



WILLIAM & MARY

CHARTERED 1693

CSCI 667: Concepts of Computer Security

Lecture 13

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Derived from slides by William Enck

Midterm Stats

- Mean: 77.22
- Median: 77
- Max: 97



Security Research Methods II

Why write a paper?

- There are many reasons to write a paper:
 - Articulate a new idea, thought, or observation ...
 - Document your research ...
 - Talk about new (observed) phenomenon
 - Advance your career ...
 - Because you have to ...
- *Reality*: publication is the coin of the realm in science, failure to do this successfully will lead to failure. You have to be effective at this to be a good (a) graduate student, (b) faculty member, or [sometimes] (c) researcher in professional research laboratory (IBM/AT&T/MS)

Where to publish?

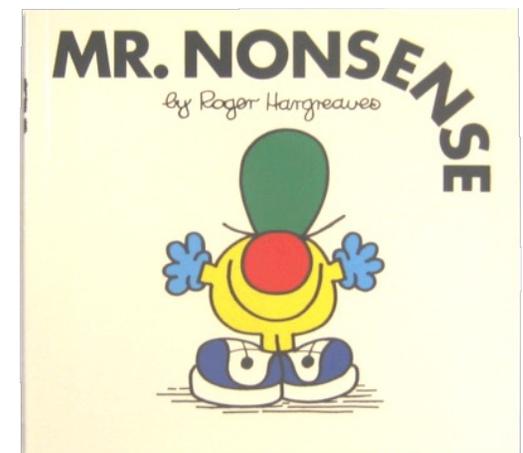
- Venues for publication:
 - Tech report
 - Workshop
 - Conference
 - Journal



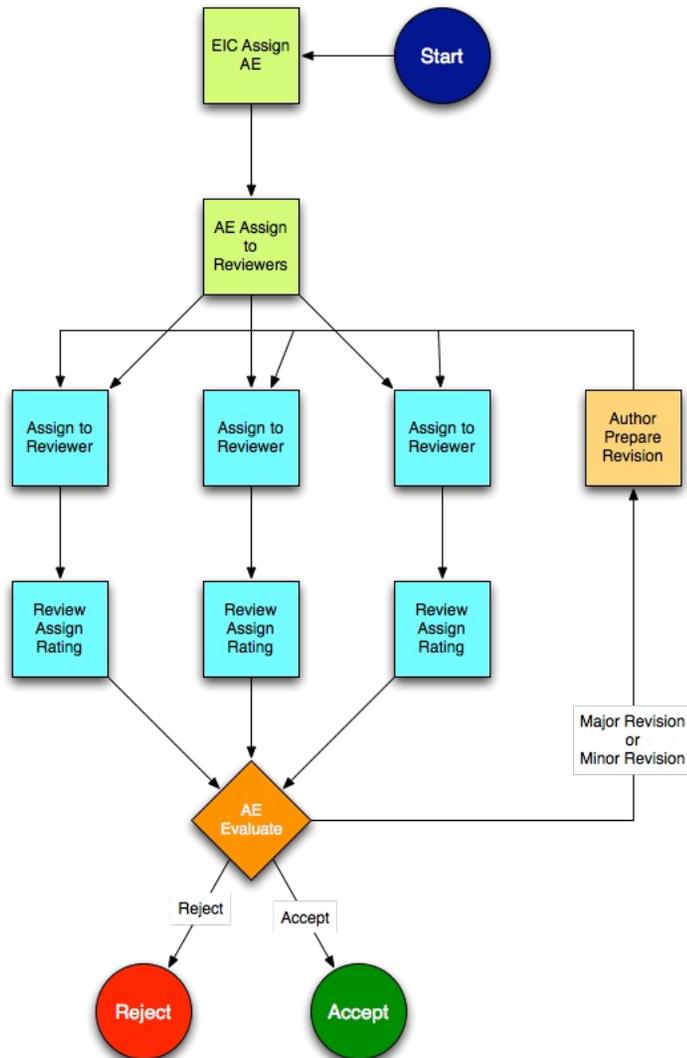
- Often your work will work through these from *preliminary* to *archival* versions of the work, sometimes branching or joining.
- *Book*: less frequent, more work.

Publication Tiers

- Not all publication venues are valued the same. Publication “tiers” tell the story
- 1st tier - IEEE S&P, USENIX Sec, CCS, NDSS, *TOPS* (formerly *TISSEC*), *JCS*
- 2nd tier - ACSAC, ACNS, ESORICS, CSF, RAID, AsiaCCS, *TOIT*
- 3rd tier - SecureComm, ICISS, WiSec, CODASPY
- 4th tier - HICS
 - SCIdgen (WMSCI 2005)
 - <http://pdos.csail.mit.edu/scigen/>

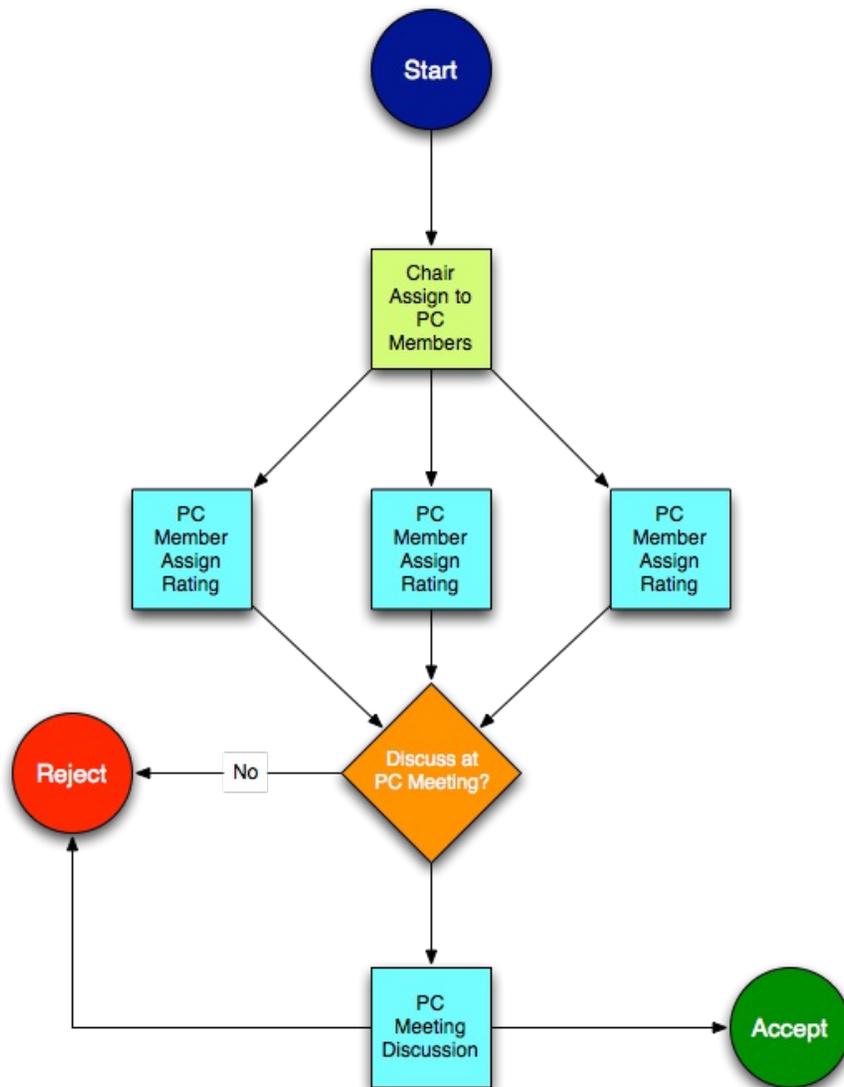


Journal publication



- The *editor-in-chief* (EIC) receives the papers as they are submitted.
- The papers are assigned to *associate editors* for handling.
- *Anonymous reviewers* rate the paper:
 - Accept without changes
 - Minor revision
 - Major revision
 - Reject
- *CCS, NDSS, USENIX Security* are also following this rating pattern now → *S&P* dropped it (yay!)

Conference Publication



- The *PC Chair* is the person who marshals the reviewing and decisions of a conference. This is different than the *general chair*.
- *PC members* review, rate and discuss, the paper, then vote on which ones are accepted.
- The *acceptance rate* is the ratio of accepted to submitted papers.

Paper evaluation

- A paper is evaluated on
 - Novelty
 - Impact
 - Correctness
 - Presentation
 - Relevance
 - “hotness”



Parts of a paper

- Parts of paper (vast generalization)

1. Abstract

2. Introduction

3. Related Work/Background

4. Solution/Problem

5. Evaluation/Analysis/Experiment

6. Discussion (often, but not always)

7. Conclusions



Abstract

- One sentence each for:
 - Area
 - Topic of work
 - Problem
 - What's the issue?
 - Solution
 - How do you propose to address the problem?
 - Methodology
 - What's the experiment?
 - Results
 - What did you find?
 - Take Away: Lesson



Abstracts for course projects!

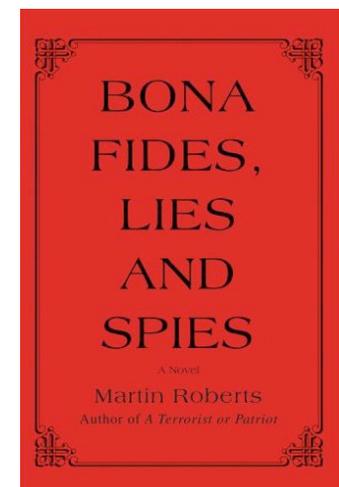
Introduction

- One paragraph each on:
- Area
 - More elaborate
- Problem
 - Scenario
- Why is problem not solved
 - Brief of related work or the challenge
- Proposed insight (“In this paper, ...”)
 - What is the experiment?
- Contributions -- What will the reader learn?
- Boilerplate outline (?)



Related work

- This is a statement of the work that led to this one.
 - who this work relies on
 - who has done work in the area
 - areas that inspired this work (not just technology)
 - Not a laundry list
- There are several reasons for related work section:
 - Motivate the current work
 - Differentiate from past work
 - Establish “bona fides”



Motivation, Background

- **Motivation**
 - Why is this a problem?
 - Motivating Example: Alice...
 - Why isn't the problem solved?
 - Forward/backward reference to the related work.
- **Problem, assumptions:** Problem statement, threat model, TCB.
- **Background:** What all does the reader need to know to understand your approach?
 - Already known material related to the solution
 - Tip: You can always move text from the design to the background, to focus on the *novel contributions in the design*.

System Architecture and Design

- How do you solve the problem?
- General Architecture / Overview
- What are the
 - Design Goals?
 - Challenges?
 - Contributions of your design (i.e., the design decisions) that help overcome the design challenges, hence achieving the design goals?

Implementation

- Experimental Platform
 - Exact specification of platform
 - Design may have more than implementation -
- what did you implement?
 - How are key design features/mechanisms implemented?
 - *Not the design*: Separating the novel design contributions/decisions from their implementation is often a challenge)

Experiment

- Experiment
 - Means of showing truth
 - Big Insight -- Hypothesis -- Claim
 - Show why it is interesting
 - Expected Results
 - Informal proof/argument that is true
- Experiment types
 - *Empirical* - measure some aspect of the solution
 - *Analytical* - prove something about solution
 - *Observational* - show something about solution



Results vs Findings

- Results
 - Summarize -- what do the results mean?
 - Specific experiments
 - We did X, saw Y
 - What do the experiments prove
 - What other experiments would you want to do based on these results?
- Key Findings
 - What do the results mean?
 - What are the lessons?
 - Lead to the takeaway.

Conclusion

- Like the abstract in past tense
- Problem
 - What was the problem?
- Solution
 - What was the insight and why was it expected to work?
- Method and Results
 - What did you find?
- Take away: Lesson
- Future work



Hint

- Intro: tell them what you are going to tell them
- Body: tell them
- Conclusion: tell them what you told them.

