The LASER Workshop

Panel Discussion

ACSAC 2013

Learning from **A**uthoritative **S**ecurity **E**xperiment **R**esults

Help computer security community quickly identify and learn from both successes and failures in research

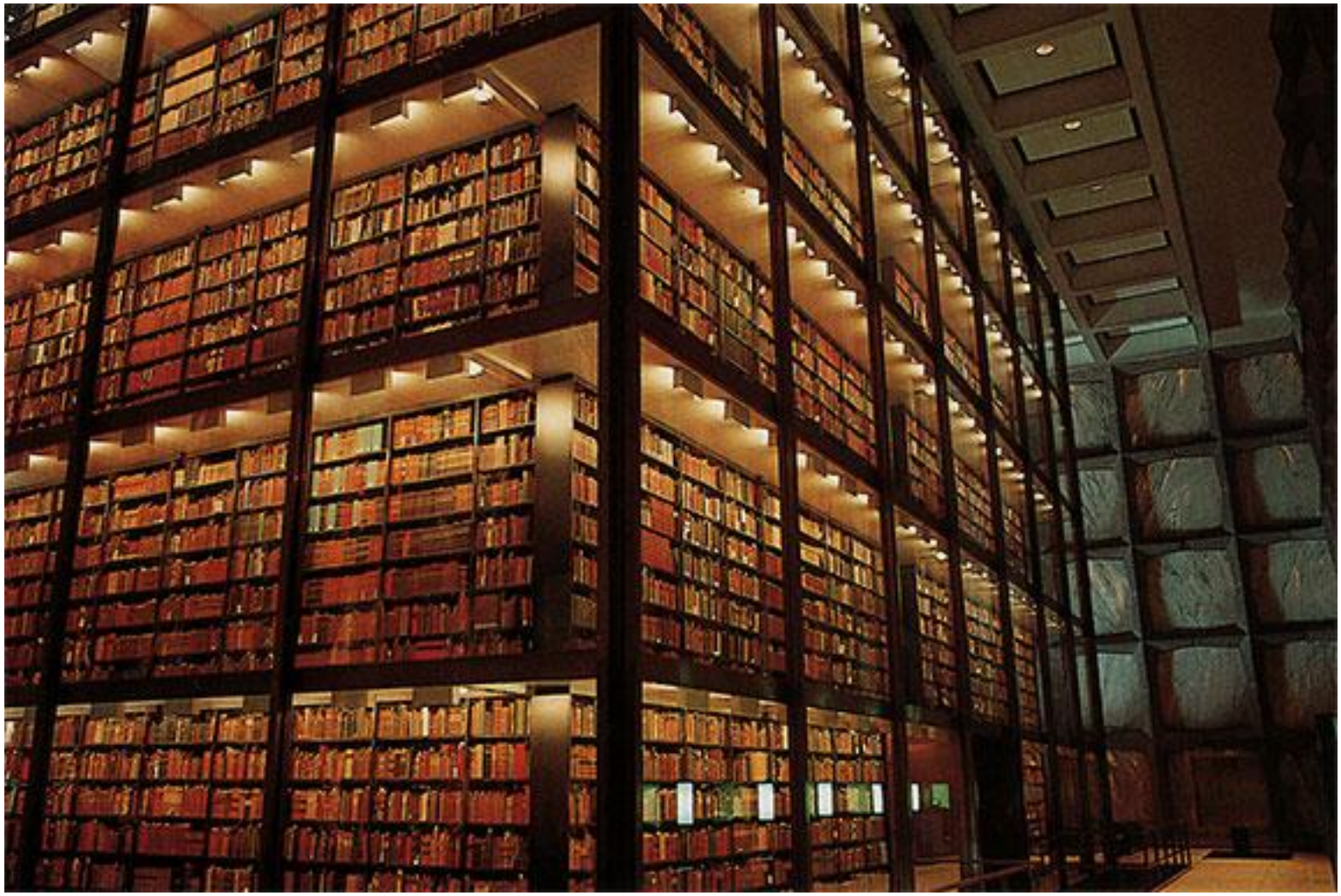
SRI International

Published papers typically document successful research

- Assertion: Unsuccessful research has value to other efforts
  - “Failures” provide clues
  - If well-documented, may provide good place to begin new research
  - Help prevent repetition of failures

LASER Workshop www.laser-workshop.org

- LASER 2012: July 18-19
  - Venue to study / learn from negative security research results, document findings, discuss
    - Paths that were unfruitful – and why
    - Confounding issues in research that may have yielded unexpected results or invalidated experiments – and why
    - Inability to reproduce prior work
    - Problems with data sets
    - Experimental methods that proved unsuitable to specific research problems
  - Mini-conference format
  - Papers: 20 submitted, 6 accepted (30%)
  - Student scholarships: 6 (1 International)

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- LASER 2013: October 16-17
  - Venue to study / learn from negative security research results, document findings
  - *Moved to USENIX publishing for open access*
  - *Requirement for structured abstracts and papers*
  - *Open, free live Internet stream, videos being archived on site*
  - *Workshop/breakout format, adding "Works in Progress" (WIP) sessions*
  - Papers: 13 submitted, 4 accepted (31%), 4 WIP (31%)
  - Student scholarships: 7 (1 International, 2 HBU)

- Works in Progress (WIP) Sessions
  - Interesting research that isn't quite ready to publish
  - Friendly, collegial environment to help researchers identify issues in experiments, brainstorm solutions
  - Small groups (8-10 people), preplaced based on topic and background

"I've never gotten this level of discussion and comments on my work. I wish I had gotten this a long time ago." – Professor of Computer Science

- LASER 2014
  - Early stages of planning
  - Targeting October 2014
  - Soliciting input from community

- Panelists
  - Sam Weber, CMU Software Engineering Institute
    - Former LASER NSF Program Manager
  - Carl Landwehr
    - Program Committee
  - David Balenson, SRI International
    - Organizing Committee Local Arrangements & Treasury
    - Program Committee, WIP facilitator
  - Nathaniel Husted, Indiana University
    - Participated on student scholarship

- Current state of cyber science: where we are as a community, where we are going, and/or where we need to go, and how LASER is or should contribute to this
- How is LASER doing in meeting its stated goal? ”Help computer security community quickly identify and learn from both successes and failures in research”
- Use of structured abstracts and papers: did use of structured abstracts help, and if so, in what way?
- Works in Progress (WIP) Sessions: what, if anything, about these was valuable? what worked, what didn't work?
- Future of LASER: should it become a large conference? co-locate with major conference? continue down the path of "roll up your sleeves" workshop or revert back to a mini-conference format? why?

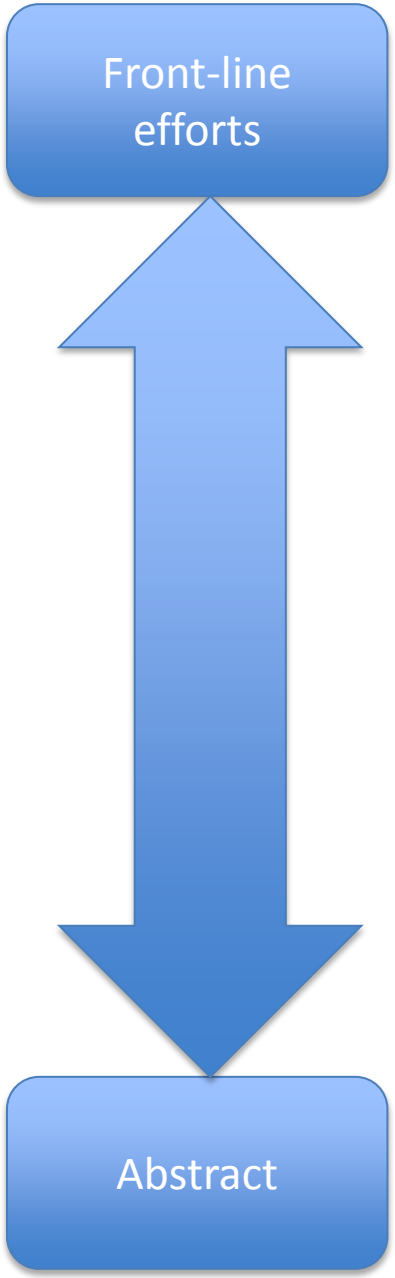
LASER

- “Through this series of workshops, researchers present their unexpected results – which may be failures, but may also be opportunities to learn something other than what was expected. This process encourages researchers to learn from each other and avoid duplication of effort, while encouraging new approaches to old problems.” (NSF Award)
- “Enrico Fermi described the art of experimentation elegantly: ‘There are two possible outcomes (of a test). If the result confirms the hypothesis, then you have made a measurement. If the result is contrary to the hypothesis, you've made a discovery.’ Successful research gets published at conferences like ACSAC. Unsuccessful research - things we thought would work but didn't - and measurements (per Fermi) - are generally not considered publishable in computer science in general, or in the security field in particular. Failing to learn from our failures reduces progress.” (previous ACSAC panel)

Definitions

- Cybersecurity: defending the nation's cyber-infrastructure from malicious adversaries
- Nancy Leveson:
  - Safety: prevent losses due to unintentional actions by benevolent actors
  - Security: prevent losses due to intentional actions by malevolent actors
- Key features:
  - Malicious events, not random – intent matters
  - Intelligent adversaries
    - Assume that adversary will read your papers!

Weber



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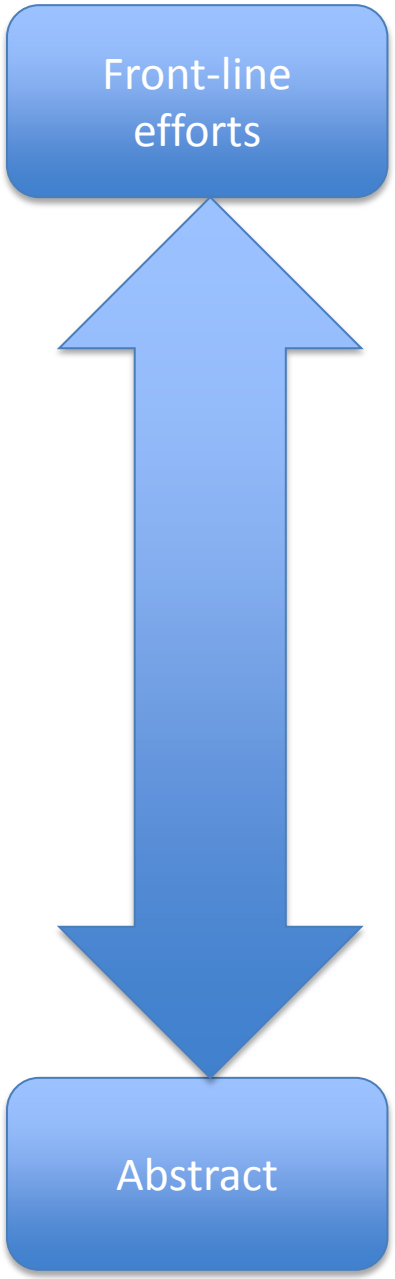


Attacks

Killing pigeons with nuclear missiles

Solving non-existent problem

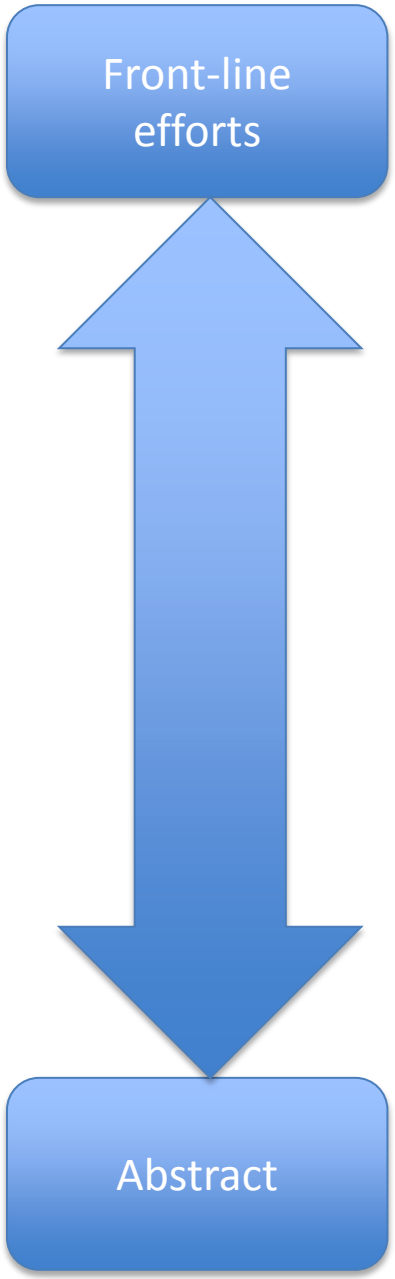
Sloppy work

Over-generalized/over-stated conclusions

"spherical cows"

Note: incorrectly anticipating adversary is NOT bad work! One can only be blamed for foreseeable future events.

Weber



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Negative results

"Too risky" to do

Unfashionable approach/topic

Early efforts on too difficult topics

Duplicates old results

Mistakenly assume converse result already proven

Not enough funding!

- Current state of cyber science: where we are as a community, where we are going, and/or where we need to go, and how LASER is or should contribute to this
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Questions

For more information, visit
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