Controlling Unknown With Actionable Wi-Fi Analytics

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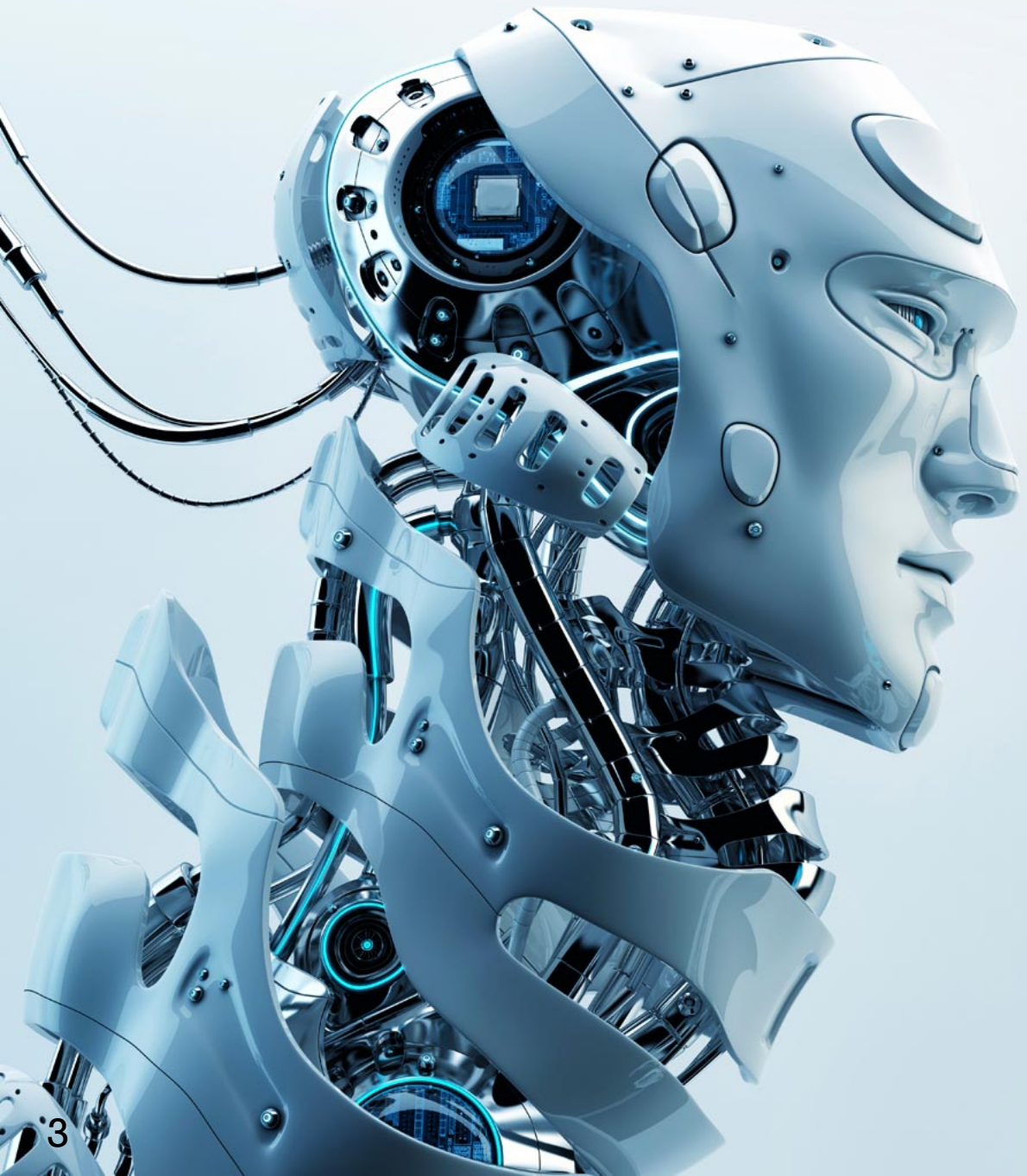
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IT Professional Wi-Fi Trek 2016

More data has been created in the past two years than in the history of the human race

By 2020 there may be over 50 Billion things in the world collecting, analyzing and sharing data

By 2020, it's estimated that 1.7MB of new information will be created every second for every human being on the planet
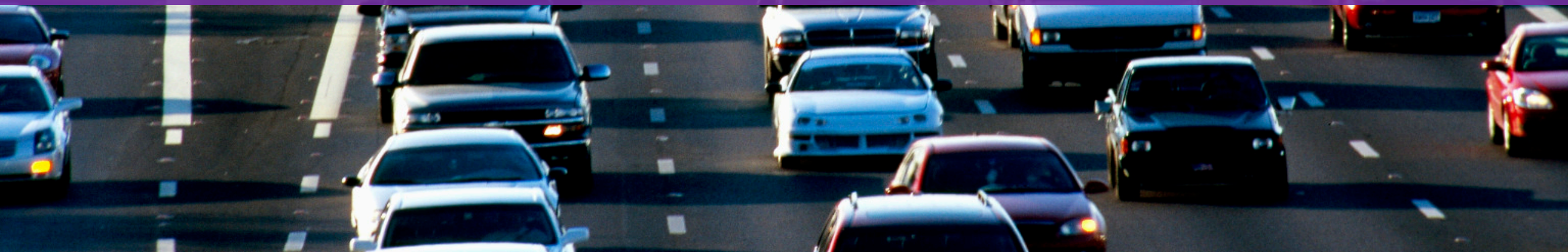
It's estimated that less than 0.5% of all data is ever analyzed and used

Imagine the potential to help drive better outcomes for your users and your business

We've evolved networks by building bigger 'roads' and priority 'lanes' for our traffic

…but never stopped to look inside those 'cars' travelling down our highways

Legend:
- SIP traffic
- RTP/SRTP traffic
- Call Admission Control (CAC) traffic
- ICE traffic
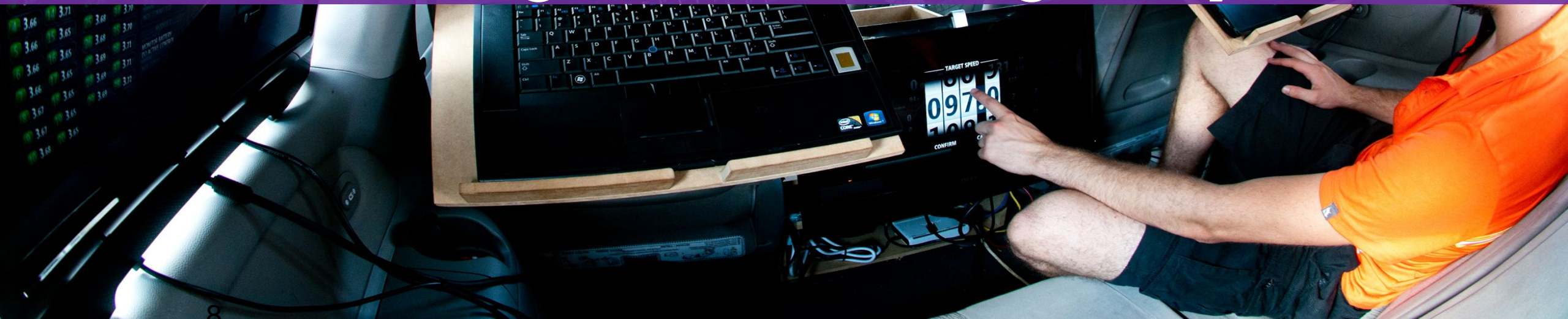
Requirements Have Gotten Complex
We Need Insights - Not Opinions

Mobility Fusion At The Access Point

First Mile In

Last Mile Out

Experiences
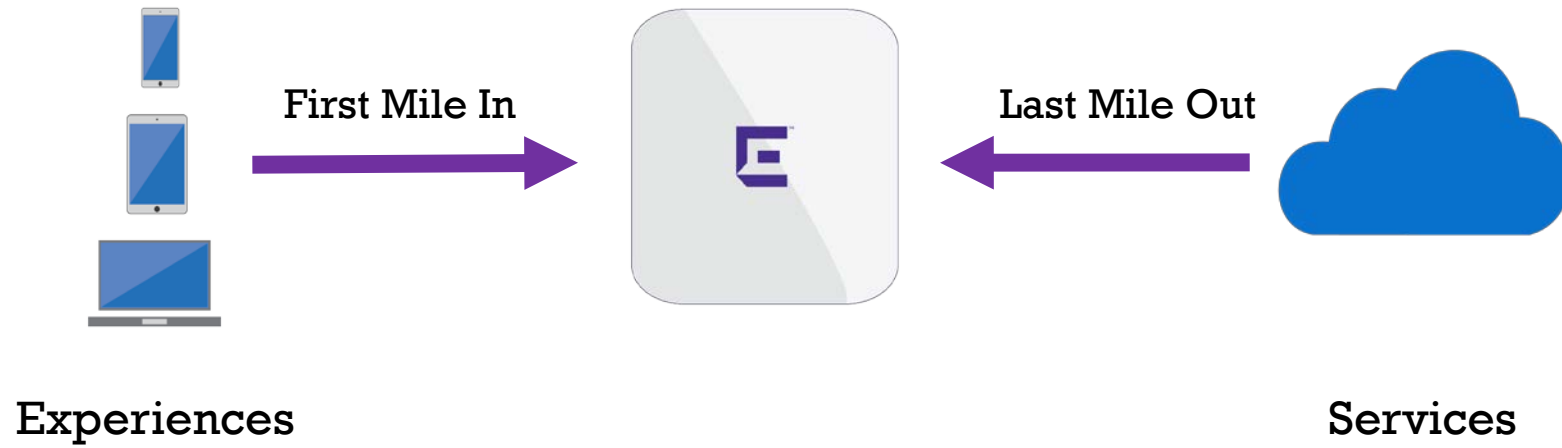
Services

3 Dimensions of Wi-Fi Analytics

Radio Conditions

Application Response

Network Services

Life of a Packet
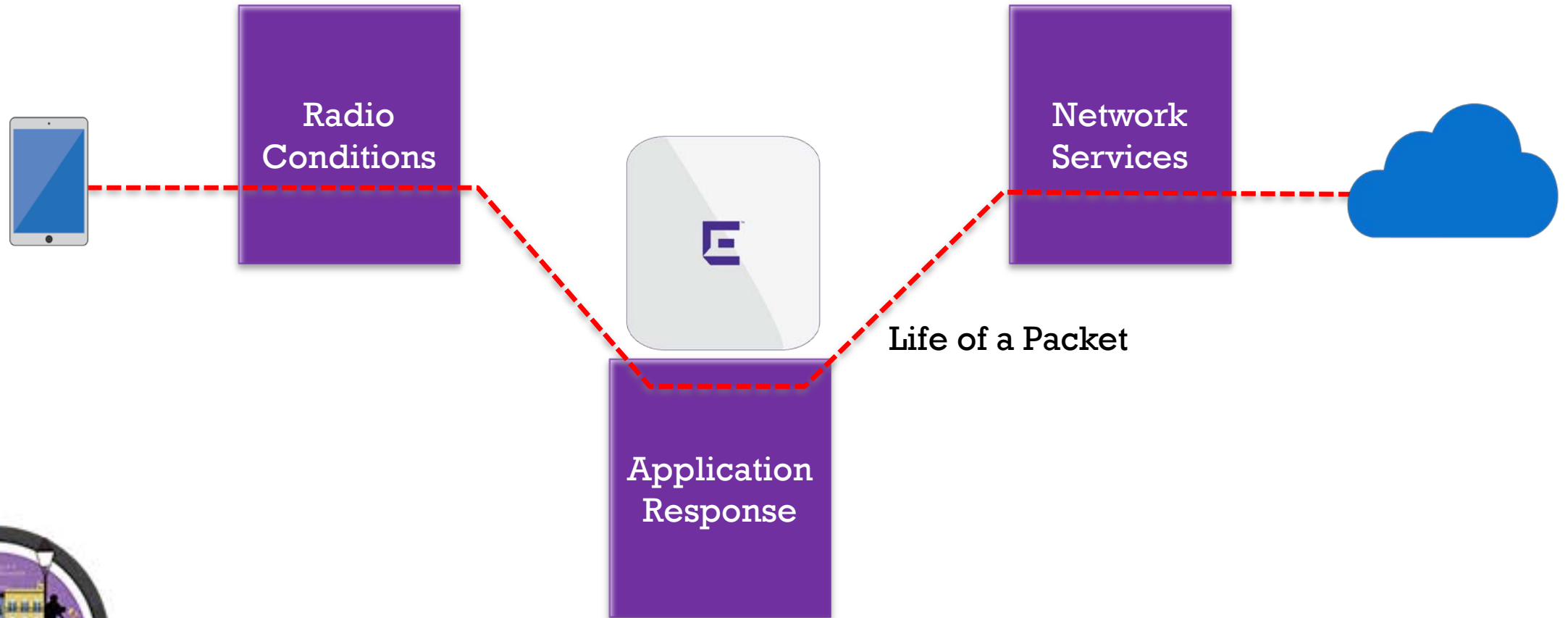
Measurements "Behind The Radio"

Network Services

- Wi-Fi essential services:
  - DHCP, DNS, RADIUS, LDAP

- Uptime and response is critical

- User experience predicated upon

Application Response Times

- Measured in ms for bi-directional flows

- Illuminates network AND application response times

Measurements "In Front of the Radio"

- Measuring RF is not straight forward: what tool, what values, client side vs. infrastructure, etc.

- How do you determine IF the RF is contributing to good or bad experiences?

- There is no single measurement the industry has agreed upon to pass judgement on "quality of experience"

Measuring RF Conditions – Link Quality

- Can we determine client link quality from the infrastructure view point?

- Several factors can contribute to Link Quality – which to choose?
  - Noise level, RSS, channel utilization, channel plan, collision

- How many points of data can be collected? How many can be analyzed?
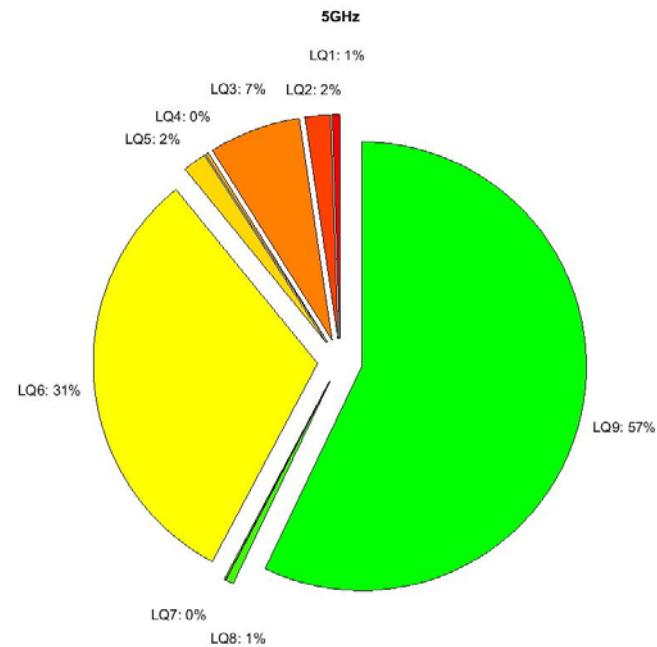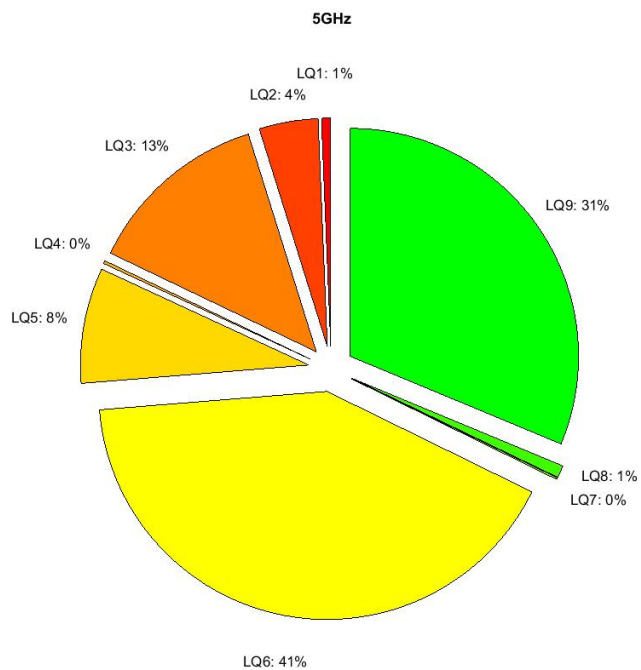 - How "big" does our data need to be?

Lab Example – Measuring Two Criteria

- Could two points of data provide LQ? RSS, Tx Rate as reported on AP
  - RSS: indicator for: deployment coverage
  - Tx Rate: indicator for: deployment channel plan, error free environment, efficient use of channel
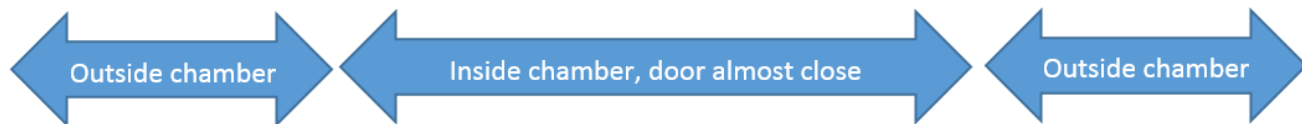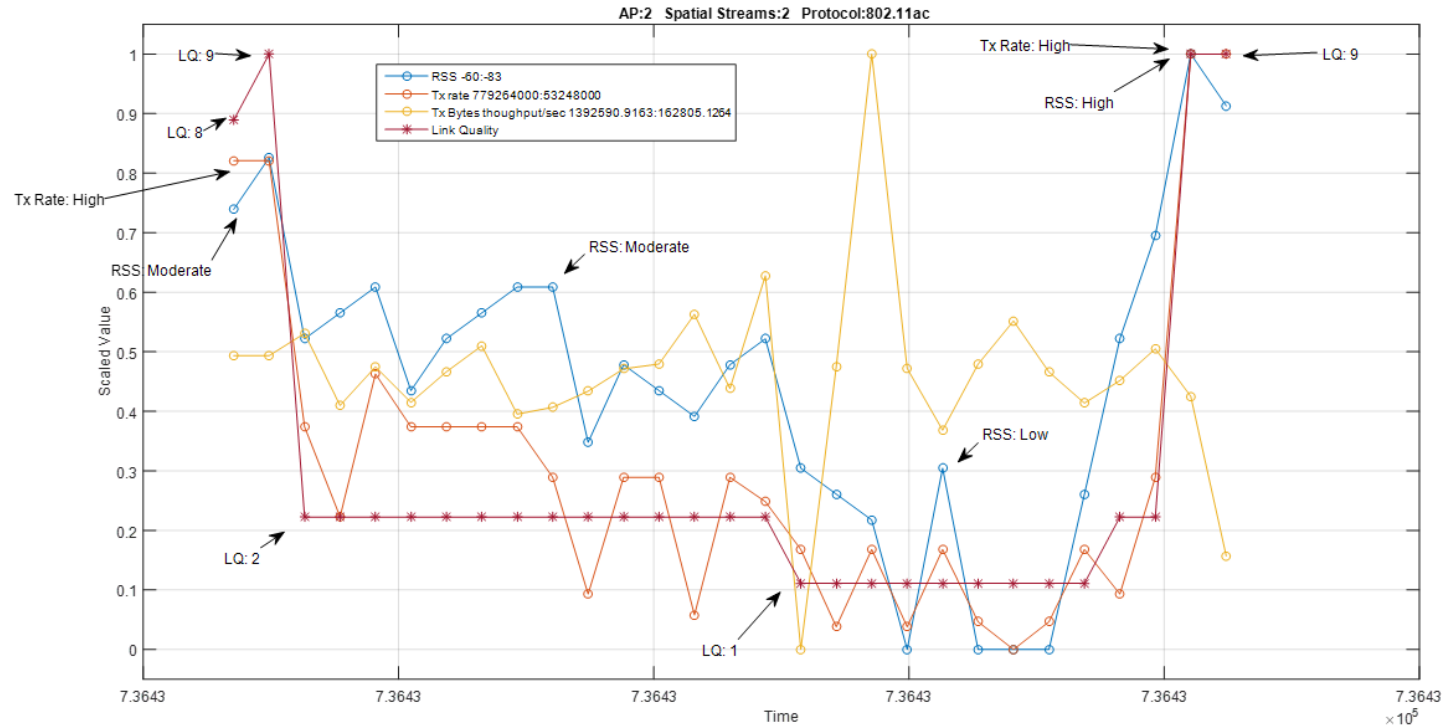
Real World Application

- Data collected in live environment pre vs. post redesign for 5GHz deployment

5GHz

LQ1: 1%
LQ2: 4%
LQ3: 13%
LQ4: 0%
LQ5: 8%
LQ9: 31%
LQ8: 1%
LQ7: 0%
LQ6: 41%

5GHz

LQ1: 1%
LQ3: 7%   LQ2: 2%
LQ4: 0%
LQ5: 2%
LQ6: 31%
LQ9: 57%
LQ7: 0%
LQ8: 1%

Real World Breakdown: Distributions across APs

- Same metrics, Tx Rate + RSS shown here
  - (Darker colors are worse)

- Metrics quickly illuminate AP's whose clients are experiencing WORSE RF conditions

- Validated Metrics prove significance in the real-world: only 2x values!

5GHz: AP LQ distribution
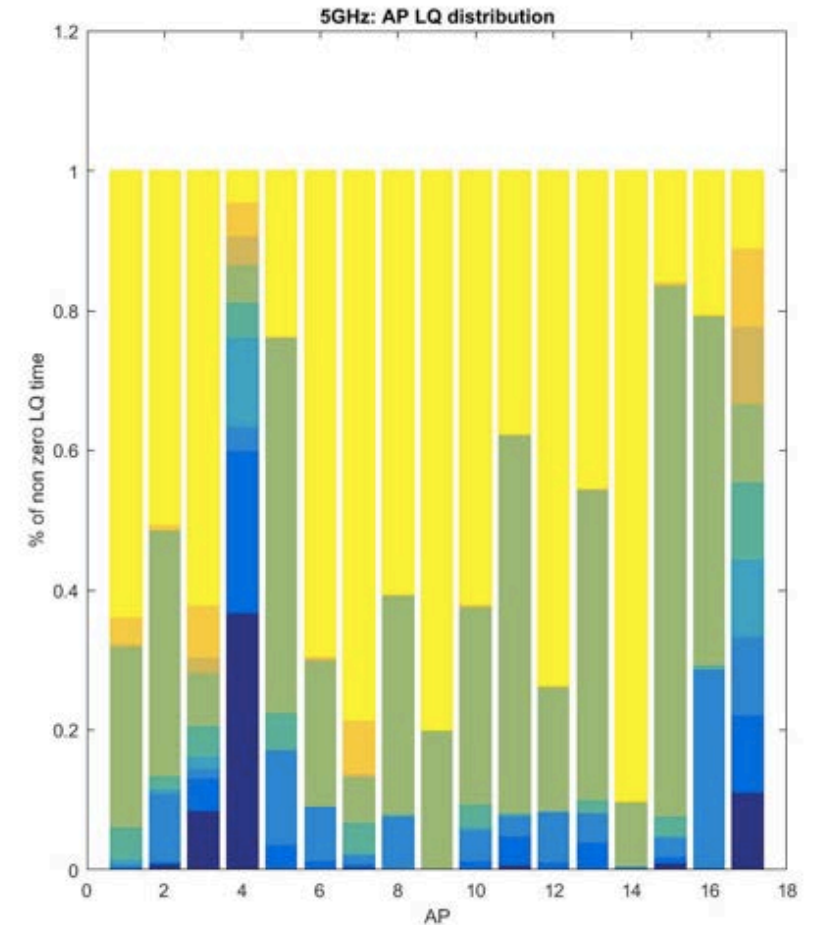
So What Does This Prove?

1. Valuable insights can be derived from as little as two points of data

2. Quality can be determined from infrastructure visibility – it doesn't necessarily require client-side input

3. Network intelligence can be leveraged to influence control of the user experience

Cognitive Wi-Fi

- Networks are getting smarter

- Expectations are getting bigger

- We're working to computationally align both

- True control happens then

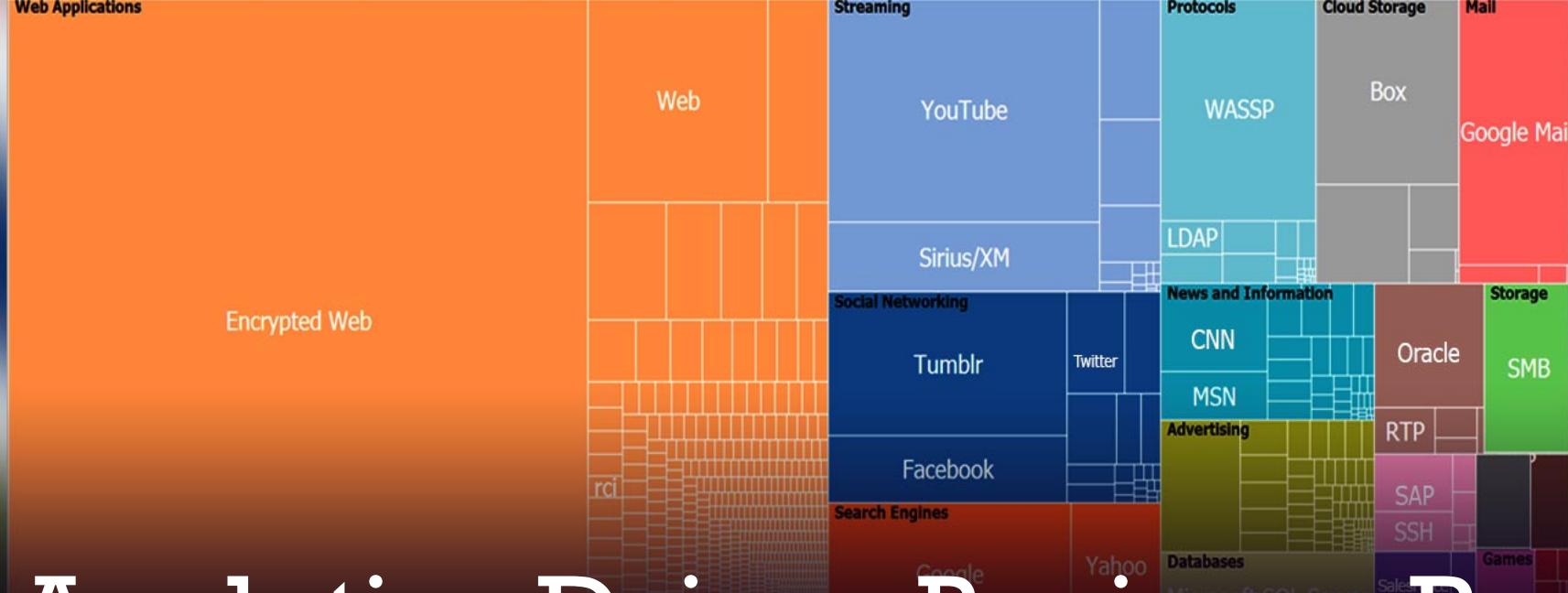**Predictive tool for deployment planning**

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Self-adjusting WiFi network

↓

Learning and monitoring of the network objectives

Analytics Drives Business Results

Assure delivery of excellent user experiences

Generate new sources of revenue and/or optimize operations

Obtain greater security profile and eliminate unwanted behaviors

Thank You