Queen Mary
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Bridging the gap between Internet stakeholders with technical forum analytics

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Open ≠ accessible

Open ≠ accessible: long, communication-intensive, complex

Open standardisation produces a wealth of data

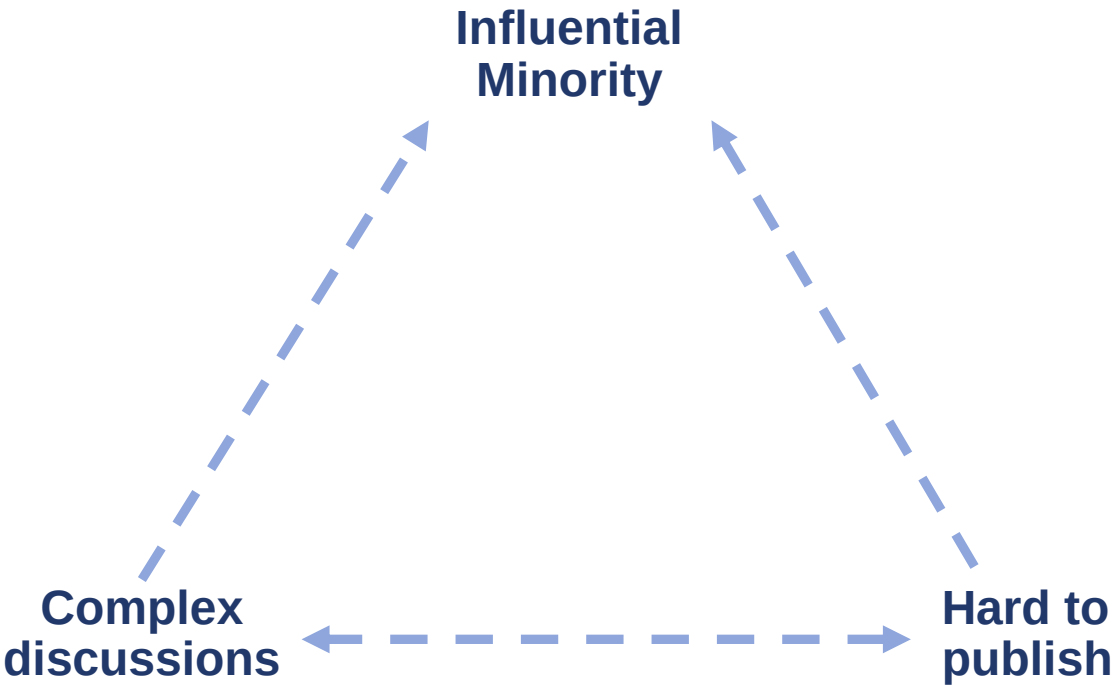
Standardisation reveals the interplay between Internet stakeholders

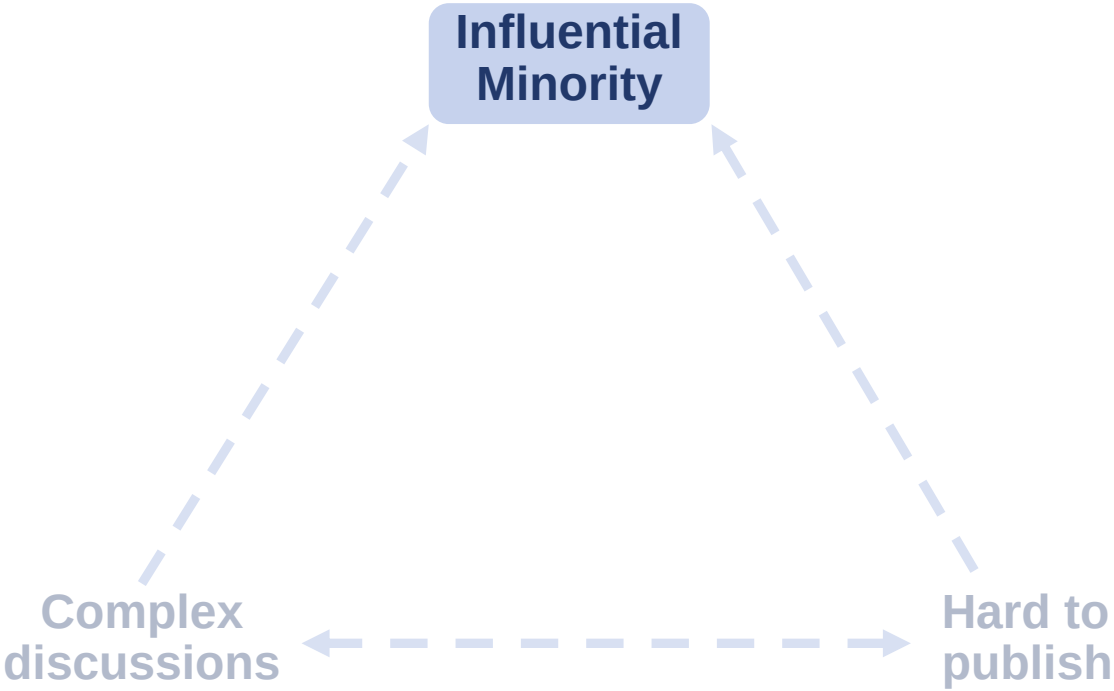
Analytics reveal internal and Internet-wide dynamics: IETF case study

Coordination → **Standardisation** (emails, minutes, participants) → **Interoperability**

Standardisation analytics shed light on

- Standardisation dynamics
- Evolution on the Internet
- Regulatory challenges
- Competition tussles
- Innovation cycles
- Security threats
- …


Influential Minority
Complex discussions
Hard to publish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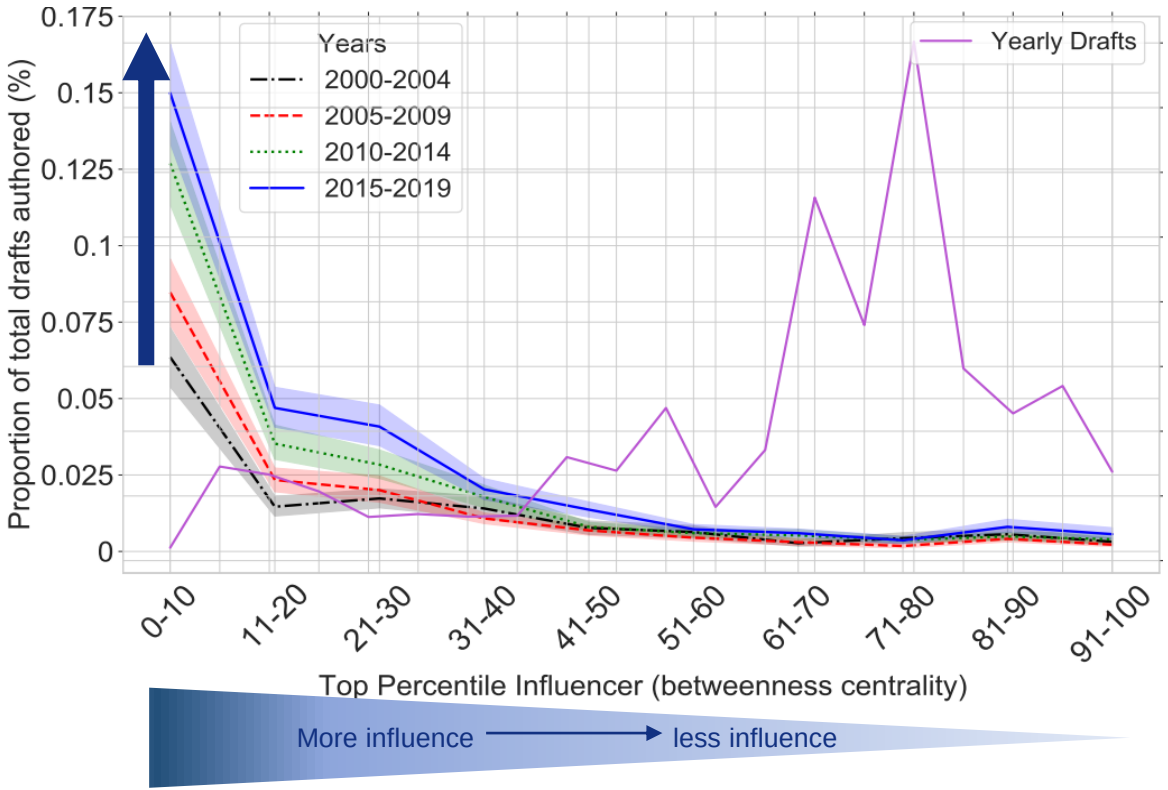
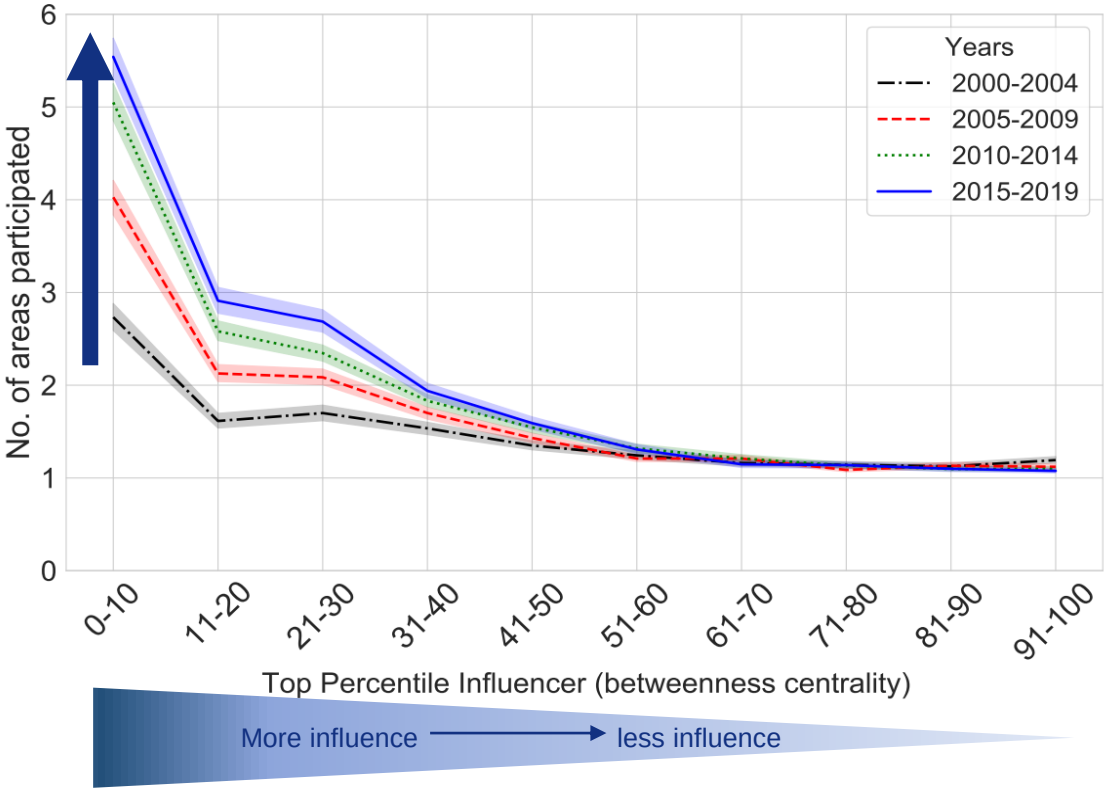
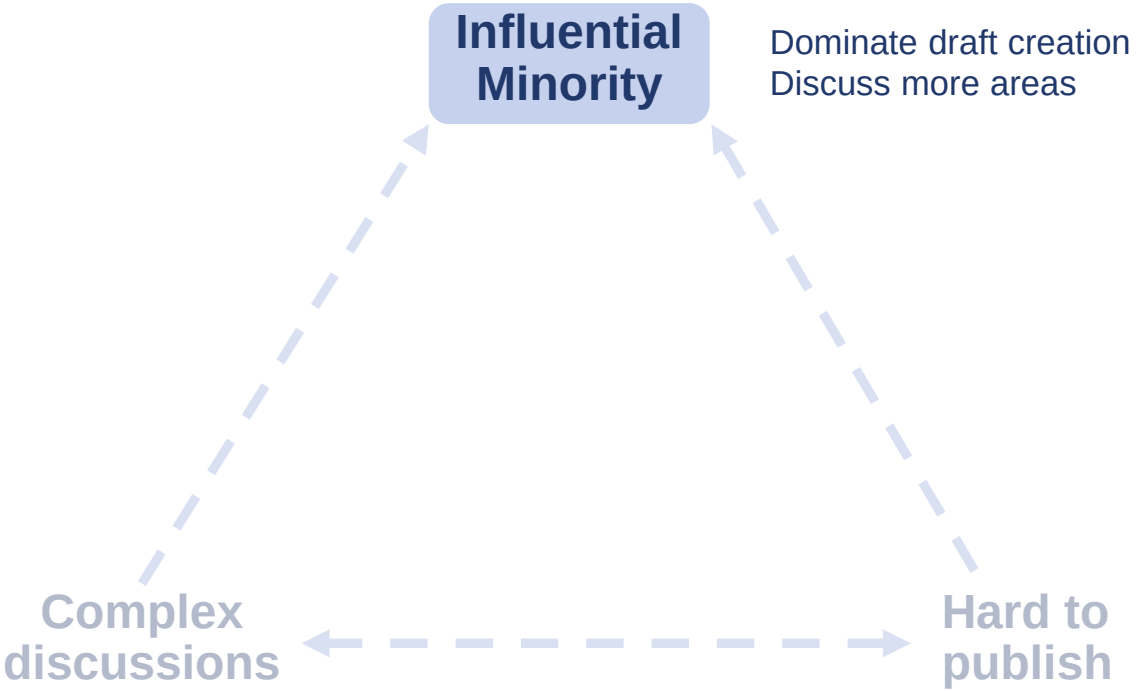


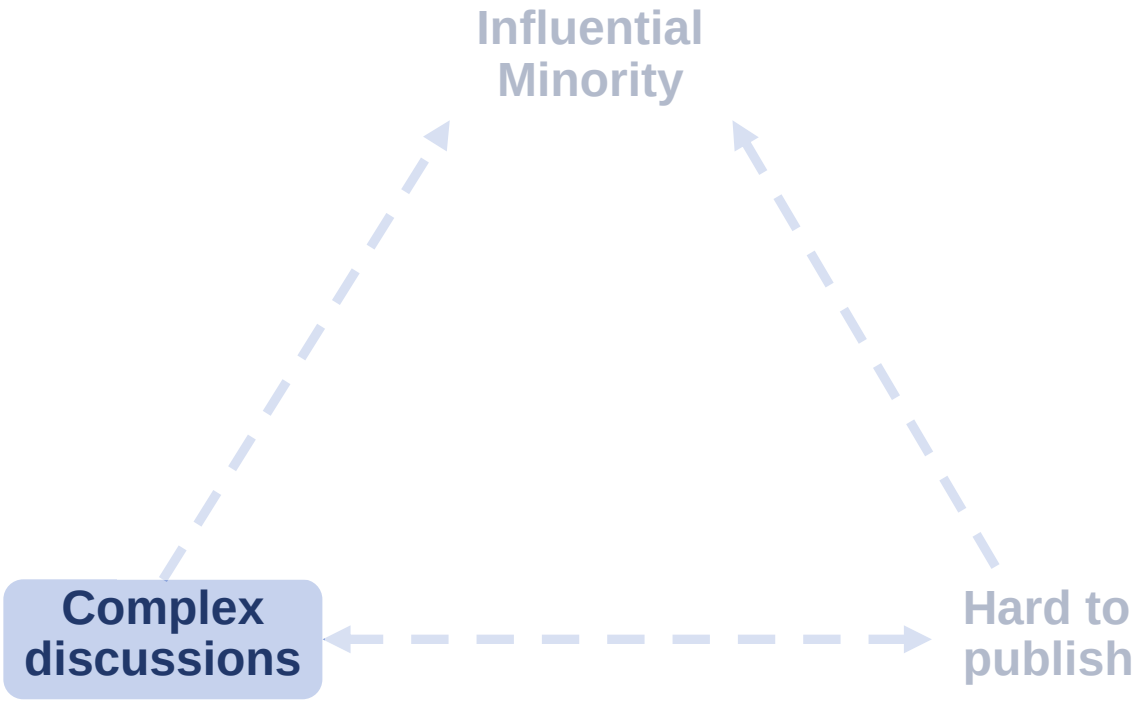
Influential participants increasingly dominate draft creation



Influential participants discuss more areas

More areas discussed


Influential Minority
Dominate draft creation
Discuss more areas
Complex discussions
Hard to publish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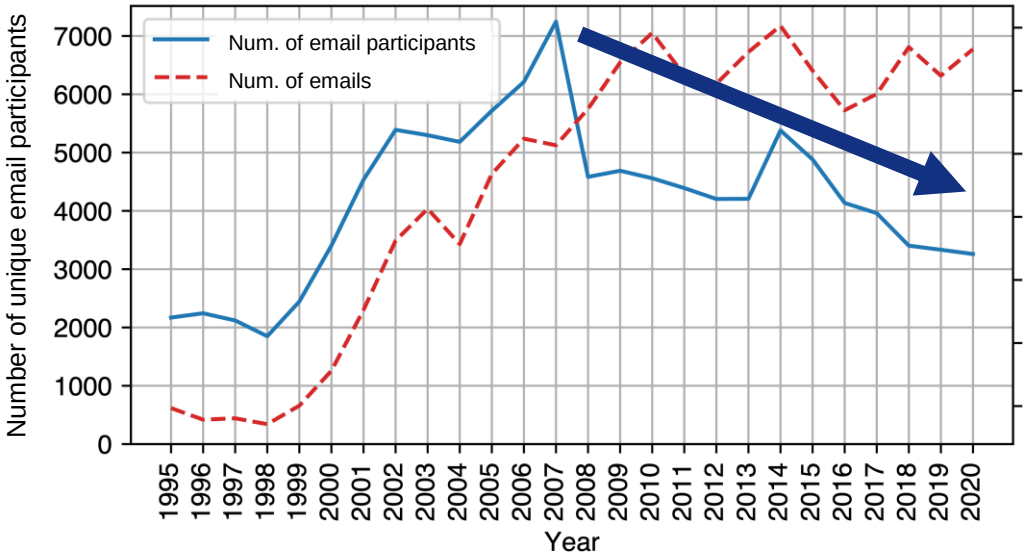
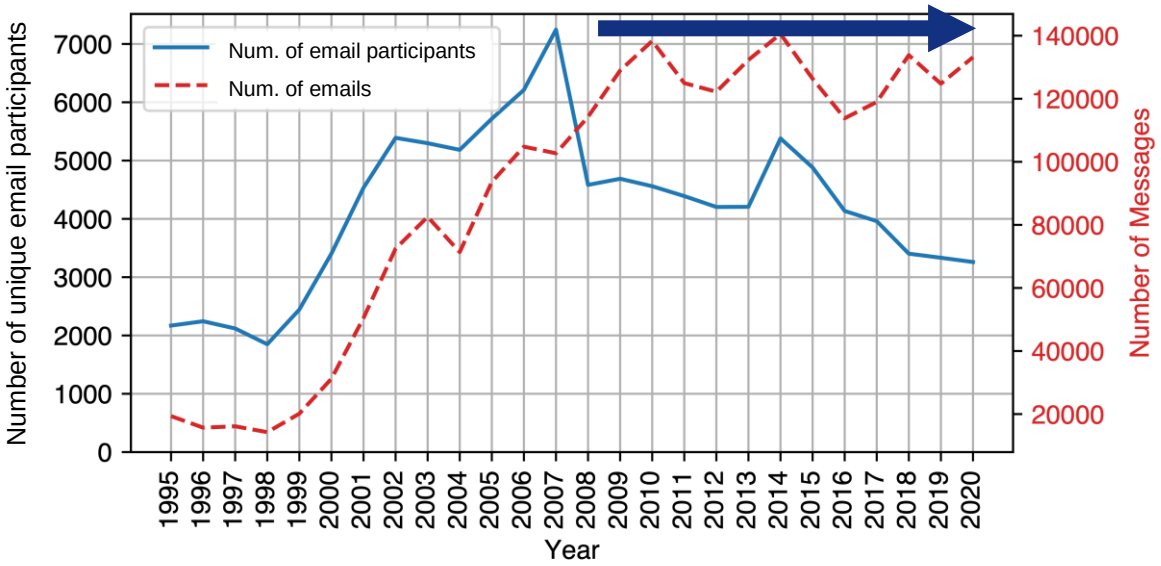
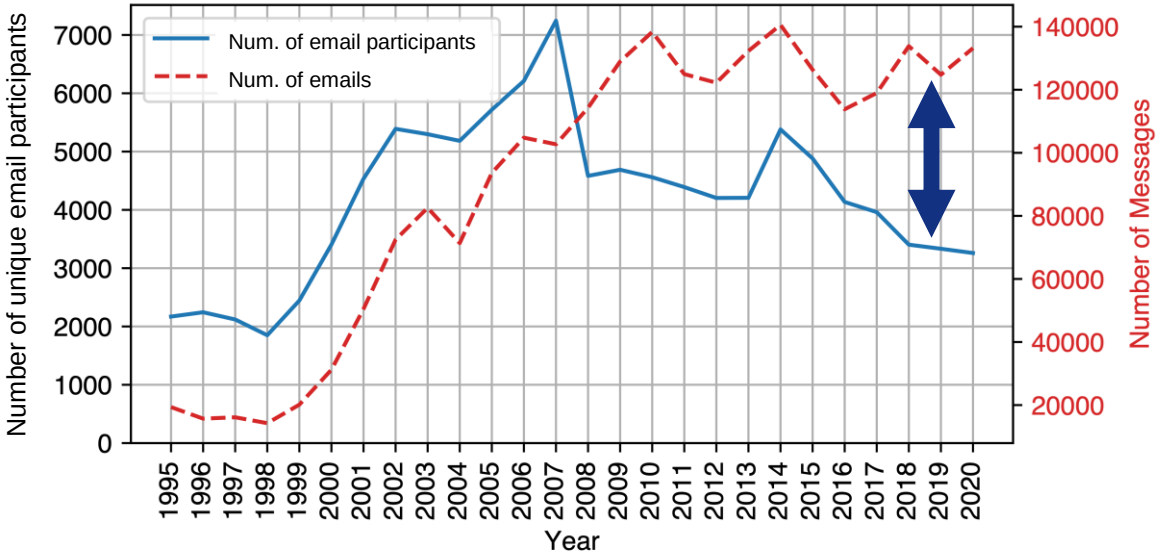


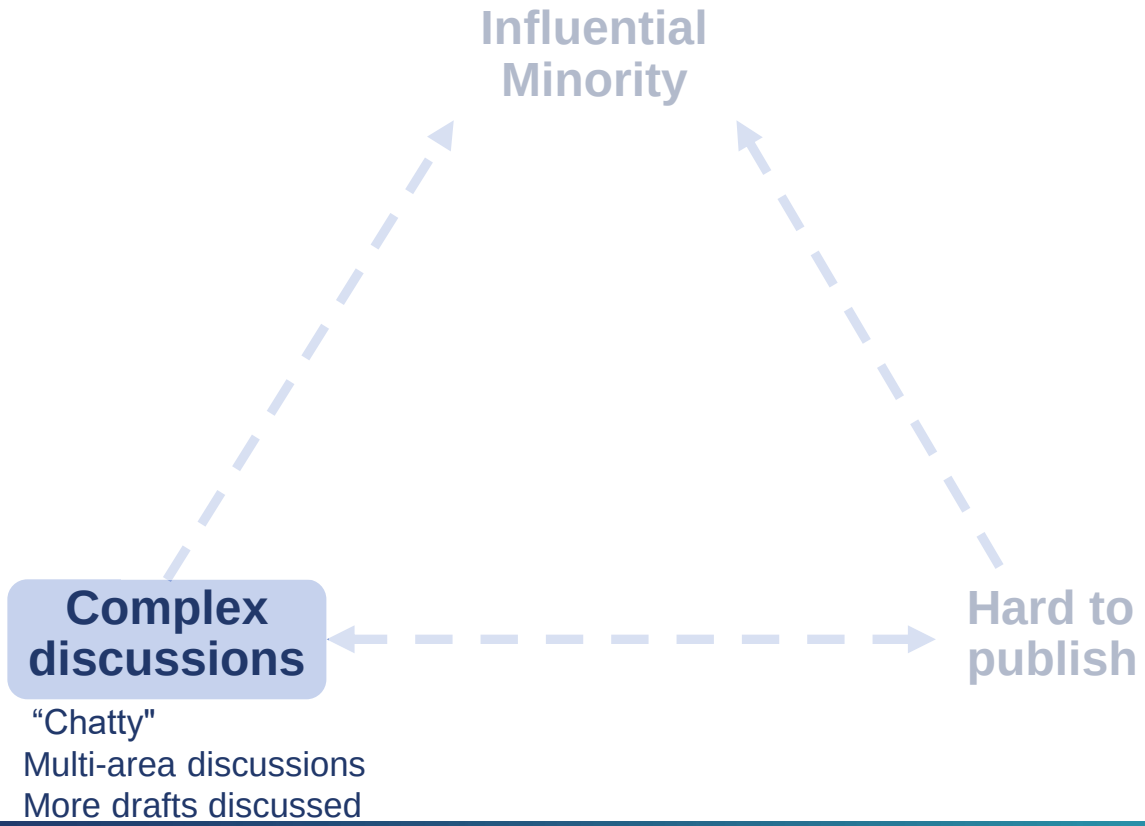
Decreasing number of email participants

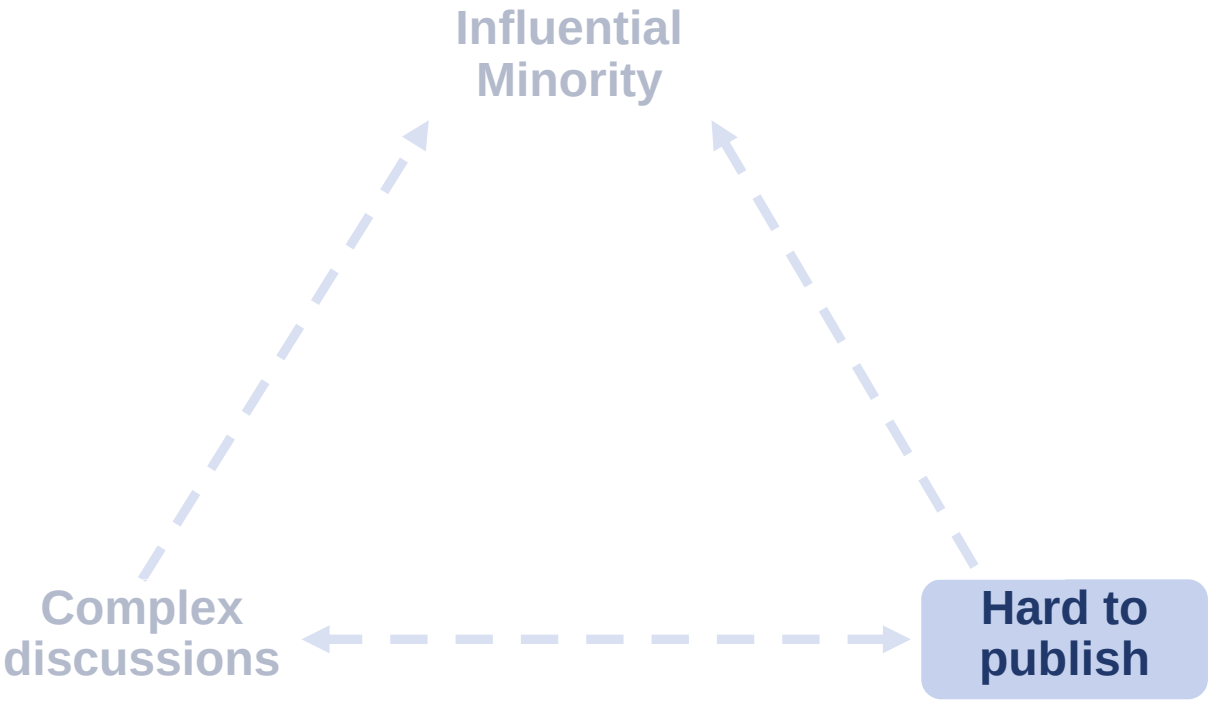


Stable number of emails



Increasingly “chatty”


Influential Minority
Complex discussions
Hard to publish
“Chatty"
Multi-area discussions
More drafts discussed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Complex discussions
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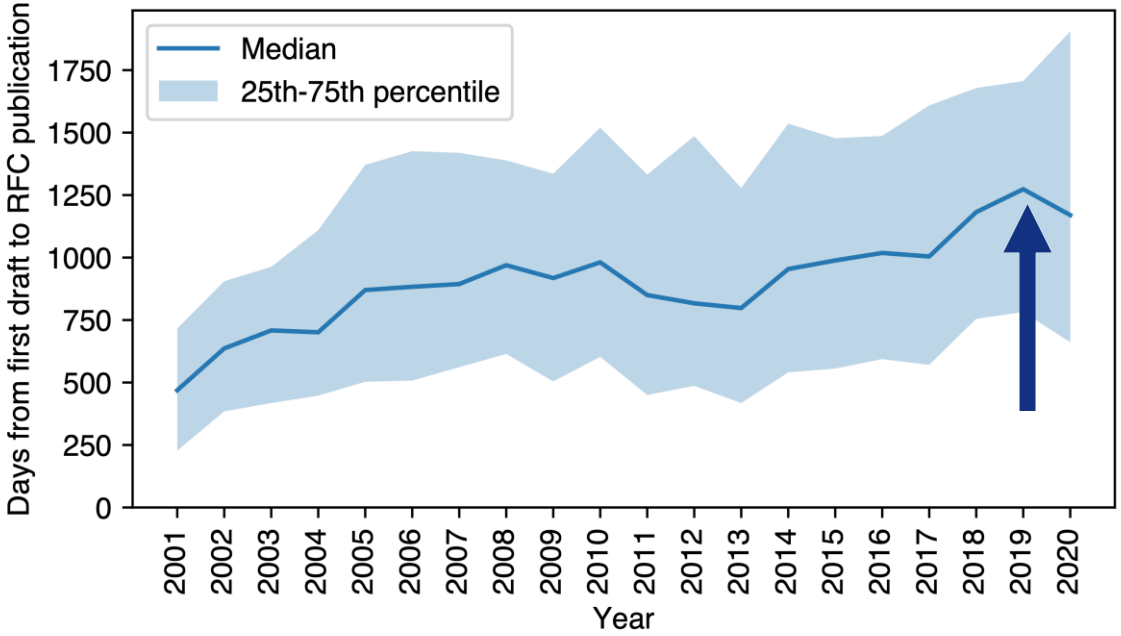
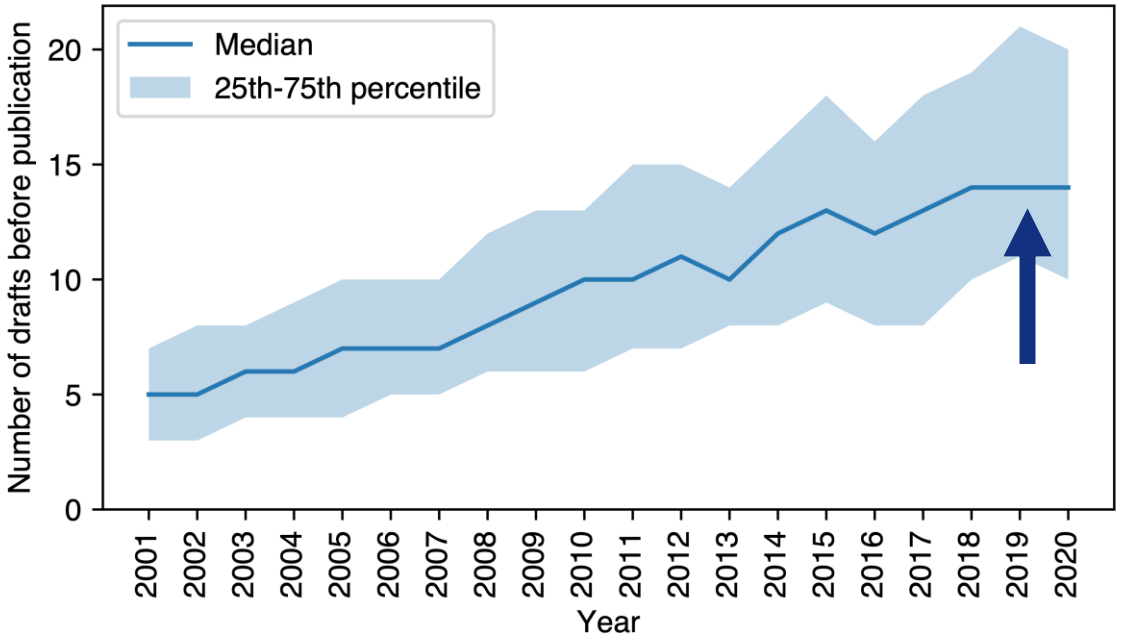
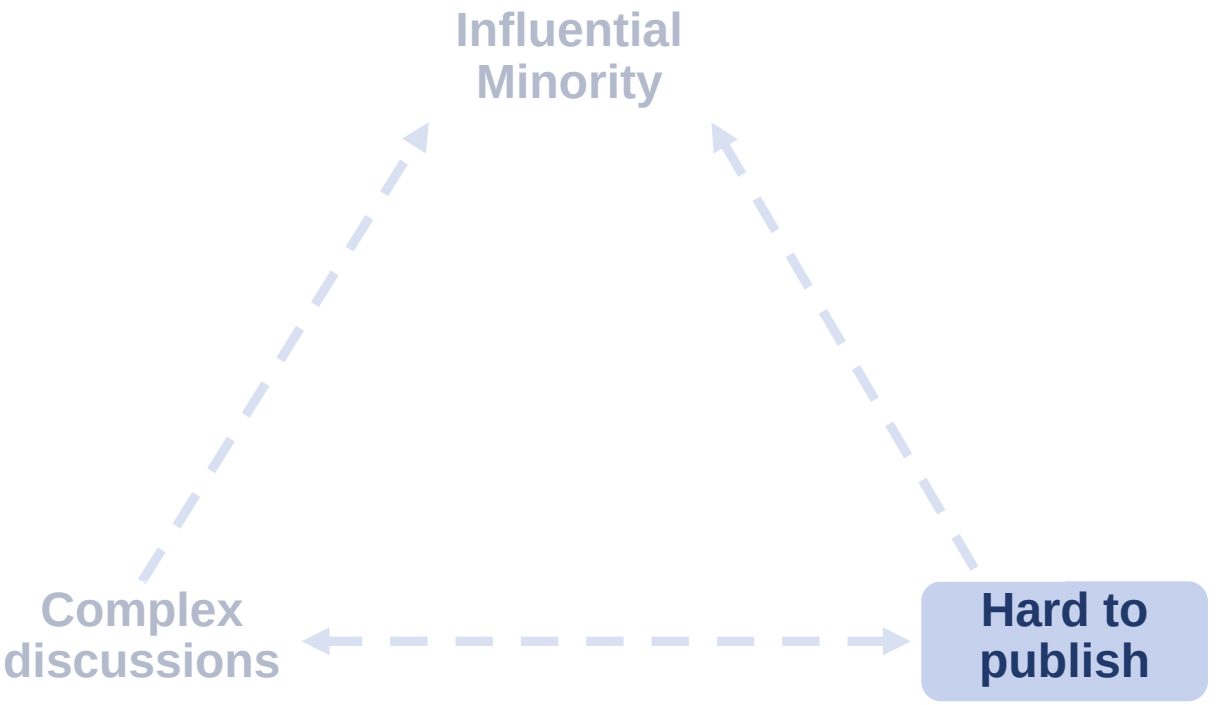


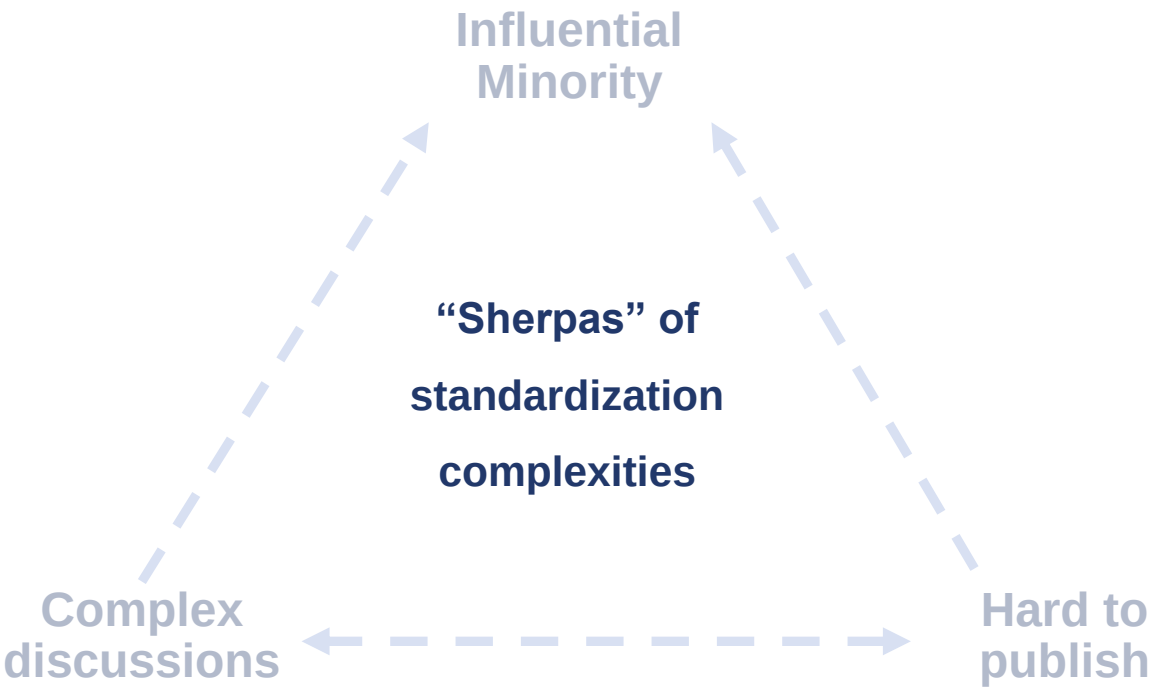
3x increase in time to publish



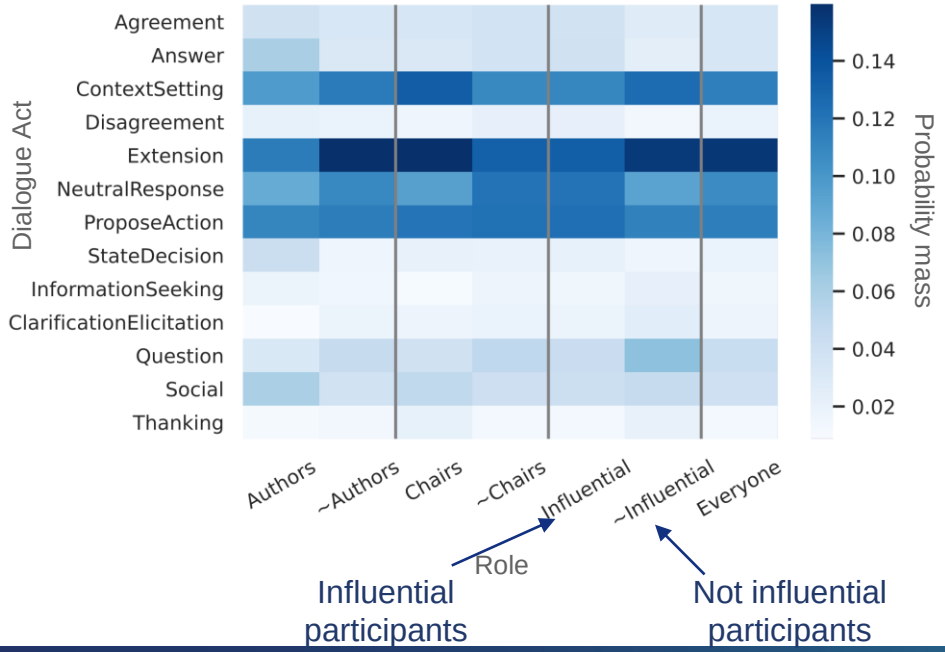
2x drafts pre-RFC publication



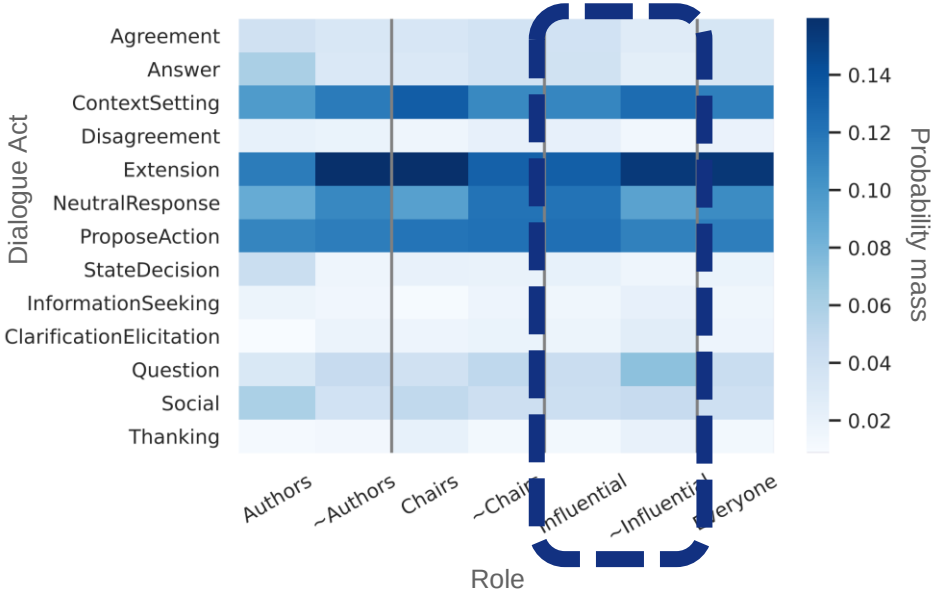
Longer time, more drafts
More affiliations, areas, authors


Influential Minority
“Sherpas” of standardization complexities
Complex discussions
Hard to publish

The type of dialogue shows the role of a participant



Influential participants dialogue is…



Responsive

Concise communication style

Makes decisions

Proposes (slightly) more actions

Background papers:

IETF social graph: AAAI ICWSM (2022, 2023)

IETF linguistics: ACL (2023), ACL Findings (2023), Frontiers in Psychology (2023)

IETF RFC production: ACM IMC (2021), IFIP TMA (2023)

Ongoing: W3C, affiliations

Sodestream project: sodestream.github.io
IRTF RASP RG: datatracker.ietf.org/rg/rasprg/
More: icastro.info

Back up slides

Decision-making annotations

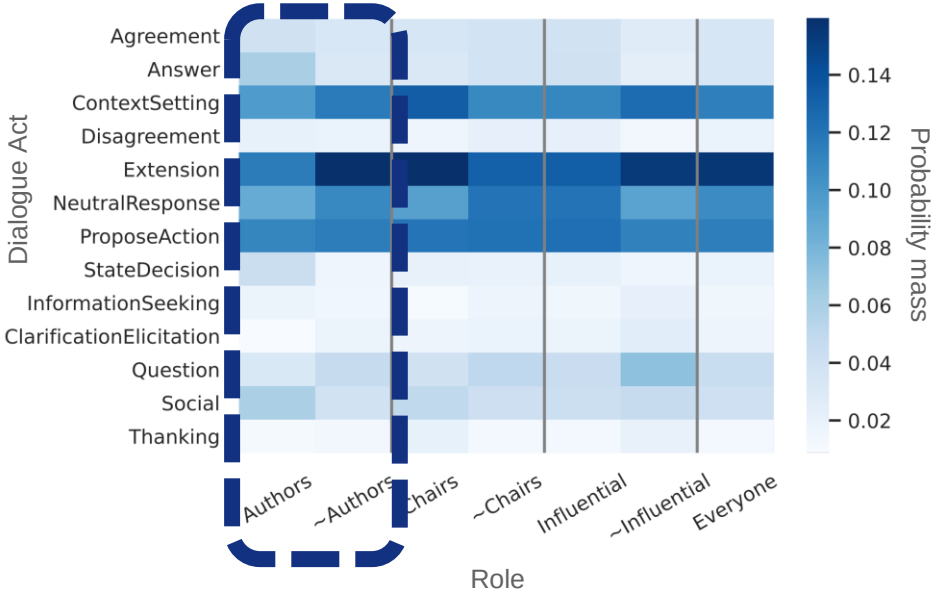
4 drafts, 15 threads, 363 authors, 8230 segments, 2196 messages.

Based on ISO 24617-2 standard for Dialogue Act (DA) labeling

Min two annotators per segment, one or more DA labels per segment

Label	Description	Example	Count	IAA
InformationProviding	Any type of providing information	-	7643	.86
Agreement	Agreeing with opinion or accepting a task	That's a good idea.	651	.74
Answer	Answering a question	It is 42 bytes.	655	.73
ContextSetting	Providing context before other DAs	Imagine the case when ...	2212	.25
Disagreement	Disagreeing with opinion on rejecting a task	I don't think so.	365	.68
Extension	Natural continuation of the previous one.	Moreover, it's faster.	3007	.65
NeutralResponse	Response without clear (dis)agreement	Your idea seems interesting.	2066	.71
ProposeAction	Propose an actionable activity	We should update the text.	2225	.65
StateDecision	Explicitly express a decision	We will incorporate this.	359	.63
InformationSeeking	Any type of seeking information	-	1146	.84
ClarificationElicitation	Expresses need for further elaboration.	Could you explain again ...	326	.29
Question	Any type of question.	How big is the header?	865	.86
Social	Social acts (thanking, apologizing etc.)	-	1040	.67
Thanking	Conveying thanks.	Thanks for the comment.	249	.98

Authors dialogue is…

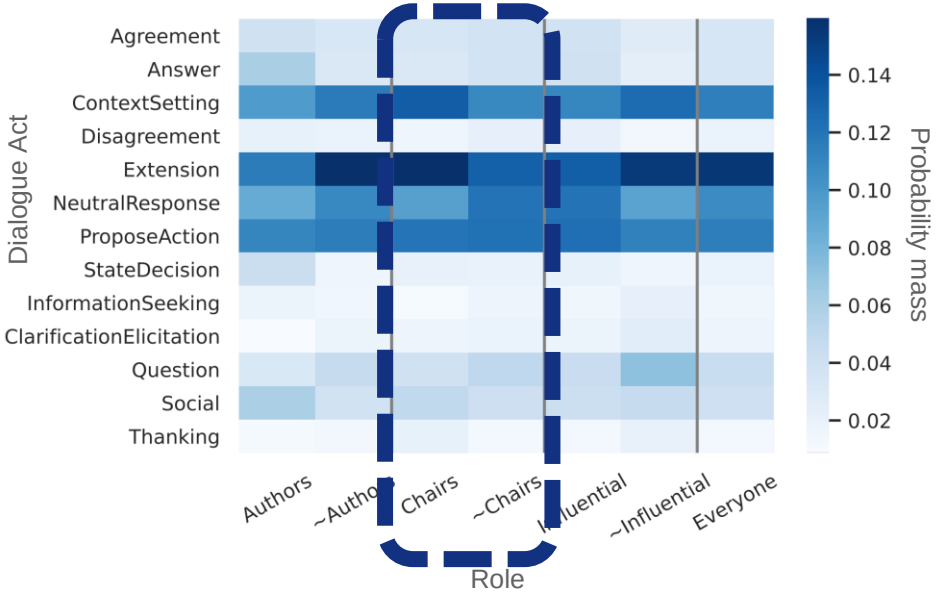


More social, answers more, asks less

Short focused messages

Reactive role and make most decisions

Working Group Chairs dialogue is…

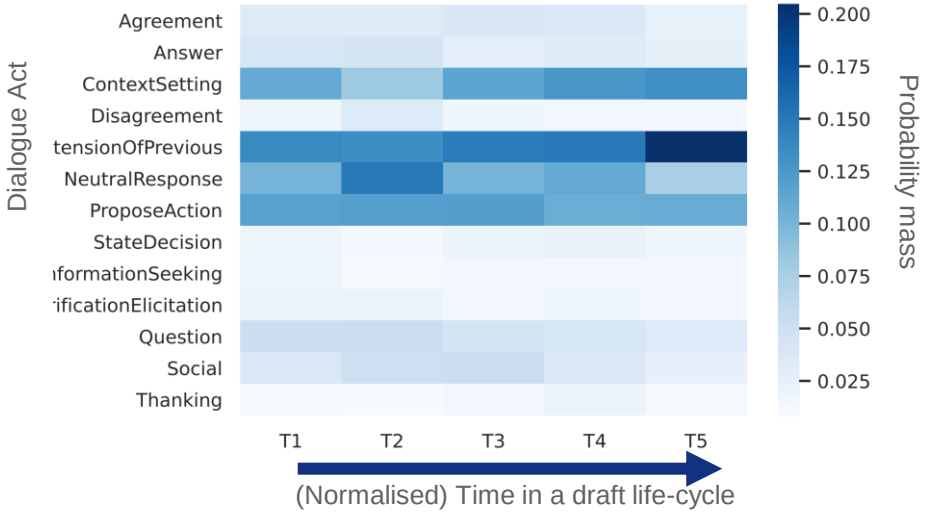


More responsive

More verbose

- Discussions management
- Reviews assignment

The type of dialogue also shows the life-cycle of a draft



Questions:

common in early phases

ContextSetting and Extension:

common towards end (complex discussions)

ProposeAction:

consistently more frequent than StateDecision: participants prefer to discuss options rather than commit to a single one

Standardisation analytics shed light on

Standardisation dynamics

Evolution on the Internet

Regulatory challenges

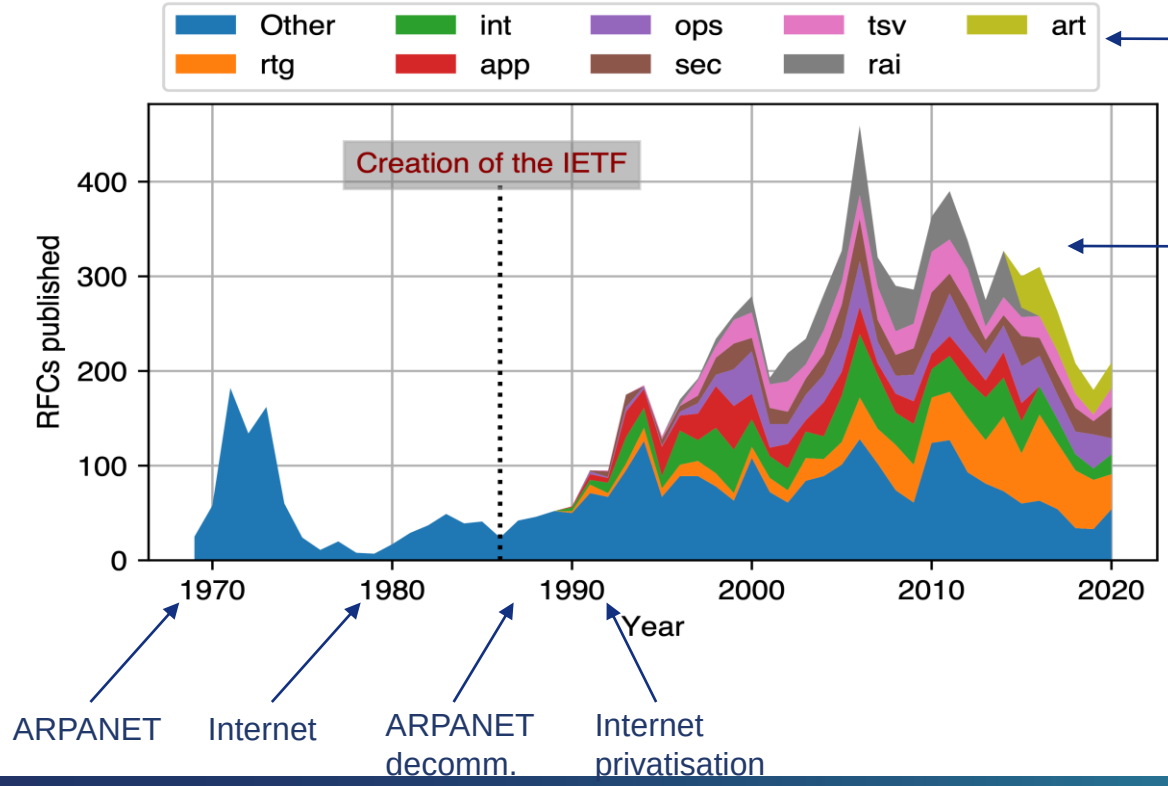
Competition tussles

Innovation cycles

Security threats

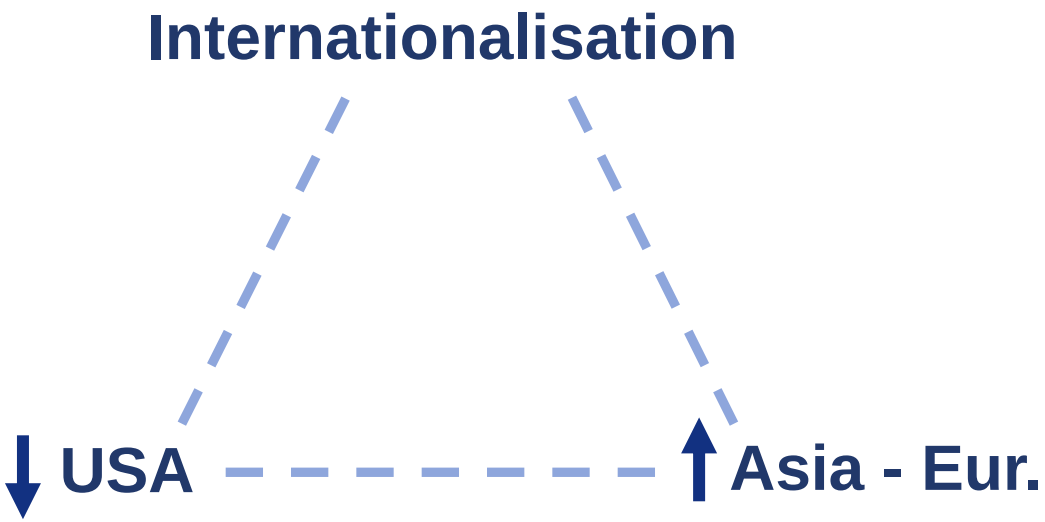
…

Standardisation reflects the evolution of the Internet

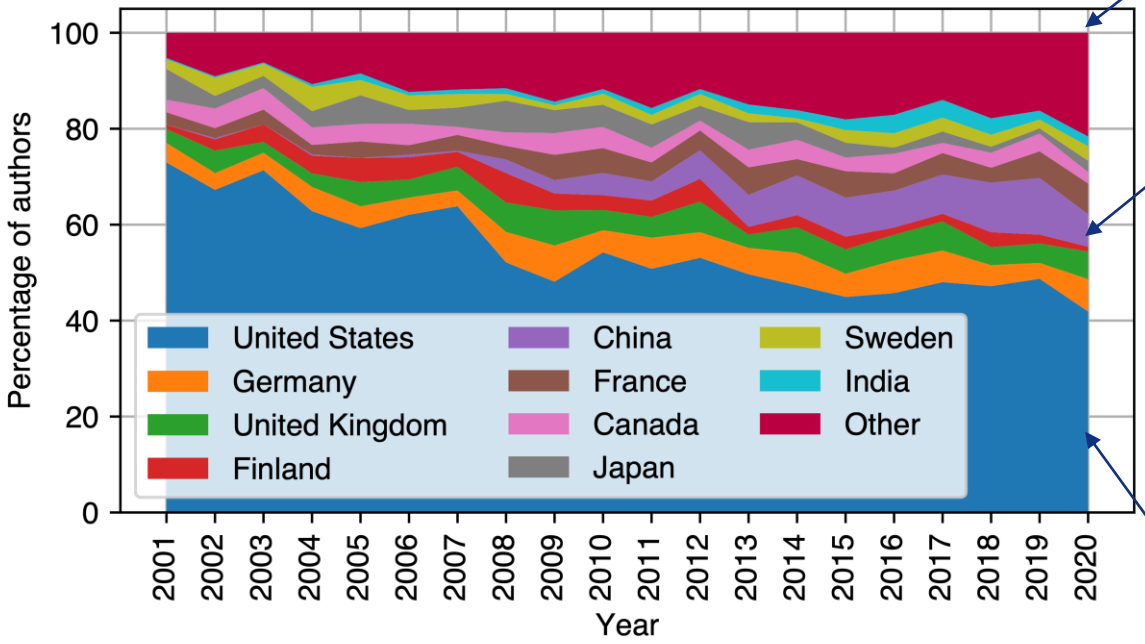


Different technical areas

Tech. “waves”


Internationalisation
USA
Asia - Eur.

Regional churn

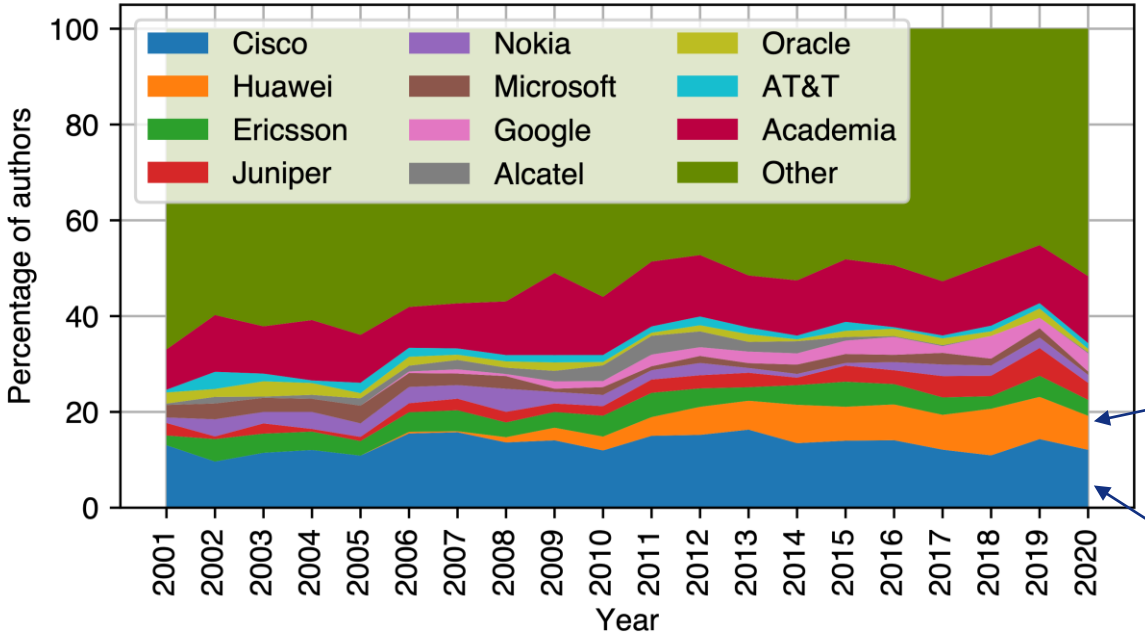


RFCs involve an increasing number of countries

China is increasingly relevant

USA (still) dominates (from 75% → 44%)

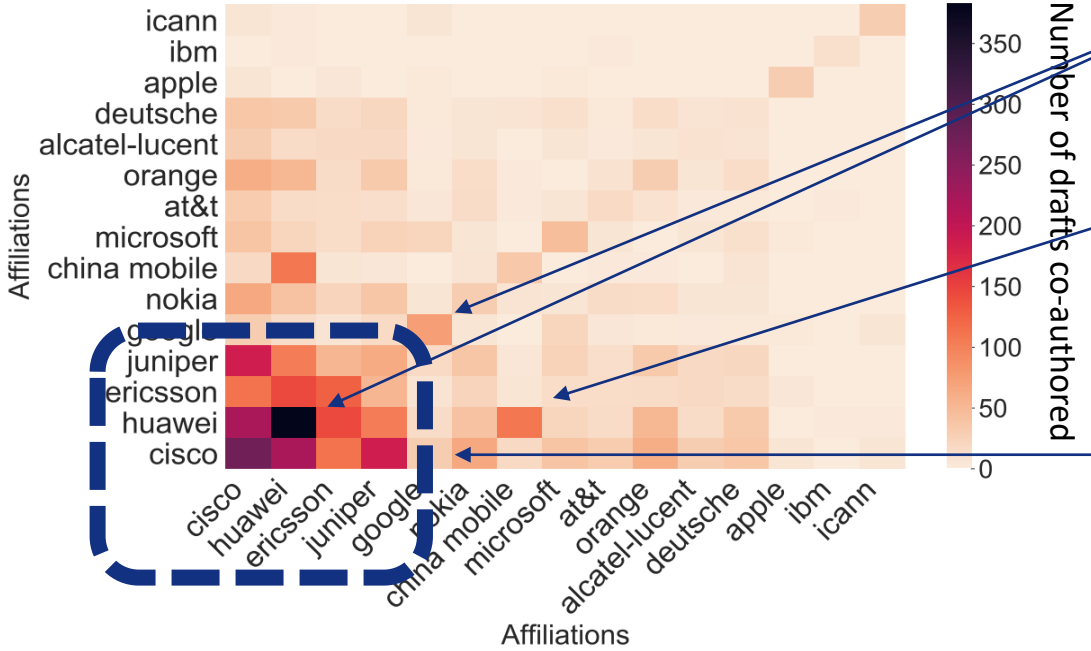
Stakeholder churn



Huawei is upcoming

Cisco is still large

Stakeholders' interests



Within organisation collaboration

Regional preference?

Organisational clique?