eAudiology

Things I've learned.

W. Campbell

* Involved in teleaudiology since 2008.
* 1st clinical use of remote infant ABR.
* Development of Teleaudiology Resource Guide with NCHAM working group.
* Development of Ontario Infant Hearing Program teleaudiology protocol.

So, what do I know?

*I know Distance!

*Digital Transformation for Audiology…..Threat?

* 2000 debut at AAA.
  * $40 million invested
  * Retail for $39–replaced every 40 days
  * Profit margin of $19.50
  * 2005: folded
* 2008 Songbird Flexfit:
  * $79 direct to consumer. 400 day battery life
* March 2012: Songbird Clear BTE, 1000 stores in US

Songbird

Hearinghealthmatters.org

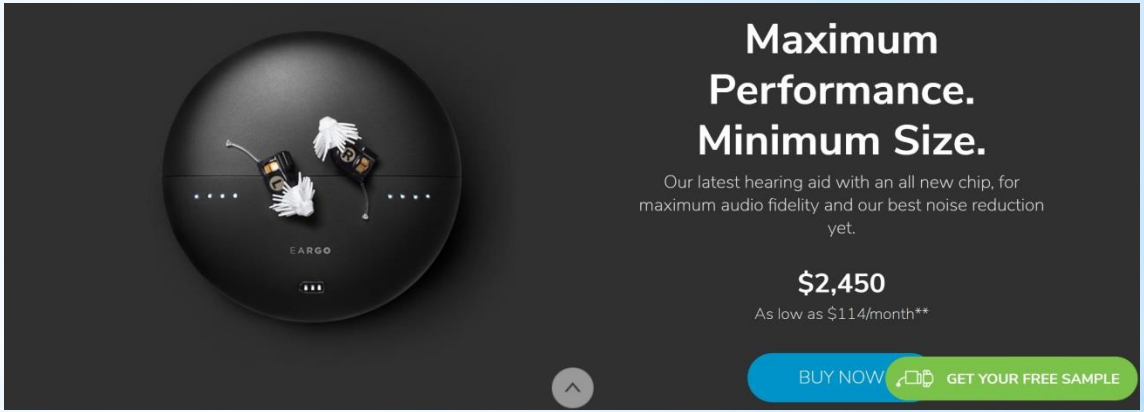
NORTH BRUNSWICK, NJ–Songbird Hearing, Inc., called it quits—again. For at least the second time in the 12-year history of the original disposable hearing aid, the Songbird has apparently failed to build the market its manufacturer had hoped for.

Attempts to reach company executive for comment were unsuccessful.

*Songbird 2012

Hearinghealthmatters.com

* www.ovationhearing.com
* www.eargo.com



* Online hearing aids

* **Distinguish yourself from others.**
* Save clients time and money.
* Efficiency in clinician time.
* The right tool for the job!

* Digital Transformation for Audiology….or Opportunity

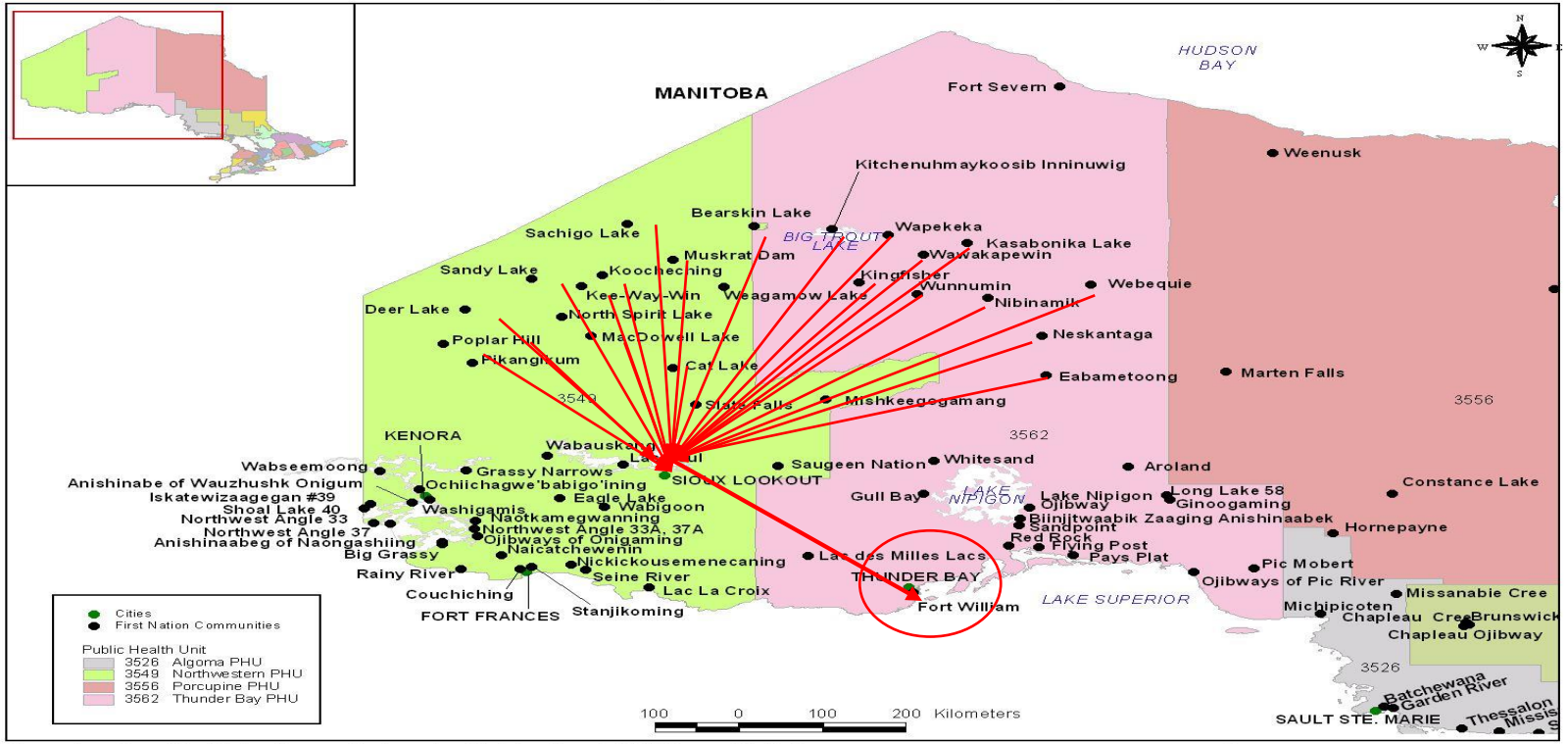
Origins

* Telehealth in audiology is not new:
  * Fabry, 1990's, hearing aid programming.
  * Schmiedge (thesis) 1997, OAE's.
  * Towers et al, 2005, Krumm et al, 2008, ABR.
  * Franck et al, 2006, CI programming.
  * Birkmire-Peters et al, 1999, video otoscopy.
  * Hyde & Campbell, 2010, EHDI toolkit.
  * Swanepoel et al, 2008, conventional audiometry.
  * Pearce, Ching, Dillon, 2009, assessment delivery.

Ontario Infant Hearing Program

- Ontario Infant Hearing Program (IHP)
  - Began in 2001.
  - Provides universal screening, assessment, communication development services.
  - Audiologists sited in 12 regions across Ontario.

First Nation Communities by Public Health Unit, Northwestern Ontario



Source: Location of First Nation Communities based on Statistics Canada 1996 Census Subdivisions, with current community names as of October 2002, provided by FNIHB-ON.
Public Health Unit boundaries from Statistics Canada, 2000.

Centre for Surveillance Coordination | Le Centre de coordination de la surveillance

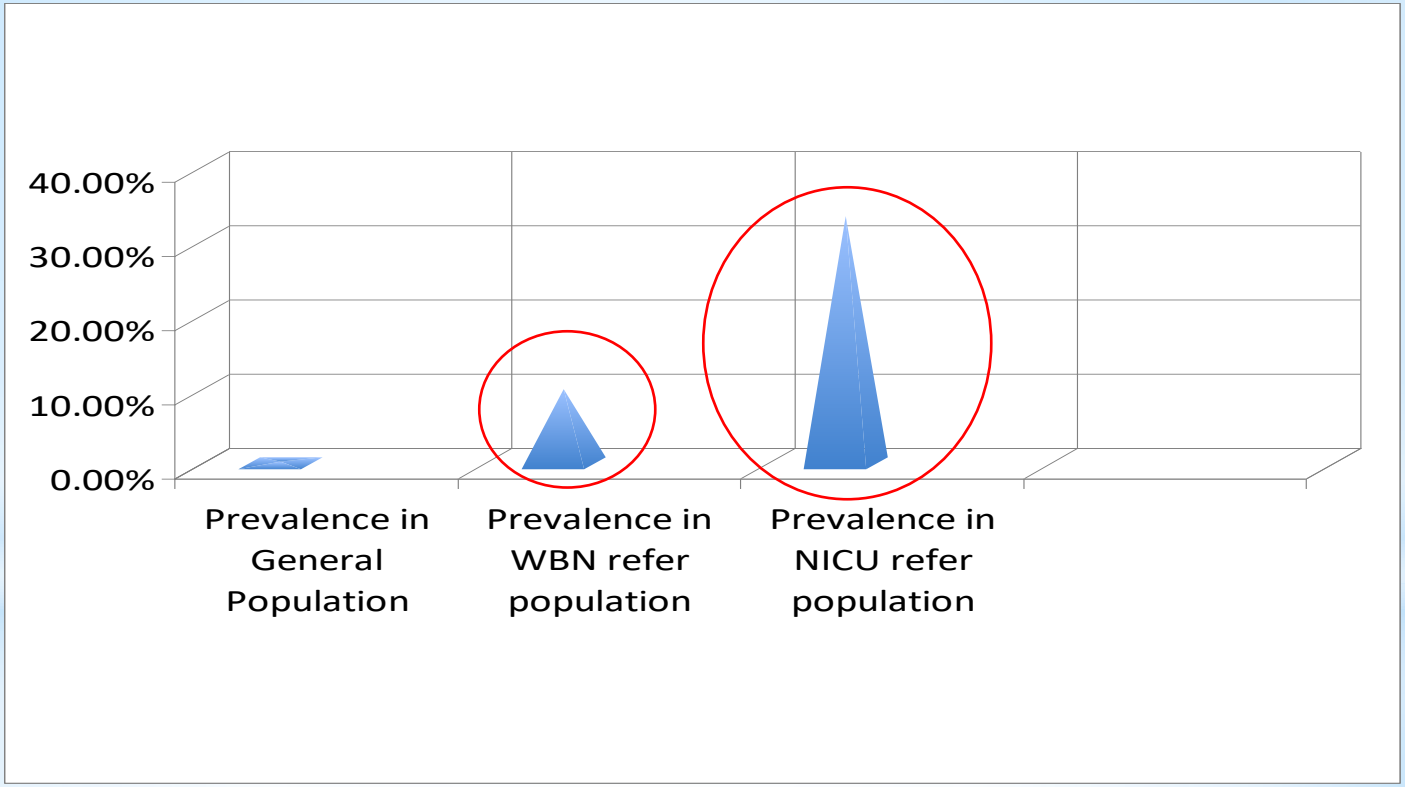
Issues in EHDI

* 2006: Barriers to access to IHP ABR services in northern Ontario
* Loss to Follow Up
* Travel cost for families
* Training and Support of EHDI professionals
* Wait List for Service
* Quality Assurance

Issues in EHDI

* 2006: Barriers to access to IHP ABR services in northern Ontario
* Infants missed at hospital before discharge
* Infant who refer at Stage I and do not return for Stage II
* Infants who refer from Stage II and do not return for assessment

*Probability of HL



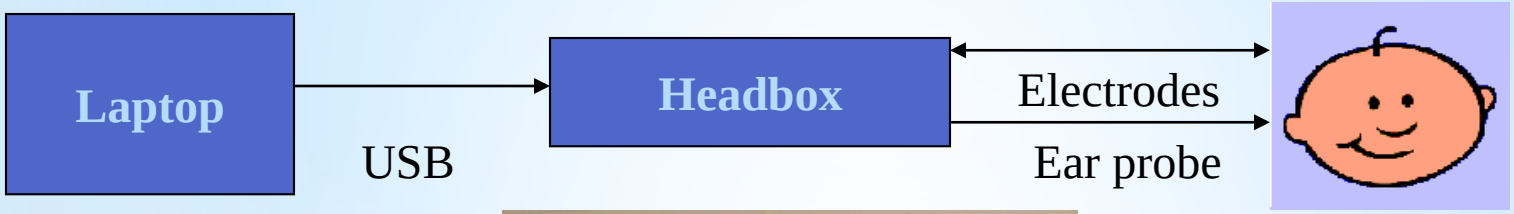
* 2006: Barriers to access to IHP ABR services in northern Ontario
* 2008:
  * Technology became available
  * Online services accessed
  * Development of pilot for province wide program
* 2008-2011: Integrated into clinical schedule

* Opportunity

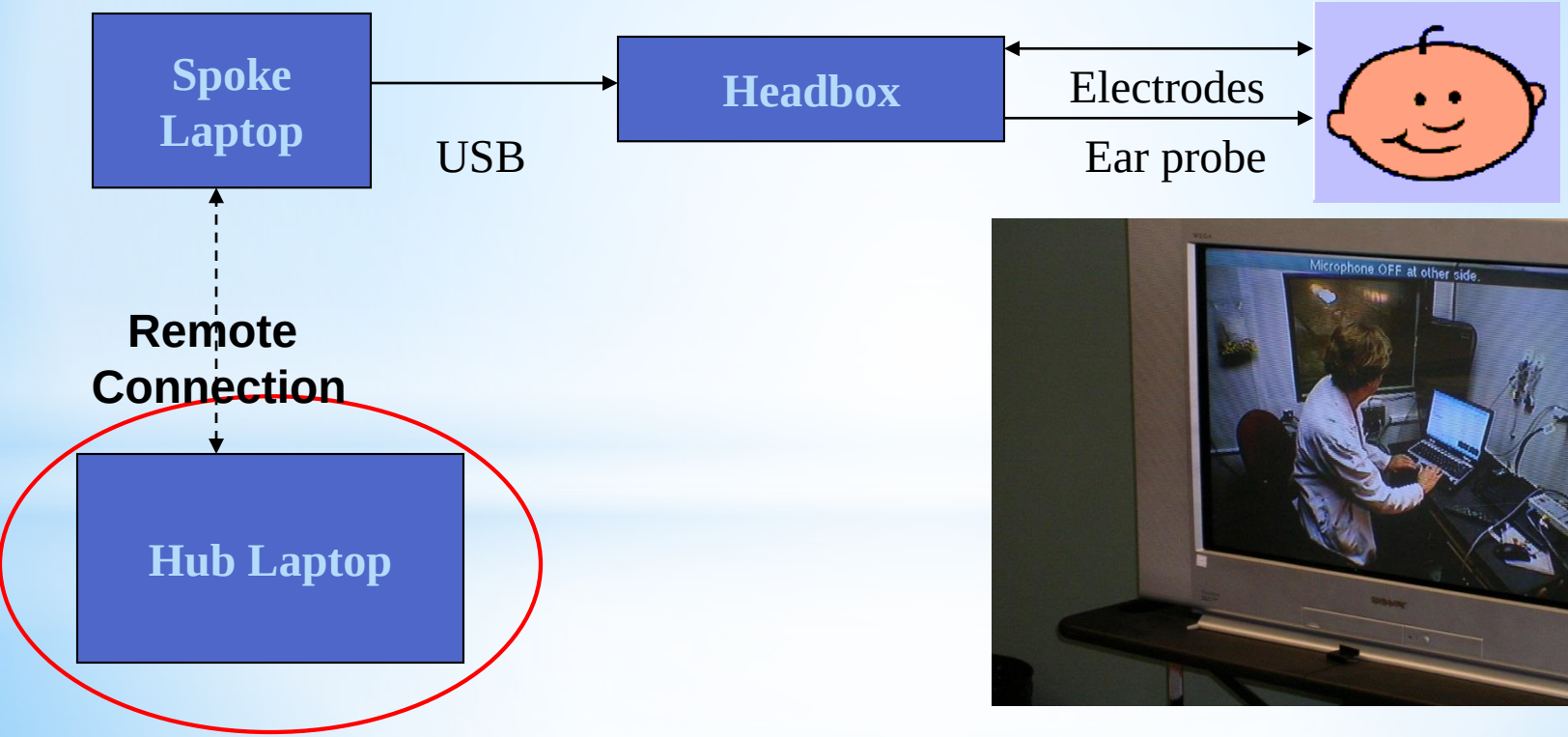
Terminology

- Hub site:
  - This is where the assessing audiologist is located.
  - Equipment necessary for establishing the telemedicine and data connection.
- Spoke site:
  - This is where the infant is located.
  - ABR, otoscope, OAE equipment location
  - Trained technician and intake staff

*Remote Assessment



*Remote Assessment

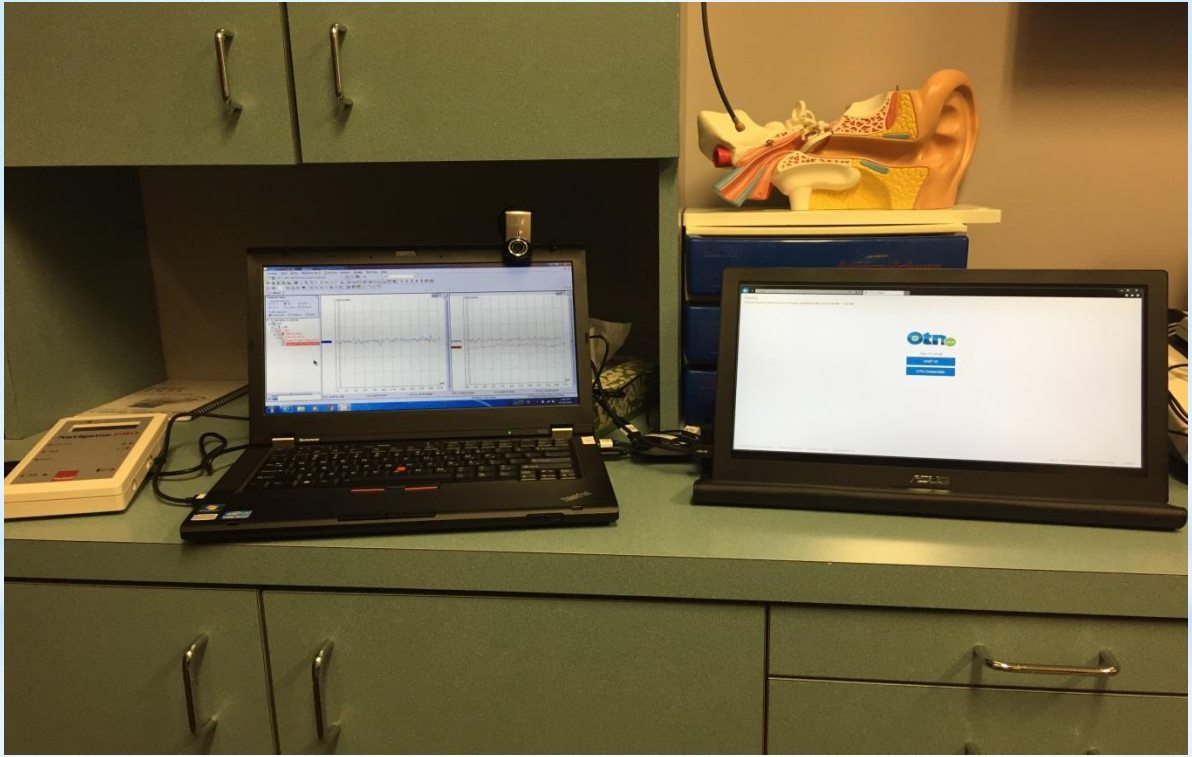


Making it work

- Software barriers:
  - 2006: ABR software was DOS based and could not be controlled using Windows based desktop sharing software.
- Access barriers
  - 2008: Use of Ontario Telemedicine Network (OTN) secure network, data link connected to video link.
  - OTN used fixed sites, limiting access to service.
  - Overcoming risk to OTN network and various agency concerns.

*Feb. 2008

And now



* 2008-2011: 120 Ax, 1 ID
* 2011 to present:
  * Development of Ontario protocol
  * Established 2 other sites in ON
  * Dev't of funded remote Ax programs in Ontario and British Columbia

* All that work for….

Key Components

- Videoconference and data connections
  - Established telemedicine network
  - Skype for Business
- Trained staff
  - Hub site audiologist
  - Spoke site technician
  - Scheduling and support staff

* Telemedicine network access.
* Desktop sharing solution.
* Testing environment.

* Challenges and Solutions

Challenges and Solutions

* Agency IT policy restrictions.
* Patient Privacy.
* Clinician comfort with technology.
* Patient comfort with technology.

Law of Unintended Consequences

* Technology changes…..
* Staff change……
* Agency policies change…..
* Funding changes…..
* Equipment setup and team involvement is critical.

* Flexibility!

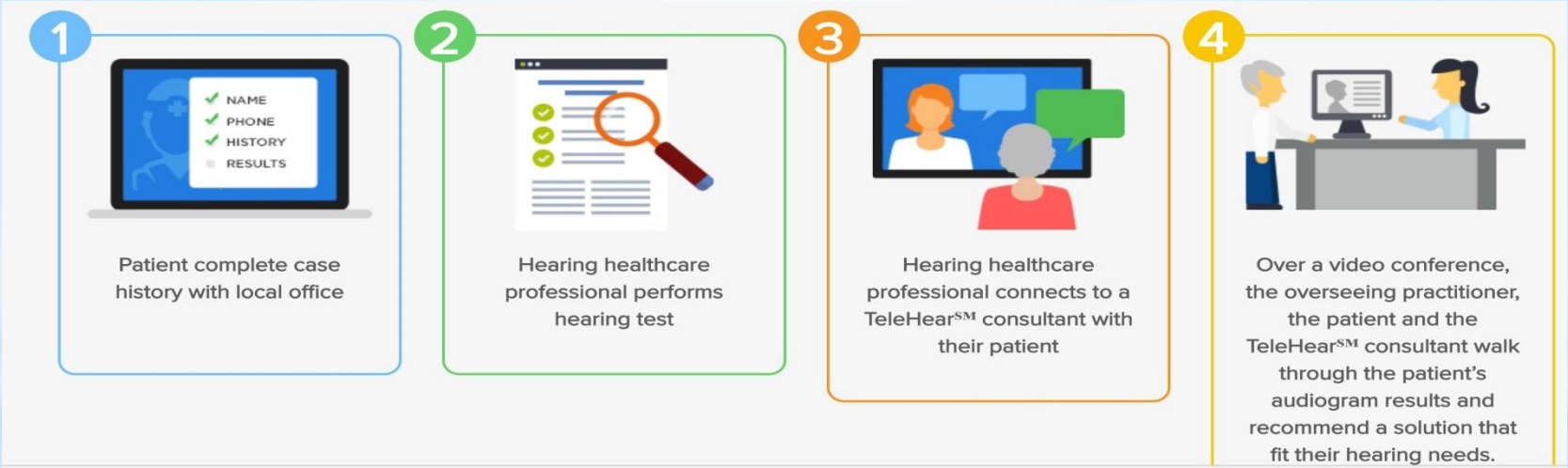
US Veteran's Administration

- 2015: 710,000 HA dispensed (21% of market)
- VA eAudiology:
  - 176 sites (+419 brick and mortar)
  - 23,561 remote appointments
  - Satisfaction and outcomes rated as good or better compared to face to face.

* Royal Institute for Deaf and Blind Children, Australia
* RemoteEar.com
* NCHAM: A Resource Guide Supporting Teleaudiology
* KUDUwave
* OtoID
* VA Teleaudiology
* Alaska Federal Healthcare Access Network
* BCEHP

* eAudiology Now

* Signia TeleCare
* Starkey Telehear



With permission from www.telehear.com

* Hearing aid adjustment.
* Counseling.
* Post fit follow up.

* Practical eAudiology

* Virtual home visits:
  * Hearing aid adjustments
  * Counseling
  * Direct DIY instruction
  * Post fit follow up

* Practical eAudiology

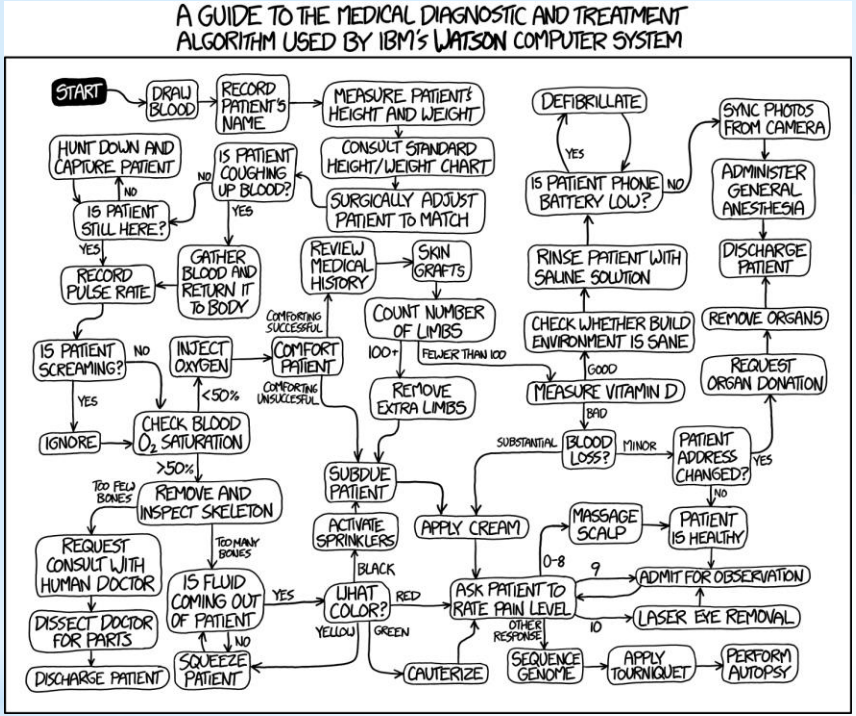
With permission from Municipality of Greenstone

Hearing Aids

- Web based manufacturer software
- Connection to devices
- Assistance at remote site
- Video conference or live chat link

Network Technologies

* Manufacturer supplied links
* OTN PCVC
* Vidyo
* Skype for Business
* Teamviewer
* AnyDesk



xkcd.com

*Keep it simple!!

*THINK!

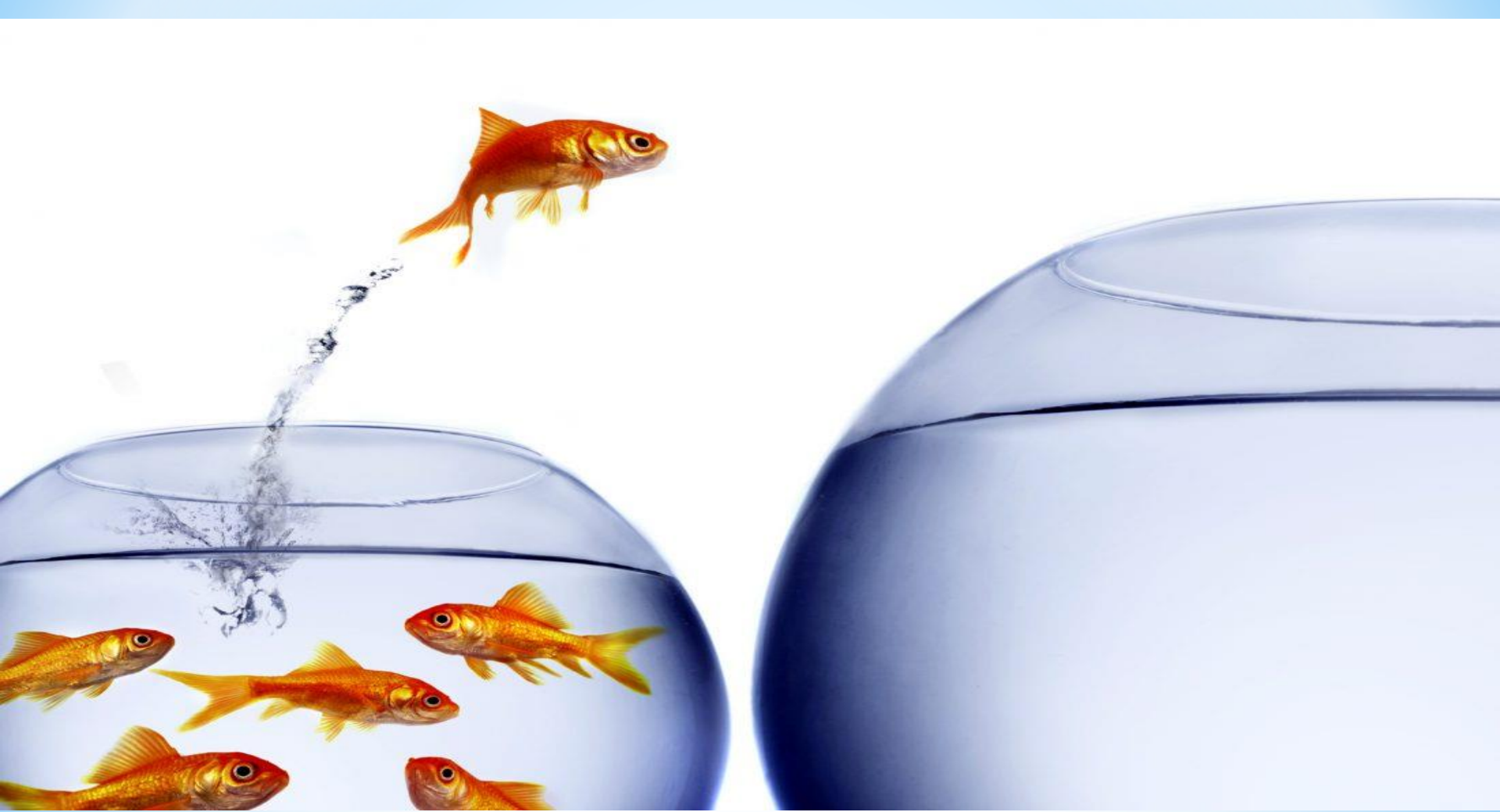
* Know your community
* Understand the cultural aspects and impact
* Link to resources to help with things you don't understand
* What are the barriers? How can they be overcome?
* Don't just apply temporary solutions
* What are the strengths? How can you use them?


The internet is so fascinating!
That's the microwave!

* Isolated attempts at online or direct sales.
* Rise in public sector programs, ie VA, EHDI, CI.
* Innovation and integration into private sector practice.
* Manufacturer's role?

* Where are we going, really?

*Time



*Questions?

Contact

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