

# Break Your Own Design

Falk Bachmann on **BYOD**



IT Professional Wi-Fi Trek 2016



# Agenda

- **About**
- **Design**
- **Own Solution**
- **Your ingredients**
- **Break IT**



# About me

- **Born:** 1975, projects in over 14 countries
- **Youth:** Networks since 1996
- **Origin:** Solutions for a purpose
- **Destination:** Affordable IT Designs for medium sized Companies



# Design



- “Design is the creation of a plan or convention for the construction of an object, system or measurable human interaction..”
- “Designing often necessitates considering the aesthetic, functional, economic, and sociopolitical dimensions of both the design object and design process.”
- “It may involve considerable research, thought, modeling, interactive adjustment, and re-design.”

*Source: <https://en.wikipedia.org/wiki/Design>*



# Example 1 - K-12 installation

Average IT guy

- never got wireless training
- is the only one in IT out there
- external consultants charge too much

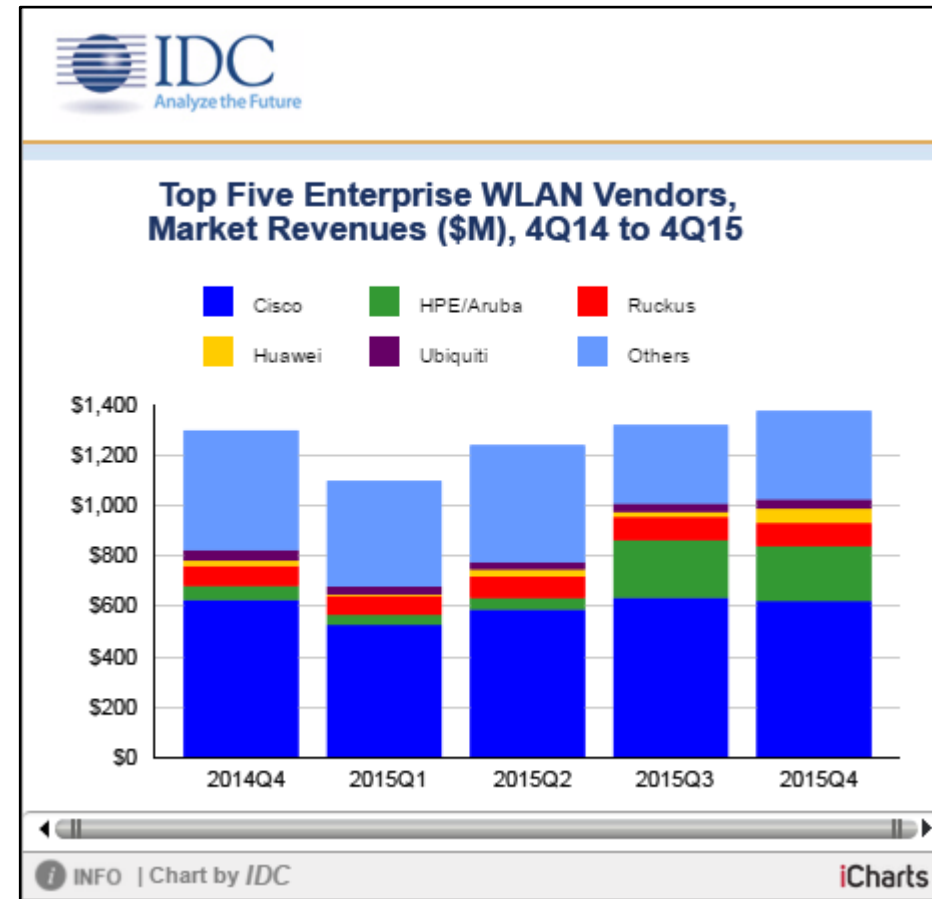


# Own Solution



# Your Solution

- “Use Ubiquity, they are number four. Market leaders are too expensive”
- one channel per classroom
- widest channel you can get
  - 40 MHz in 2.4 GHz
  - 160 MHz in 5 GHz



Source:

<http://www.idc.com/getdoc.jsp?containerId=prUS41061416>



# Break IT

- **Day one after holiday season**
- But we tested during holiday season:
  - Netflix - was great
  - YouTube - was a blast
  - WhatsApp Web - ran fine
  - Facebook - posts worked flawless





# How to avoid the day of “Break IT”

- Look back:

## Design



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# Example 2 – Medium Business installation

3-5 IT people

- Too much IT topics
- No real network guy
- never got wireless training
- We do all IT ourselves



# Own Solution



Picture:  
Phillip Pessar - Great Old Building Downtown Miami  
<https://www.flickr.com/photos/southbeachcars/>



# Your Solution

- **Variant 1:**

- Lets use the vendor we know from other things -> ends up in Cisco or HP/Aruba

- **Variant 2:**

- We use something else, because the vendor xyz convinced us
- Ends up in using vendor defaults or guidelines, if any exist.



# Break IT

- Day one when the store opens
- ***“But we tested before”***
  - Netflix - was great
  - YouTube - was a blast
  - WhatsApp Web - ran fine
  - Facebook - posts worked flawless



# How to avoid the day of “Break IT”

- Look back:

## Design



- “Design is the creation of a plan or convention for the construction of an object, system or measurable human interaction...”
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## Example 3 – Buy a new car

You had many cars already in you life

- This time it should be fast
- never drove it yet, just dreamed it
- It's just a new car, so why should it be any different?



# Own Solution

- Convertible
- 2 seats are enough
- nice look                      - nice sound



Picture:  
General Motors  
Press Material





# Your Solution

- **Visit the dealer of choice**
  - Get a good price and drive away



# Break IT

- Rainy Day number one:



# How to avoid the day of “Break IT”

- Look back:

## Design

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# How to avoid the day of “Break IT”

## Be clear on:

- Requirements
- Dependencies
- Circumstances
- Risks



# How to avoid the day of “Break IT”

**Be the first:  
Break your  
own Design!**

## Things go wrong:

- Develop alternative solutions upfront
- Be clear on risks
- Dependencies are in everything
- Risks can't be eliminated, just minimized



# How to avoid the day of “Break IT”

**Be the first:  
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## Question all steps:

- All requirements? Really? Not just the IT related fluff?
- Which concept to go forward?
- Will it be a dead end?
- Can you already see an dead end coming in the next 24 months?
- Ready to pay extra for future proof solution?



# How to avoid the day of “Break IT”

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own Design!**

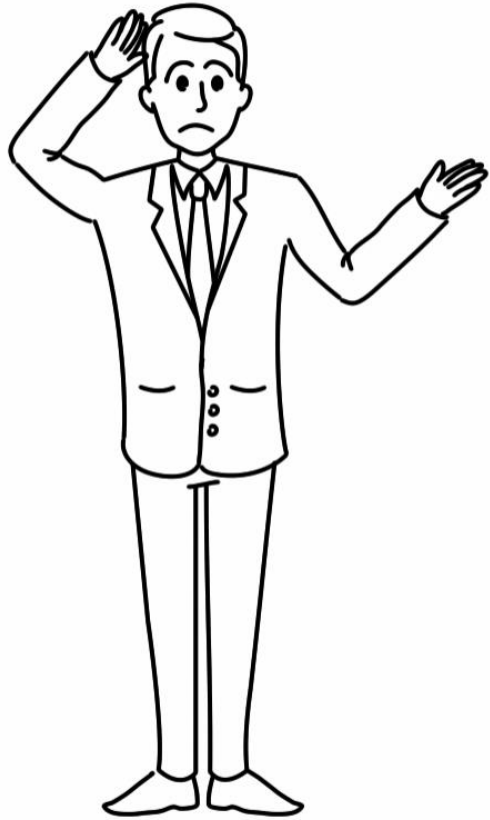


## How to start?

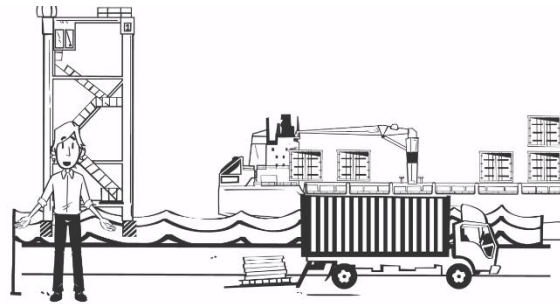
- Communicate
- Verify
- Question the path and steps you take



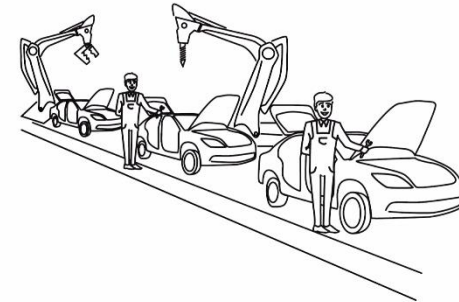
# How to avoid the day of “Break IT”



## Find the purpose!



Be the first:  
**Break your own Design!**





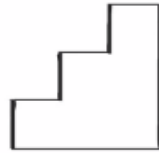
# How to avoid the day of “Break IT”



Develop  
Design



Get it  
approved



Verify for  
scalability



Budget  
met?

Be the first:  
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own Design!**



# How to avoid the day of “Break IT”

## Question every aspect

- Number of Client devices
- LAN Parameters
- WAN Parameters
- Server/Application capacity
- Reliability of all components
- Overall Security
- RF Parameters
- User Experience
- Technology usage
  - VPN, .11ac, .11g, DSL ...

**Be the first:  
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# Requirements definition is key

Example:

- We need an horse
- Build an Kayak

**Be the first:  
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Hopefully  
this works  
out well...



# Horse look alike



Be the first:  
**Break your  
own Design!**



OMG



# Kayak with a hinge

Be the first:  
**Break your  
own Design!**



OMG



# User Experience is key

## Define the purpose

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## User Experience

- Just Web browsing?
- AutoCAD drawings from remote Location?
- Voice? Video?



# User Experience is key

## Define the traffic path

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Where are the Applications located?

- In the WWW
- Local server-room
- Remote location



# User Experience is key

Define the core requirements

Expectations from the users view?

- Easy to get on the network
- Seamless usage
- Any network, any location

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# User Experience is key

## Define the circumstances

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- What is the current use pattern?
- What will be the use case in 6-18 months?
- Are other IT projects running in parallel?



# User Experience is key

## Define the environment

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- What will your design be used for?
- Will this be the only context?
  - Just provide wireless access?
  - Launch a new application and use wireless?



# User Experience is key

Define the needed components

**Be the first:  
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- What could be used?
- Will it be suitable?
- Will it be accepted?



# How to avoid the day of “Break IT”

## Define the how it sticks together

**Be the first:  
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own Design!**

- Which component will deliver which part?
- Are there dependencies?
- What if one doesn't work out as expected?



# How to avoid the day of “Break IT”

## Define the how it sticks together

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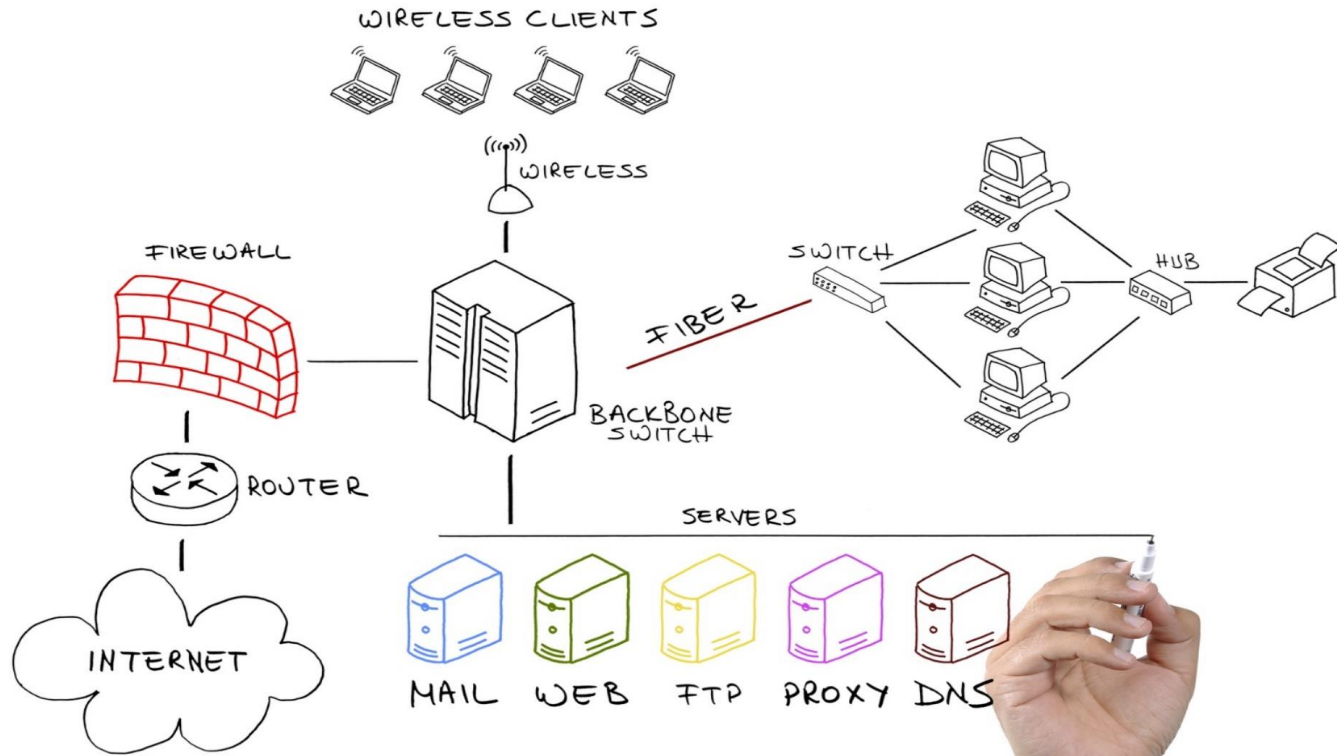
OMG



# How to avoid the day of "Break IT"

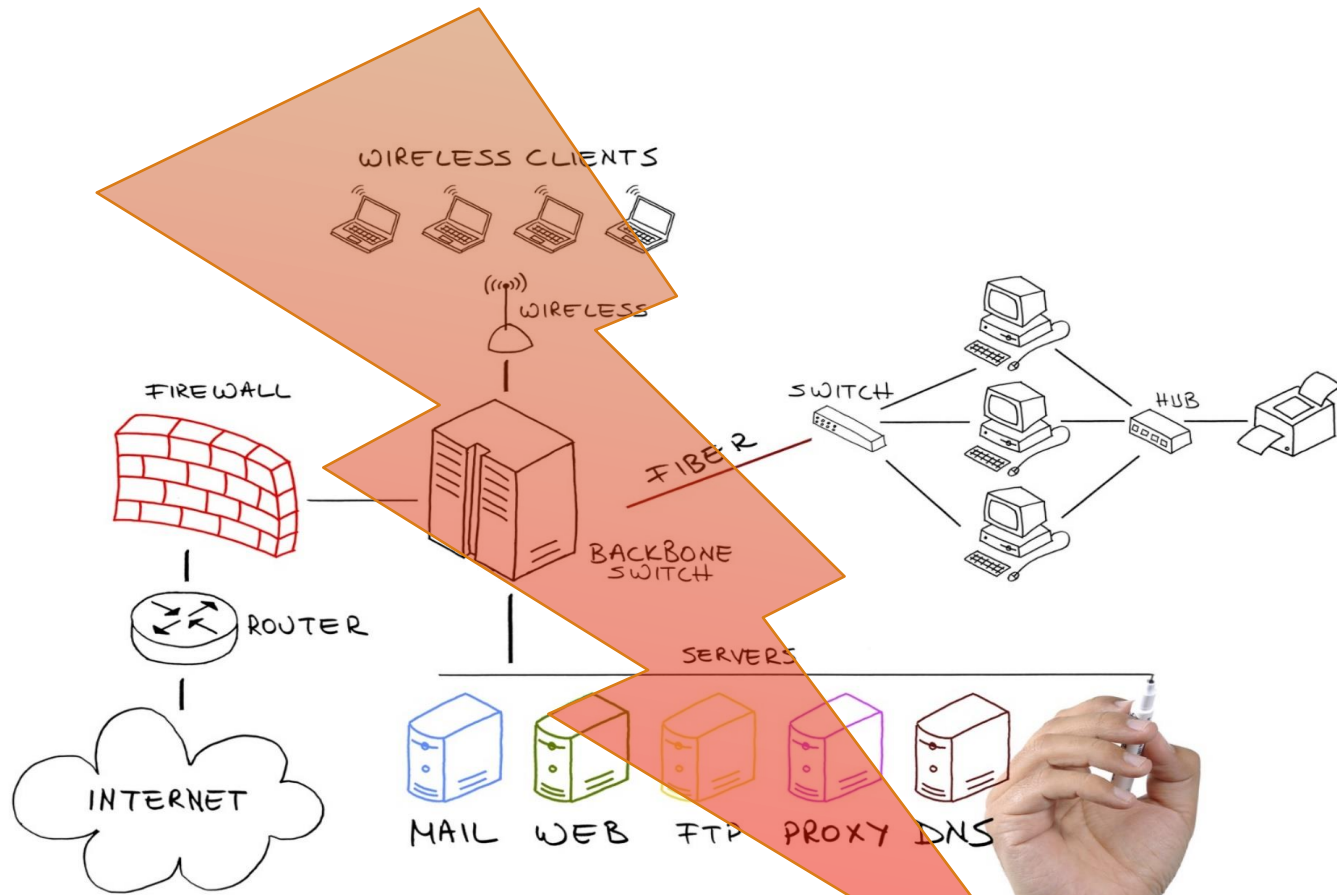
## Define the how it sticks together

Be the first:  
**Break your own Design!**



# Break IT yourself NOW

Be the first:  
**Break your own Design!**



# Break IT yourself NOW

- Antenna cables?
- Can they receive?
- Down tilt?

Be the first:  
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own Design!**





# Break IT yourself NOW

## The KODAK CAMERA.



“You press the button, we do the rest.”

Anybody can take good photographs with the Kodak. Send for the Primer, free.

The Kodak is for sale by all Photo stock dealers.

The Eastman Dry Plate and Film Co.  
Price, \$25.00. Loaded for 100 pictures. ROCHESTER, N. Y.

Be the first:  
**Break your own Design!**



# Break IT yourself

## Example: Data Security

- **Situation 1:**
  - Client device that got the screen not locked
- **Situation 2:**
  - Client device with the screen locked
- **Situation 3:**
  - All you packets belong to me

Be the first:  
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own Design!**



# Break IT yourself

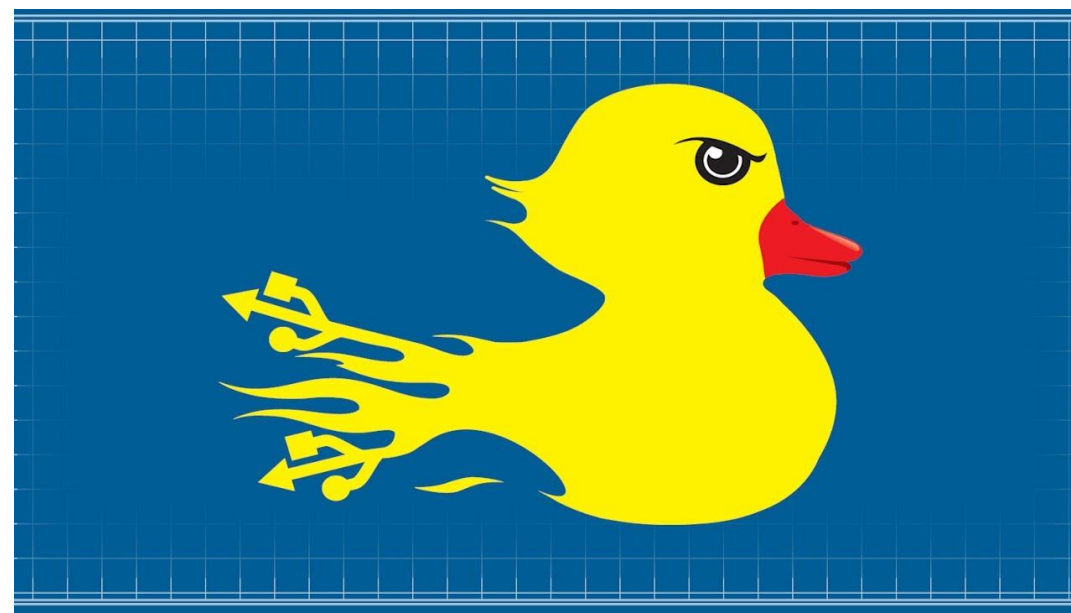
## Situation 1



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### USB Rubber Ducky

- Script
- Gather
- Steal



# Break IT yourself

## Situation 2

Be the first:  
**Break your own Design!**



# Break IT yourself

## Situation 3

### Wi-Fi Pineapple

- Script
- Gather
- Steal



Be the first:  
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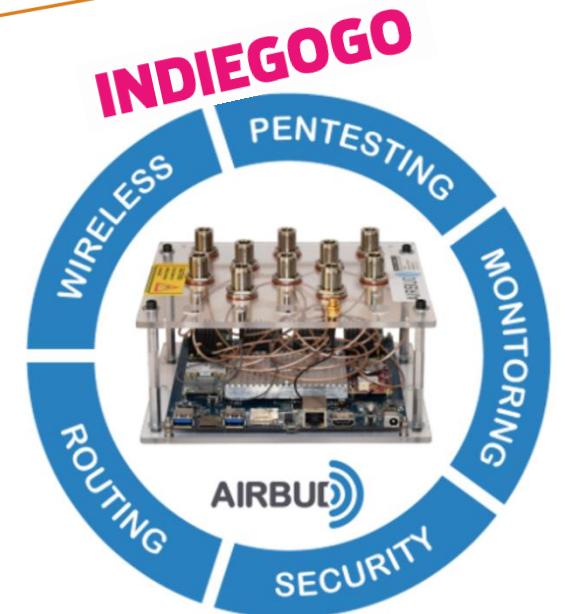


# Break IT yourself Security?

## AIRBUD

- Pentesting Platform
- Monitoring or Sniffing Platform
- Wireless Router or Firewall Platform
- Wireless Spectrum Analysis Appliance
- Test Platform for PCIe mini and M.2 cards
- Any other wireless application

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• <https://www.indiegogo.com/projects/airbud-ultimate-multi-radio-wireless-platform-security#/>



# Break IT yourself

## Example: Ignorance

- **Best Practices**
- **Validated Designs**
- **Conferences**
- **Trainings**
- **Certifications**

**Be the first:  
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The most powerful design  
doesn't come out of the box



It comes from within.





# Use existing resources



## Survey Phases

### Predictive site surveys

(network plan, simulation)

*"How many APs? Where? Power? Channels? Antennas?"*

### Pre-Deployment site surveys

(AP on a stick)

*"What does the real world RF look like?"*

### Post-Deployment site surveys

(validation)

*"Does this network actually work?"*

### Periodic site surveys

(health check)

*"Does it still work? What has changed?"*

# 7 Ways to Fail Checklist

[twitdoc.com/65YC](https://twitter.com/65YC)

By: @Steven\_Heinsius



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WIFI  
TREK



# Learn from others



<http://revolutionwifi.blogspot.com/>

## AirCheck Sparks a Debate at the Presidential Debate



<http://www.netscout.com/Connect/blog-ent-aircheck-sparks-a-debate-at-the-presidential-debate/>



# Learn from others



<https://www.cwnp.com/cwnp-wifi-blog/>



<http://www.wlanpros.com/>



# Learn from others



<http://jenniferhuber.blogspot.com/>

## gcatwifi

<https://gcatwifi.wordpress.com/>

Sniff Wi-Fi Ben Miller's blog on Wi-Fi sniffing.

<http://www.sniffwifi.com/>



<http://badfi.com/>

## hrwifi

<https://hrwifi.wordpress.com/>



<http://www.ekahau.com/wifidesign/blog/>

## The Emperor's Proclamations

<http://www.emperorwifi.com/>



# Remember the Design definition



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