The End of Bad Wi-Fi

Jussi Kiviniemi
Ekahau

2018 BICSI WINTER
CONFERENCE& EXHIBITION
Orlando, FL | February 4-8

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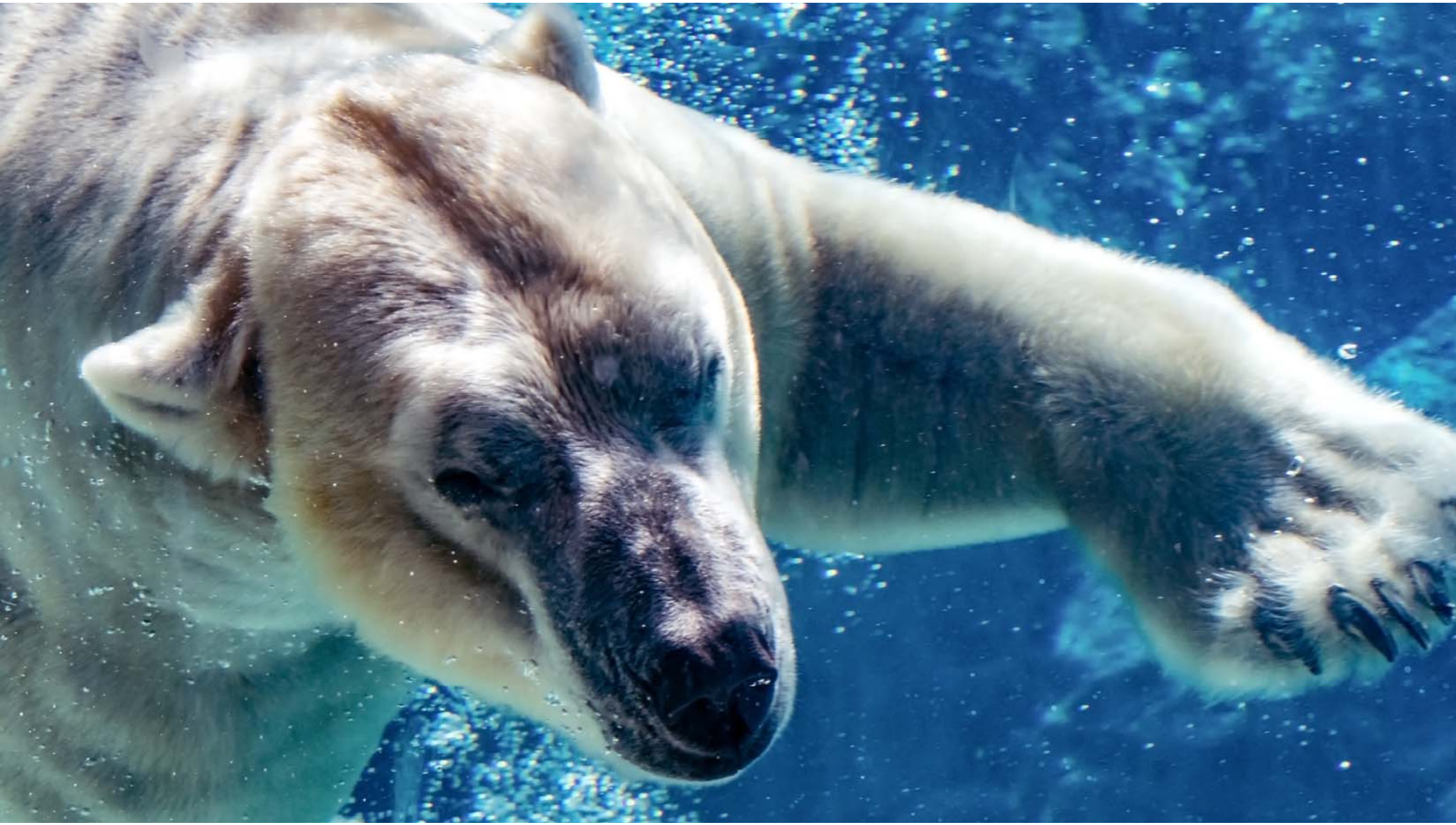

About me

- Senior Vice President at Ekahau
- Product strategy & development
- Marketing strategy & evangelism

- Worked with Wi-Fi since 2001
  - At Ekahau since 2002

- *More info: Google "Jussi Wi-Fi"*

Find me on LinkedIn and Twitter:

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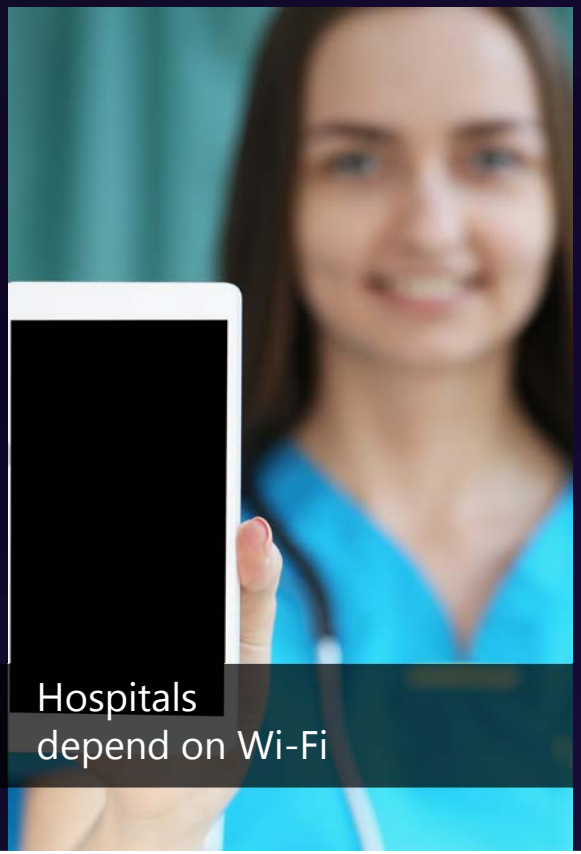
Agenda

- Cars
- Transportation system
- Practical examples

Wi-Fi is everywhere

Warehouses
rely on Wi-Fi



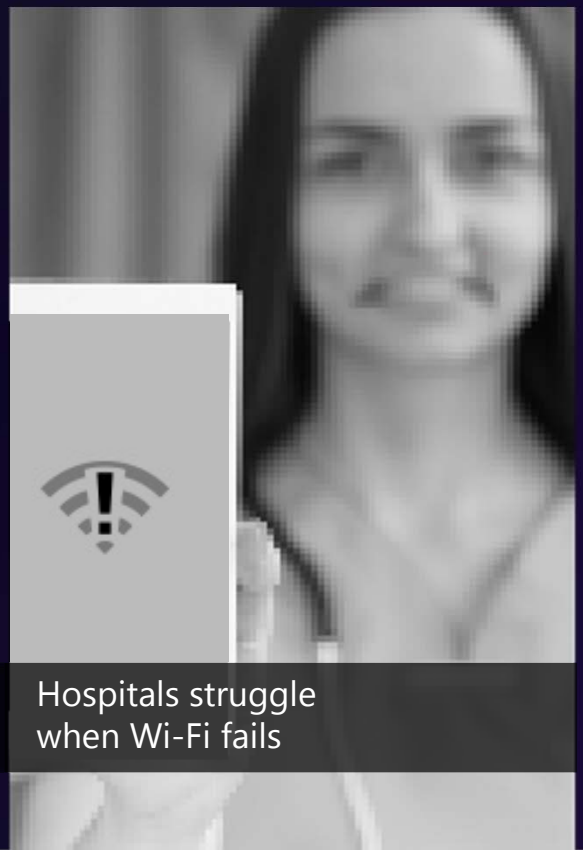
Hospitals
depend on Wi-Fi

Number #1 thing in
hotels:
Good Wi-Fi

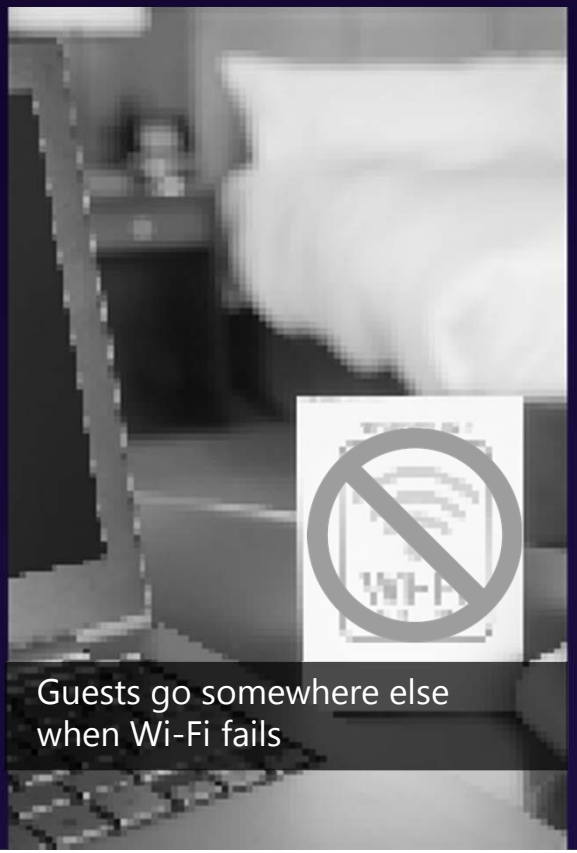
No books at schools.
Just Wi-Fi

Bad Wi-Fi is everywhere

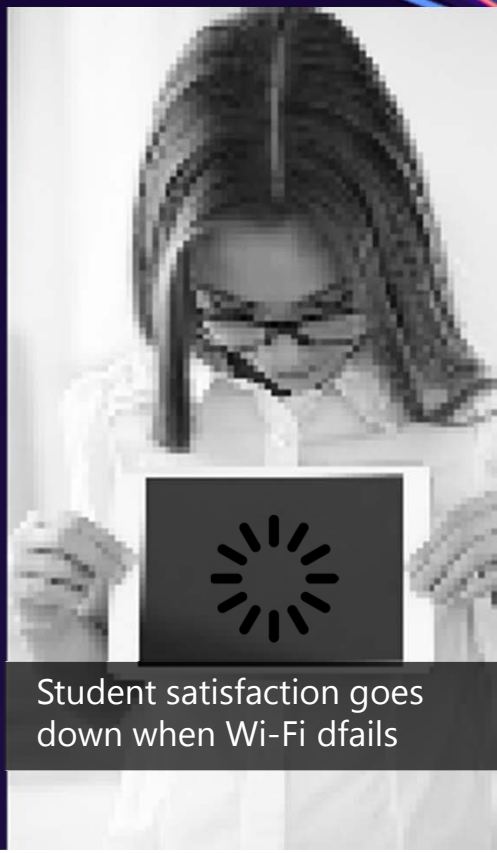
Warehouses grind to a halt when Wi-Fi fails



Hospitals struggle when Wi-Fi fails



Guests go somewhere else when Wi-Fi fails



Student satisfaction goes down when Wi-Fi dfails

Why does bad Wi-Fi exist?

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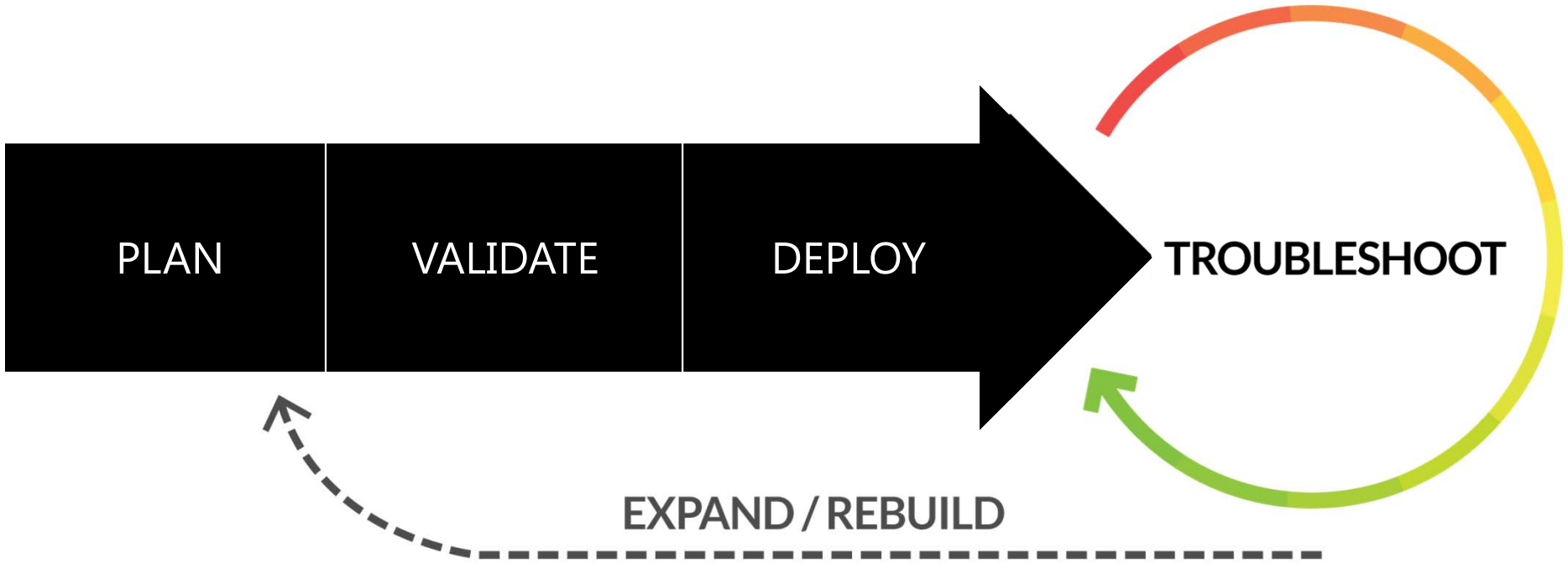
Wi-Fi Network Life Cycle
The Promise

Bicsi

Reality

DEPLOY
RS COVERAGE HOLES ROAMING ISSUES
ERRORS INEFFICIENT AIRTIME USAGE
S TROUBLESHOOT PACKET LOSS
IANNEL OVERLAP CAPACITY PROBLEMS
INTERFERENCE CONFIGURATION ERRORS
EXPAND / REBUILD

Life cycle for Wi-Fi that works

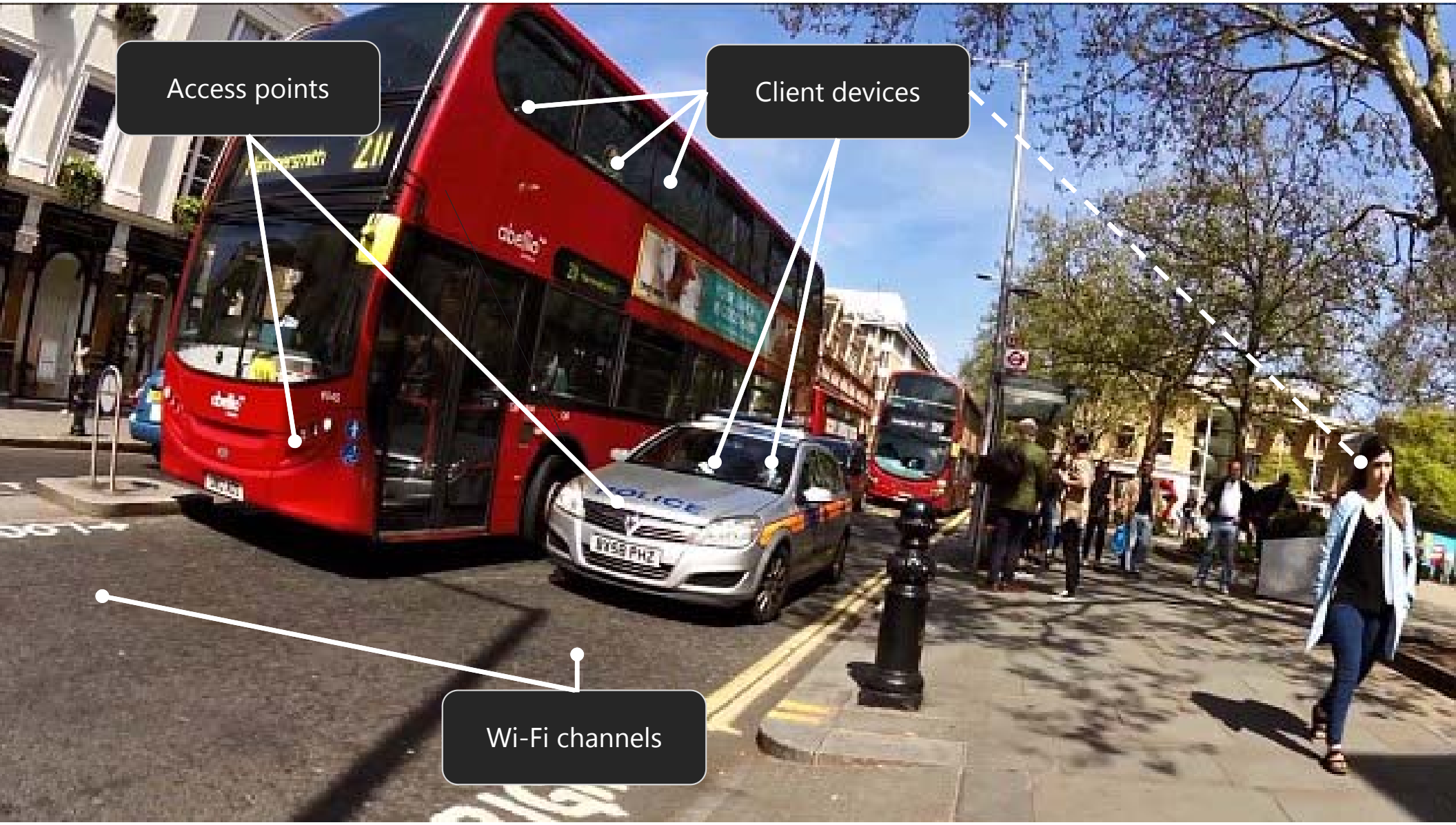


Bad Wi-Fi

- Problems connecting
- Choppy video
- Dropped calls
- Lost revenue
- Impacted healthcare services

Great Wi-Fi

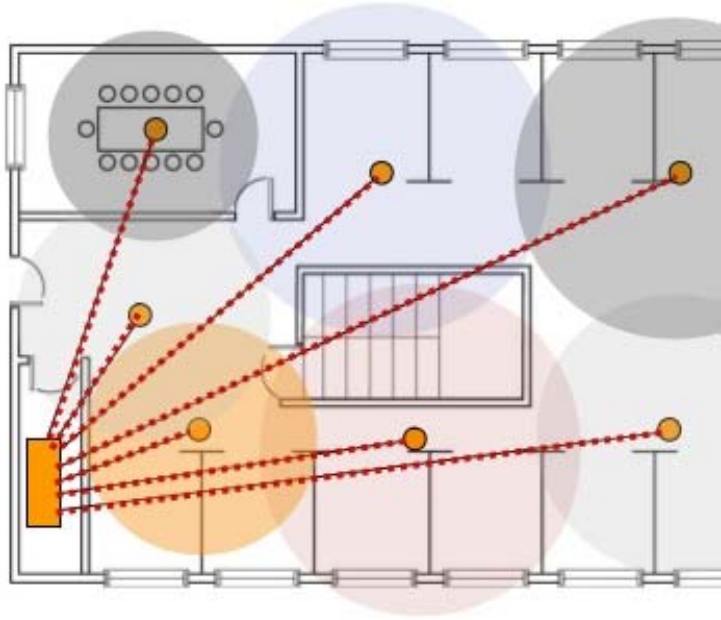
- Things just work


Access points
Client devices
Wi-Fi channels

LEFT REARWARD VEHICLE CAMERA
MEDIUM RANGE VEHICLE CAMERA
RIGHT REARWARD VEHICLE CAMERA

Automatic RF functionality in access points is like Tesla's Auto-Pilot

- Transmit power optimization
- Channel optimizations
- Dynamic allocation of dual-5GHz



So, site surveys are not necessary.

Thank you!

Find me on LinkedIn and Twitter!

Google: “Jussi Wi-Fi”

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Thank you!

NOT SO FAST

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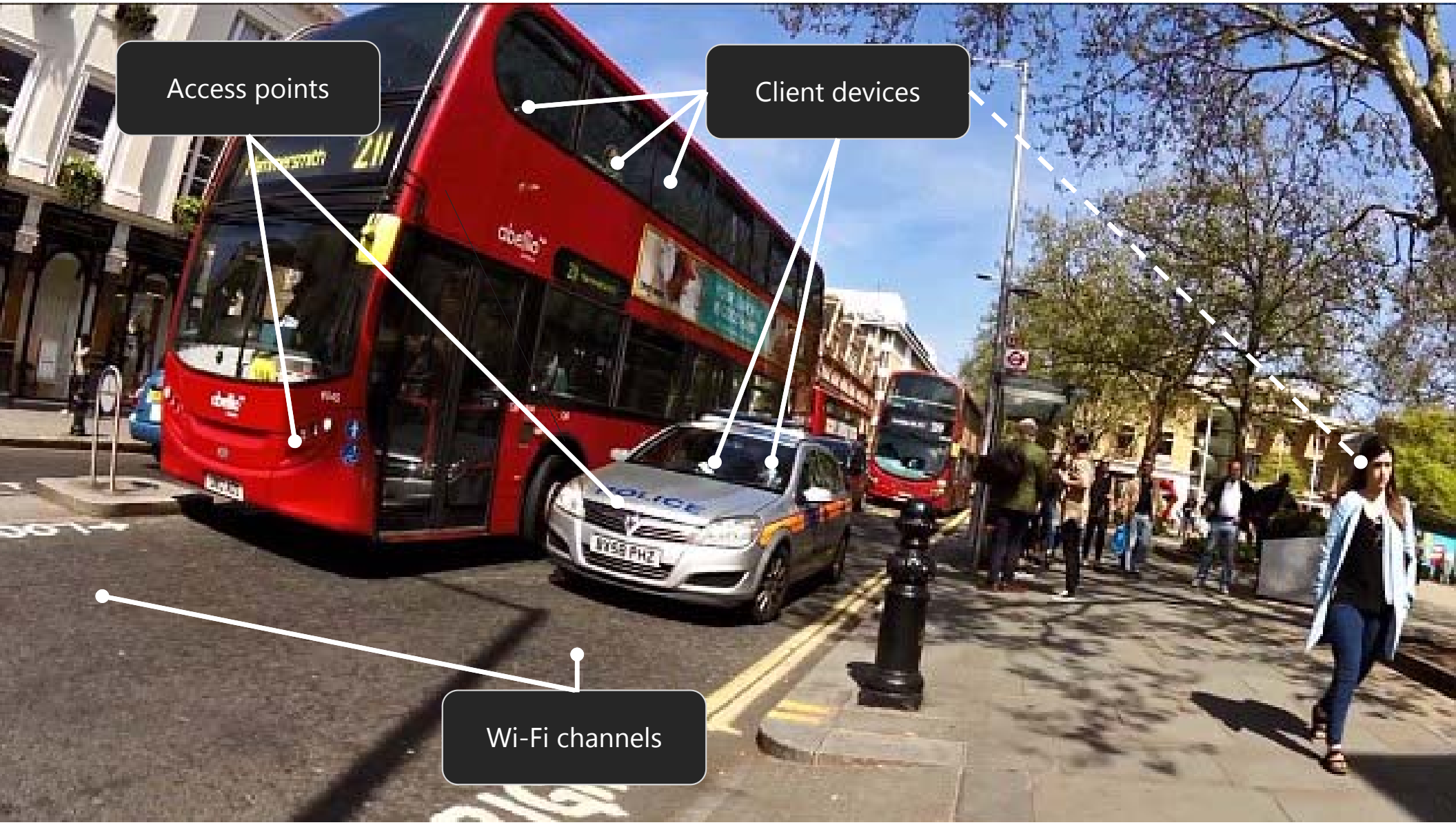
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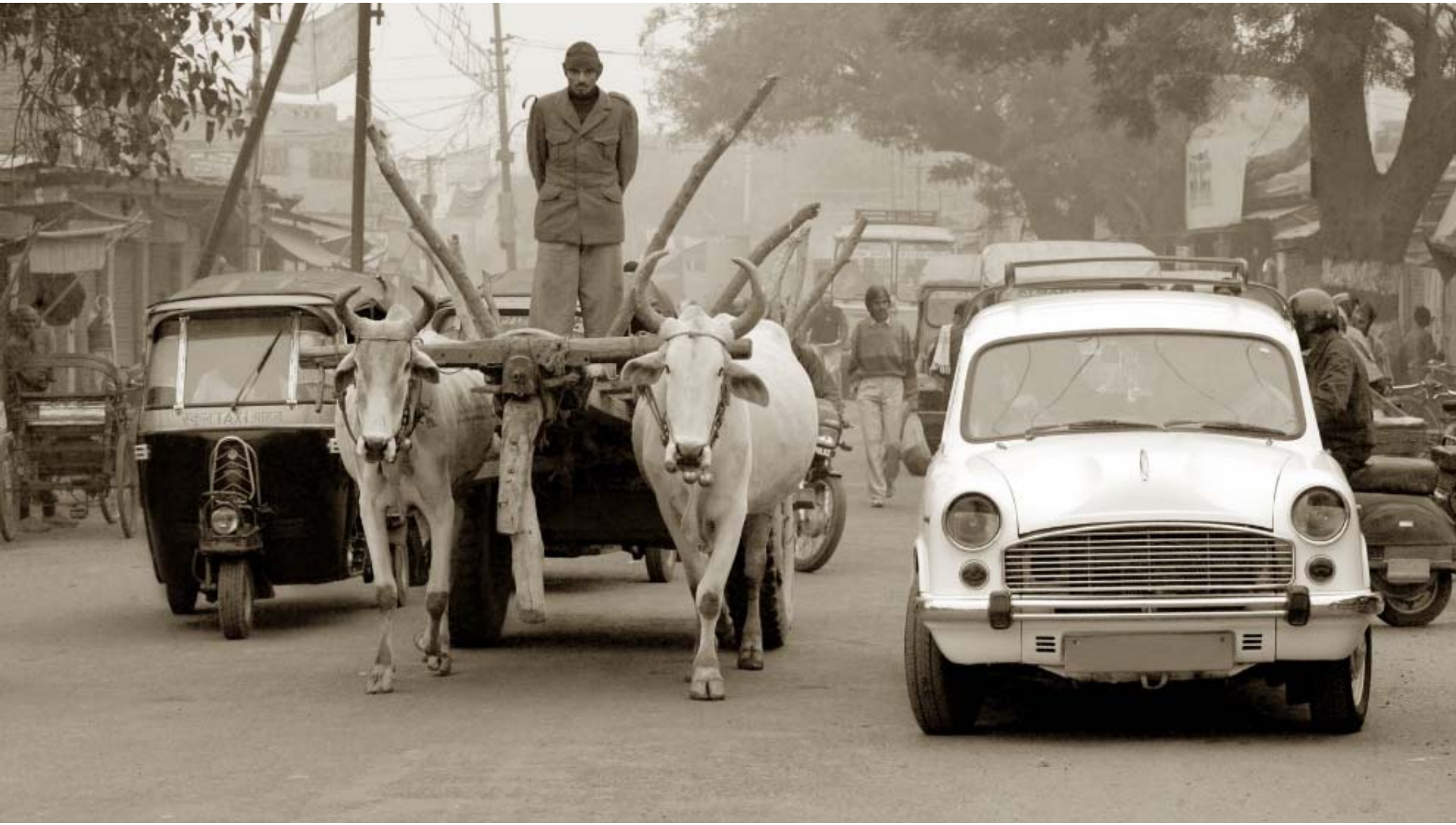
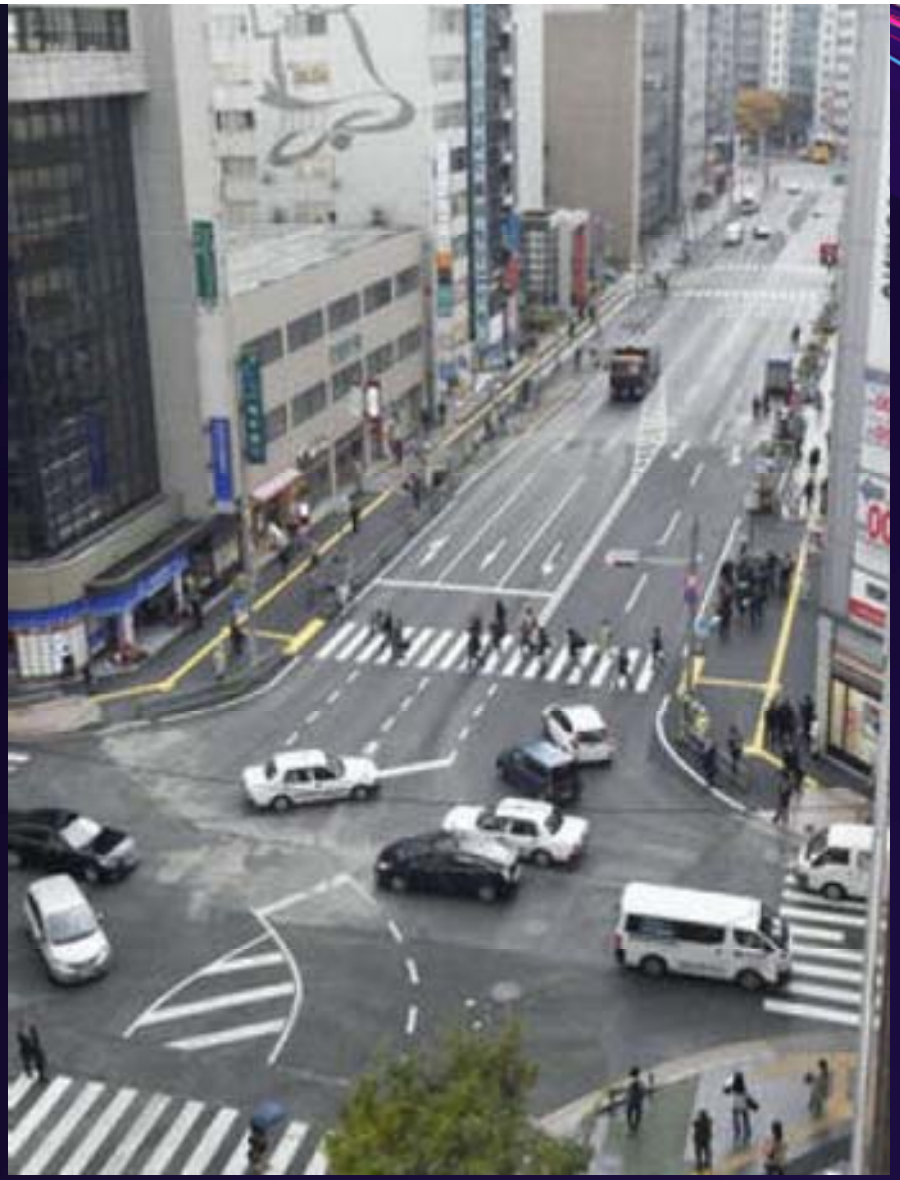
Ausfahrt



VIGILI DEL FUOCO
IVECO



Let’s take a closer look.

Each lane has limited capacity

- 3 channels on 2.4 GHz (1,6,11)
- 20+ on 5GHz (36-165)

- Use all the channels you can!

Two cars per lane is not better than one

- At any location…
- … on any channel…
- **… only use one access point!**

- Multiple access points on the same channel cause **co-channel interference**

The imbalance between the two highways

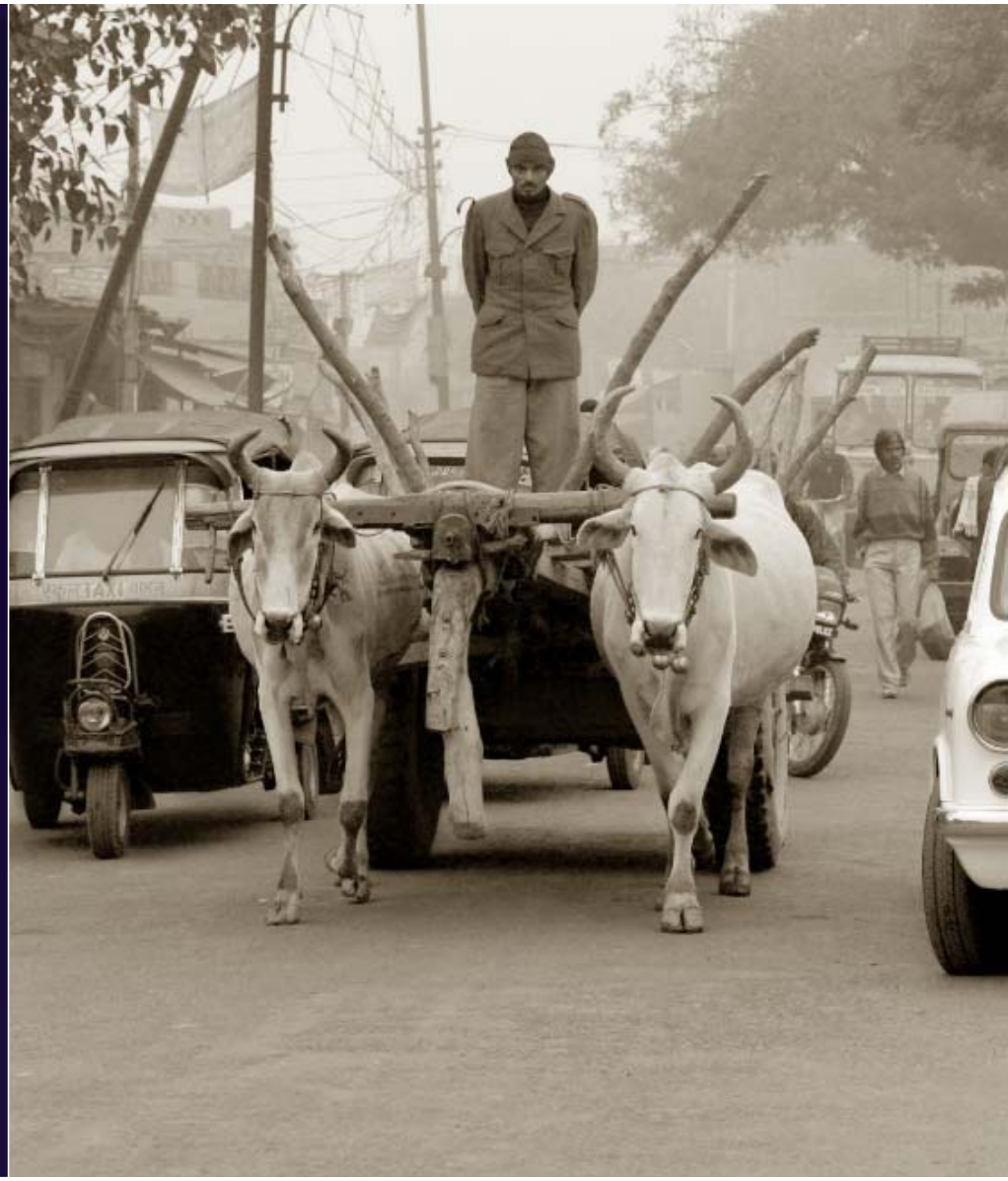
- 2.4 GHz frequency is often overutilized
  - Yet it only has 3 channels!
- Clients still tend to associate to 2.4 GHz radios
  - Received signal strength at the client device often higher on 2.4
  - Situation is improving

Oh, sheep!

- Wi-Fi devices play nice: they wait for their turn
  - 802.11 protocol
- Other devices don't understand 802.11, and do whatever they like
  - Microwave ovens
  - Cordless phones
  - Bluetooth
  - Video cameras
  - Baby monitors

Slow vehicles hurt everyone on the road

- Legacy client devices (802.11g, 802.11b) slow down everyone in your network



Minimum speed limits

- If you support the slowest data rates in your Wi-Fi network
  - Tons of overhead
  - Clients sticking to far away access points
  - Slower overall performance

Consider capacity

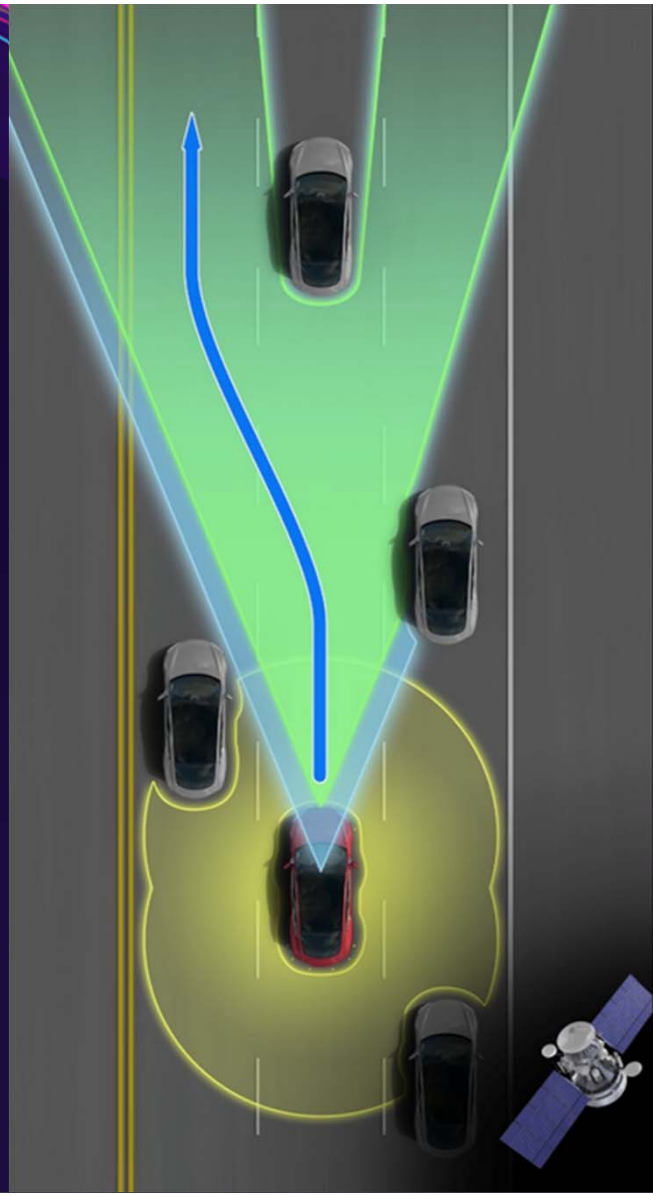
- Wi-Fi design is still often seen equal to coverage design
- Coverage is easy
- Your primary design goals in this decade should be
  - Minimal CCI
  - Capacity

The biggest mistake: Not planning at all

- Talk to stakeholders
  - Especially network users
- Account for main requirements
- Design carefully
- Take advantage of simulation
- Reserve time & $ for on-site work

Auto-Pilot

- The Auto-Pilot is a great help
  - So is auto-RF in access points
- Best assistance is collision avoidance
  - Just like self healing is in the APs
- However
  - if the road has been badly designed…
  - … or road conditions are bad…
  - … auto-RF cannot solve the problem alone



Be this guy…

… not this guy

2909
2909

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Bicsi

#DiscoTrain

Your Wi-Fi network

- Like these gentlement - does it stand out?

- In good or bad?

Practical examples

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