

“Flawed, but like democracy we don’t have a better system”:

The Experts’ Insights on the Peer Review Process of Evaluating Security Papers

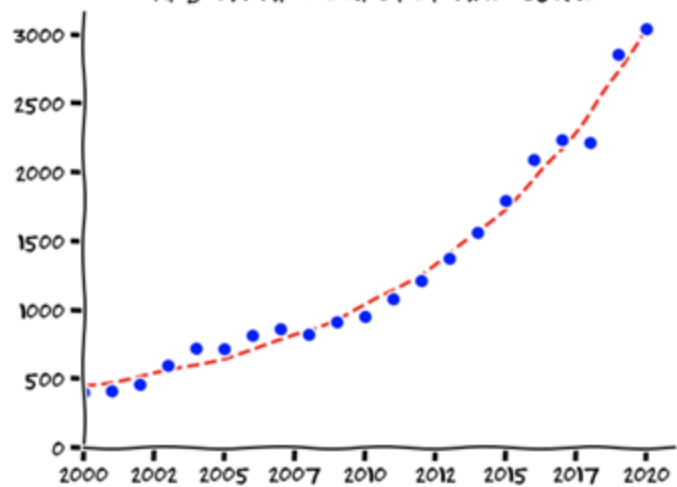
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Tiffany Bao¹, Ruoyu Wang¹, Yan Shoshitaishvili¹, Adam Doupé¹

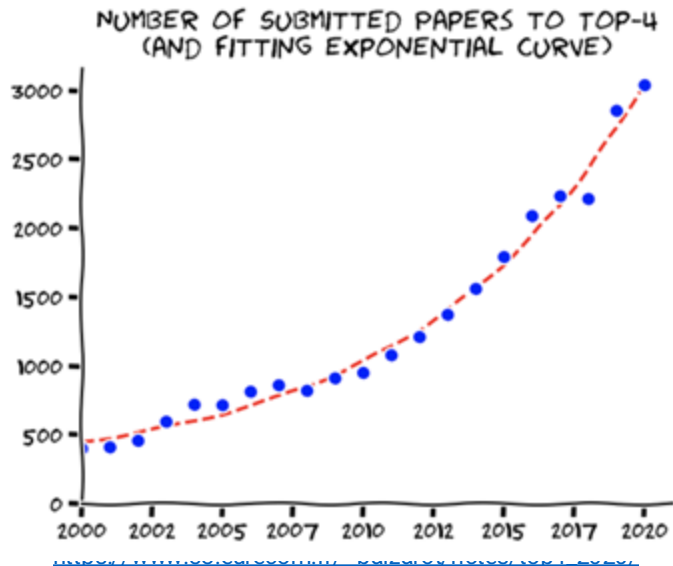
¹Arizona State University

²Texas A&M University - Corpus Christi



NUMBER OF SUBMITTED PAPERS TO TOP-4
(AND FITTING EXPONENTIAL CURVE)

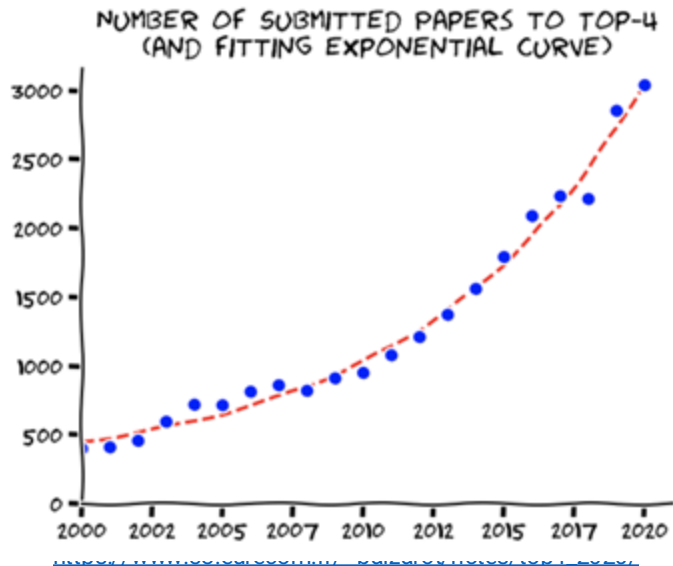




Paper submissions

Challenges PC workload

Quality/quantity of reviews



Paper submissions
Challenges PC workload
Quality/quantity of
reviews



Submit
papers



Decision



Submit
papers



Decision

“Flawed, but like democracy we don’t have a better system”:

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A typical top-tier security
venue peer review process



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Decision

A typical top-tier security
venue peer review process

Paper assignment
by Chairs



Submit
papers



Bidding by
Reviewers



Decision

A typical top-tier security
venue peer review process

Paper assignment
by Chairs



Early
rejection



Submit
papers



First round
of reviewing



Second round
of reviewing

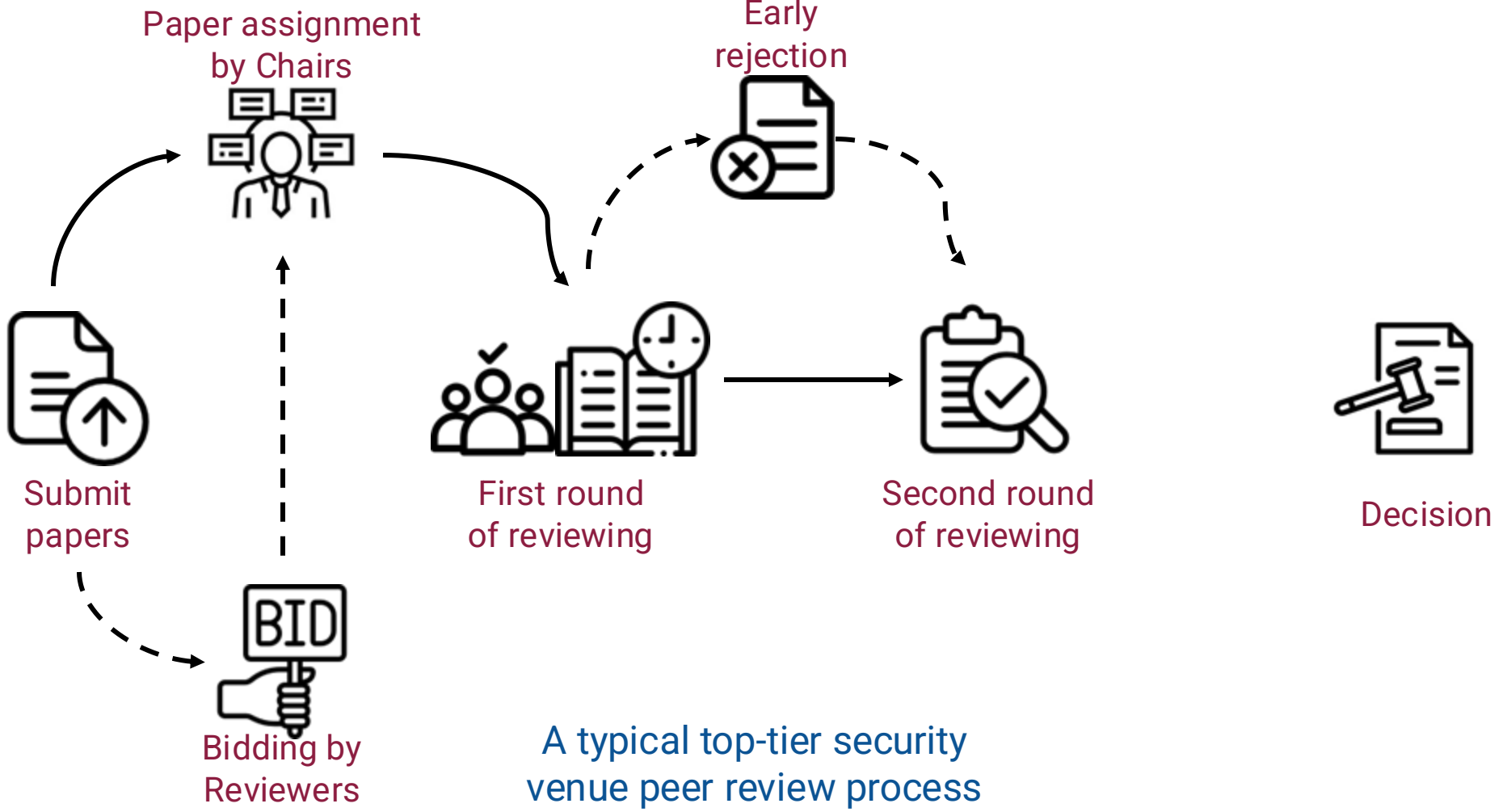


Decision



Bidding by
Reviewers

A typical top-tier security
venue peer review process



Paper assignment
by Chairs



Early
rejection



Rebuttal



Submit
papers



First round
of reviewing



Second round
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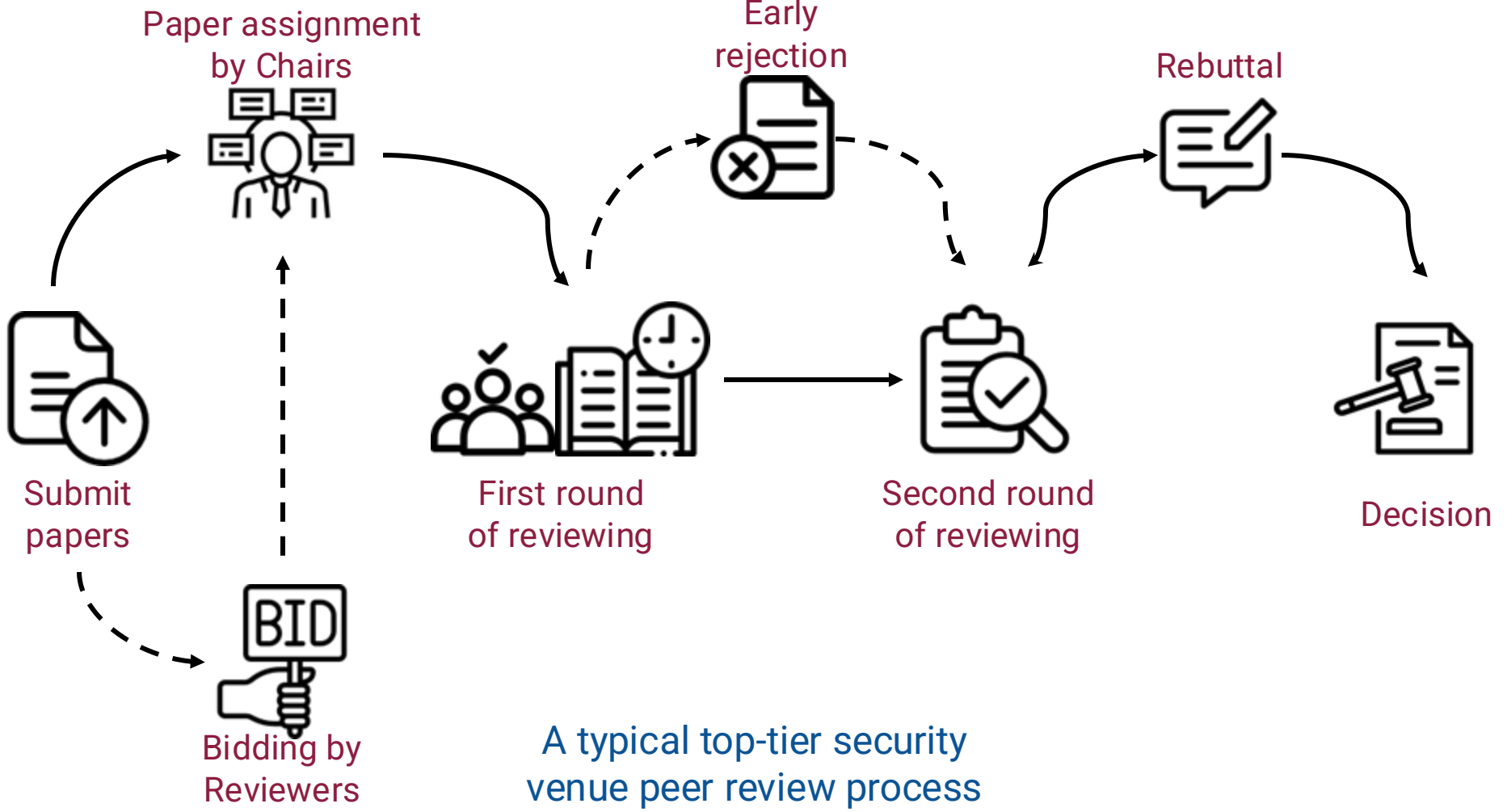


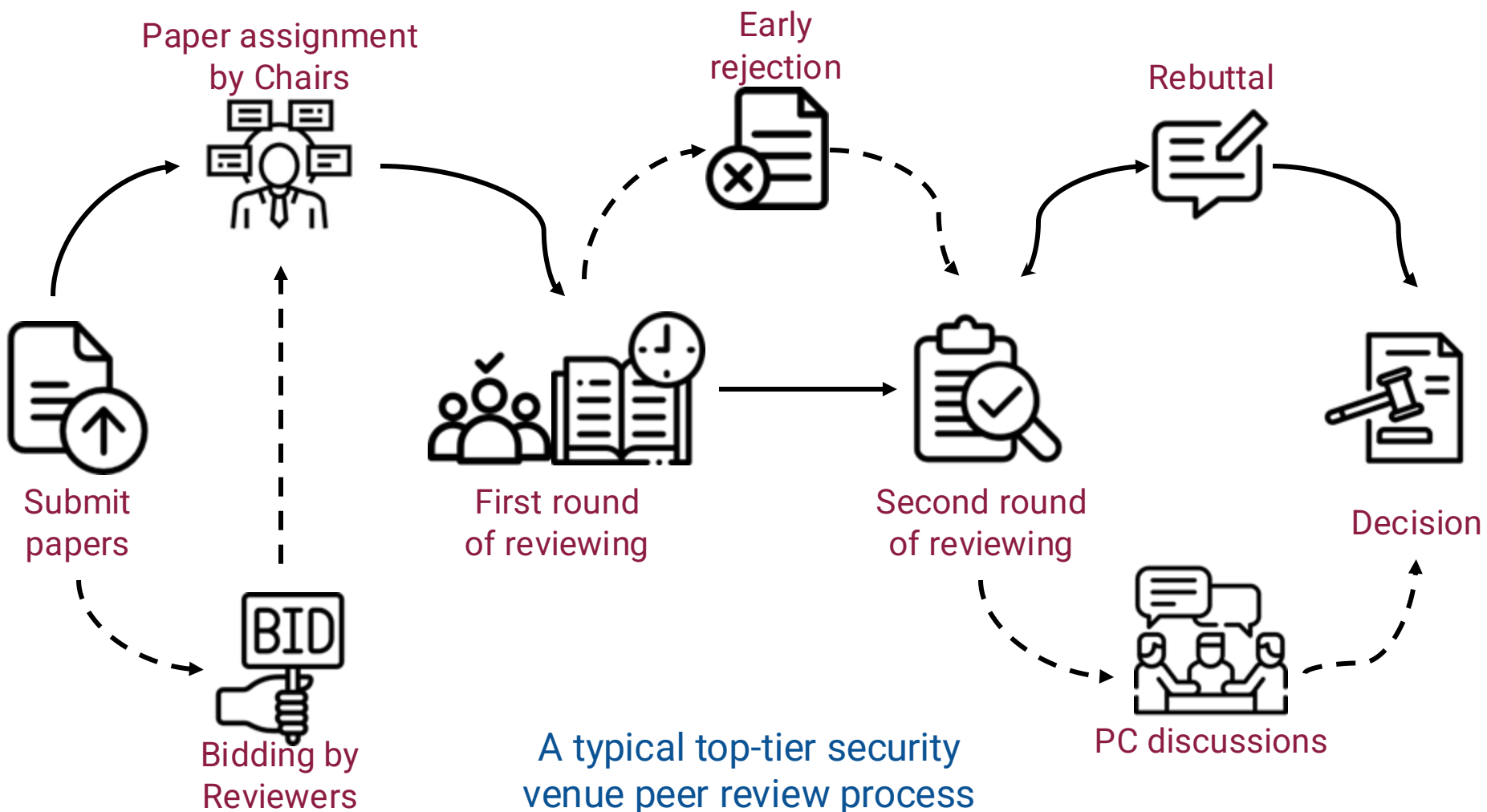
Decision



Bidding by
Reviewers

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Recruitment Process



~300
PC members

Recruitment Process



~300
PC members



Invited: 70
PC members

Recruitment Process



~300
PC members



Invited: 70
PC members



Interviewed:
21
PC members
(12 PC chairs)



Replying to [redacted]

[redacted] one of 4 top tier security conferences [redacted]

[redacted] with the highest review randomness.

[redacted] Twitter Web

Replying to [redacted]

[redacted] rolling submissions [redacted] caused a lot of issues. More changes are needed.

Replying to [redacted]

[redacted] rolling submission deadlines, [redacted] are wiping almost everyone out. [redacted] I think it requires some community discussion.

[redacted] Twitter for Android

Systemic issues in the review process

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Randomness of reviews

“

If we can be more accurate in our reviews, then yeah, it (gaming the system) is a horrible thing to do. But, we are not; it works. And so, somebody whose job depends on getting these papers in, why would you blame them for doing something that works.

- P7, Chair Participant

Rolling submission deadlines









IEEE S&P



2018-2020

IEEE S&P



2021

IEEE S&P



2022

IEEE S&P



2022

Accept
Minor Revise
Major Revise
Reject &
Resubmit
Reject

Accept
Minor Revise
Major Revise
Reject

Accept
Major Revise
Reject

Reviewer sentiments on the revised model

Reviewer sentiments on the revised model



- Review more fairly
- Increased review quality
- Possibility of dialogue
- Writing more constructive reviews (P10)

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- Increased workload distribution
- Reduced turnaround times
- Less time to write satisfactory reviews
- Exhaustion

Reviewer sentiments on the revised model



- Review more fairly
- Increased review quality
- Possibility of dialogue
- Writing more constructive reviews (P10)



- Increased workload distribution
- Reduced turnaround times
- Less time to write satisfactory reviews
- Exhaustion
- Focus only on how *ready* the paper is
- Growing pain to switch (P7)

**“Flawed, but like democracy we don’t have a better
system”:**

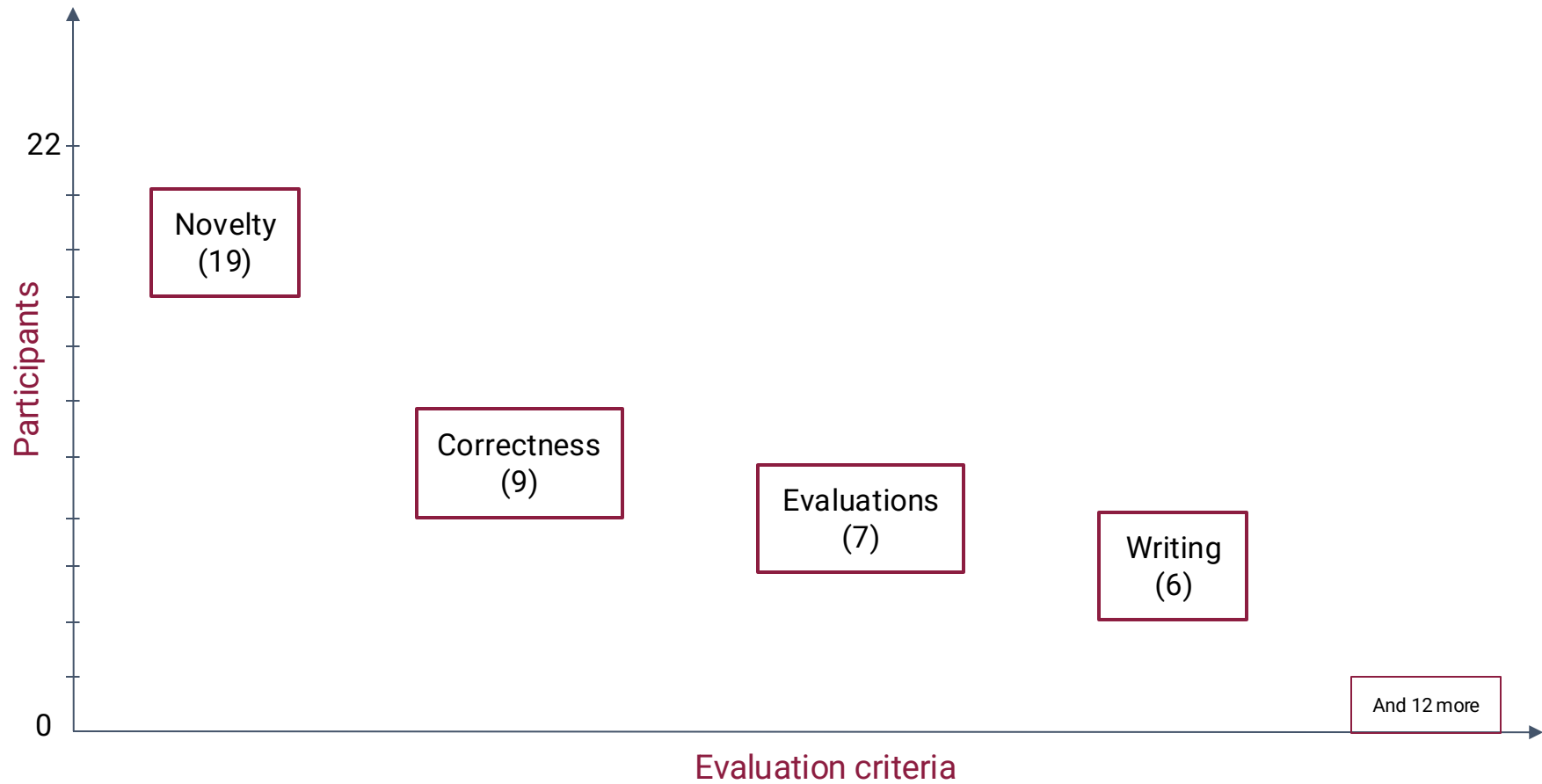
**The Experts’ Insights on the Peer Review Process of
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Which evaluation metrics do security reviewers use?

“

Security is an area where there are not any kind of hardened established metrics for evaluating security.

- P19, Chair Participant



Novelty: a subjective metric

“

Novelty is definitely subjective. This is something where different reviewers will see different values out of a paper. Novelty is possibly multi-dimensional in itself in terms of, what are we learning from this, and what information from this is valuable?

- P19, Chair Participant

Red flags

Red flags

- Total 52
- Content-related
- Argument-related
- Writing-related

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“ We know that the acceptance rate is so low (at these conferences) that sometimes there can be a tendency from the reviewer side to look for reasons to reject instead of reasons for accepting a paper.

- P9, Non-chair Participant

Red flags

- Total 52
- Content-related
- Argument-related
- Writing-related

“ We know that the acceptance rate is so low (at these conferences) that sometimes there can be a tendency from the reviewer side to look for reasons to reject instead of reasons for accepting a paper.

- P9, Non-chair Participant

“ But I think it's important to fight that instinct and to always frame reviews constructively and positively.

- P10, Chair Participant

Recommendations

“Of course, I want to review early but quite often I did not.

- P17, Chair Participant

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Rec. #1: Help reviewers with timely review submissions

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“Of course, I want to review early but quite often I did not.

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Rec. #1: Help reviewers with timely review submissions





Replying to [redacted]
[redacted]
[redacted] The hallmark of a professional organization is consequences. Yet, we as reviewers do not face real consequences for sloppy reviews. [redacted]
[redacted]
[redacted] Twitter Web App

Replying to [redacted]
[redacted] Right now there is habituation to reject.
[redacted]
[redacted]
[redacted]

Replying to @lorisdanto and @jhasomesh
[redacted] chairs should call out bad behaviors and shut down bad reviewers [redacted]
[redacted]
[redacted] · Twitter for Android



Rec. #2: Recognize and reward good reviewers



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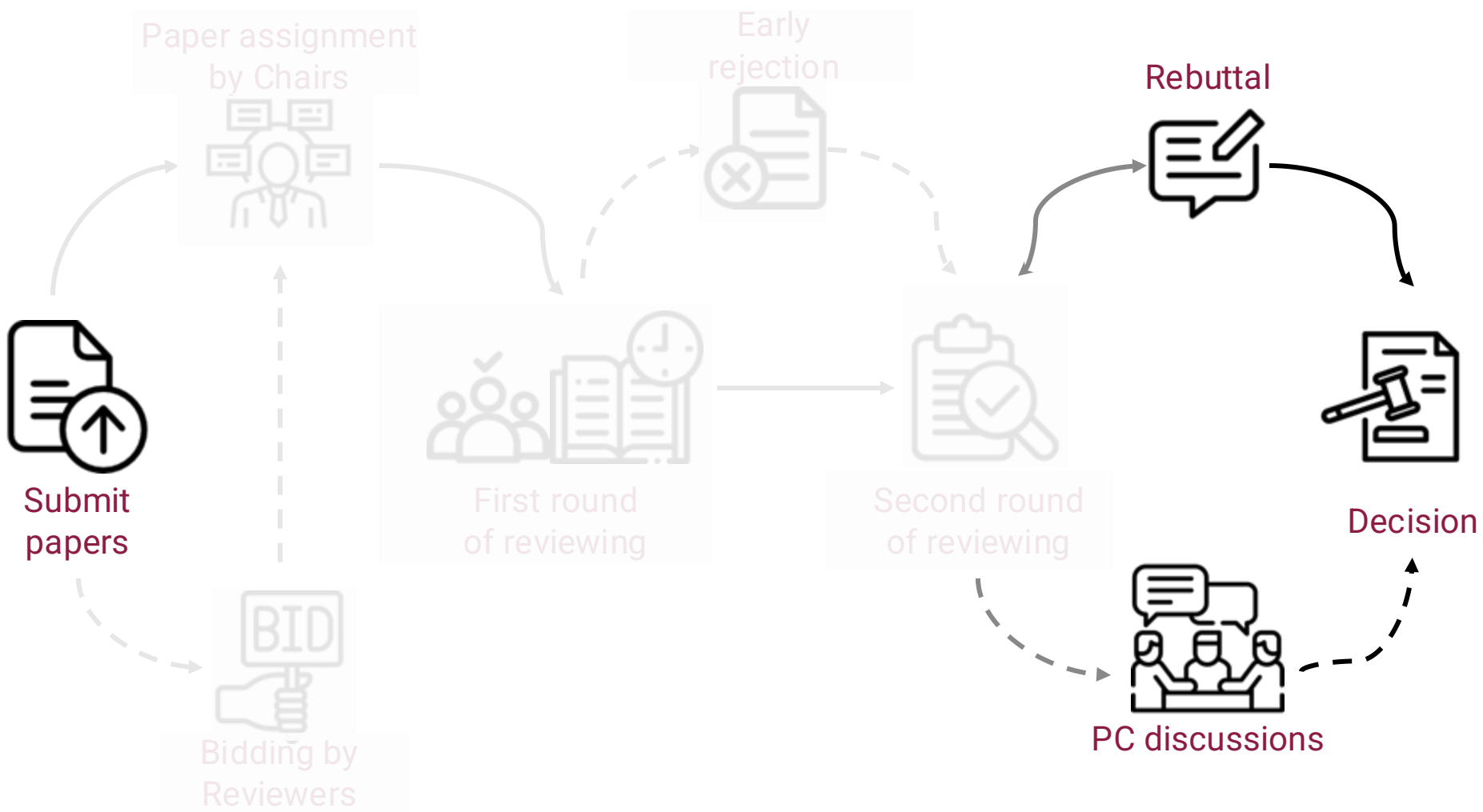




Submit
papers



Decision



Rec. #3: Improve transparency



Going forward!

Thank you for listening!

Special thanks to our participants and reviewers for their time and contributions.

Thanks to those who tweeted about their opinions of the community

Questions?

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