Selecting the Right Technology

Lessons learned from the TTAC

Kirt J Beck, Director

Telehealth Technology Assessment Center

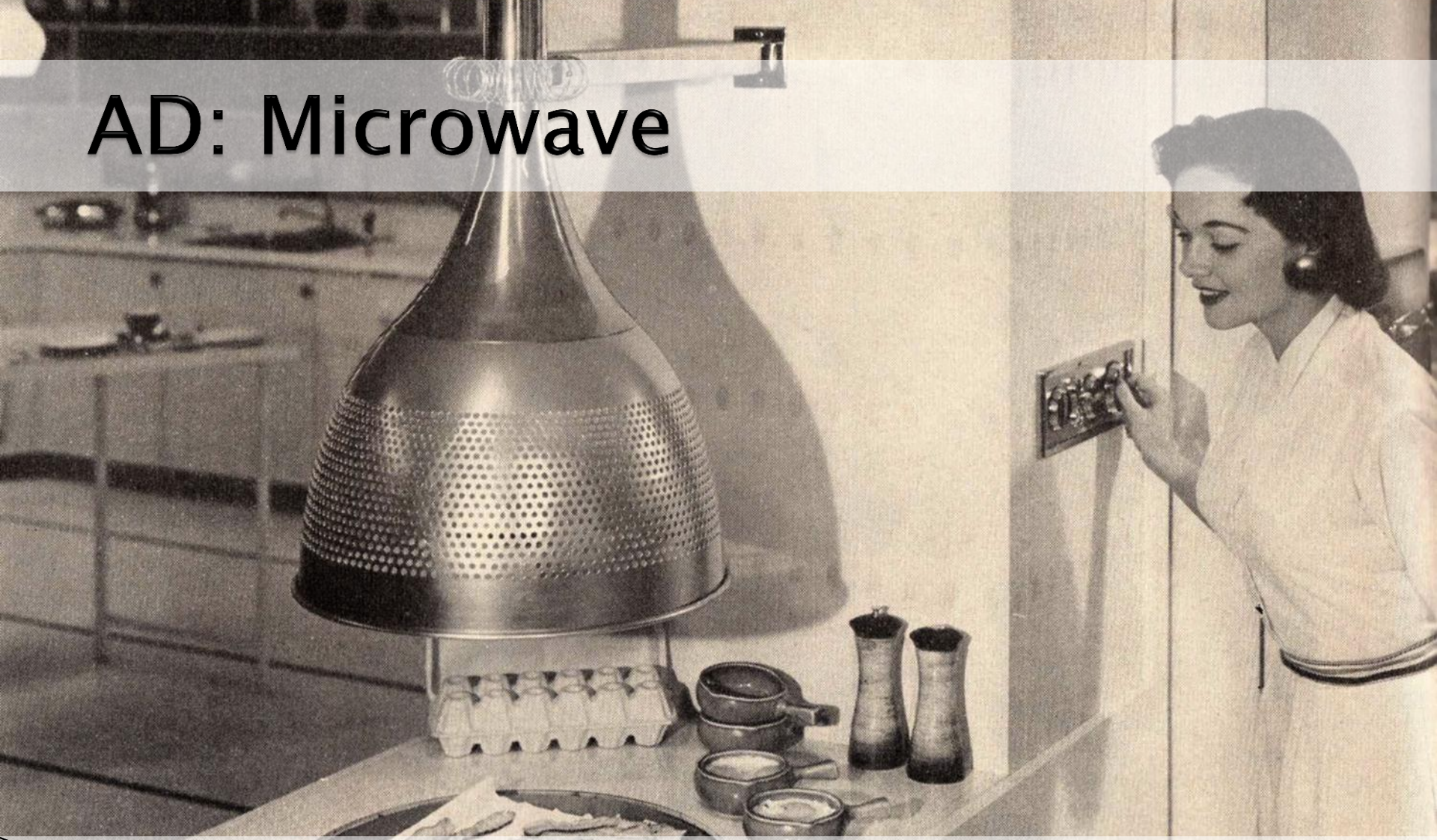
TelehealthTAC

Accidental Discovery

Episode: Microwave Oven

TelehealthTAC

AD: Microwave



- The year: 1945
- The situation: World War II
- The person: Percy Spencer

AD: Microwave

- The year: 1945
- The situation: World War II
- The person: Percy Spencer

TelehealthTAC

AD: Microwave

- The year: 1945
- The situation: World War II
- The person: Percy Spencer

TelehealthTAC

AD: Microwave

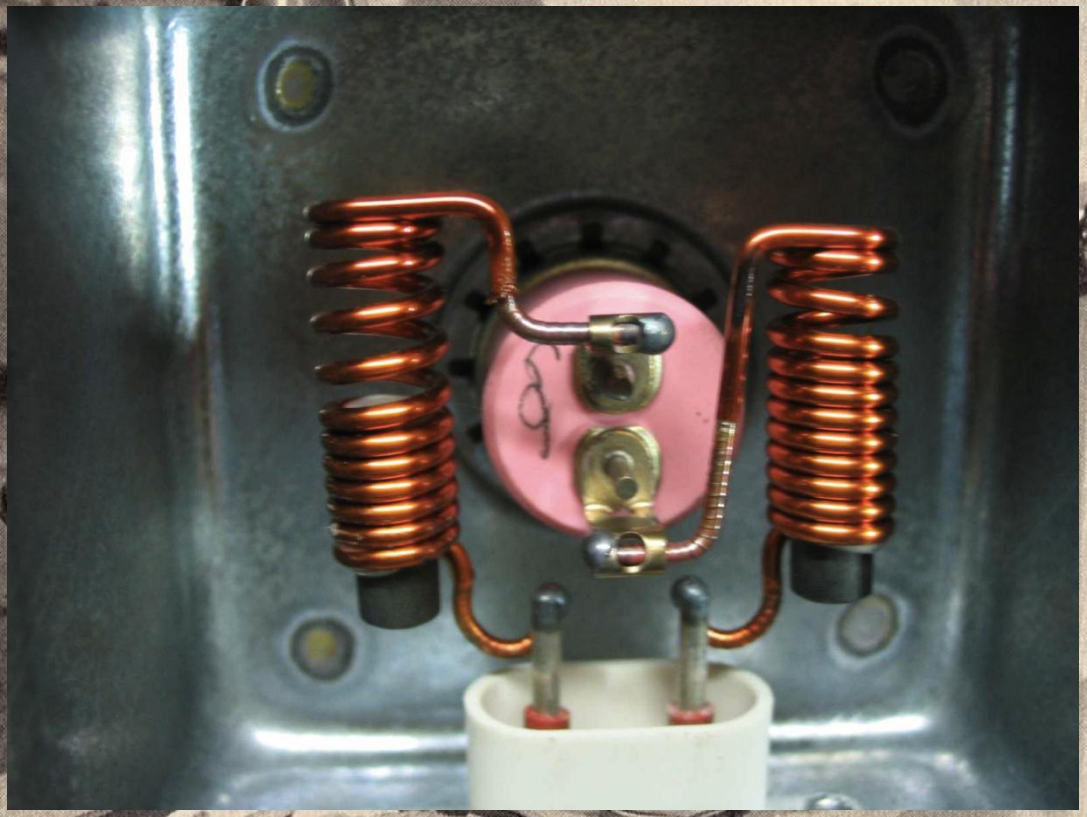
- The year: 1945
- The situation: World War II
- The person: Percy Spencer

AD: Microwave

- The year: 1945
- The situation: World War II
- The person: Percy Spencer

TelehealthTAC

AD: Microwave



- The year: 1945
- The situation: World War II
- The person: Percy Spencer

AD: Microwave

- Know when to take advantage of those with the skills and capacity
- You don't need formal training to do wonderful things
- The most expensive solution isn't always the best
- Be prepared for people to use your technology in novel ways
- Testing can be messy
- OSHA?!

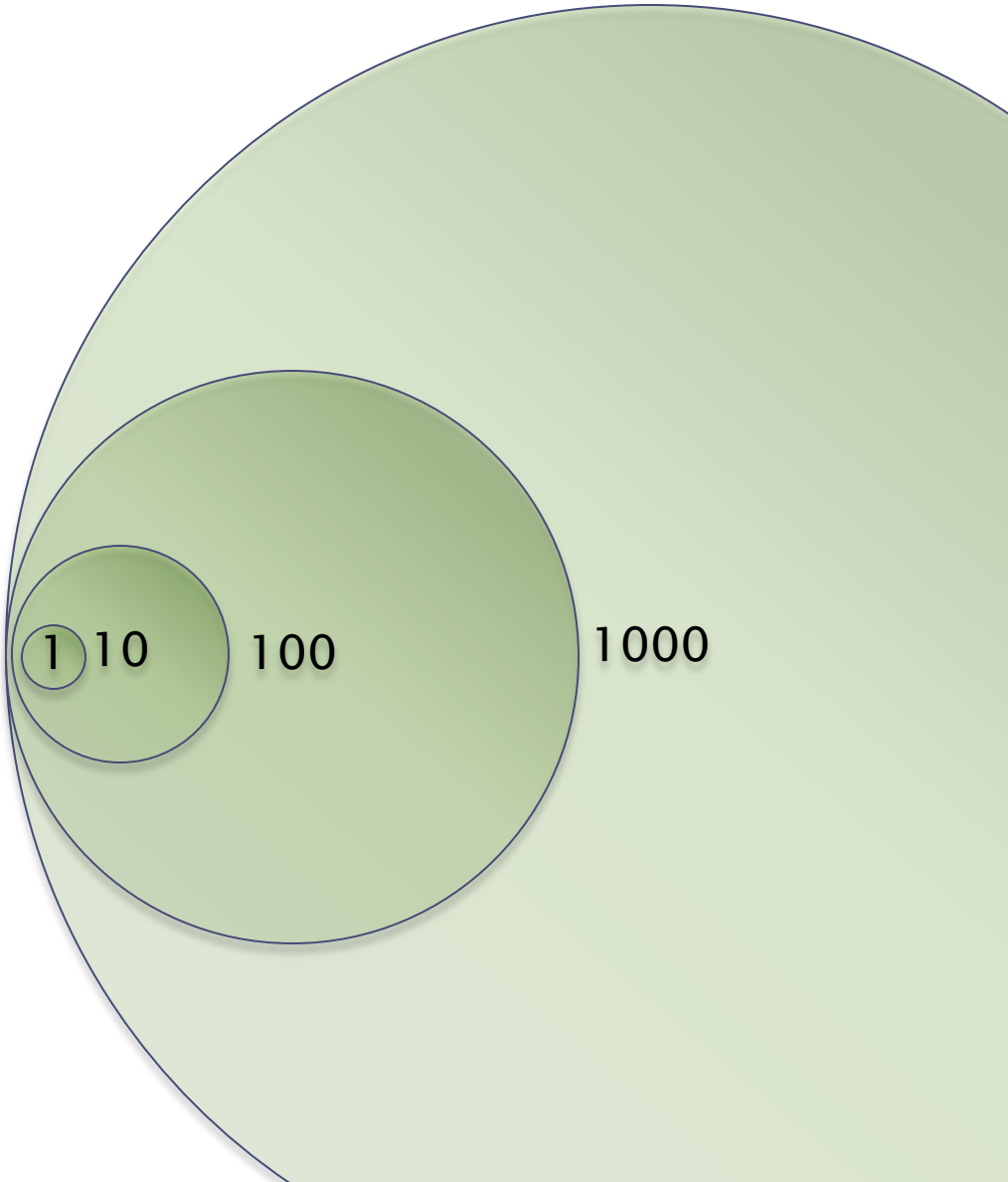
Today's Talk

- The Problem – Telehealth Technology
- The Process – Technology Assessment
- The Truth – Lessons Learned
- The Resources – Where to Look
- Wrap Up, Q&A

The Problem (1–10–100–1000)

The cost of finding a defect:

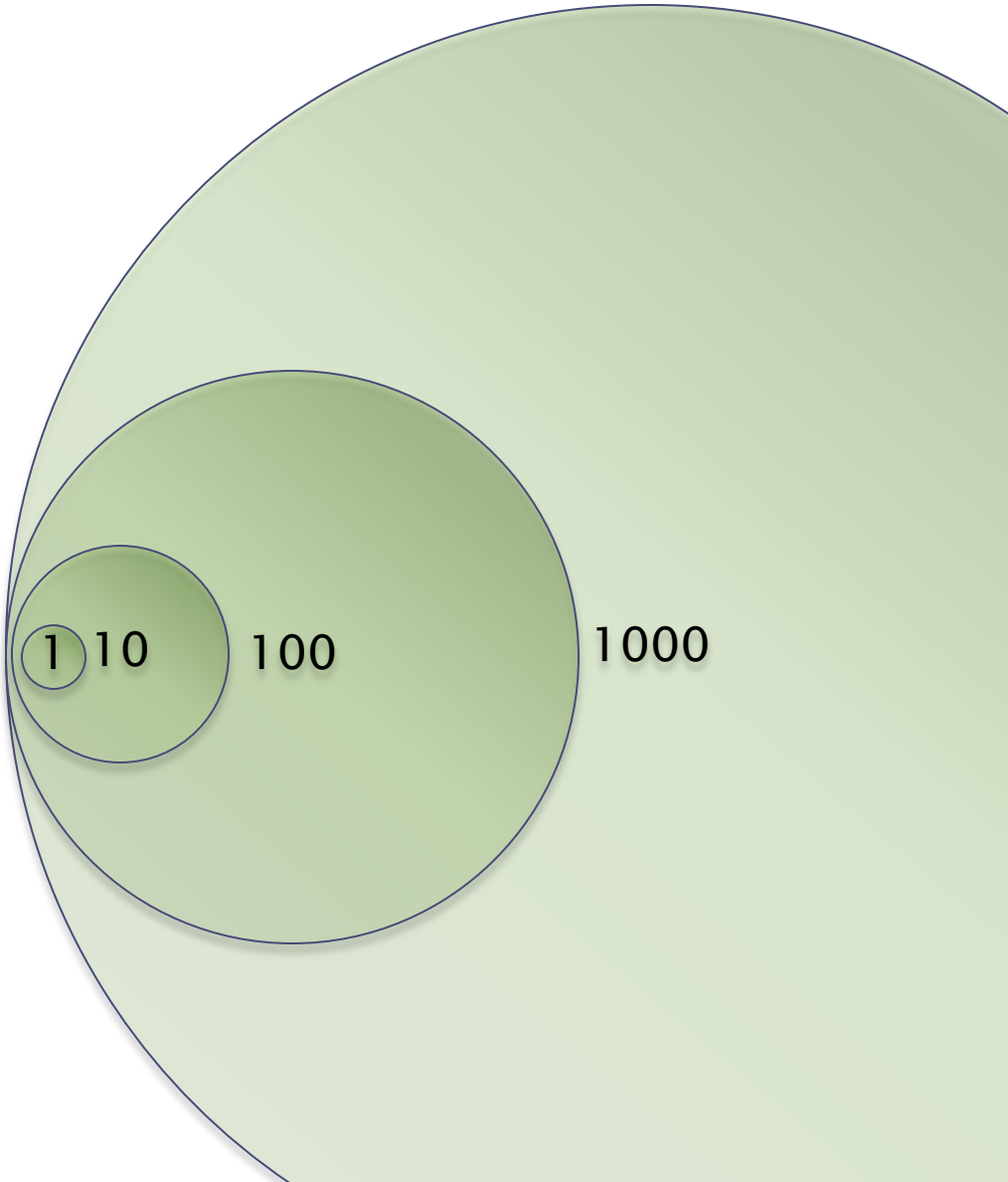
- During planning
- During development
- During testing
- After deployment



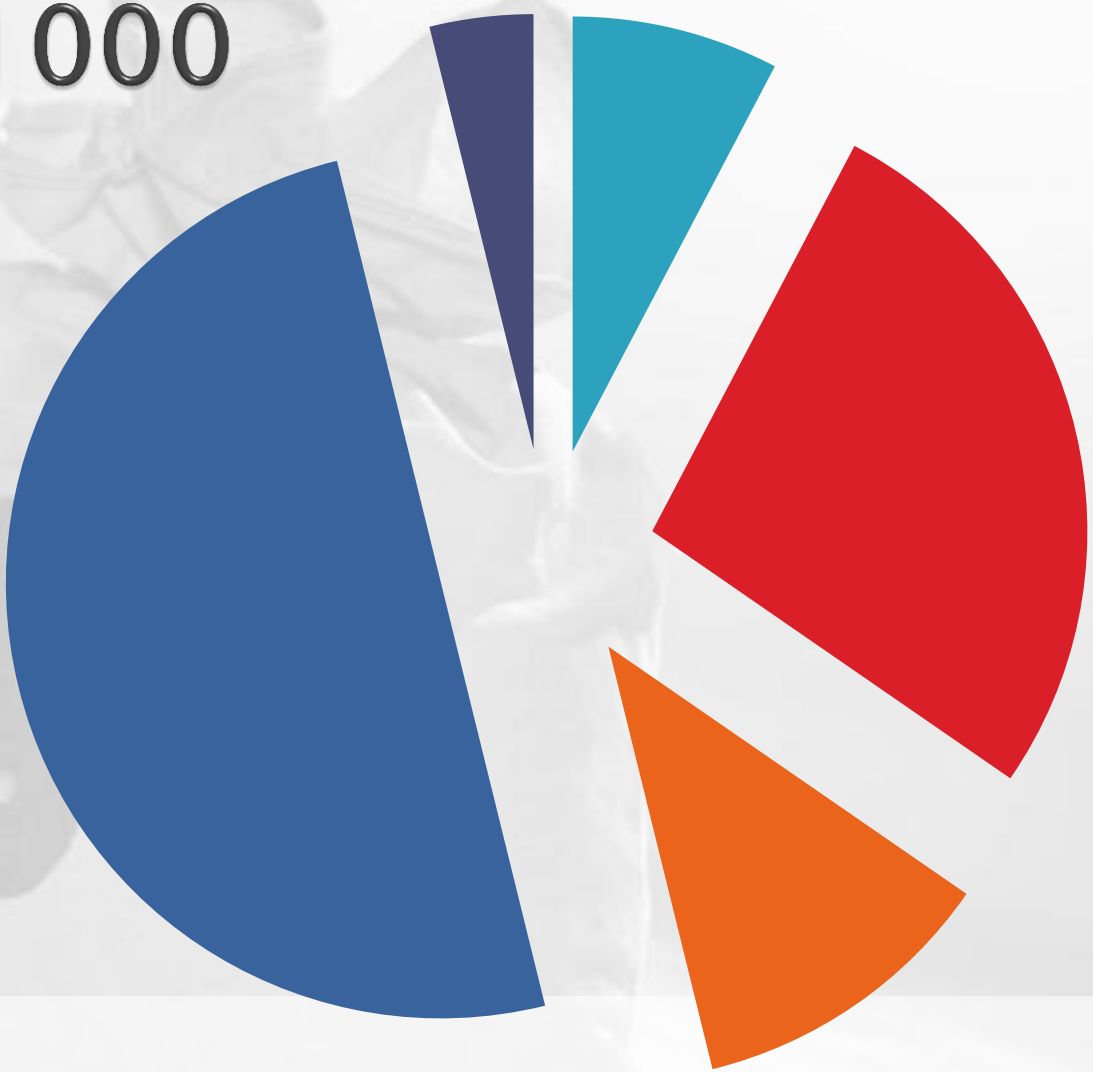
The Problem (1–10–100–1000)

~~The cost of finding a defect:~~
- ~~During planning~~
- ~~During development~~
- ~~During testing~~
- ~~After deployment~~

The cost of the wrong technology:
- During planning
- During assessment
- During staging
- After deployment



The Cost of 1000



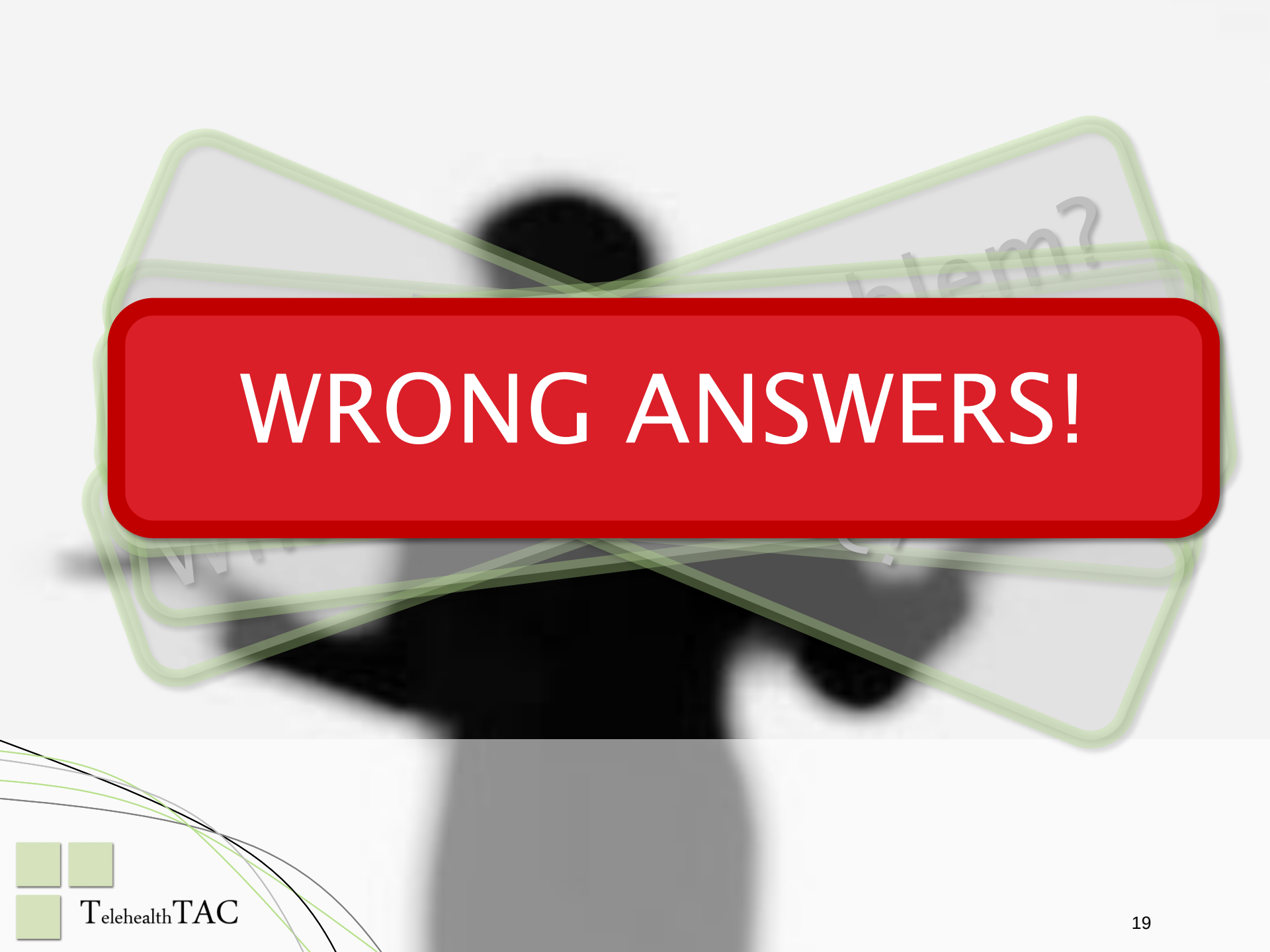
TelehealthTAC

TelehealthTAC

I'm Not Technical!

Just Tell Me!

It's All The Same!


WRONG ANSWERS!

What Are We Going To Do?!

- **Remain calm**
  - Tea, yoga, and long baths may help
- **Learn how to do it right**
  - Repeat after me, “Yes, I can!”
- **Find out how it works, and how to get help**
  - Experience (yours) + Experience (others) = Goodness

Telehealth TAC

A Processes Overview

- Establish Requirements
- Review the Market
- Procure the Devices
- Plan the Tests
- Test the Plan
- Select a Device
- Deploy and Support

Establish Requirements

- Gather as many points of view as possible
- Create shared meaning around the requirements
- Think through a variety of requirement types:
  - Functionality
  - Portability
  - Interoperability
  - Usability
  - Data Integrity

If this is all you do, you will be way ahead of those who just head to the market immediately.

Review the Market

- Use online resources – Google, Bing, Amazon, etc
- Phone a friend – TRCs, OAT Grantees, TTAC
- Talk to organizations that have existing programs
- Contact the manufacturers and vendors

If you find yourself doing this before you have a firm grasp on the requirements, go back a step.

Procure the Devices

- Manufacturers and vendors can be incredibly useful
  - Loaners are great!
- Buy and borrow what you need
- Keep it all organized
- Try to get the devices in at the same time

Your budget and time might not allow this – consider finding a way to get access to the devices at a store, conference, or other telehealth program.

Plan the Test

- Quantify your requirements
- Develop methods to test against the requirements
- Planning and testing can be iterative

This does not have to be an all-inclusive, massive test suite … what are you really looking for with your tests?

Test the Plan

- Test independently or together
  - Independent tests can prevent “group think”
  - Collaboration can foster discussions
- Document EVERYTHING
- Be consistent
- Update test if needed

Have the right people involved here – it can be a timesaver in the end if the equipment starts out in the right hands.

Select a Device

- Get the reviewers together
- Discuss the scores – clarify discrepancies
- Consider bringing in the initial requirements team
- Be prepared for a second review of top performers
- Make a decision and share your results

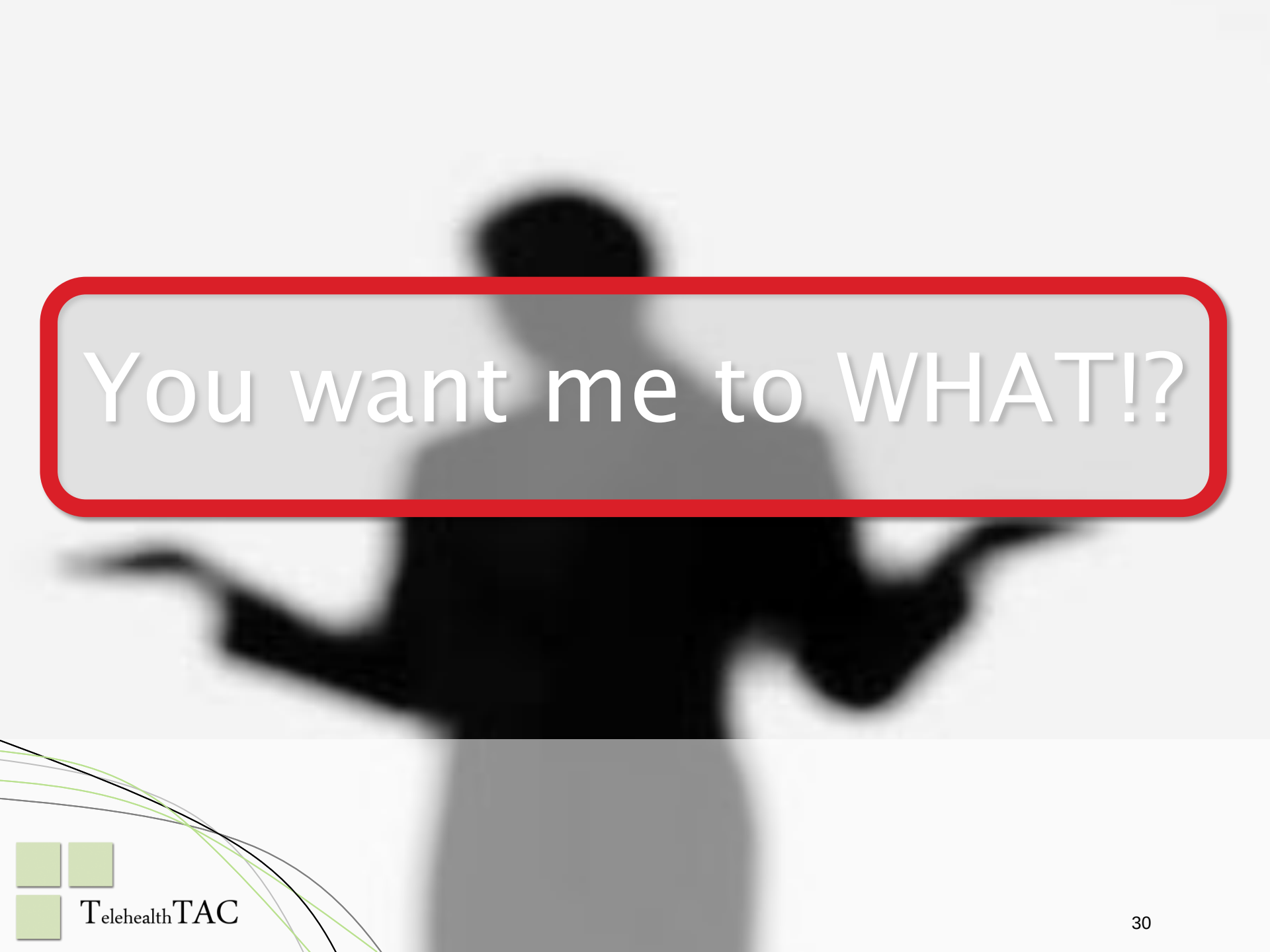
This will happen regardless of how many of the previous steps you have taken – your exact process here will vary depending on your other efforts.

Deploy and Support

- Device Staging
- Configurations
- Spares
- Warranties
- Customer Support
- Troubleshooting
- Training
- Replacing Equipment

This requires its own plan, process, and work that will likely be somewhat unique to each technology, organization, and deployment size.

TelehealthTAC



TelehealthTAC

Repeat after me – www.telehealthtac.org – we have toolkits and materials that talk about all of this in much more detail.

Telehealth TAC

Lessons Learned – DSLR Cameras

- A large, frequently changing market that is targeting many people with different needs.
- Brought in 17 cameras, 13 lenses, and 10 lights for evaluation
- Two experienced photographers on the team, previous work assessing point-and-shoot cameras

Lessons Learned – DSLR Cameras

- The Plan:
  - Shoot images of the eye, teeth, mouth, head, back, wound, finger tips, hand, and an elbow
  - Use various lens and light combinations with each subject and camera body
  - Use custom-made software for image review
- The Goal:
  - Determine if camera bodies or lenses make a significant difference
  - See how equipment performs with common but diverse imaging needs

Lessons Learned – DSLR Cameras

- Keep your focus just that – focused
- Homegrown solutions can be outgrown
- Use the experts that you have
- Be willing to “cut your losses” if evaluation work is not producing useful information

Lessons Learned – EHR Carts

- A rapidly growing market with healthcare-oriented products
- We were asked to help finish the build for a dozen carts to be used in the OR
- We knew little about the carts, the needs, or the parts but did have previous cart-building experience

Lessons Learned – EHR Carts

- The Plan:
  - Assemble the pieces needed for one cart, then repeat the process for the others
  - Work from general build notes from previous work groups
- The Goal:
  - Do it all in three days

Lessons Learned – EHR Carts

- Know your requirements
- Establish the process before doing work
- Assembly lines propagate errors if something needs to be redone (1-10-100-1000)
- Committing to deadlines without knowing the work can make for late nights

Lessons Learned – Stethoscopes

- A fairly small market with mostly established players and a few new, smaller manufacturers
- We brought in 13 stethoscopes, with some purchased and some borrowed
- We had experience with a few models of stethoscope as a part of a previous Store & Forward project, had audio equipment experience with one of the testers

Lessons Learned – Stethoscopes

- The Plan:
  - Create a foam sound booth and test inside that
  - Use a tone generator and audio analyzer to test frequency response
- The Goal:
  - Determine which stethoscope provides the best auscultation ability in a quantitative test

Lessons Learned – Stethoscopes

- K.I.S.S. – Keep It Simple, Smart-guy
- Foam sound booths are not sound proof
- Audiologist labs after-hours are quiet
- After-hours cleaning crews are noisy
- Using doctors' ears can provide more relevant information

YOU WANT ME TO WHAT!?

Repeat after me – www.telehealthtac.org – we have toolkits and materials that talk about all of this in much more detail.

Telehealth TAC

Help is Here (and There, and There …)

- Telehealth Resource Centers
- Office for the Advancement of Telehealth
- American Telemedicine Association
- Telehealth Technology Assessment Center

Help is Here

- TelehealthTAC
  - Toolkits
    - Desktop Videoconferencing, Digital Cameras (point-and-shoot, DSLR), Electronic Stethoscopes, Home Health, Patient Exam Cameras, Technology Assessment 101, Videoconferencing Bridges, Videoconferencing Codecs, Video Otoscopes
  - Webinars and presentations
  - Email, phone, and personal help

Summary

- Technology assessment is a hard but critical practice
- It's a process that you need to actually *do* to learn
- It is okay to make mistakes, as it builds experience

Questions?

Kirt J Beck
TTAC Director
kjbeck@TelehealthTAC.org
Main: 907.729.4703

Follow Us

TelehealthTAC

For additional information, please visit our website at www.TelehealthTAC.org

Additional resources for telehealth program development can be found at www.telehealthresourcecenters.org

TelehealthTAC

Photo Credits – Licensed Under Creative Commons:
altemark, andjohan, attaboy, Charisse Joy, Denise Cross, expertinfantry, Garret Spargo, RiRi Trautmann, Robbie1, Robert Donovan, Stew Dean

ALASKA NATIVE TRIBAL HEALTH CONSORTIUM