Tips for Good Empirical Talks
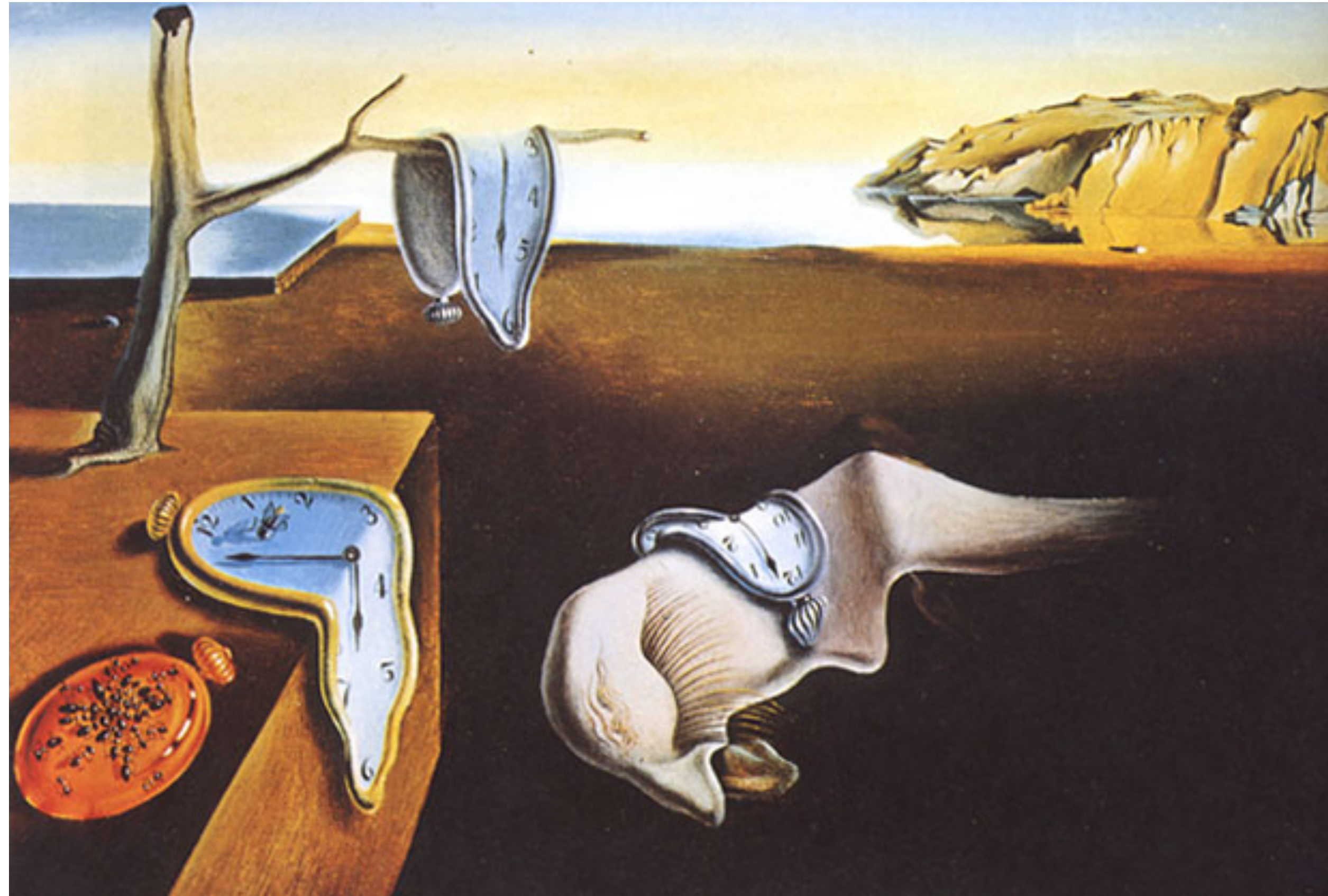
Liz Izhikevich
(and Zakir Durumeric and Kayvon Fatahalian)

Who painted this painting?

Salvador Dali (age 22)

The point: learn the basic principles before you consciously choose to break them

No one cares about measurements

What do people care about?

- What _new_ thing did you find?

  - What are the implications? A vulnerability?

Most Work (time spent) != Most Interesting

- Methodology (which often takes the most time) often is not relevant

Present a Story, Not a Paper

Present a Story, Not a Paper

- Why was the paper written?

- What is meaningful to communicate?

- If the content is not alluded to in the intro…50% chance its not important enough to be in the talk

Know Your Audience

- Measurement community: Cares about the data and whats in the data

- Security community: Cares about the attack/defense and the threat model

- Industry community: Care about the takeaway and what we want them to do with it

- (Majority of) Us: Care about understanding the general space? What do you hope to get from it?

- Generally: Audience never interpret data/plots. And they are only half awake

Convince the audience of something

- What are the 3 points I want the audience to leave with?

  - Do I want them to use a new tool or system?

  - Measure in a new way?

  - Think about future work differently?

- What is the storyline that ties these points together?

  - Strong talks = more memorable = audience leaves with takeaways?

Presentation Transitions Should be Natural

- Should always expect which slide is coming next (story should flow)

- Transition seems awkward? Will be 10x more awkward in person

- Why should come before the what

    - Just presenting sections in paper does not achieve this

- No surprises! Big shift? Prepare them with a transition slide

Talks are a simplified version of paper

- All results should never be included in a talk

- Figures from paper usually never appear in talk

  - Talk figures should be dramatically simplified *

- Edge cases and related work usually dont belong in security/measurement talks

    - Systems talks rely a bit more on prior systems

Each slide should have one point

Slide titles matter

- Meaningful slide titles provide convenience and clarity for the audience

- Slide titles across entire presentation should summarize the talk

- Titles should be kept short-medium in length

Show, don't tell

Outline slides are horrible…they really only tell you there will be an intro/end

This is not a story!

Use data / figures to convince audience

- One figure per slide

- Explicitly explain the figure!

  - MUST introduce the axis

- Simplify figure. Use keynote/powerpoint to make it

  - 1-2 lines for a plot

  - 1-2 table rows

Simplify Tables

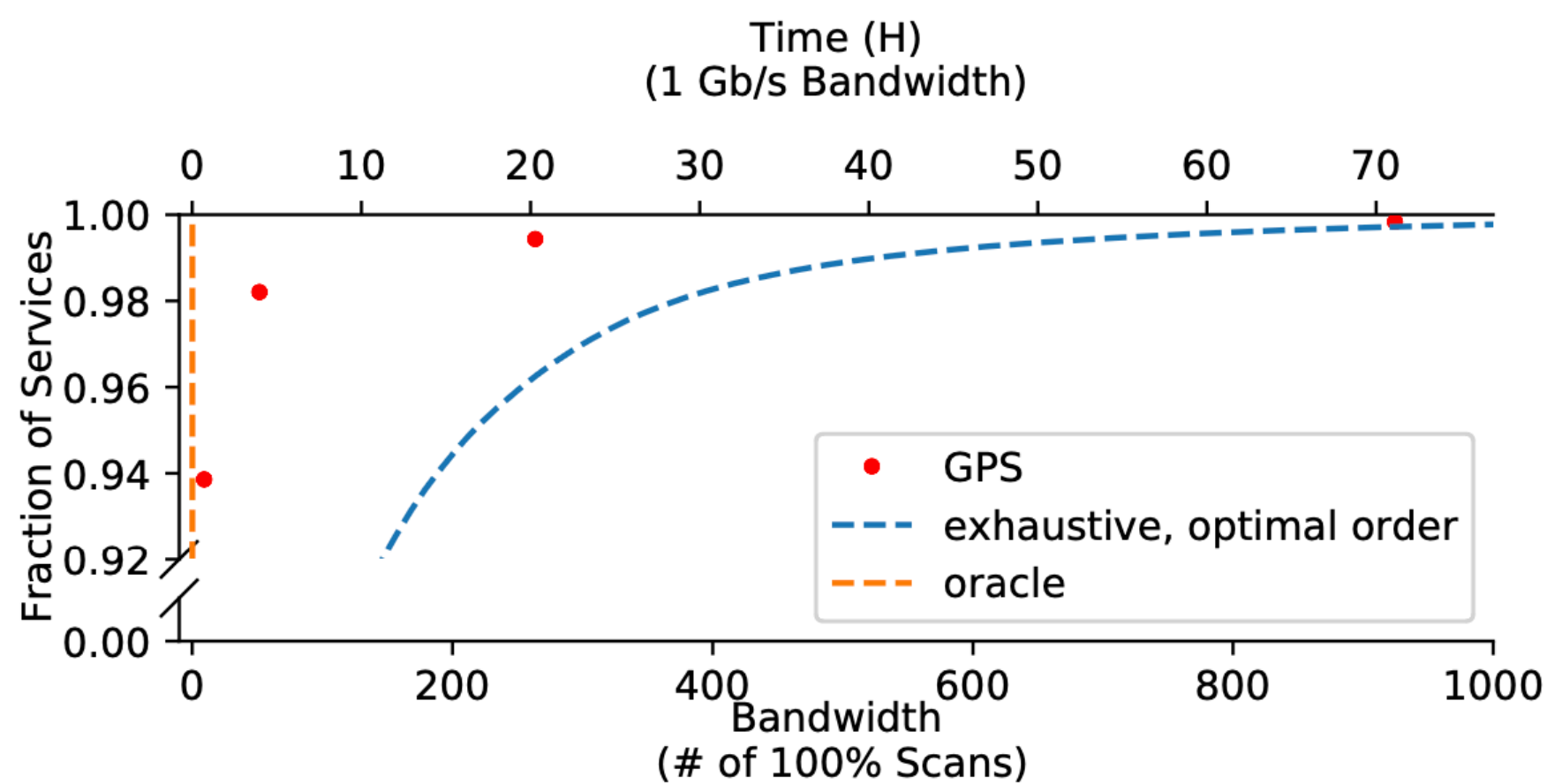| Service	Traffic	Censys Leaked	Shodan Leaked	Previously Leaked
		Fold Increase in Traffic per Hour		
HTTP/80	All	**7.7***	15.7*	17.2*
	Malicious	**4.0***	5.8	**7.3**
SSH/22	All	2.4	**2.6***	**1.5***
	Malicious	2.5	**2.8***	**1.7***
Telnet/23	All	72.6*	**1.06***	201
	Malicious	**1.6***	**1.3***	**1.8**

Table 3: Impact of Internet Service search engines—Attackers are more likely to attack a service that is currently, or has been previously, indexed by Censys or Shodan. Statistically significant

VS

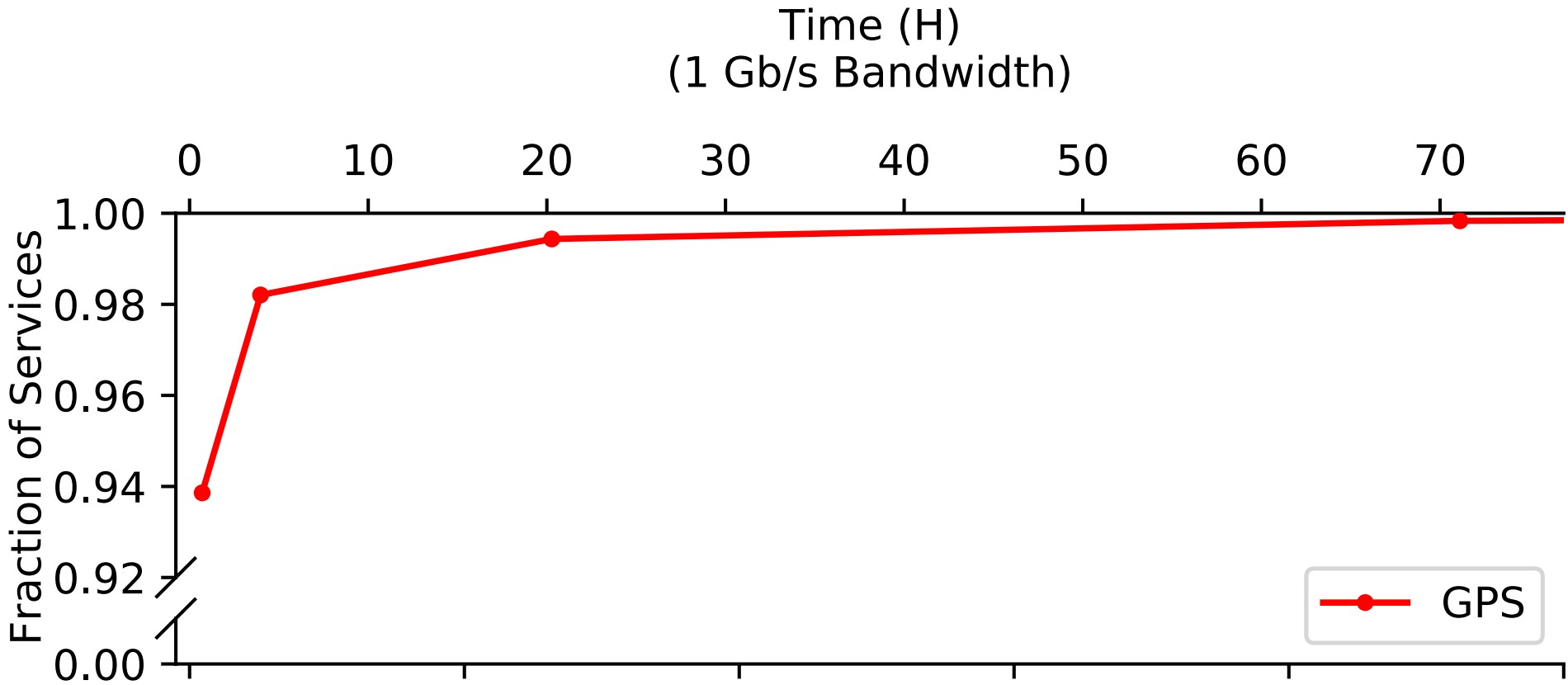## Recycled addresses increases attacker traffic

Monitored Service	Recycled Honeypots Increase in Attacker Traffic per Hour
HTTP/80	7.3x
SSH/22	1.7x
Telnet/23	1.8x

Simplify Figures

(a) **Service Discovery (Censys):** GPS finds 94% of services using 21× less the amount of bandwidth compared to optimal port-order probing (2K ports, 100% scan, 2% seed).

VS

GPS' predictions find 99% of services in < 24 hours

Conclusions Matter

- Summarize the three key points that anchor your story

- Leave those key points during Q&A

  - The last slide is precious real estate — use it!