Wi-Fi has changed

Has the way we deploy it?

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2 minutes down the memory lane

When I looked like this…

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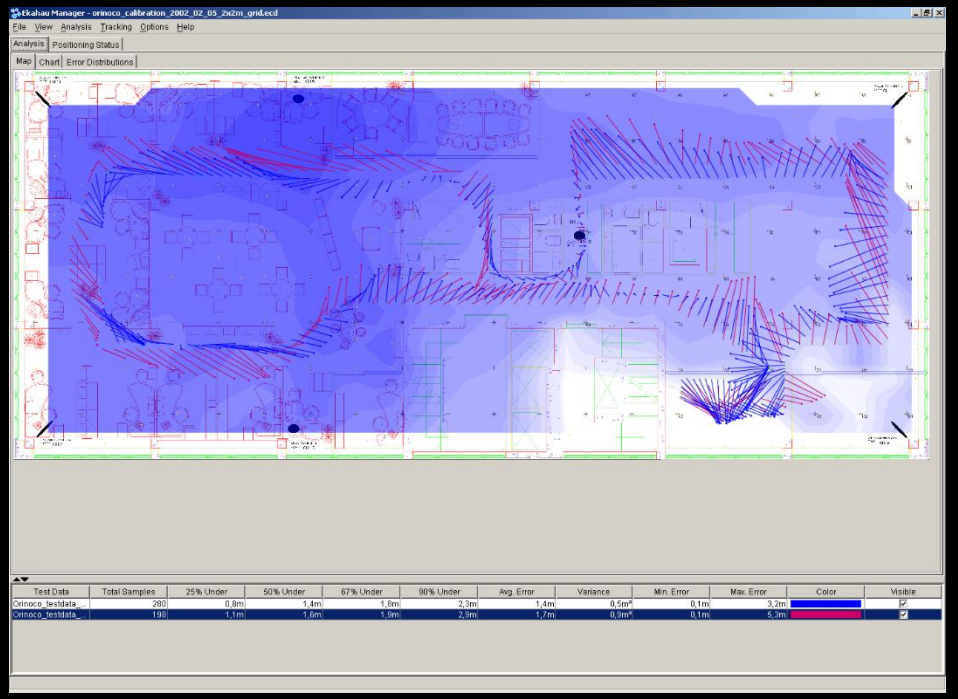
Our product looked like this…



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Free location tracking tool

became the world’s first site survey tool.

(by accident)

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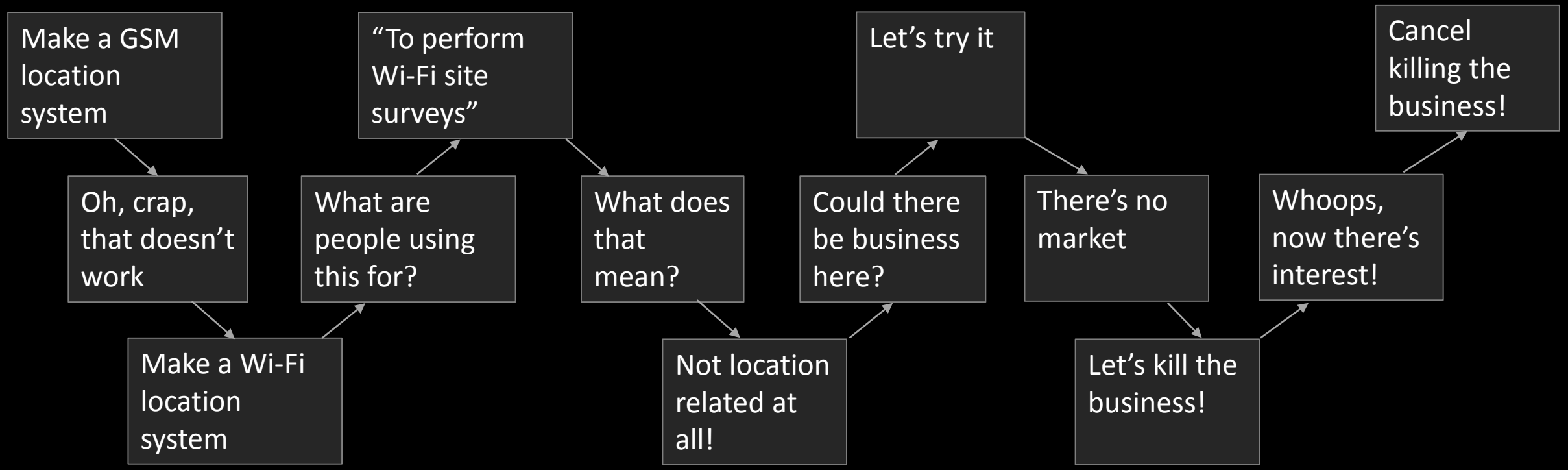
Ekahau decision making 2000-2003 style



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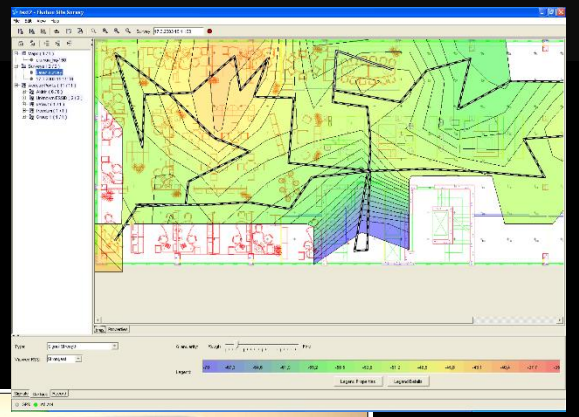
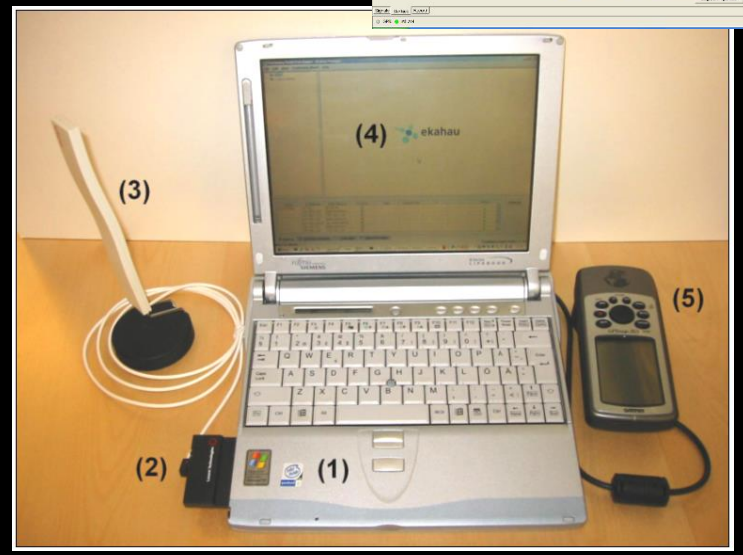
In 2002, we started making ESS





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In 2003, we rebranded

ESS, or Ekahau Site Survey for AireSpace

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ESS became also

Airespace **S**ite **S**urvey.

The 3-letter acronym was dropped.

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1999

Getting Started

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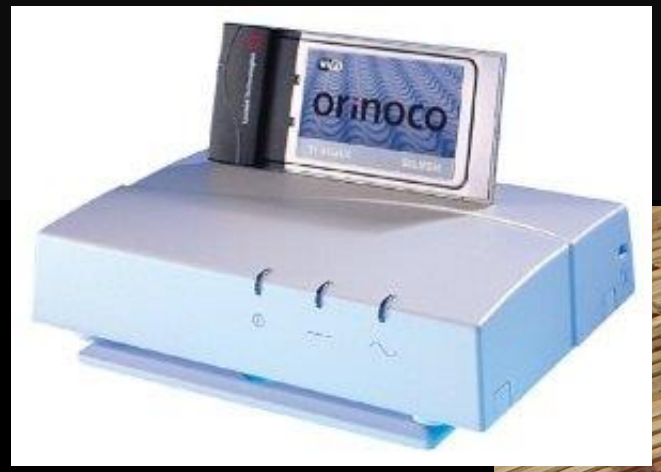

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Areas to cover

End user devices

2004

The end of wireless engineers

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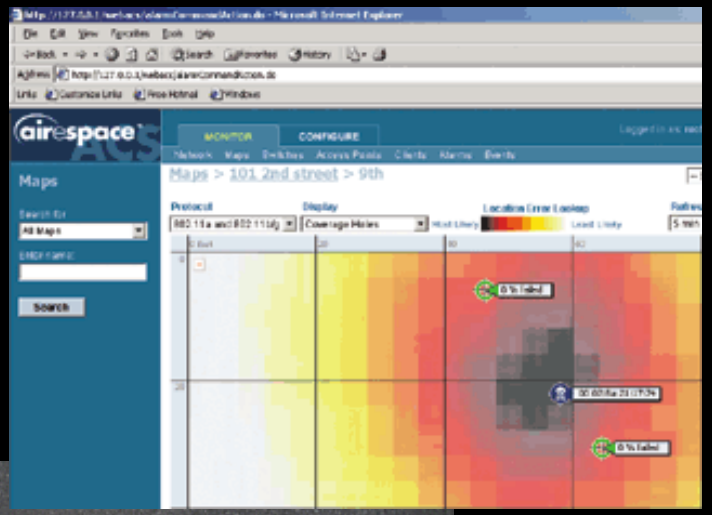

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RF Engineer in 2004? You're out of a job!

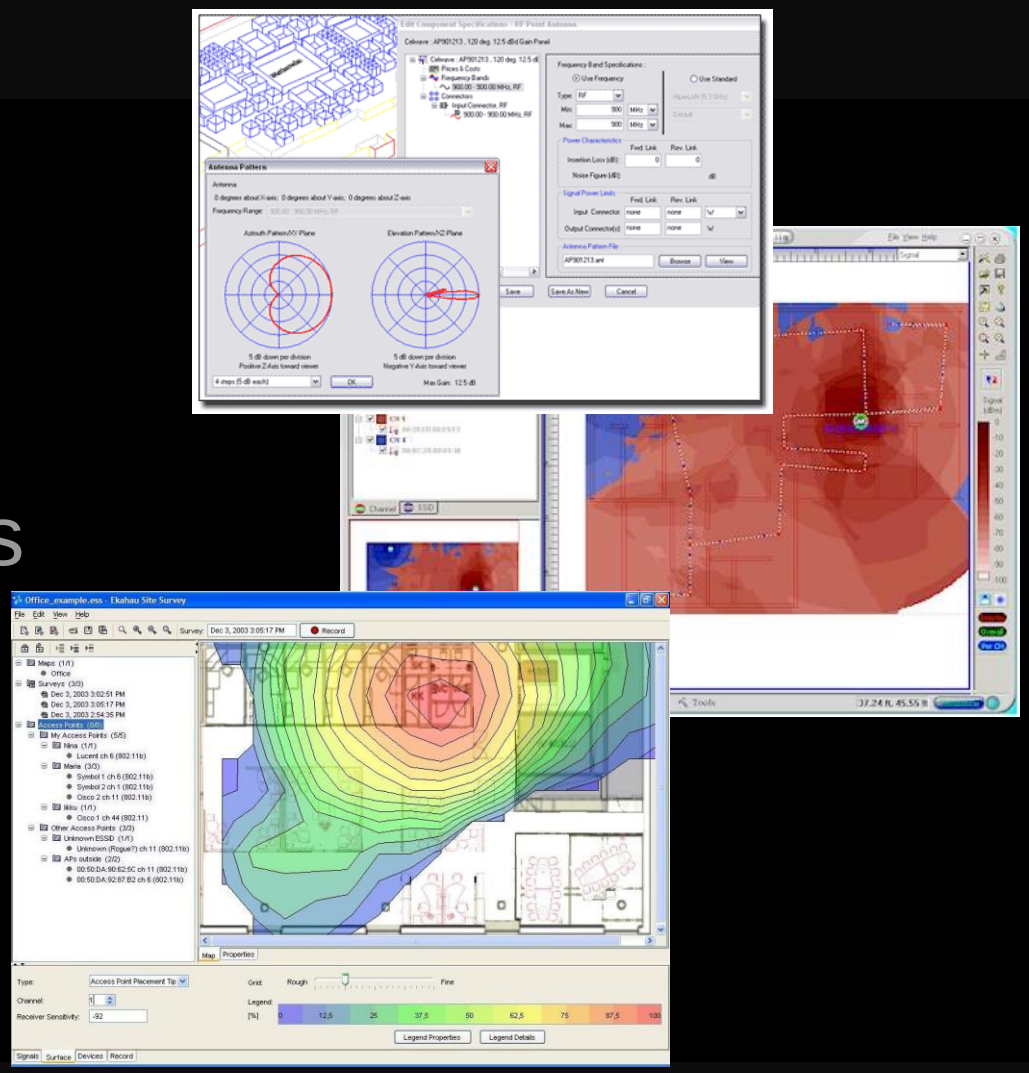
- "No site survey required" plug and play equipment from various manufacturers
- Worked well in marketing…
- … and let's leave it at that

- Security a huge threat & focus

Wireless IDS sensors = so very (hot in) 2004

RF Tools in 2004

- First generation of survey tools out
- First manageable planning tools out
- Packet analyzers out



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2014:

Capacity

Facility-wide, Floor-to-floor, 3D

More planning, even in difficult environments

Automated everything

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Why Pay Attention to Wi-Fi Design?

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A site survey is the most important step in implementing any wireless network

- Certified Wireless Training Professionals Organization (CWNP)

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“

Site survey and design before you deploy,

or pay big money and fix later.

There is no such thing as “RF Magic”.

David Coleman

Co-Author, CWNA Study Guide. Global Training Manager, Aerohive

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“

Trusting a “self-configuring Wi-Fi network” to do it all is shooting yourself in the foot.

Joeri De Winter

Wireless LAN Consultant, Skyline Networks

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“A site survey is worth a thousand support calls

Andrew von Nagy

Director, AirTight Networks

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“Always design the network as if you will take the support calls personally

Darrell Derosia

Wi-Fi Architect

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Why do these tools exist anyway?

Get stuff done. Quick.

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Get it right, the first time around

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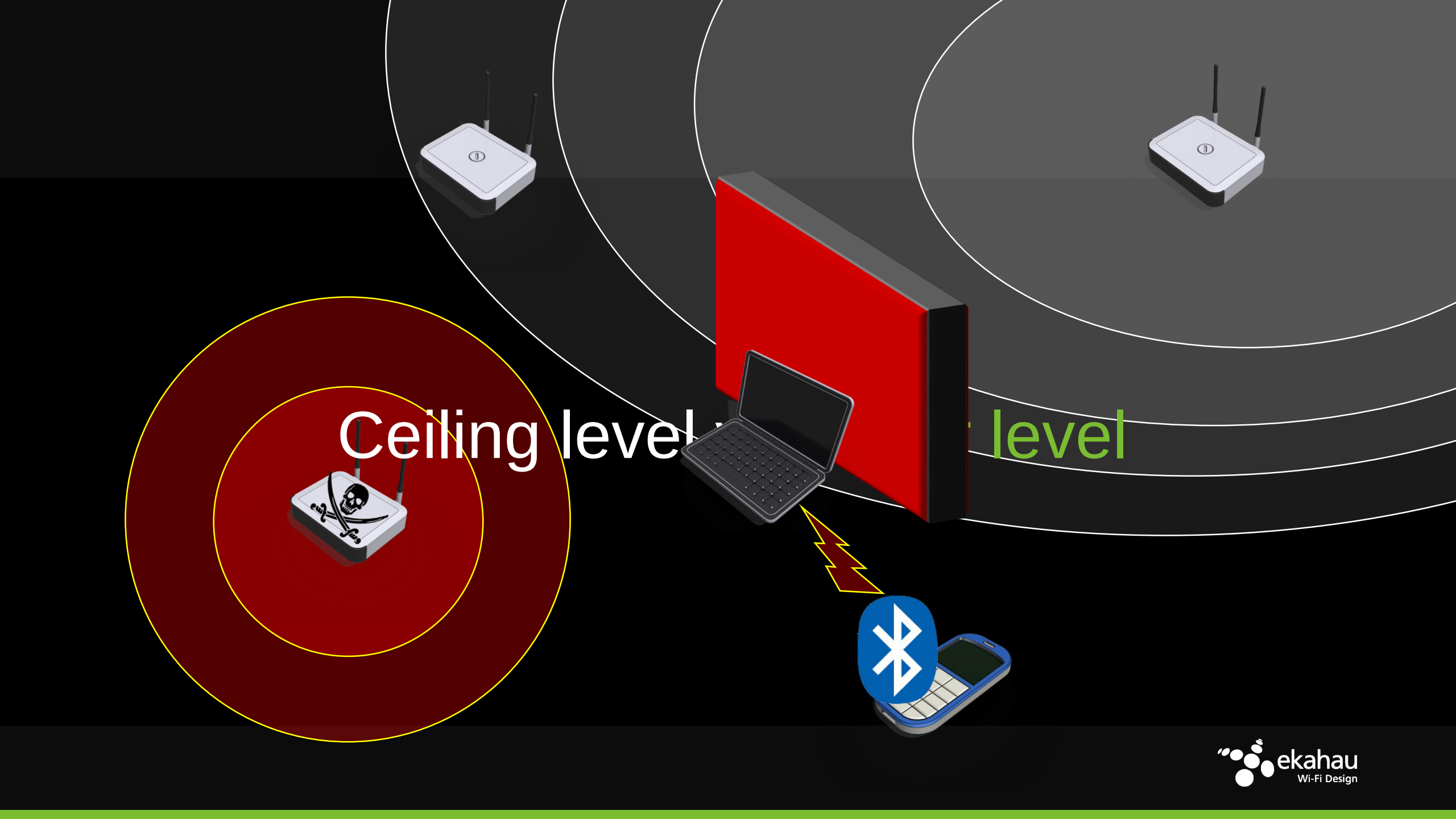
Unbiased results



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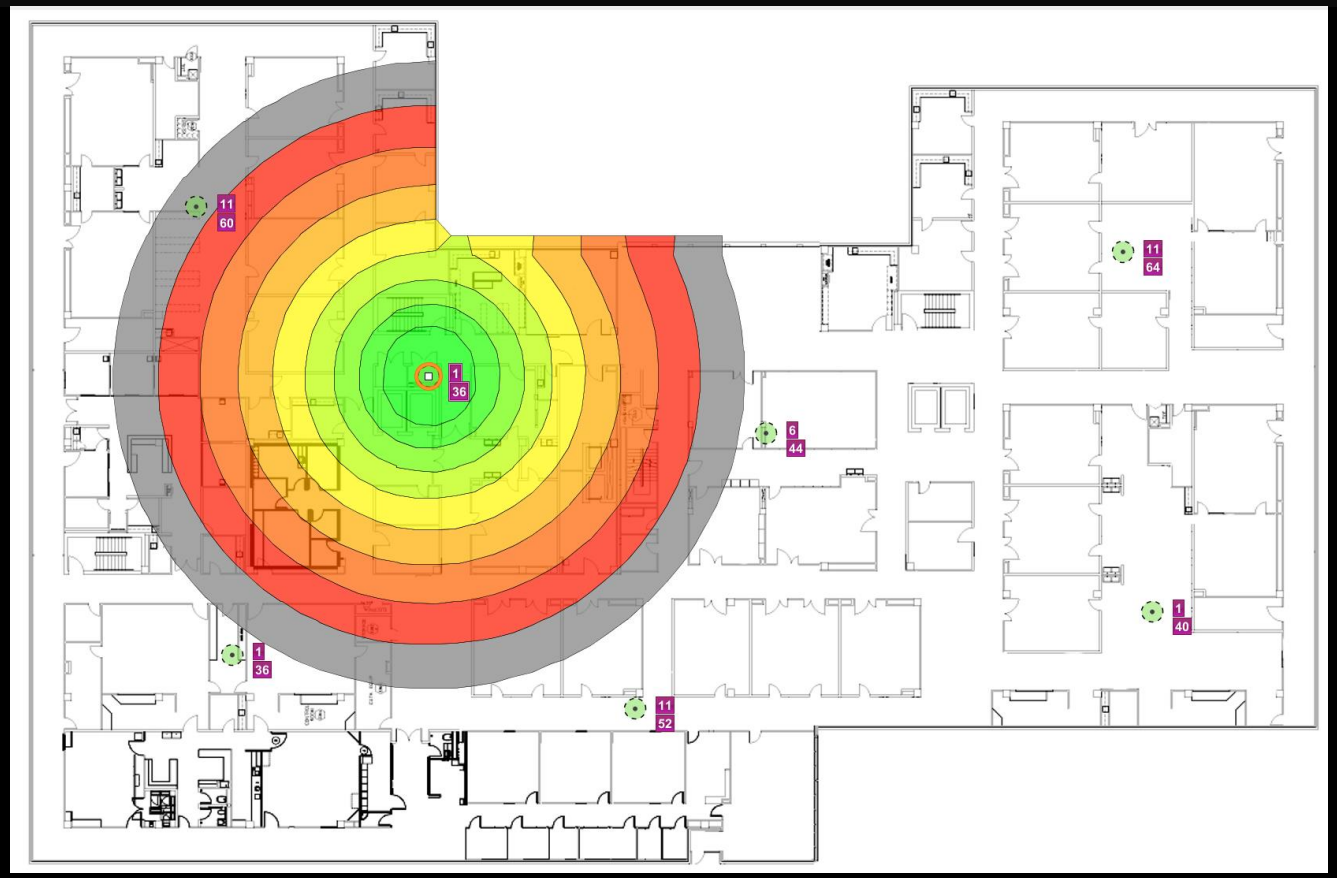
AP measurement = one or few data points



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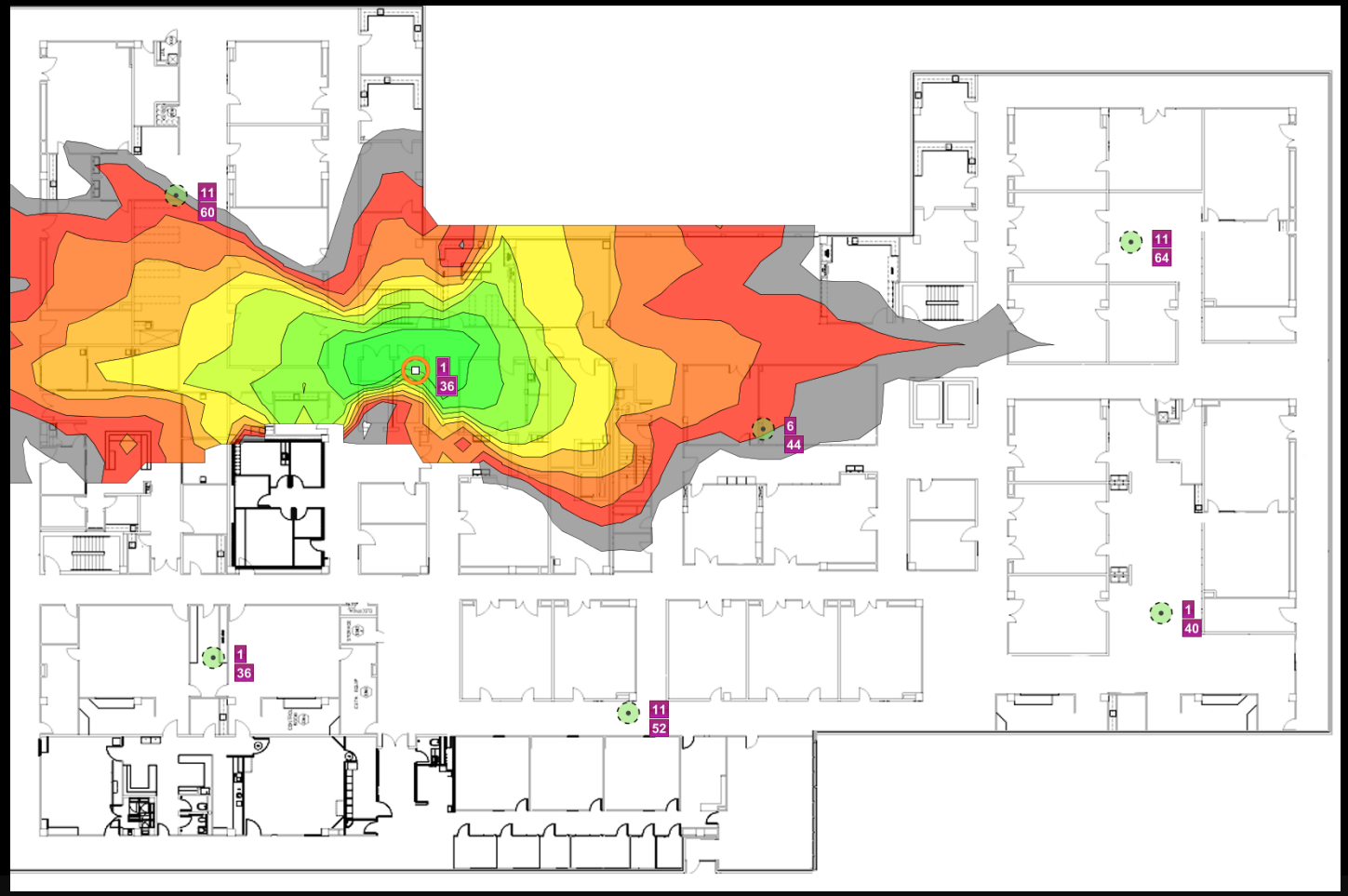
Site survey = tons of data points, floor level



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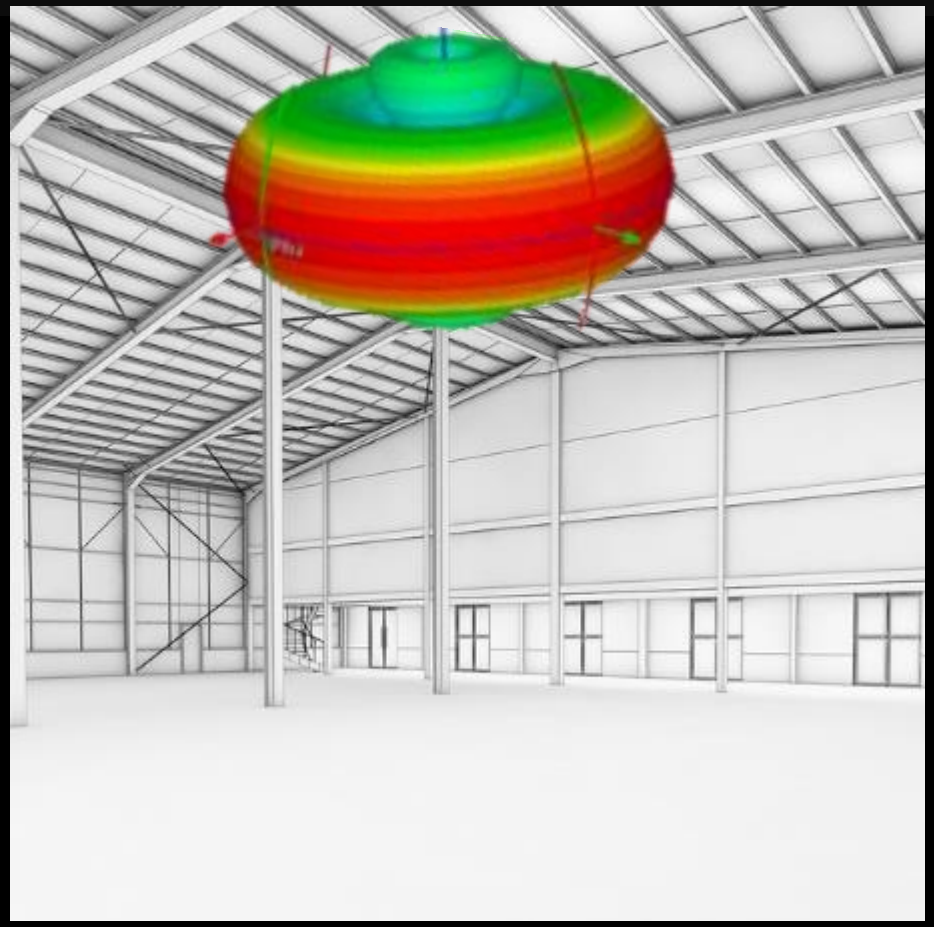
Standard Omni = Not Great



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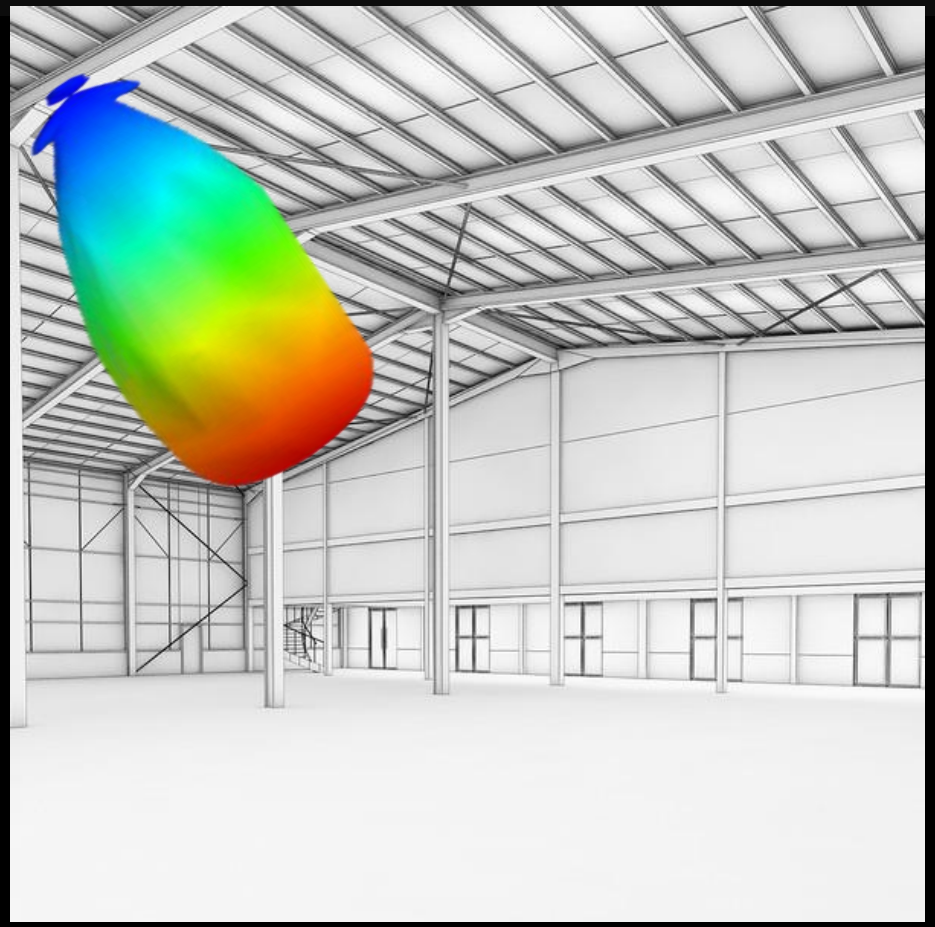
Directional or Downtilt Omni = Better



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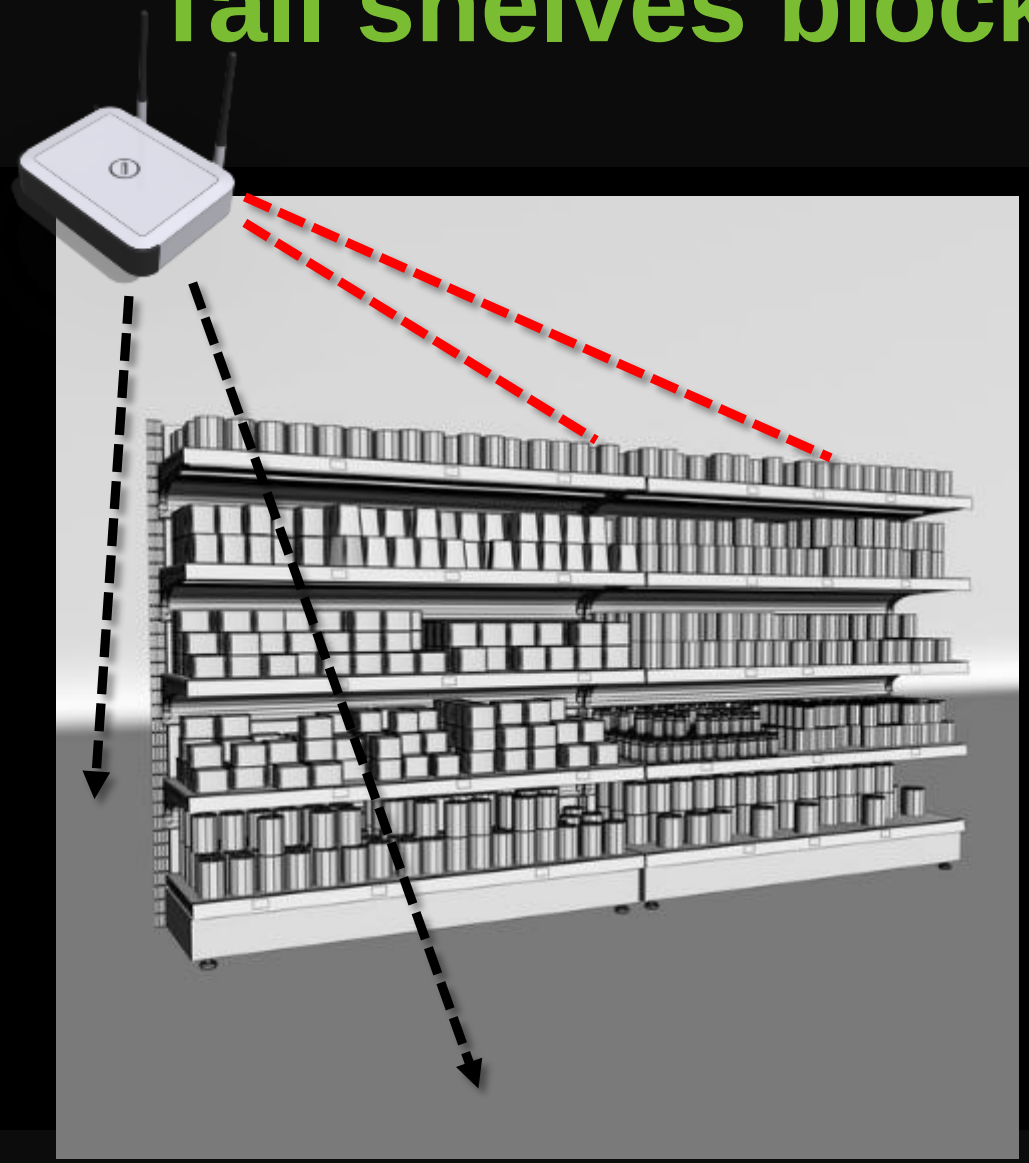
Tall shelves block some, not all



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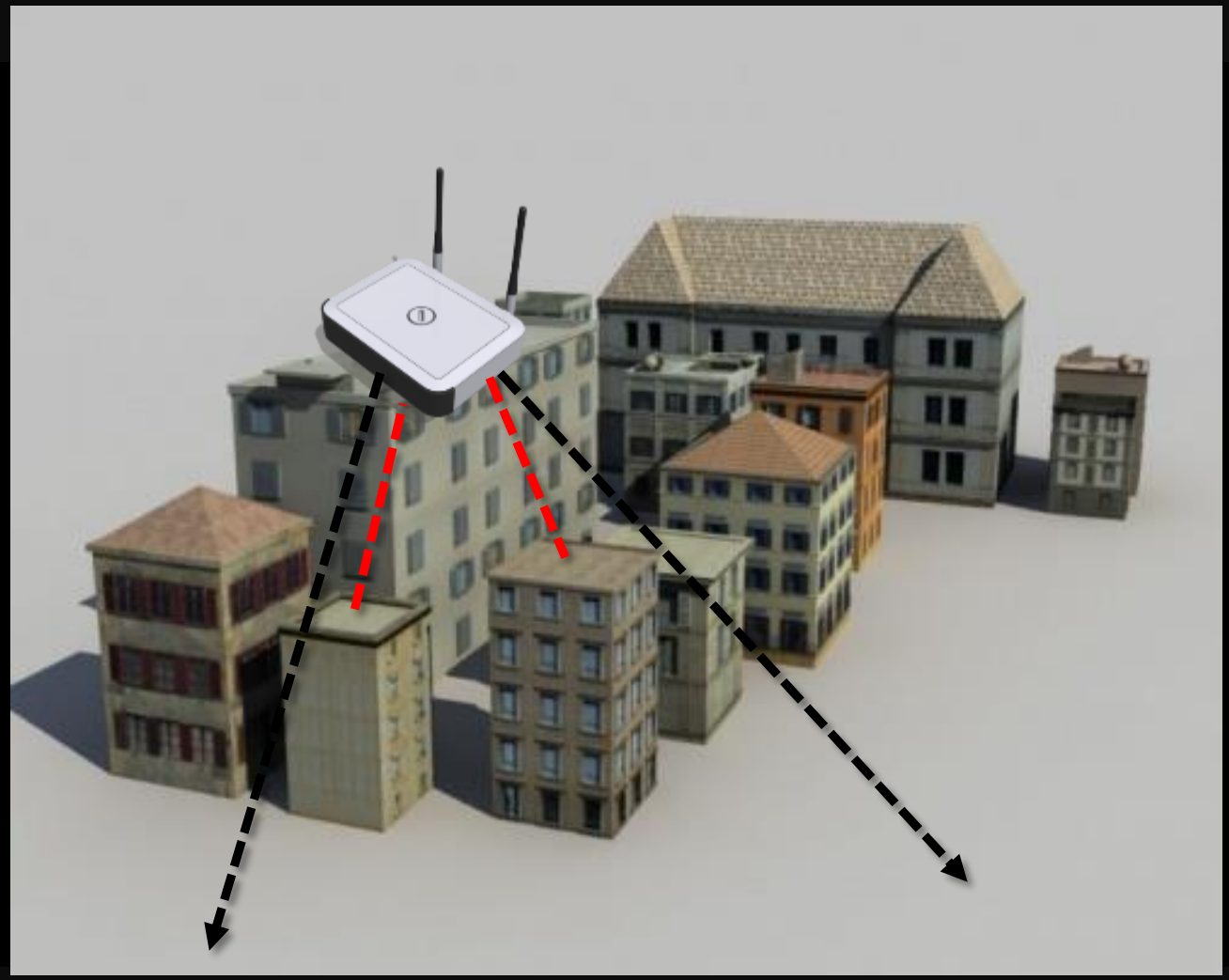
Buildings create “RF shadows”



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How 802.11ac Changes Wi-Fi deployment

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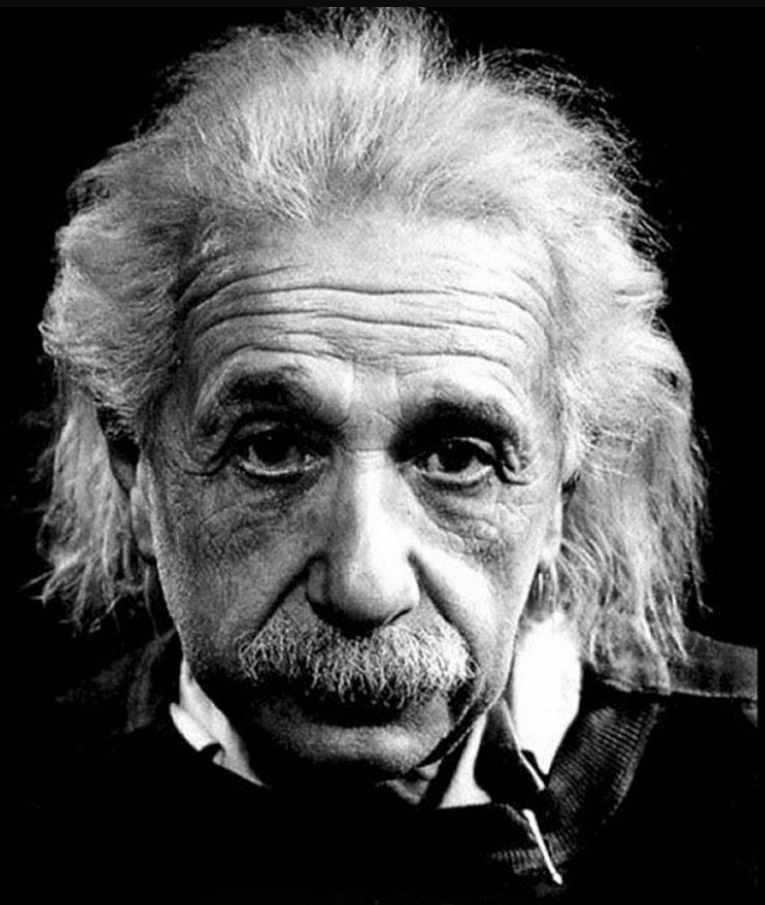
802.11ac and 802.11n are about capacity

- 802.11ac and 802.11n are about capacity
- So the way you deploy changes fairly little, **until you start looking at capacity**
- The coverage areas don’t significantly change…
- … but there are some improvements, especially with robustness of signal

802.11ac hype vs caveats

- 256QAM adds speed - but only when signal is good
- Wider channels add speed – but are not always usable
  - High client/AP density often calls for 20MHz
  - Watch out for channel overlap
  - Mind your DFS
  - Plan (primary) channels carefully

“Capacity planning sucks, because it’s complex”



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Capacity calculations 101

How many users?

x How many devices per user?

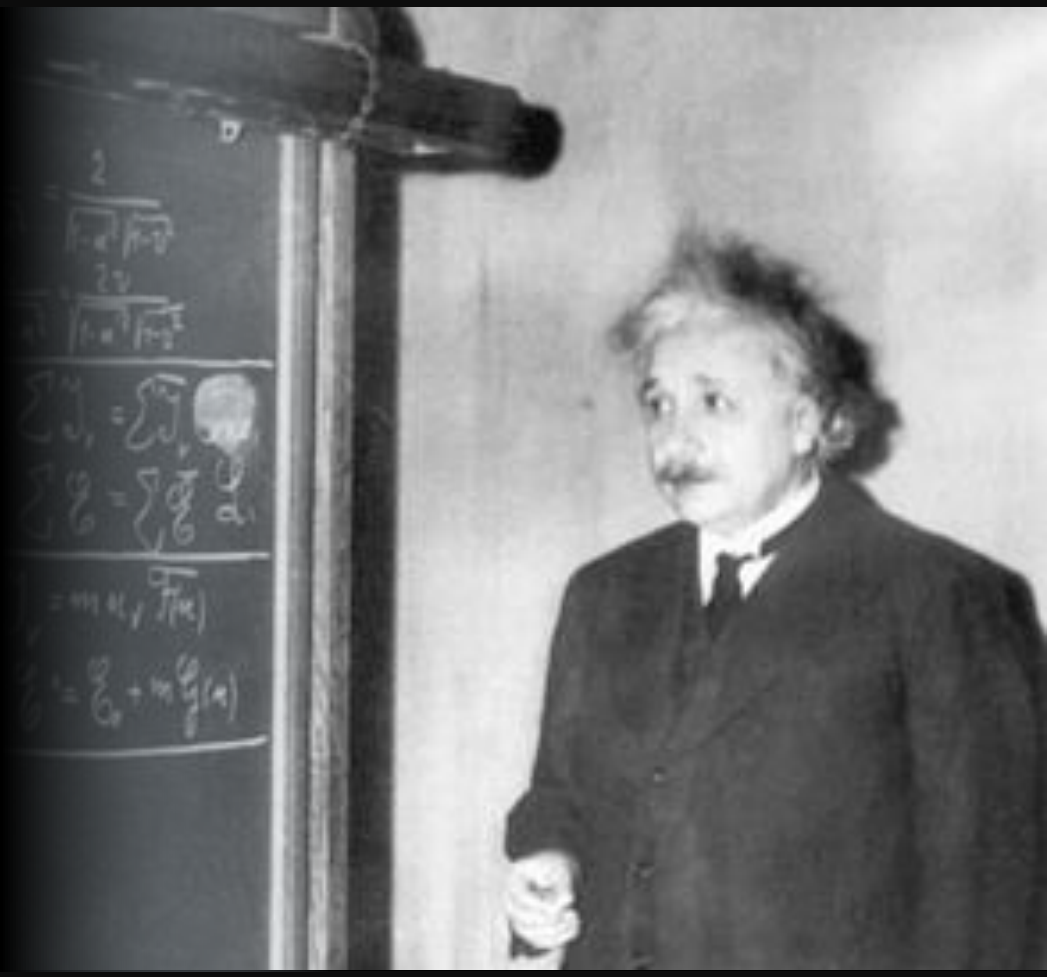
+ How many other devices?

= Devices and their types

x Which applications are run on the devices?

==========

= Total capacity required



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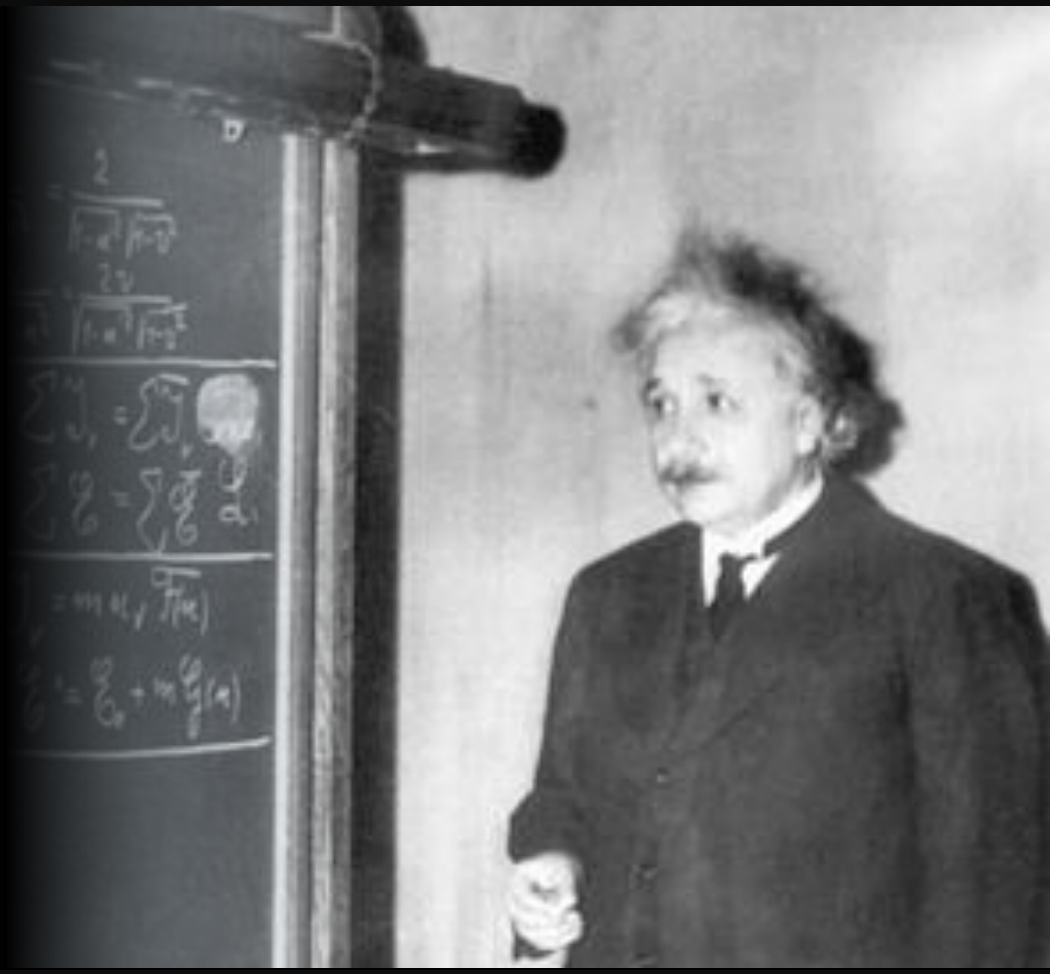
What else affects capacity?

- Areas to cover
- Types of end user devices
- Types of access points
- Channels/bands used
- Single / multiple floors
- Wall materials



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Don’t ask me about capacity

- Ask this guy

Environment – as important as the tech

Pay extra attention with:

- High ceilings
- High mounted APs
- Floor to floor
- Holes in the floor (atriums)
- Thick vs thin walls
- Shelves
- AC ducts

Demo

802.11ac Capacity Planning

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Demo

802.11ac – Legacy Impact

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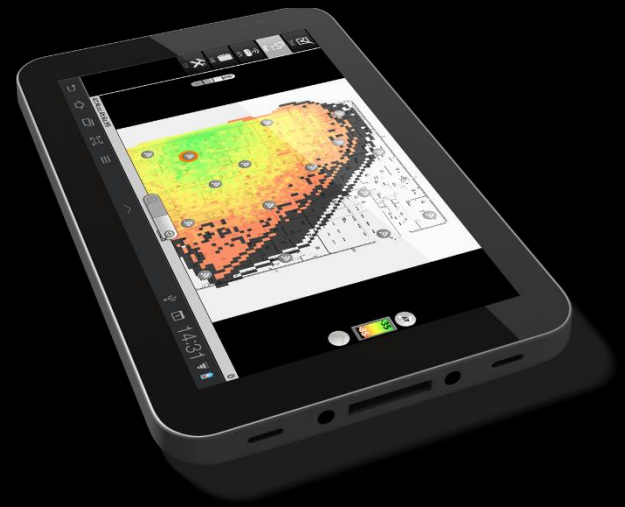
Mobile

Mobile Tools for Wi-Fi Deployment

- Mobile = something smaller than a laptop
- Android is a good platform
- Some good free apps
- Some paid apps



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Why Mobile Tools?

- Smaller
- Always with you (Android phone)
- Emulate mobile client behavior
  - Orientation
  - Radio & antenna differences
  - Drivers can be a challenge
  - Bugs
- **Should** be easier to use
- Lower price point
- Best case: use in combination with “Pro” tools

Mobile Tools - Caveats

- Standardized measurement device??
- Various operating systems and versions
- Same device make & model may have different HW (production runs)
- Limited horsepower / memory usage
- Radio may not scan all channels
- Software quality (robustness, scalability)

Pro tools + mobile tools

= Winning combination

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To end it all…

…a few basic tips for Wi-Fi Design

- Minimize the number of SSIDs
- Line of sight is king
- Get some help
- Use 5GHz
- Use the right tools
- Teach yourself Wi-Fi
- Talk to network users
- Be nice to people
- Coverage is king
- Capacity is the new coverage

← Infographic, videos & more:
www.ekahau.com/training

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I'll be smiling as long as you **don't do 1 AP per classroom**

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