

# Quo vadis IETF?

## Is the IETF (becoming) ossified?

IESG Open Microphone Session

Two minutes per question  
Two minutes per answer

Ignacio Castro  
IETF 115 - mapgr



# Measurement and Analysis for Protocols' Standardisation

IESG Open Microphone Session

Two minutes per question  
Two minutes per answer

Ignacio Castro  
IETF 115 - mapgr



# Analysing decision making in the IETF



## Published work:

- P. Khare, M. Karan, S. McQuistin, C. Perkins, G. Tyson, M. Purver, P. Healey, I. Castro. *“The Web We Weave: Untangling the Social Graph of the IETF”*. AAI ICWSM, 2022.
- S. McQuistin, M. Karan, P. Khare, C. Perkins, G. Tyson, M. Purver, P. Healey, W. Iqbal, J. Qadir, Ignacio Castro. *“Characterising the IETF Through the Lens of RFC Deployment”*. ACM IMC, 2021

## Project:

- SODESTREAM: Streamlining Social Decision Making for Improved Internet Standards (<https://sodestream.github.io>)

*Prashant  
Khare*

*Stephen  
McQuistin*

*Colin  
Perkins*

*Matthew  
Purver*

*Patrick  
Healey*

*Gareth  
Lyson*

*Ignacio  
Castro*

*Mladen  
Karan*

# The Internet is NOT a conspiracy

We know those responsible  
And have the “minutes”  
From before it started

Prashant  
Khare

Stephen  
McQuistin

Colin  
Perkins

Matthew  
Purver

Patrick  
Healey

Gareth  
Lyson

Ignacio  
Castro

Mladen  
Karan

# The Internet is NOT a conspiracy

One where we know the conspirators

And have the **minutes**

From before it started





*Stephen McQuistin*

*Colin Perkins*

*Matthew Purvis*

*Patrick Healey*

*Gareth Lyson*

*Ignacio Castro*

*Prashant Khare*

*Mladen Karan*

# IETF standardisation process

**Draft proposal**

**Draft adoption**

**RFC publication**

**RFC Deployment**

emails

drafts

\*Disclaimer:  
(slightly) different periods of analysis

Prashant  
Khare

Stephen  
Mcquistin

Colin  
Perkins

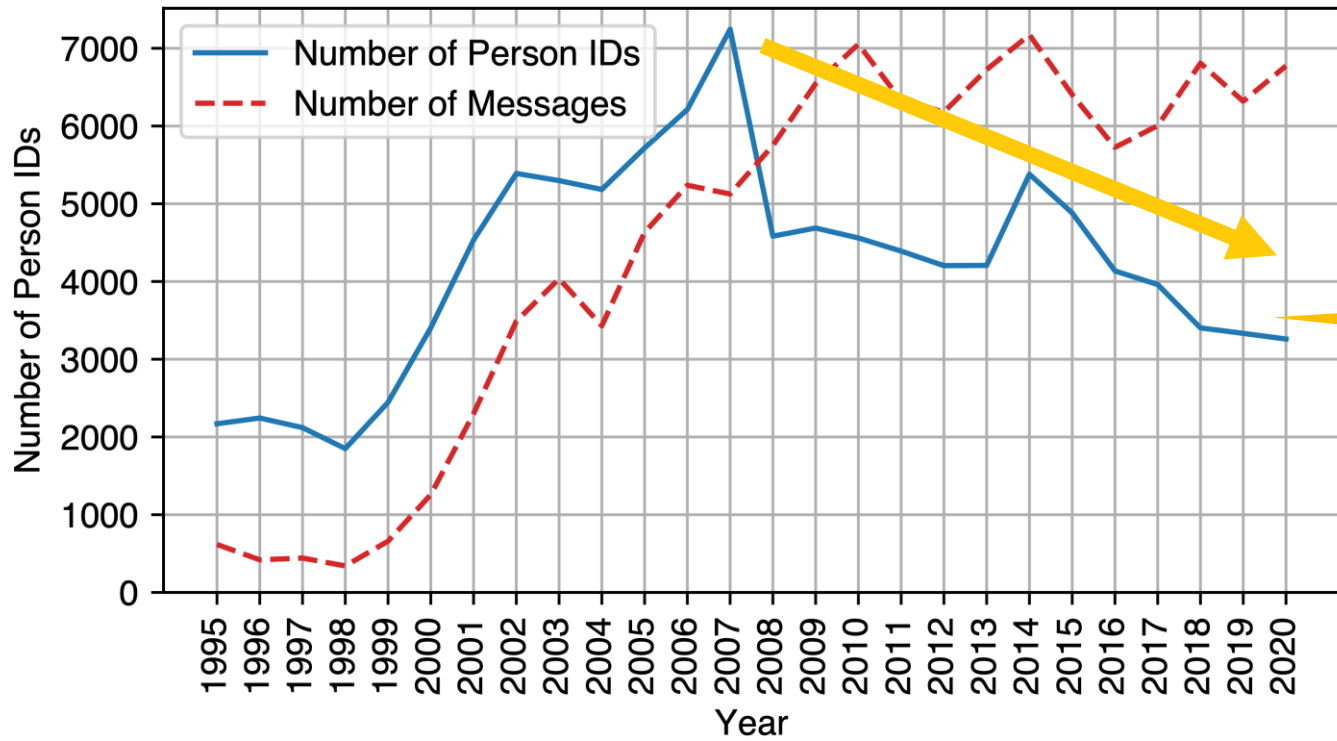
Matthew  
Purver

Patrick  
Healey

Gareth  
Lyson

Ignacio  
Castro

Mladen  
Karan



Decreasing number of  
email participants

Prashant  
Rhare

Stephen  
Mcquistin

Colin  
Perkins

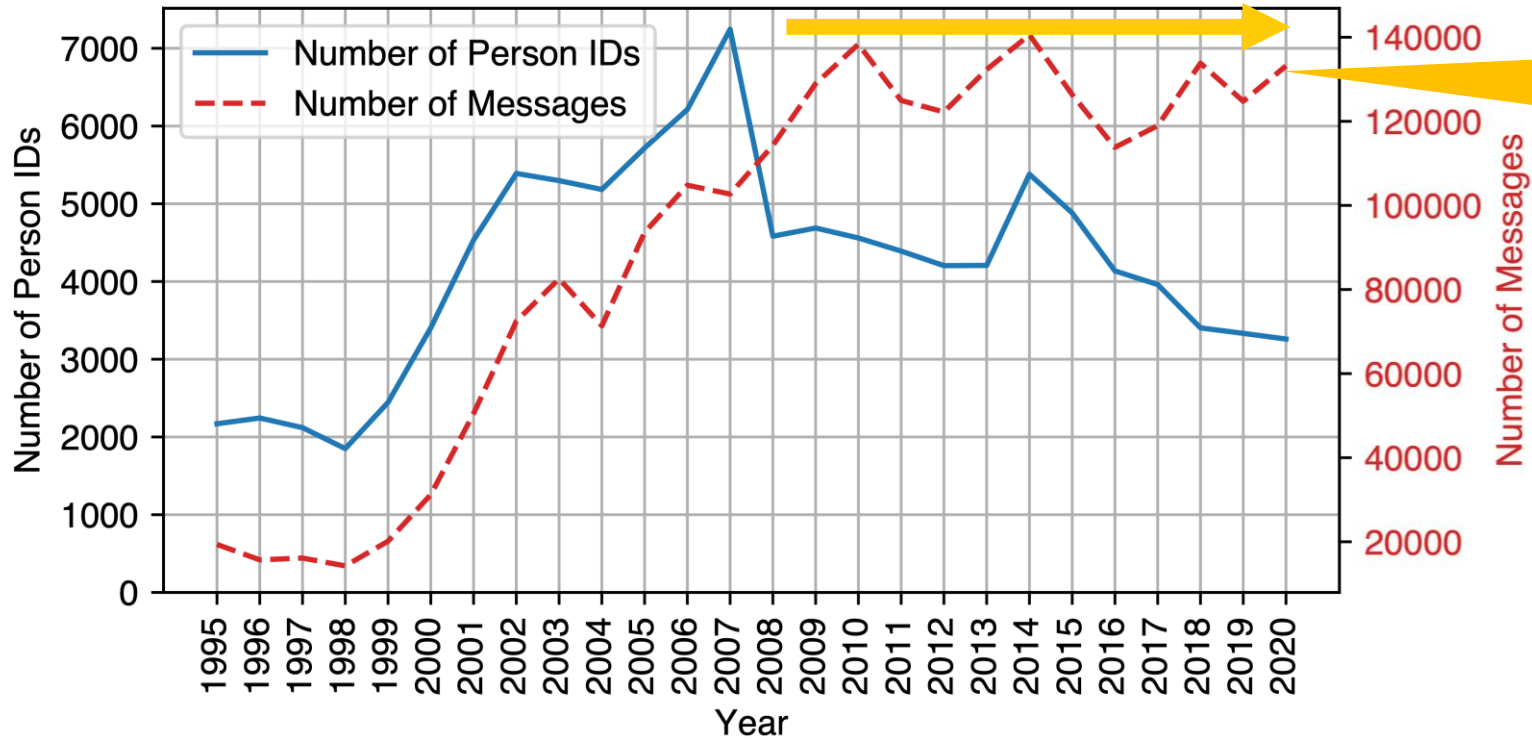
Matthew  
Purver

Patrick  
Healey

Gareth  
Lyson

Ignacio  
Castro

Mladen  
Karan



Stable number of emails



Prashant  
Rhare

Stephen  
Mcquistin

Colin  
Perkins

Matthew  
Purver

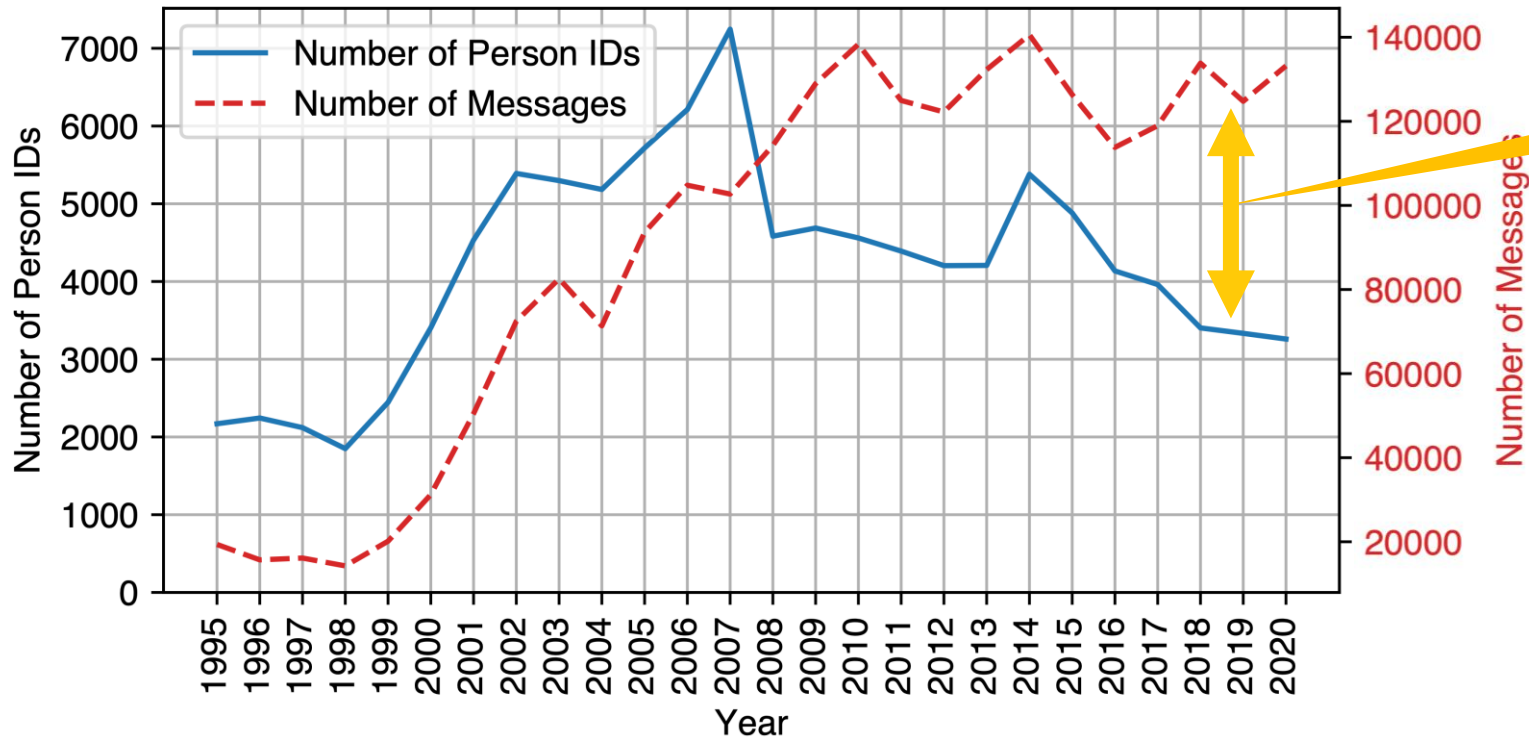
Patrick  
Healey

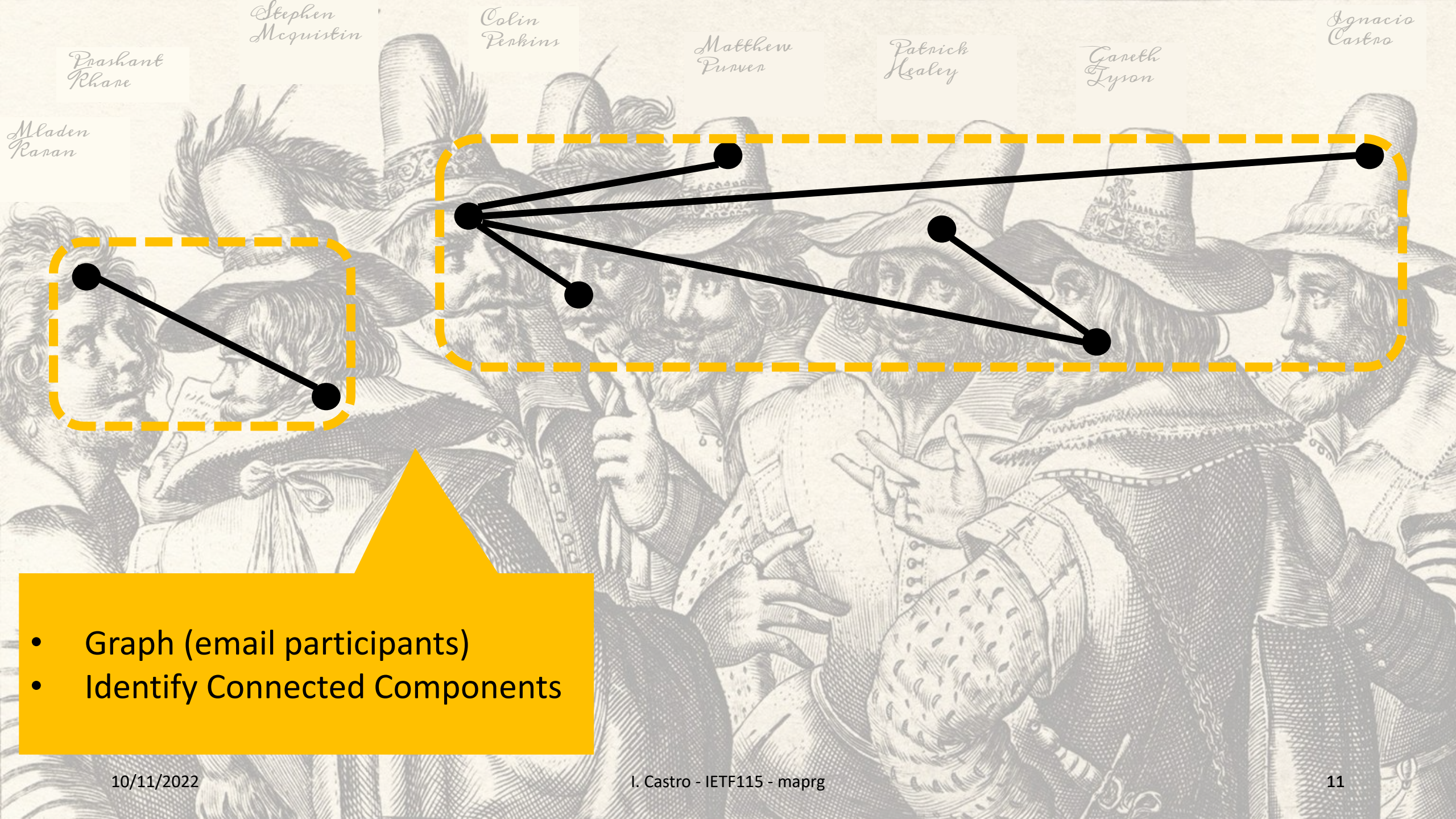
Gareth  
Lyson

Ignacio  
Castro

Mladen  
Karan

Increasingly “chatty”





Prashant  
Rhare

Stephen  
Mcquistin

Colin  
Perkins

Matthew  
Purver

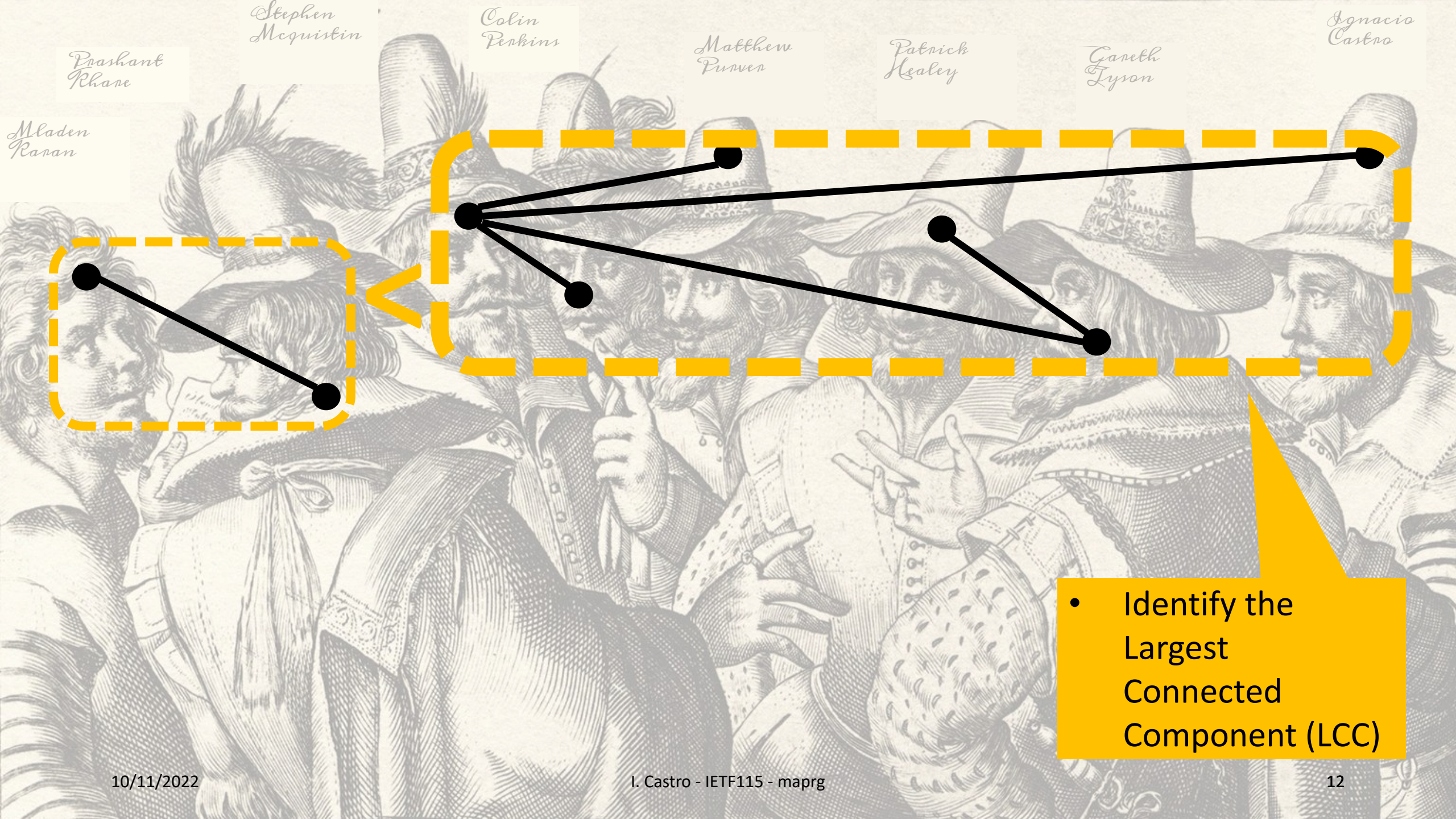
Patrick  
Healey

Gareth  
Lyson

Ignacio  
Castro

Mladen  
Karan

- Graph (email participants)
- Identify Connected Components



*Prashant  
Rhare*

*Stephen  
Mcquistin*

*Colin  
Perkins*

*Matthew  
Purver*

*Patrick  
Healey*

*Gareth  
Lyson*

*Ignacio  
Castro*

*Mladen  
Karan*

- Identify the Largest Connected Component (LCC)

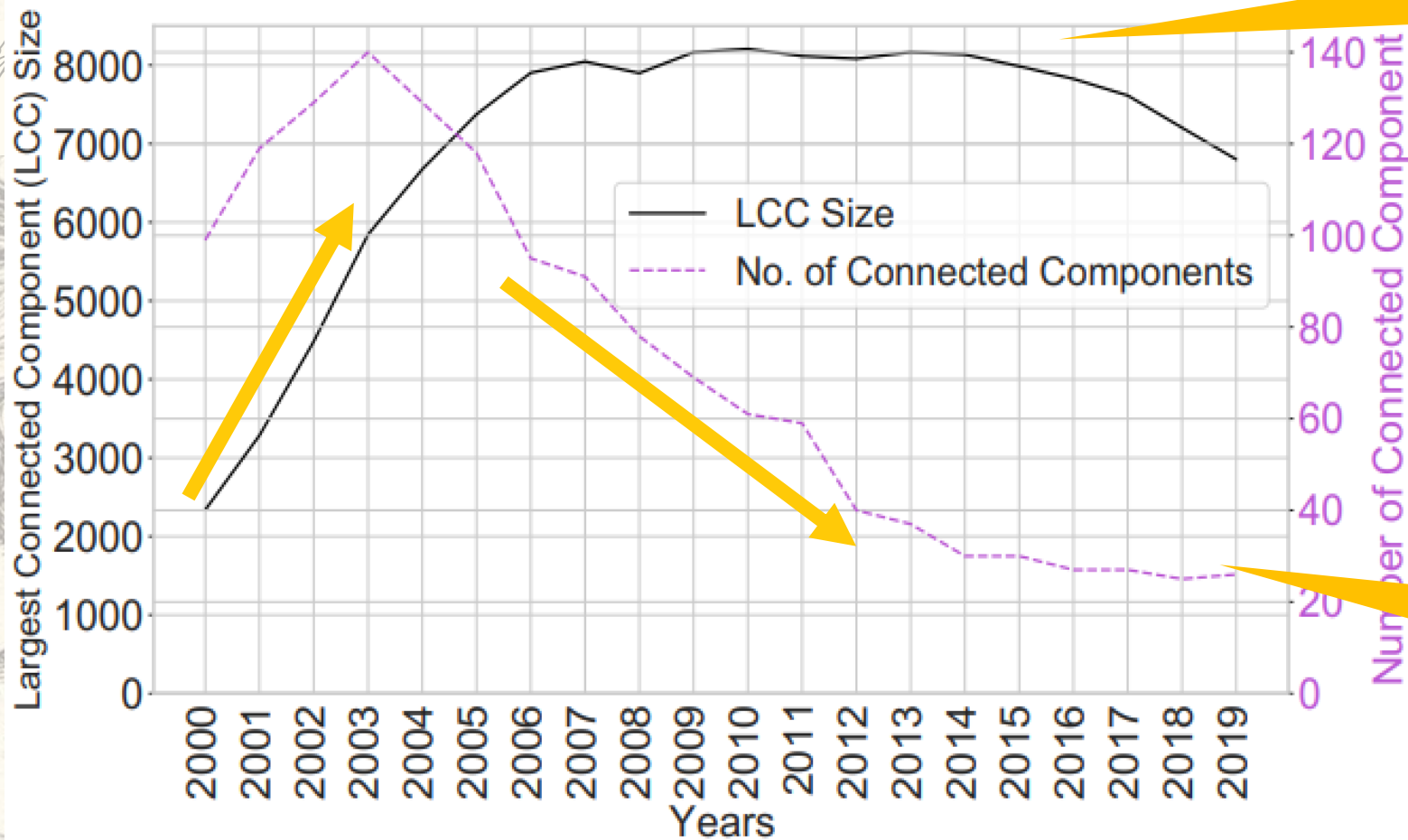
Prashant  
Rhone

Stephen  
McQuistin

Colin  
Perkins

Matthew  
Purver

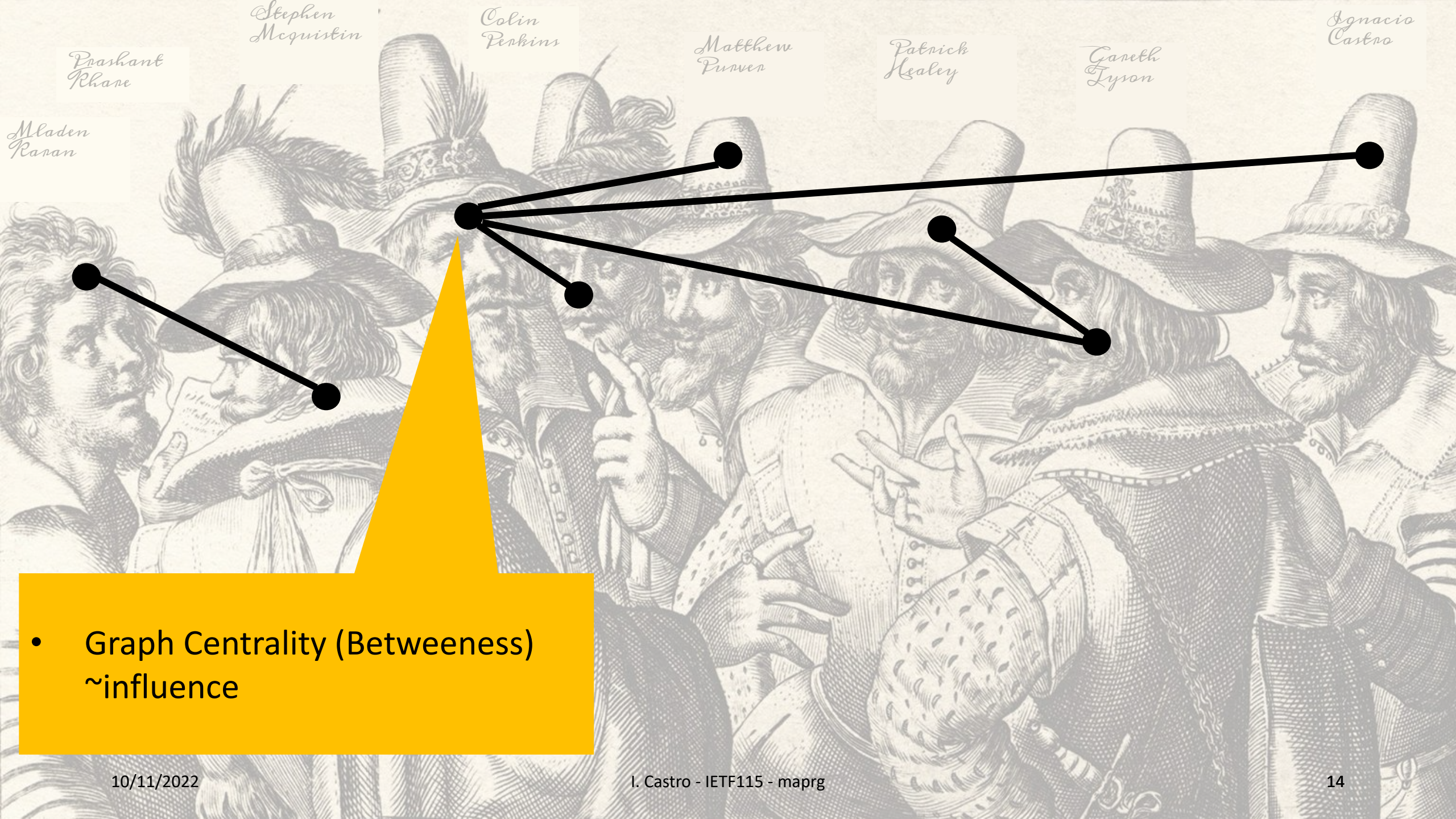
Patrick  
Healey



Growth of Largest Connected Component

More cohesive IETF?

Less Connected Componentes



Prashant  
Rhare

Stephen  
Mcquistin

Colin  
Perkins

Matthew  
Purver

Patrick  
Healey

Gareth  
Lyson

Ignacio  
Castro

Mladen  
Karan

- Graph Centrality (Betweenness)  
~influence

Prashant  
Rhone

Stephen  
McQuistin

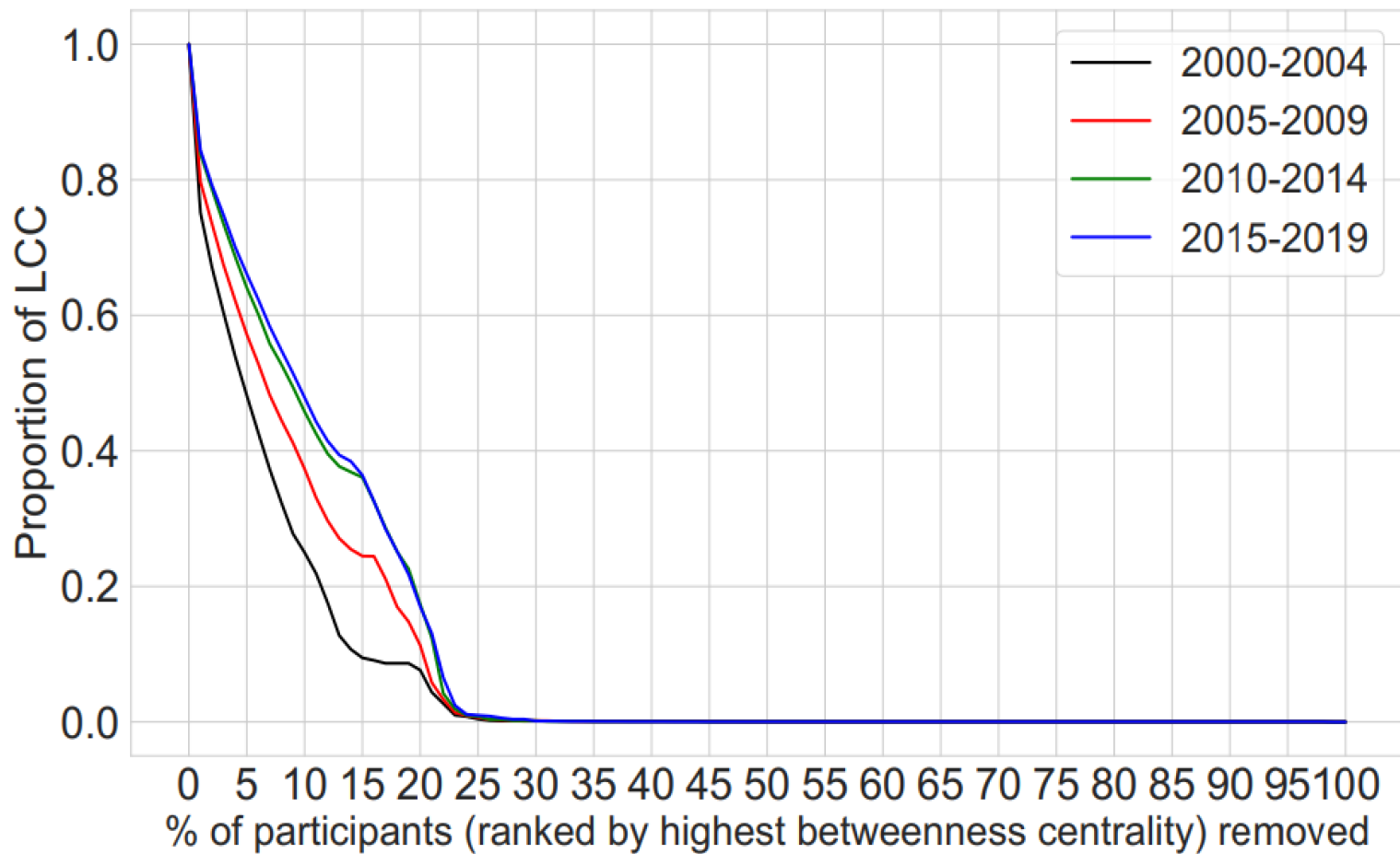
Colin  
Perkins

Matthew  
Purver

Patrick  
Healey

Gareth  
Lyson

Ignacio  
Castro



More influence -----> less influence

- Graph (email participants)
- Betweenness ~influence
- Influence percentiles (+→-)
- Remove participants

*Prashant  
Rhare*

*Stephen  
McQuistin*

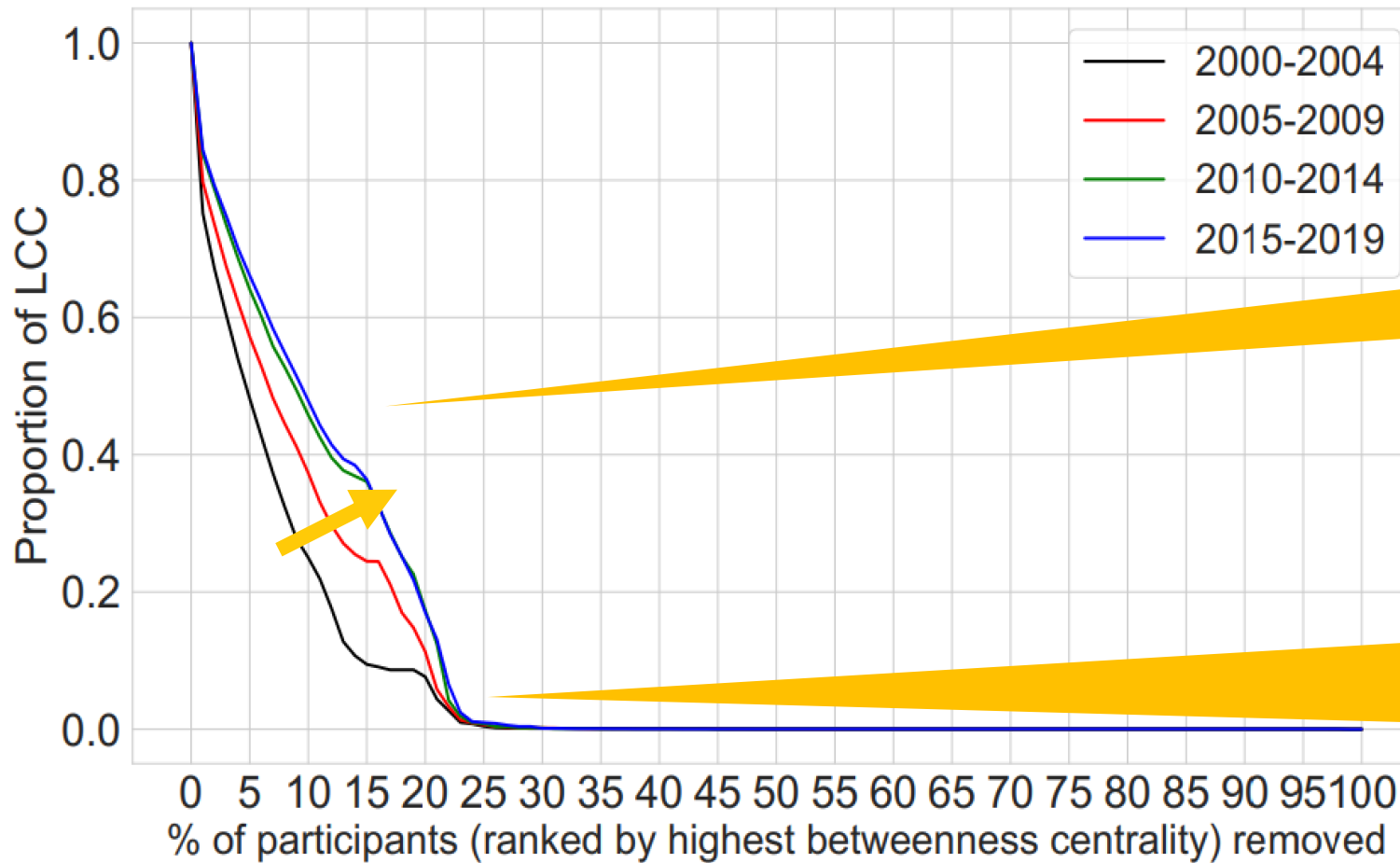
*Colin  
Perkins*

*Matthew  
Purver*

*Patrick  
Healey*

*Gareth  
Lyson*

*Ignacio  
Castro*



Growing relevance of most influential participants

Removing ~1/4 most influential participants reduces Largest Connected Component (LCC) by 90%

More influence -----> less influence

Prashant  
Rhone

Stephen  
McQuistin

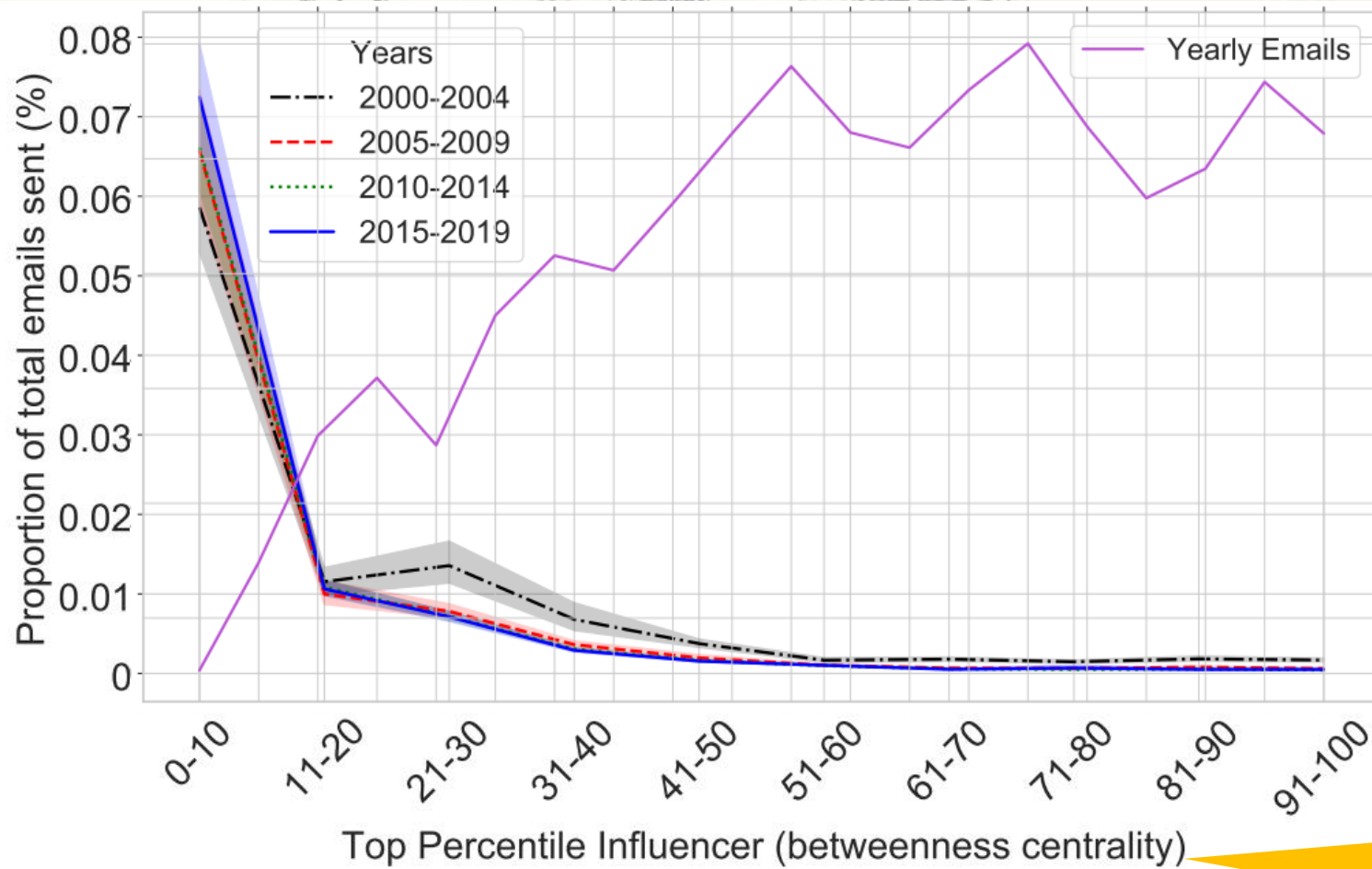
Colin  
Perkins

Matthew  
Purver

Patrick  
Healey

Gareth  
Lyson

Ignacio  
Castro



More influence -----> less influence

- Graph (email participants)
- Betweenness ~influence
- Influence percentiles (+→-)



Prashant  
Rohr

Stephen  
McQuistin

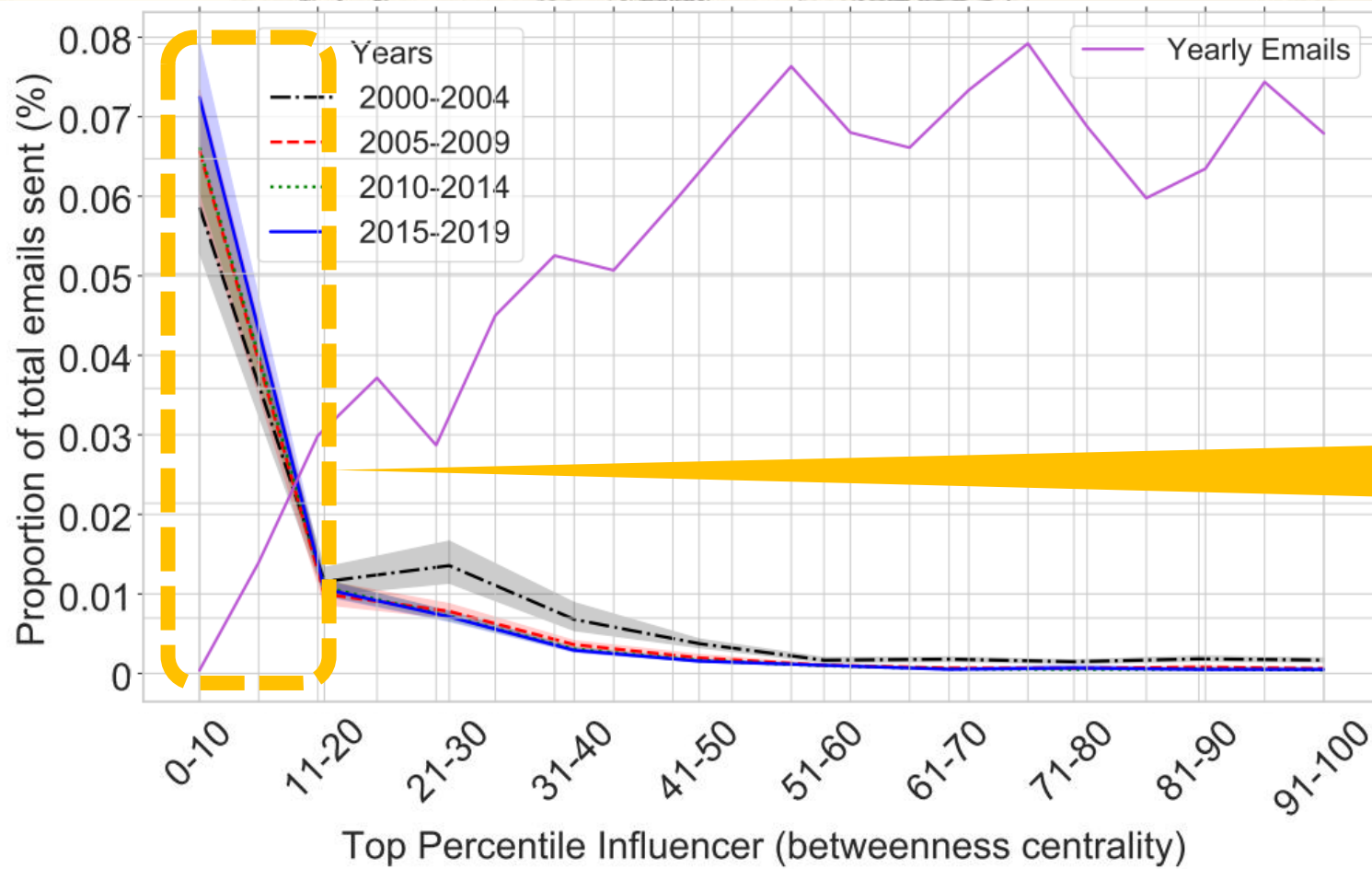
Colin  
Perkins

Matthew  
Purver

Patrick  
Healey

Gareth  
Lyson

Ignacio  
Castro



An influential minority dominates the email discussions

More influence -----> less influence

Prashant  
Rhan

Stephen  
Mcquistin

Colin  
Perkins

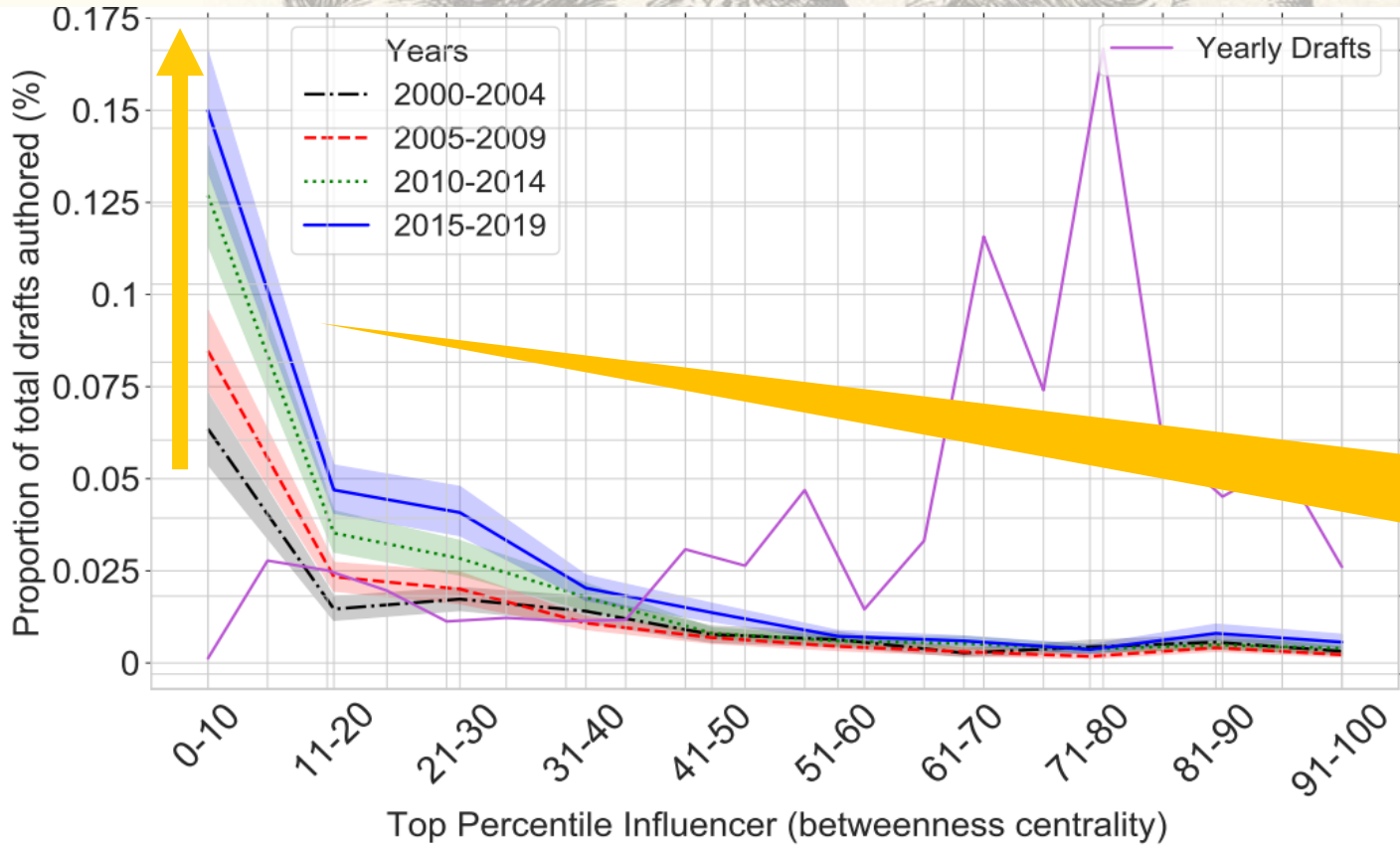
Matthew  
Purver

Patrick  
Healey

Gareth  
Lyson

Ignacio  
Castro

Mladen  
Karan



Influential participants increasingly dominate draft creation

More influence -----> less influence

*Prashant  
Khande*

*Stephen  
McQuistin*

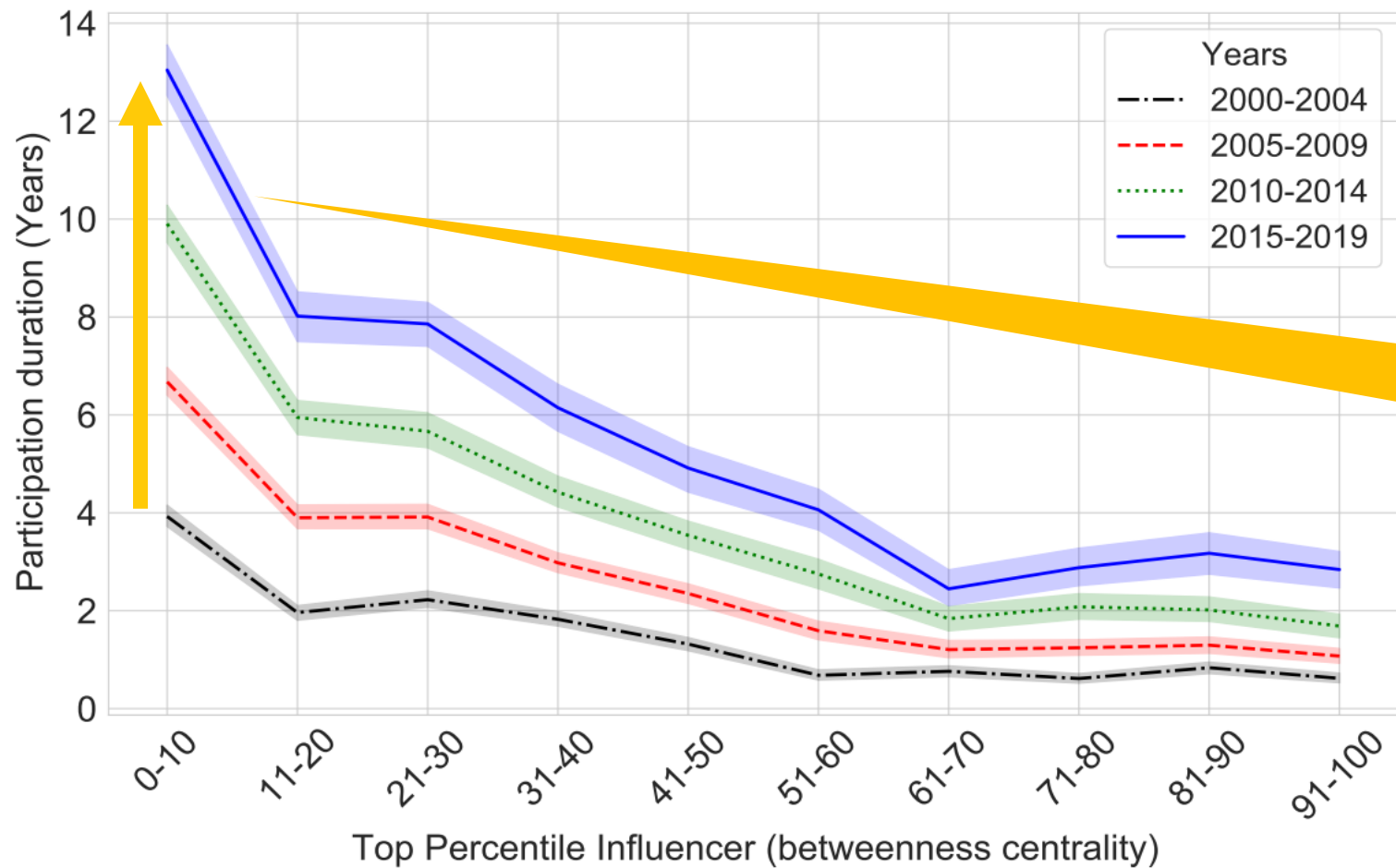
*Colin  
Perkins*

*Matthew  
Purver*

*Patrick  
Healey*

*Gareth  
Lyson*

*Ignacio  
Castro*



Longer time to gain influence

More influence -----> less influence



*Prashant  
Rhare*

*Stephen  
Mcquistin*

*Colin  
Perkins*

*Matthew  
Purver*

*Patrick  
Healey*

*Gareth  
Lyson*

*Ignacio  
Castro*

*Mladen  
Karan*



# Raise of (more) influential participants?

More complex discussions?

Prashant  
Rhone

Stephen  
McQuistin

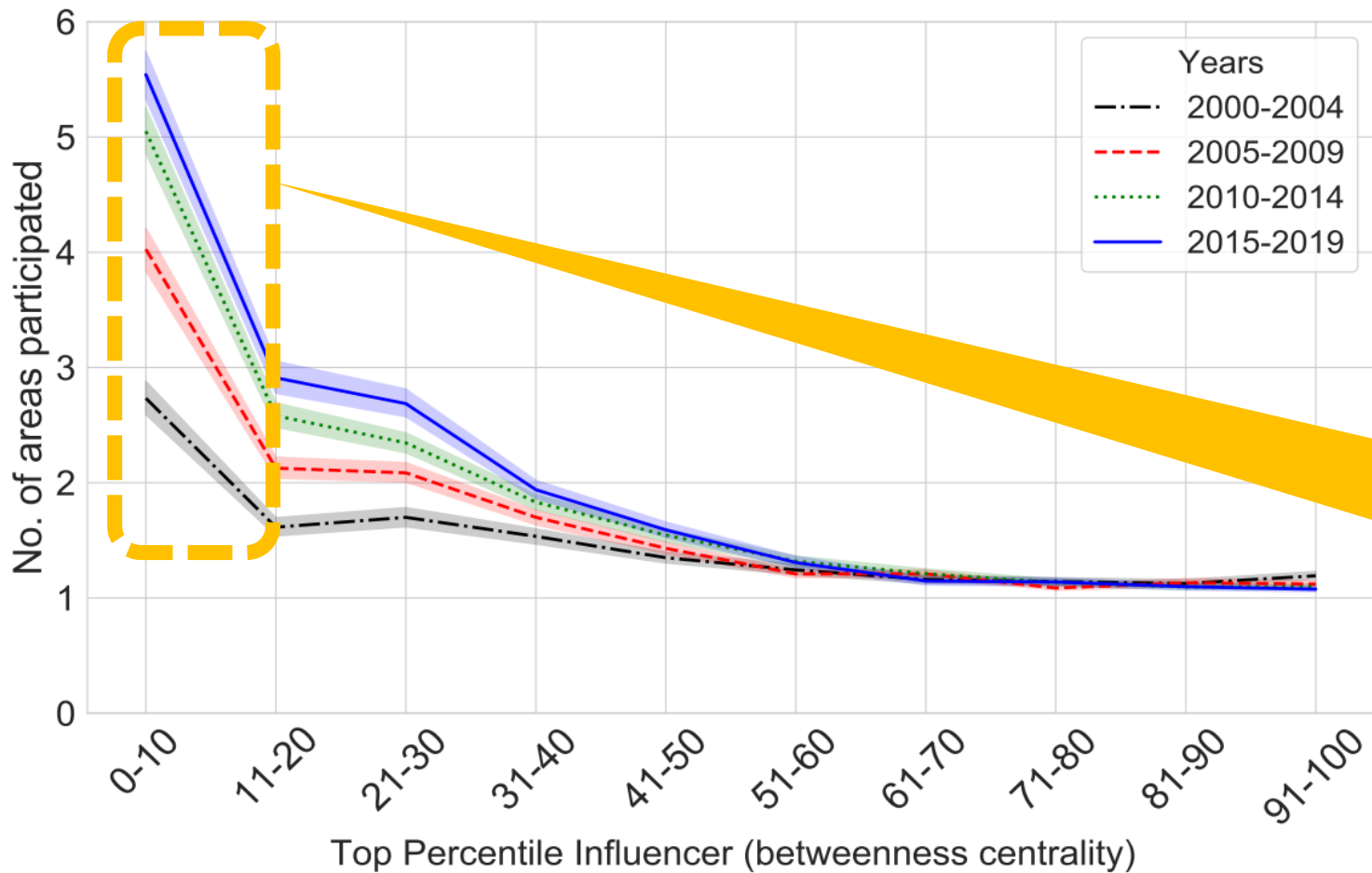
Colin  
Perkins

Matthew  
Purver

Patrick  
Healey

Gareth  
Lyson

Ignacio  
Castro



- More areas discussed
- Influential participants discuss more areas

More influence -----> less influence

Prashant  
Rhare

Stephen  
Mcquistin

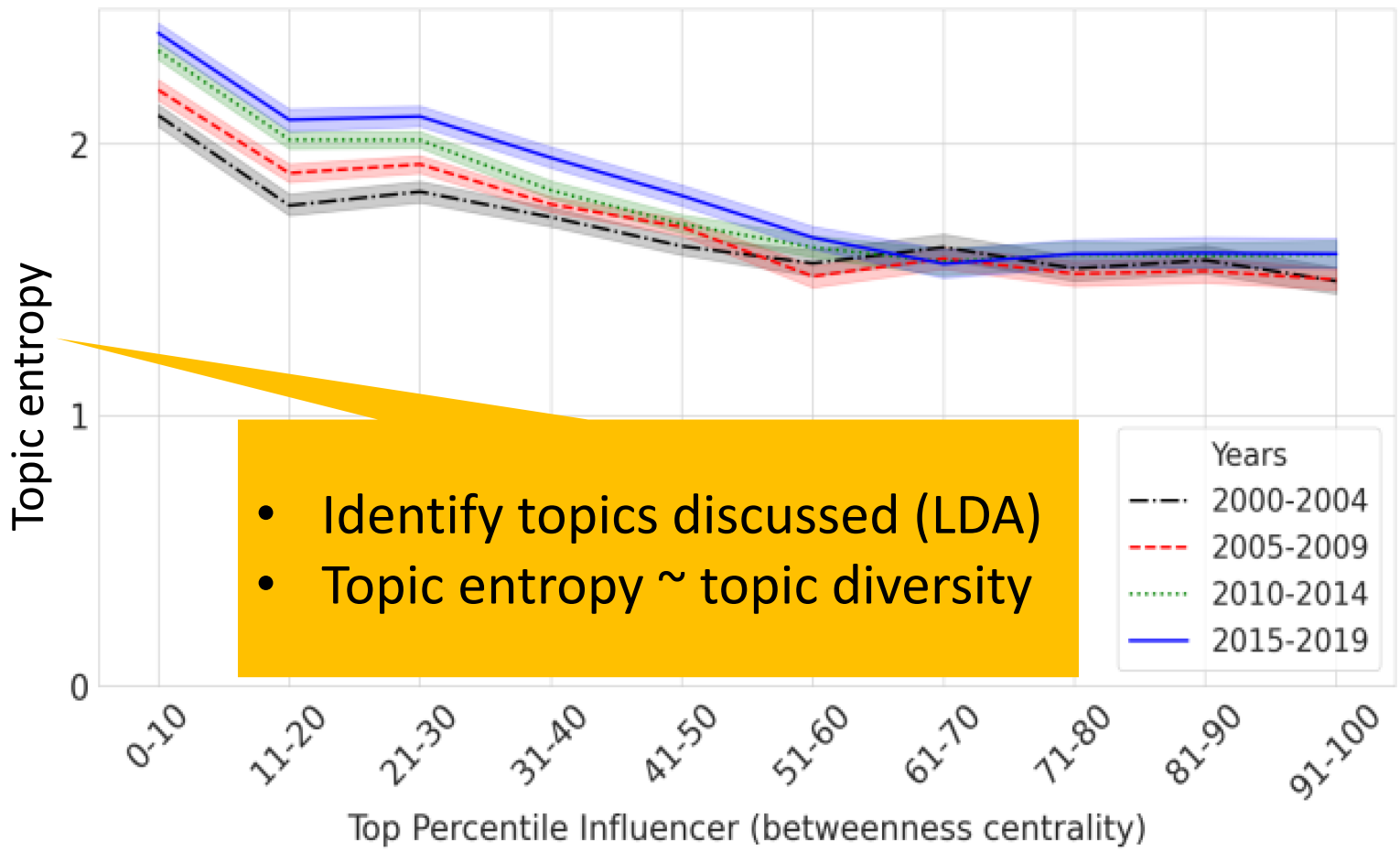
Colin  
Perkins

Matthew  
Purver

Patrick  
Healey

Gareth  
Lyson

Ignacio  
Castro



- Identify topics discussed (LDA)
- Topic entropy ~ topic diversity

More influence -----> less influence



Prashant  
Rhare

Stephen  
Mcquistin

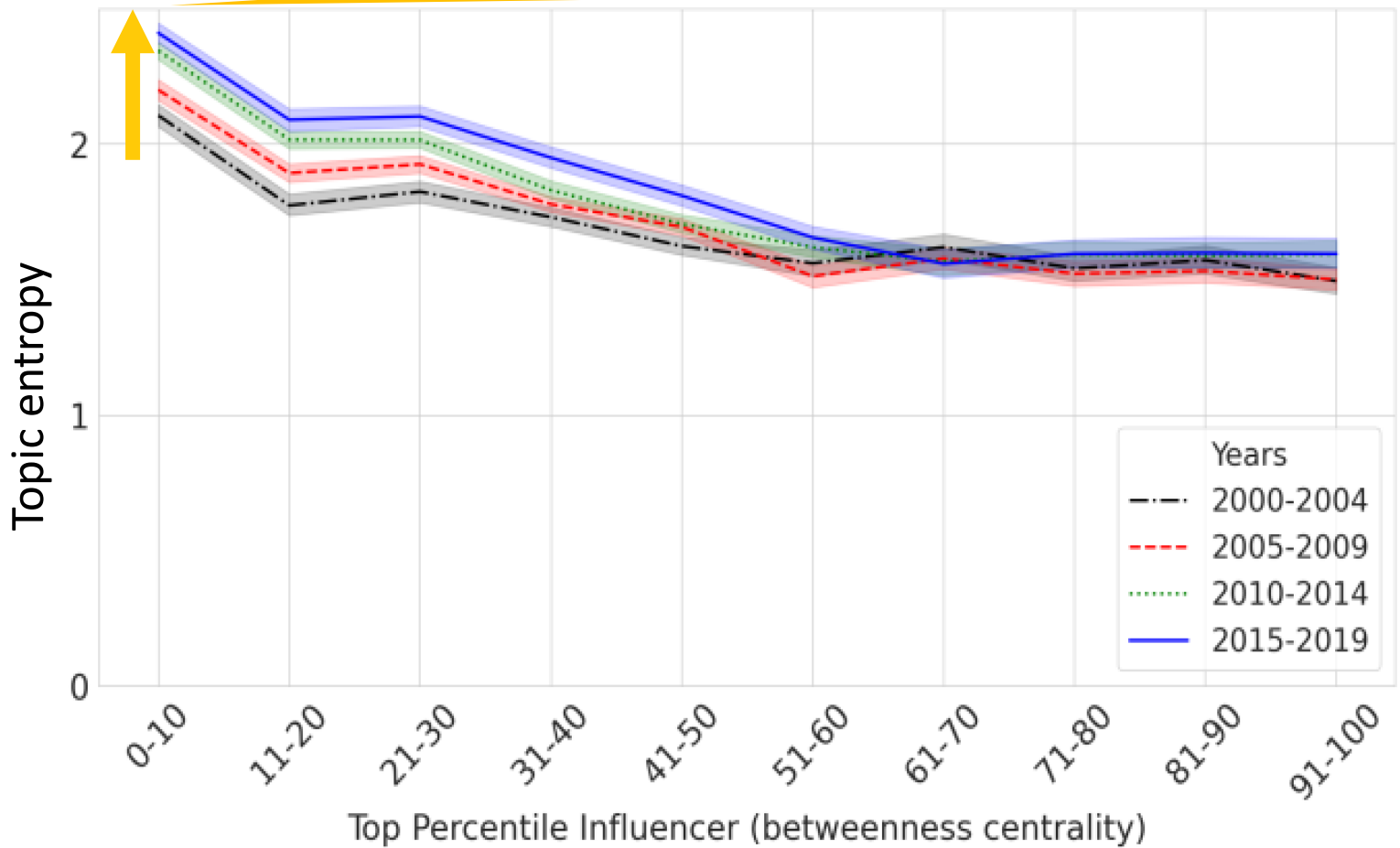
Colin  
Perkins

Matthew  
Purver

Patrick

Ignacio

Influential participants  
participate more (evenly) in  
multiple topics



More influence -----> less influence



*Prashant  
Rhare*

*Stephen  
Mcquistin*

*Colin  
Perkins*

*Matthew  
Purver*

*Patrick  
Healey*

*Gareth  
Lyson*

*Ignacio  
Castro*

*Mladen  
Karan*



# Raise of influential participants

More complex discussions



Harder to publish?



Prashant  
Rhare

Stephen  
Mcquistin

Colin  
Perkins

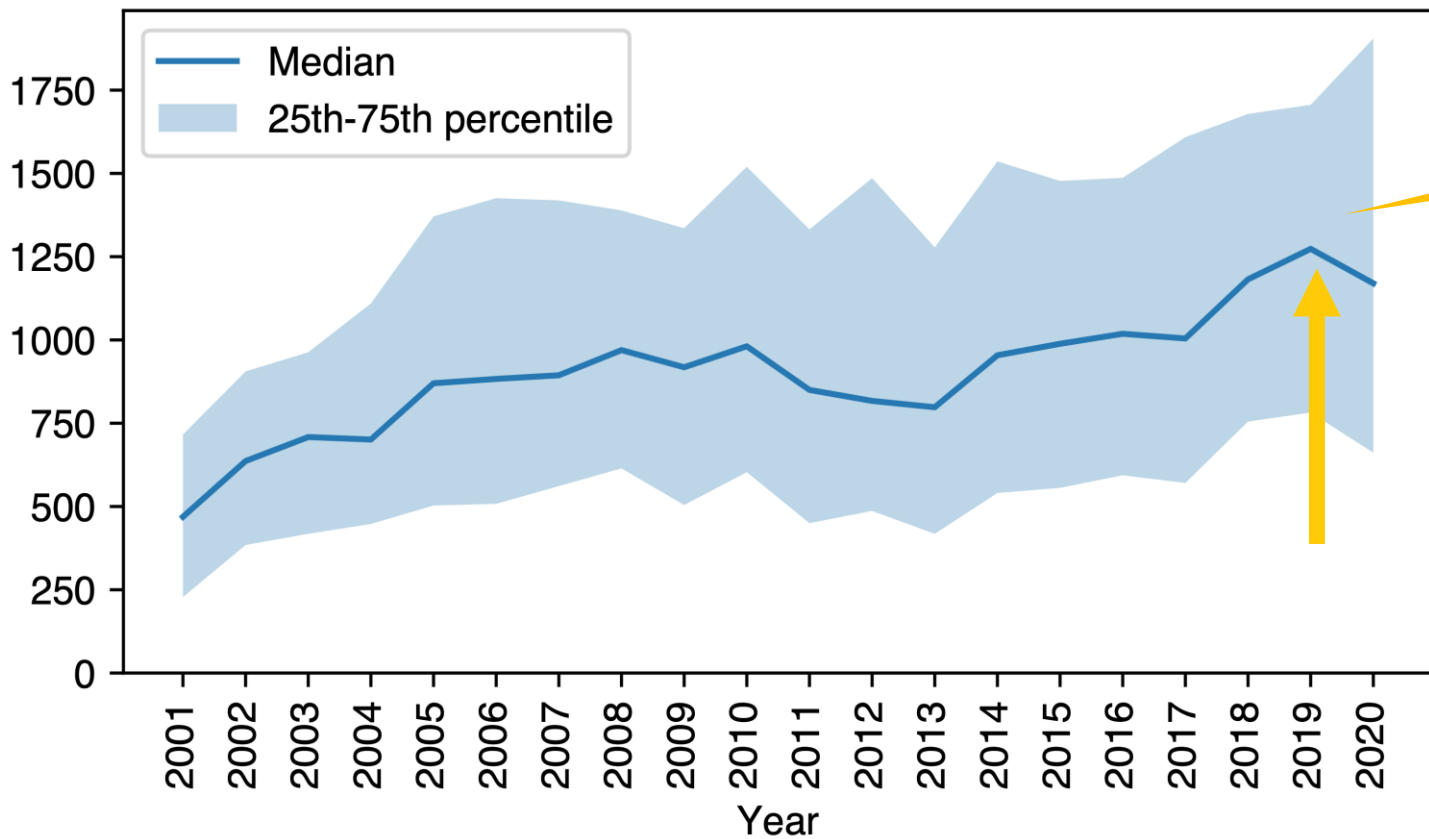
Matthew  
Purver

Patrick  
Healey

Gareth  
Lyson

Ignacio  
Castro

Days from first draft to RFC publication



3x increase in time to publish

Prashant  
Rhare

Stephen  
Mcquistin

Colin  
Perkins

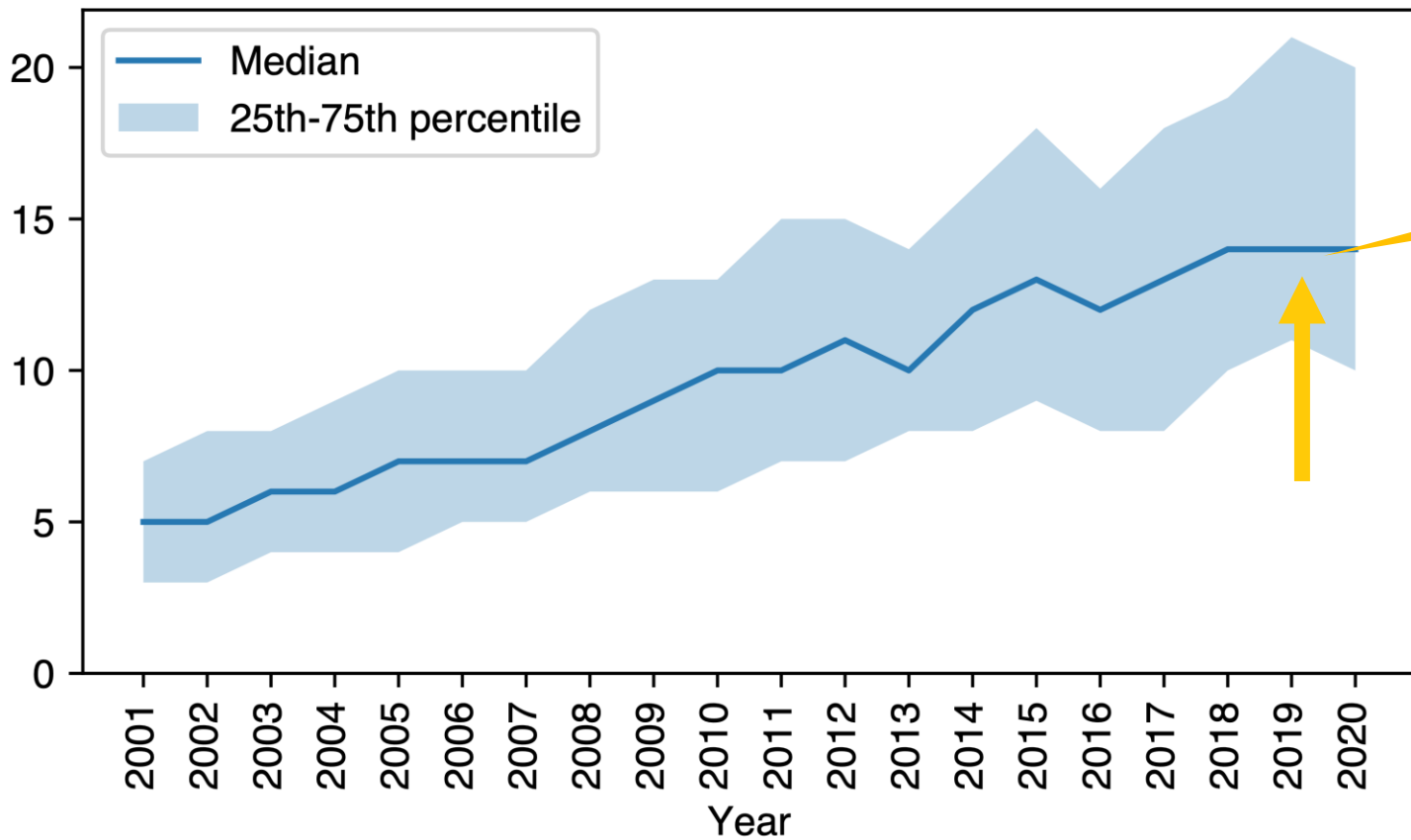
Matthew  
Purver

Patrick  
Healey

Gareth  
Lyson

Ignacio  
Castro

Number of drafts before publication



# drafts pre-RFC publication  
has more than doubled

*Prashant  
Rhare*

*Stephen  
Mcquistin*

*Colin  
Perkins*

*Matthew  
Purver*

*Patrick  
Healey*

*Gare  
Lyso*

*Mladen  
Raman*

# More coming!

- Please, help us!
  - Ground-truth: Cross-area review recommender tool
  - General feedback/insights
- RASP RG:
  - Researching Internet Standards Processes Research Group
  - Side meeting: Thurs-10th 3.30pm

