Moore's Law vs the Reality of Quality Conference Calls

Dial 844- WEB ADIGO (844-932-2344) *no ID needed*

Start time: 5 minutes after the hour
we'll go for 20 minutes until 25 past

A Conferencing Tips Webinar with Brad Volin, President of Adigo – 8/12/2014

AGENDA

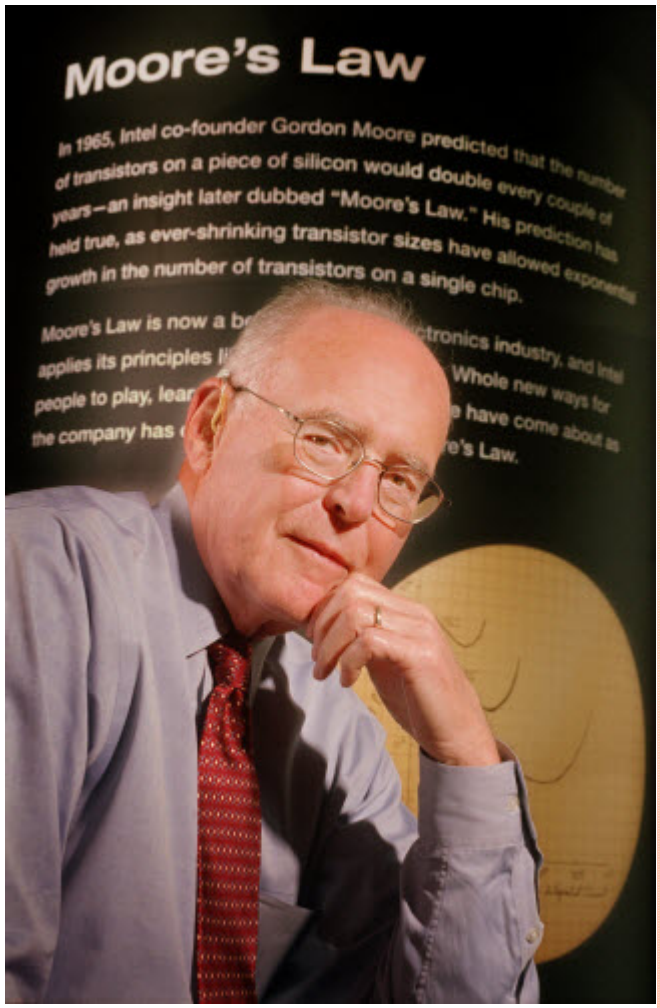
- Intro's
- Moore's Law
- Conferencing circa 2004
- Circa 2014
- Transport details
- Bridging details
- Impact and solutions

INTRODUCTIONS

- President, Adigo
- Experience at Public and Private companies
- Director of Products, Voyant Technologies 2001
  - Bridging equipment for all major carriers

Moore's Law – doubling Performance every 18 months

- Memory
- Display Pixels
- Processing speed



- What does this Mean?

<u>Everything Gets Better and better</u>

Conference calls circa 2004

1. Dial 800#
2. Enter ID
3. Good audio quality
4. Expensive

CONFERENCE CALLS CIRCA 2014 (NOW)

1. Dial 800#
2. Search email for invite, and find 10 digit ID.
3. Multiple prompts
4. Questionable audio quality
5. Background noise from mobiles
6. Difficulty in being heard
7. Cheap ($)

Better?? Certainly no doubling every 18 months
(5 times over decade??)

- Actually worse for many, albeit cheaper

PROBLEM #1: PASS THE MIC

1. Often can only hear one person at a time (you're not dreaming it)
2. Reminiscent of Nextel's push-to-talk
3. Only one mic is on at a time, and only one person talking

"Hey Mike, that concrete load arrived" – chirp – "Great, I'll be right over" – chirp. (use image from blog article)

RESULT: LOST CONVERSATIONAL SPEECH

- Lose the ability to interrupt
- Dialogue is less conversational
- Experience is less collaborative
- Can't express a simple "ah-huh" or "Wait, can you expand on that?"

PROBLEM #2: SNAP, CRACKLE, POP

- Unwanted audio artifacts
- **Static, popping, tapping,**

  echo or even latency

- Out-of-sync speech – it's like watching a movie where the audio is a second or two behind the action

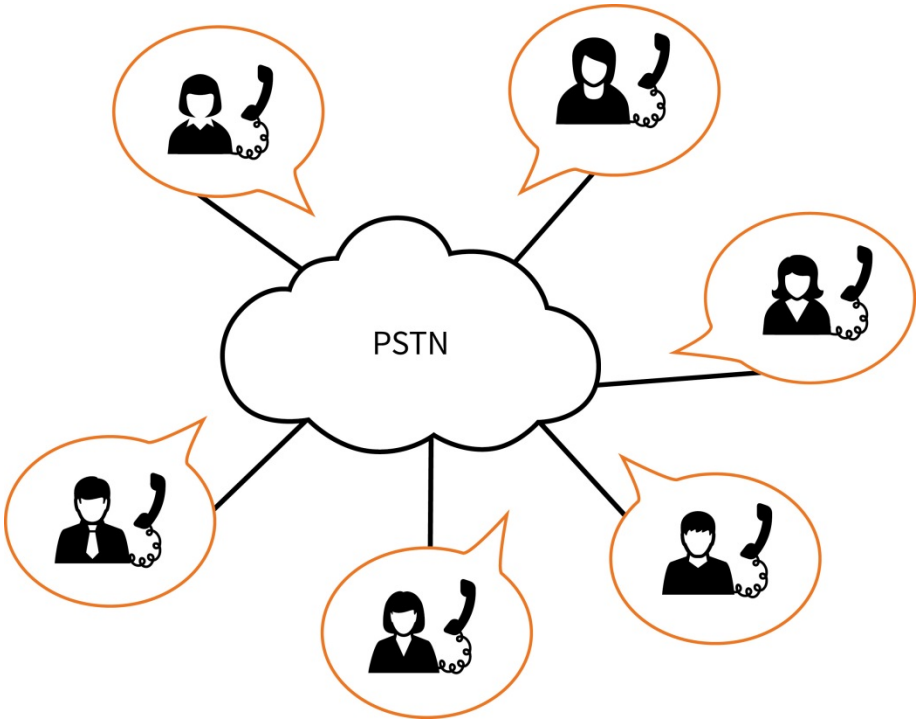
CAUSES:
2 PRIMARY TECHNICAL REASONS

- **Transport**

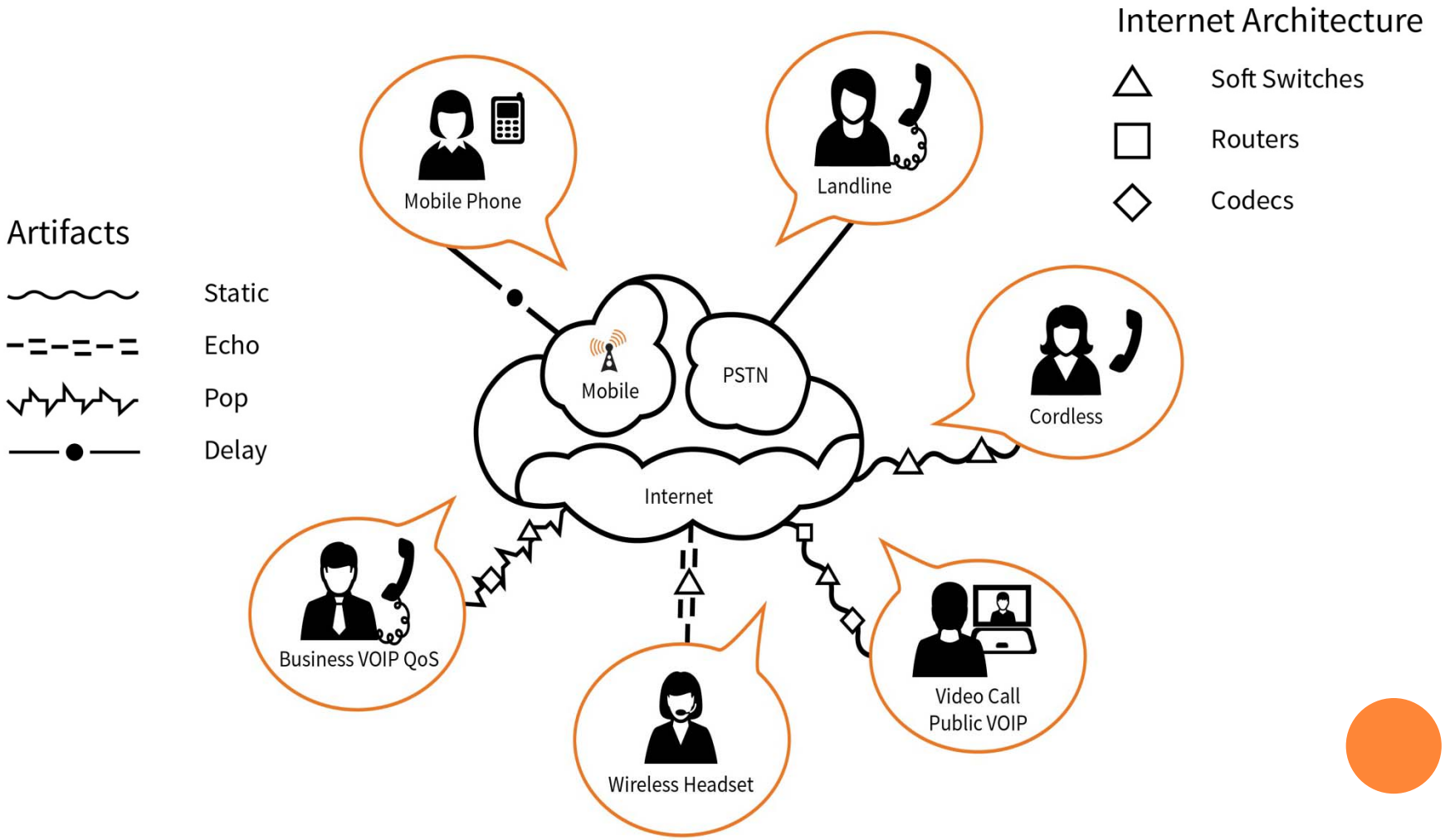
- **Bridging**

TRANSPORT CIRCA 2004 - PSTN

1. Physical route the voice information travels
2. All PSTN
   (publicly switched telephone network)
3. **Predictable, reliable**: 99.999% (5 9's)



TRANSPORT CIRCA 2014 - MIXED



RESULT - VARIABILITY

- Think skype – sometimes fine, sometimes crap
- Different endpoints:
- Different networks:

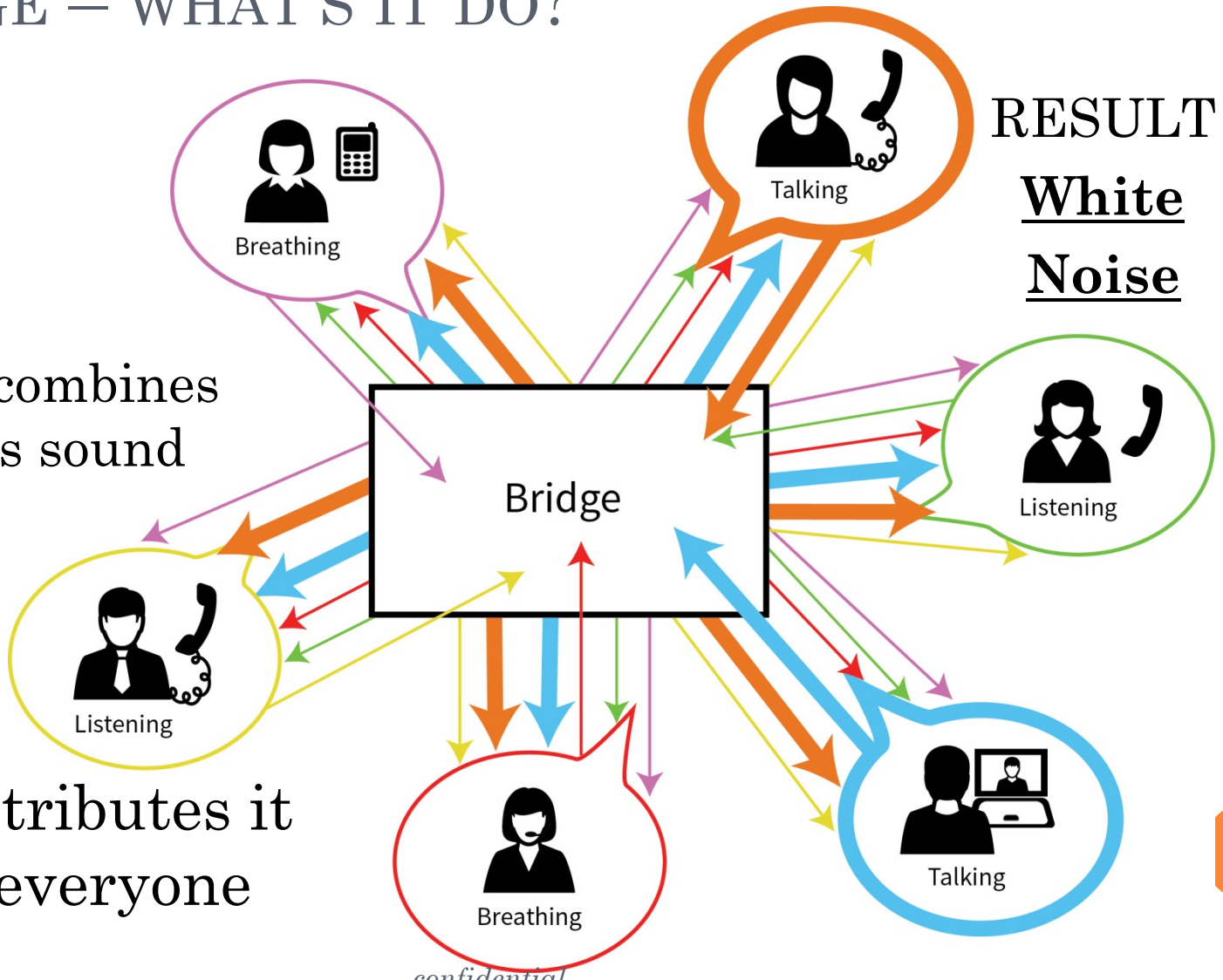
ARTIFACT	TYPICAL CAUSES
Delay	Excessive hops, long sections on the public internet, high latency connections
Echo	Codec incompatibility, low quality noise cancelation software
Static, pops, fuzz	Packet drop, poor interconnectivity, congestion, poorly prioritized traffic, poor QOS, insufficient peering

MULTIPLE WAYS TO IMPLEMENT, DRAMATIC COST DIFFERENCES

BRIDGE – WHAT'S IT DO?

1) Mixes/combines everyone's sound

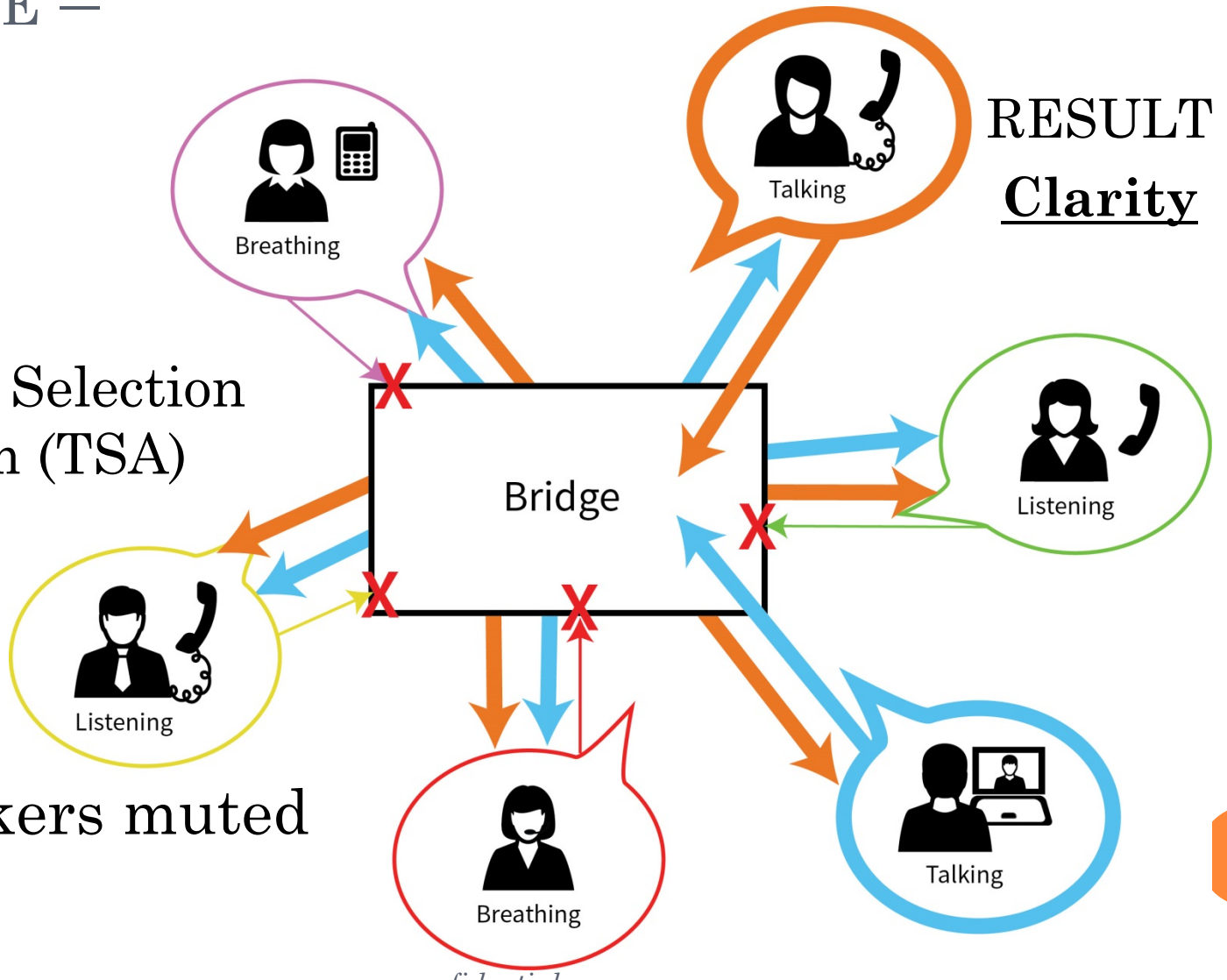
2) Redistributes it back to everyone



RESULT

White Noise

BRIDGE –



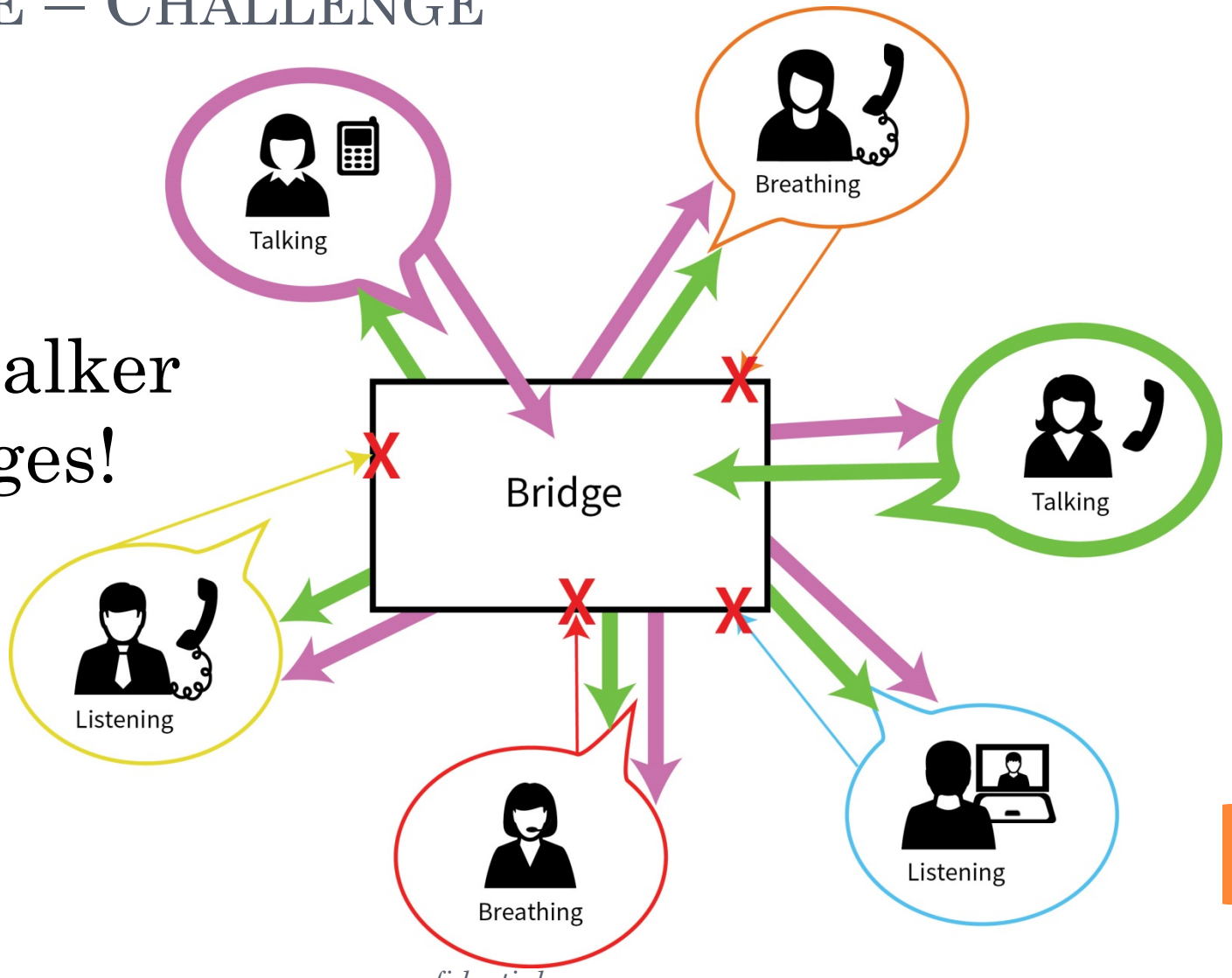
RESULT
Clarity

3) Talker Selection Algorithm (TSA)

Non-talkers muted

Bridge – Challenge

The Talker Changes!



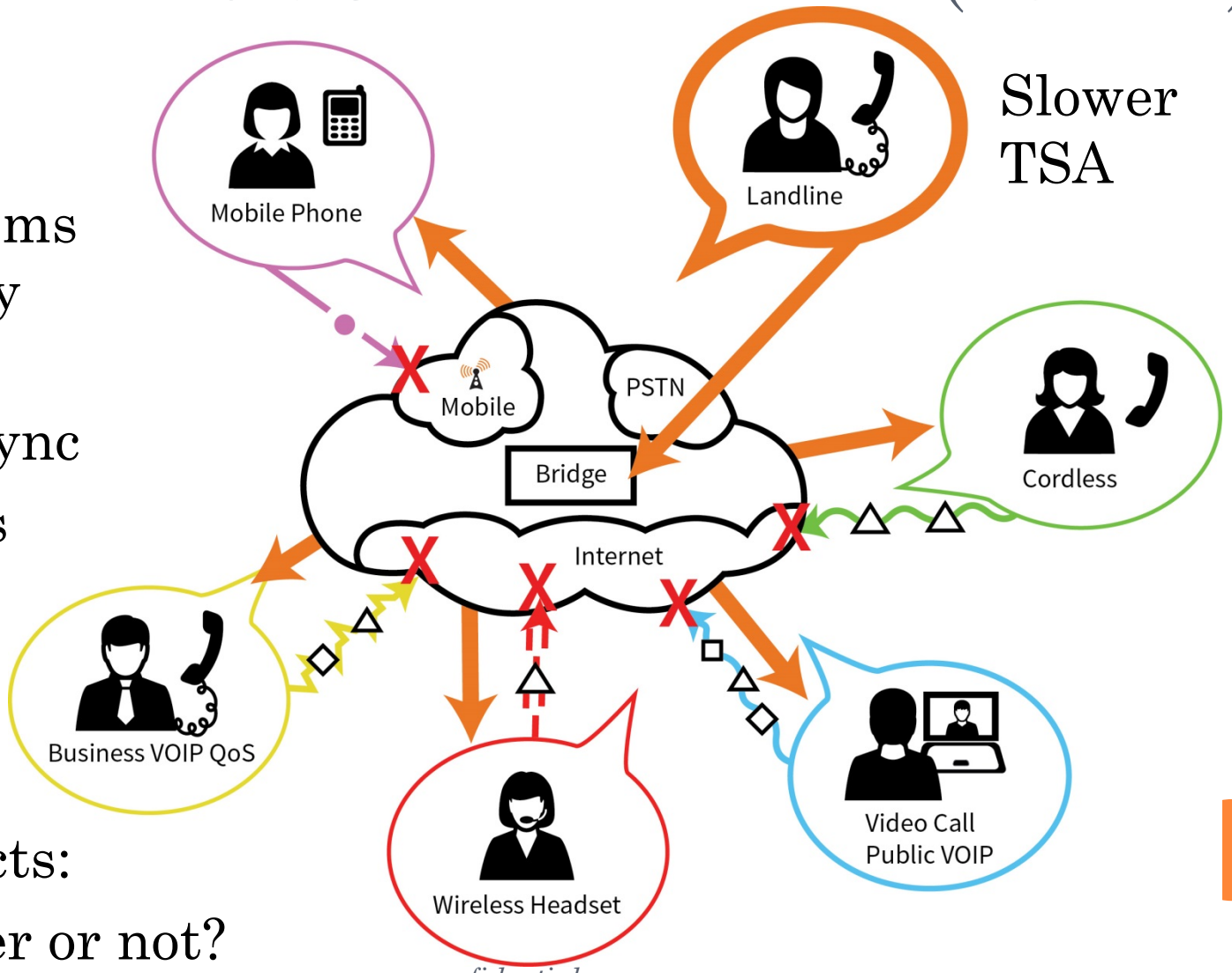
BRIDGE TECHNOLOGY CHANGES:

- Bridging – 2004
  - Custom hardware ("big iron")
  - Digital Signal Processors (DSPs)
  - Different Layers: system level, mixing, connectivity
- Bridging 2014
  - Generalized servers
  - Software based processing
  - Single stack
- Cost driven: save money

BRIDGE IMPACT: ONLY 1 MIC OPEN (TSA = 1)

Big Problems if too many mics open:

- Out-of-sync
- Artifacts



Artifacts:

speaker or not?

confidential

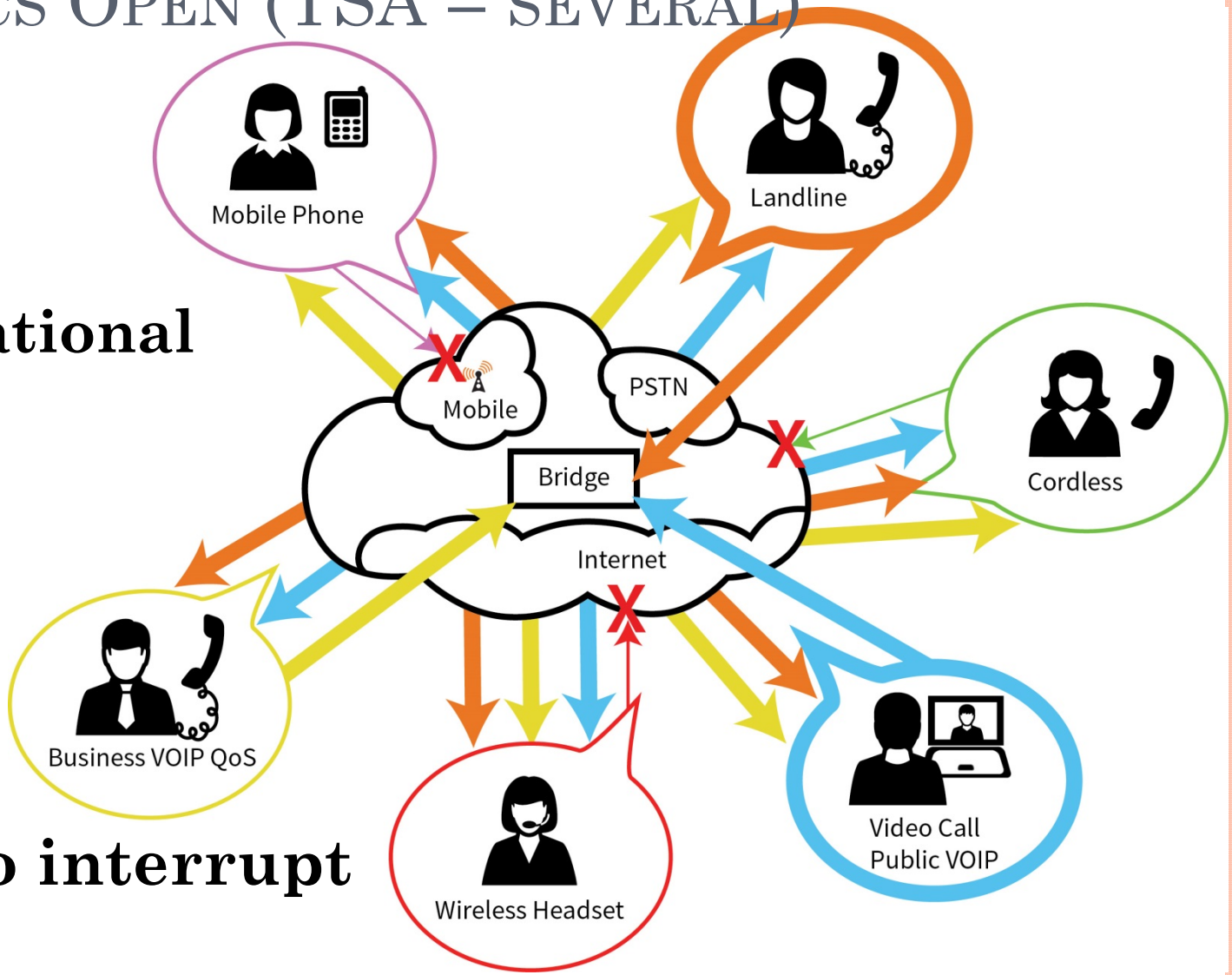
OPTIONS: QUALITY FOCUS

- Transport
  - Pay more for better noise cancellation
  - Pay more for higher quality codecs
  - Pay more for better bandwidth, fewer hops, and sufficient peering
- Bridging
  - Pay more for powerful processing
  - Pay more for purpose built, layered implementation and better performance
  - Pay more for more sophisticated TSA
- Result
  - More mics open, without artifact, latency, or sync issues

CONVERSATIONAL SPEECH
ABILITY TO INTERRUPT

Quality Focus:
More Mics Open (TSA = several)

Conversational Speech



Ability to interrupt

FREE RESOURCES FOR BETTER MEETINGS AND CONFERENCE CALLS

- The Ultimate Library of Meeting Leader Guides
- International Conference Calling Guide
- Optimized Conferencing for:
  - Law Firms
  - Marketing & PR Agencies
  - Consulting Firms
- The Hidden Costs of Generic Conferencing
- A Guide for Better Call Flows and Prompts

CONNECT

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How helpful was this? 1 (not much) – 5 (super)

For links, details and references, see our post:

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Register for an upcoming Conferencing Tips Webinar