power, low bandwidth m2m sensors**




**17,000km pipeline network with real-time monitoring and control**

**operations center detects, predicts, acts**

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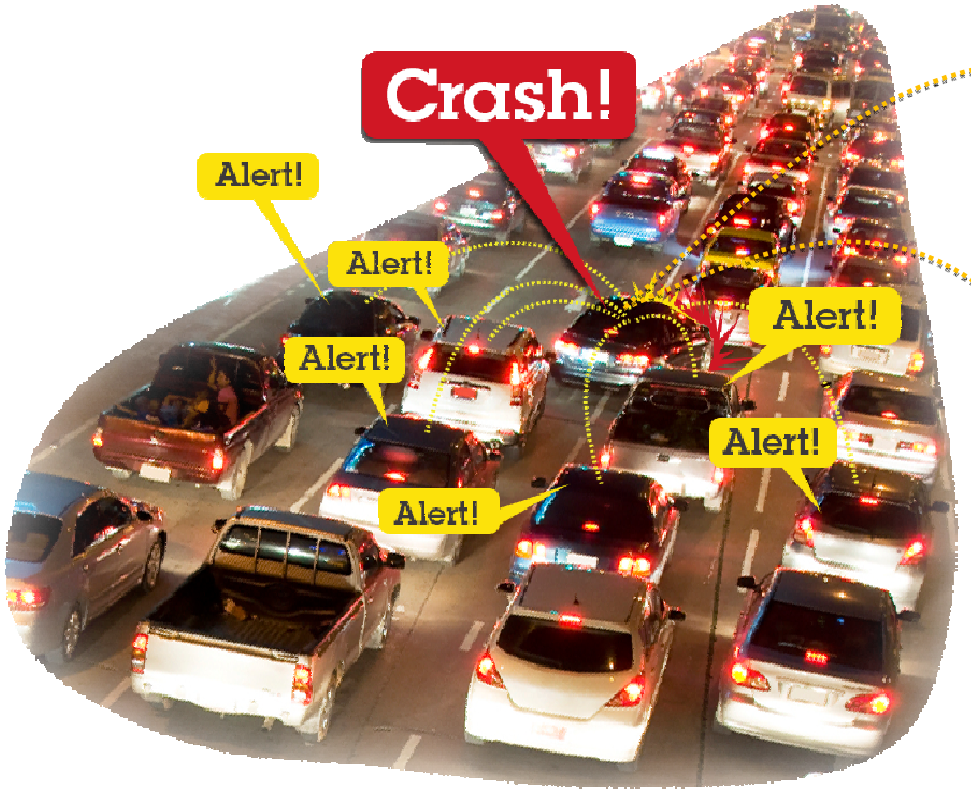
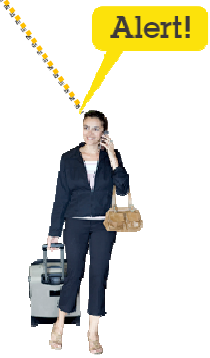
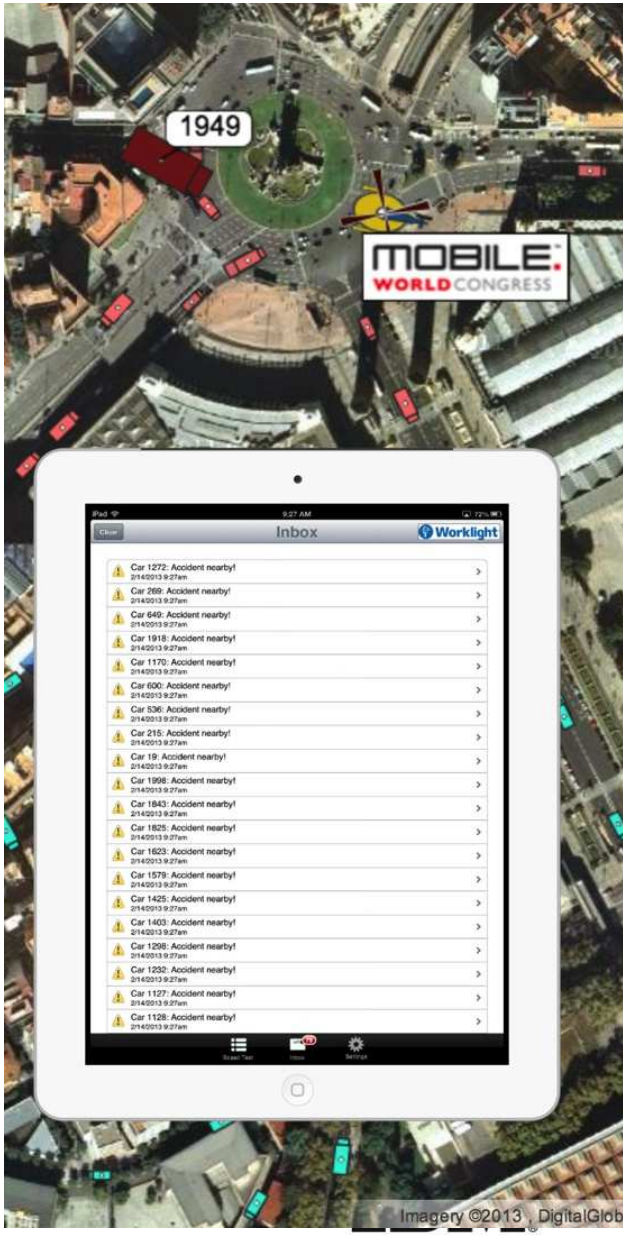
# m2m “Connected City” for public’s safety





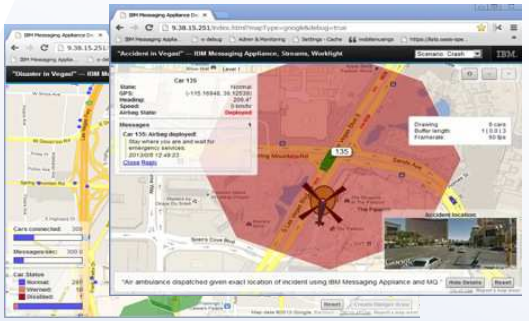

Demo video



# Demo scenario

MQTT & HTML5

real-time Big Data



HTML5 WebSocket

MQTT

high-speed m2m
publish/subscribe

Content

Insurers

OEM
Apps

etc

[April 23rd announcement]

Demo video

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