Users' participation in the design process of OSS communities

The case of Python

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Objectives and Interest (1/2)

- To analyze the forms of participation of OSS community's members in the design process

- For us *researchers in cognitive ergonomics of collaborative work*
  - To understand collaborative work and design activities
  - To support and increase the design efficiency with adapted tools or methodologies

- For you *the Python community*
  - To get engaged into a reflective approach about your collaborative practices

Objectives and Interests (1/2)

- OSS projects are innovative projects
  - ✓ New way of working together
  - ✓ Auto-organized communities of users and developers
    - Mediated collaborations distributed among several interaction space
    - Emerging status and power distributions
  - ✓ Specific position of users - developers
    - Open source
    - Bug reporting-patching
  - ✓ Dealing with major economical and political issues
- Open issues in OSS research
  - ➢ No stable model of the OSS design process
  - ➢ Forms of participation in the design process (adding new functionalities)?
  - ➢ Paradigmatic case to study the distant and mediated collaborative work

Presentation

- Our view on OSS design process
  - A distributed process
  - Involving participants with different status, power and activities
  - A specific position of users - designers
- Research strategy
  - Focus on the PEP process
- 2 complementary studies
  - Analysis python-dev online discussions around 2 PEPs
  - Analysis of a pushed-by users PEP on python-dev and python-list
- Conclusion, further works and your feedback

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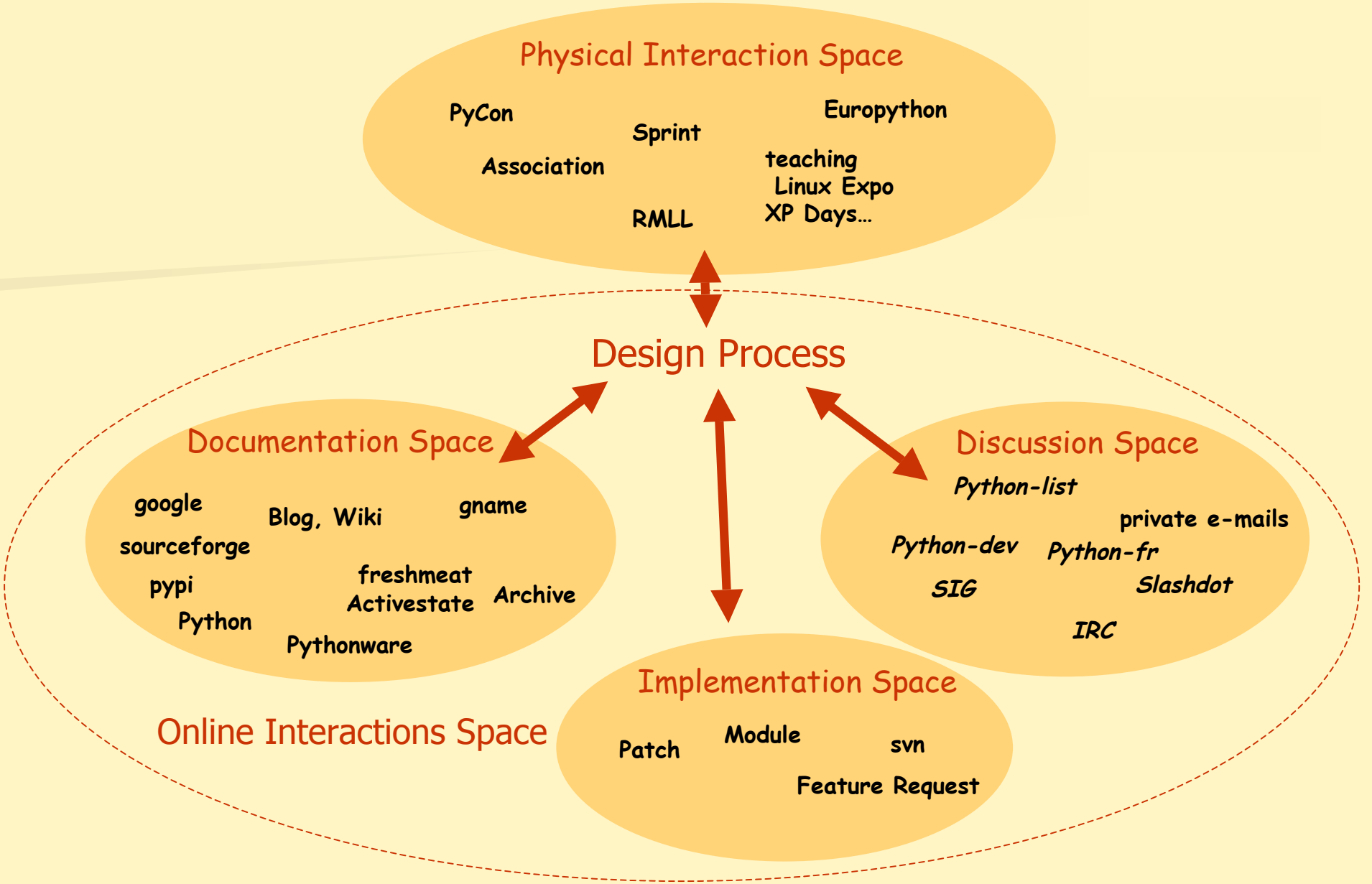

OSS distributed design process in interaction spaces

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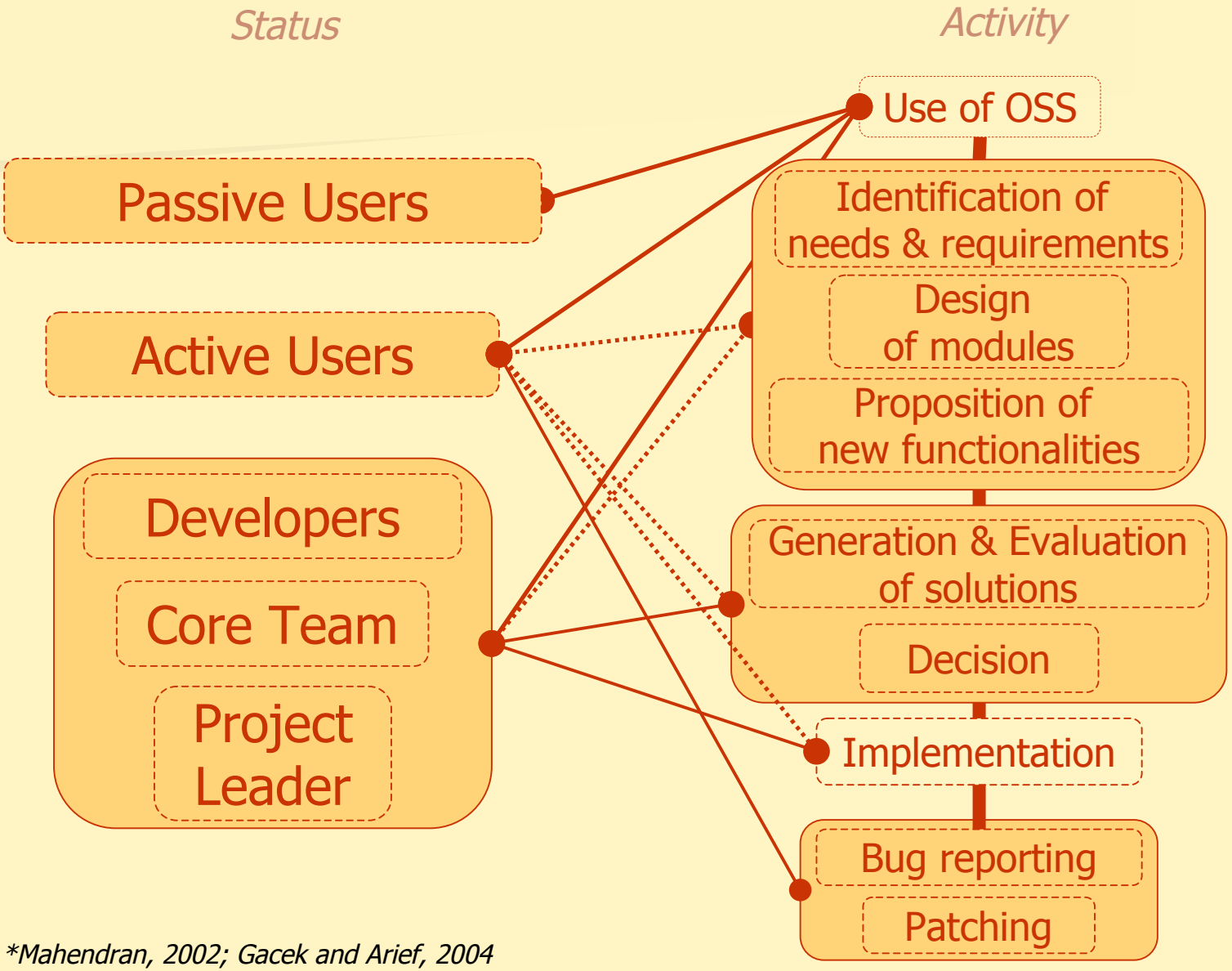
Status and Activities in OSS design



*Mahendran, 2002; Gacek and Arief, 2004

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“Many Eyeballs looking for the Problems”*

- Users-developers highly skilled in computer science
- Users’ involvement presented as the main force of OSS design model
  - Bug reporting
  - Patching
- *Users as designers*
  - Proposition, evaluation and decision regarding *new functionalities*
  - Design and diffusion of customized *modules*
- Interests of the focus on users
  - To make evolved user centered design methodologies
  - To better support users participation in OSS design

**ES Raymond*

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Research strategy

- Focus on design of new functionalities and on the *Python Enhancement Proposal (PEP) process* to have a global view of what is happening
  - From the idea of evolution proposed by users and/or developers
  - through its acceptance within the community,
  - To its specification and its implementation
- Methodology
  - Analyses of the two main mailing-lists of Python (python-dev and python-list)
  - Analyse of weblogs
  - Interviews with Python users in France

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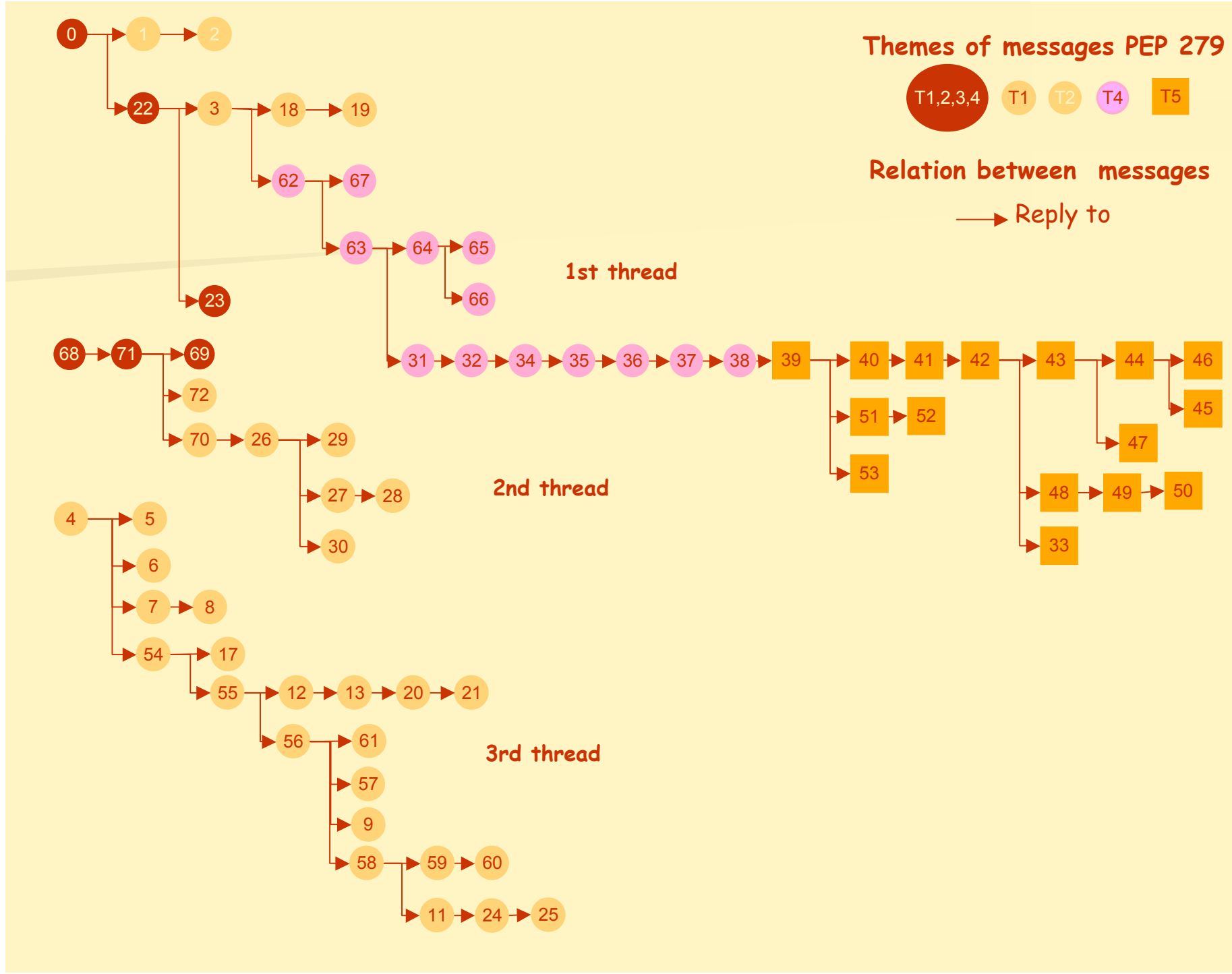
Python-dev discussions around PEPs

- Objectives
  - To understand and to model the dynamic of the PEP process
    - Thematic coherence and online design discussions dynamic
    - Temporality of discussions
    - Assigned roles influence on the design process
  - To propose a new way for representing online discussions
- Analysis of two discussions around PEPs (279 - 285)
  - On the basis of quotation practices in on-line discussions as a relevant link to maintain the coherence between messages

Results 1st study

- Thematic coherence and online design discussions dynamic
- Temporality of discussions
- Assigned roles influence on the design process


Themes of messages PEP 279
T1,2,3,4
T1
T2
T4
T5
Relation between messages
Reply to
1st thread
2nd thread
3rd thread
0
1
2
22
3
18
19
62
67
63
64
65
66
23
68
71
69
72
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26
29
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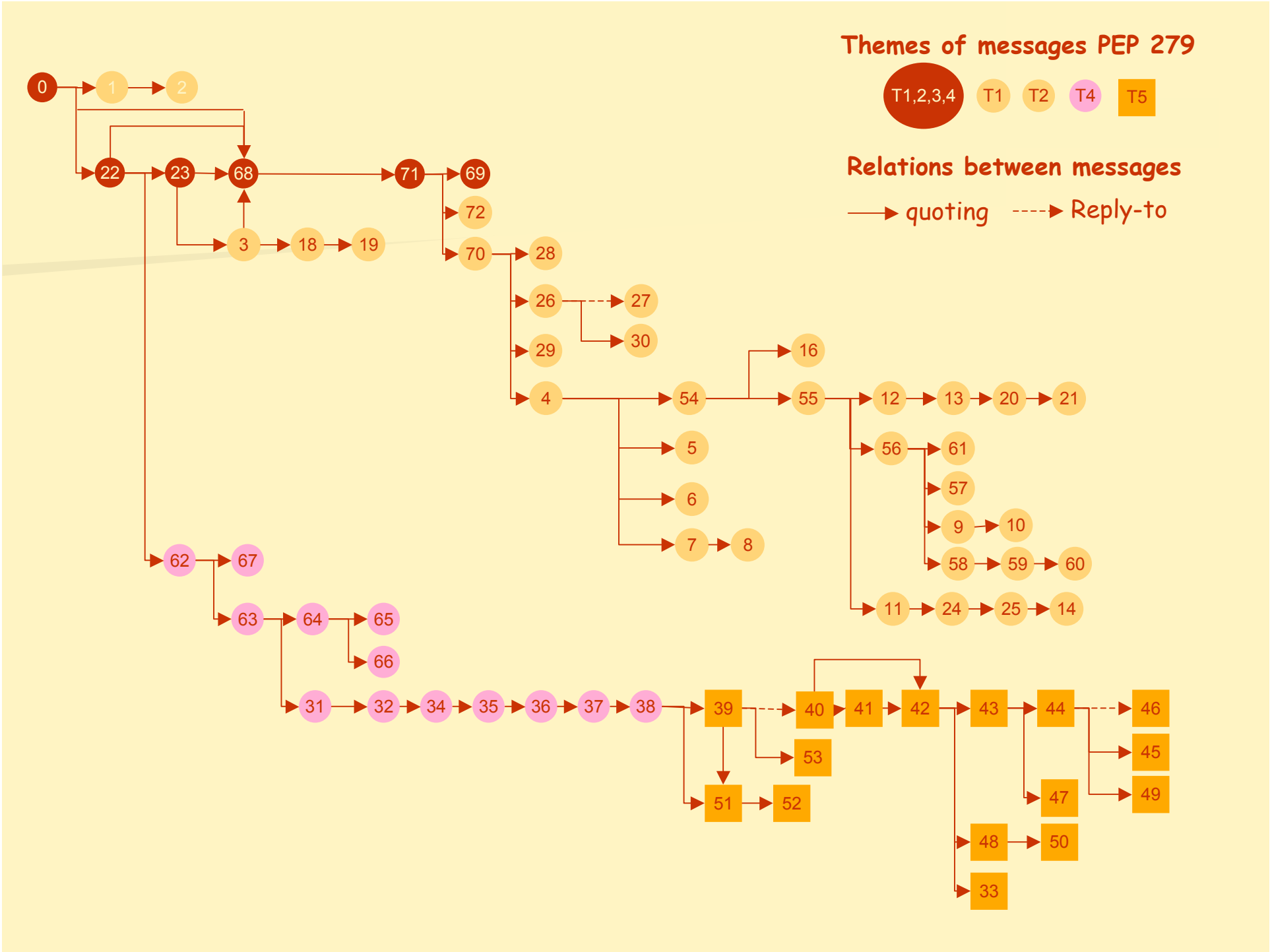
Themes of messages PEP 279
T1,2,3,4
T1
T2
T4
T5
Relations between messages
quoting
Reply-to
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68
71
69
72
3
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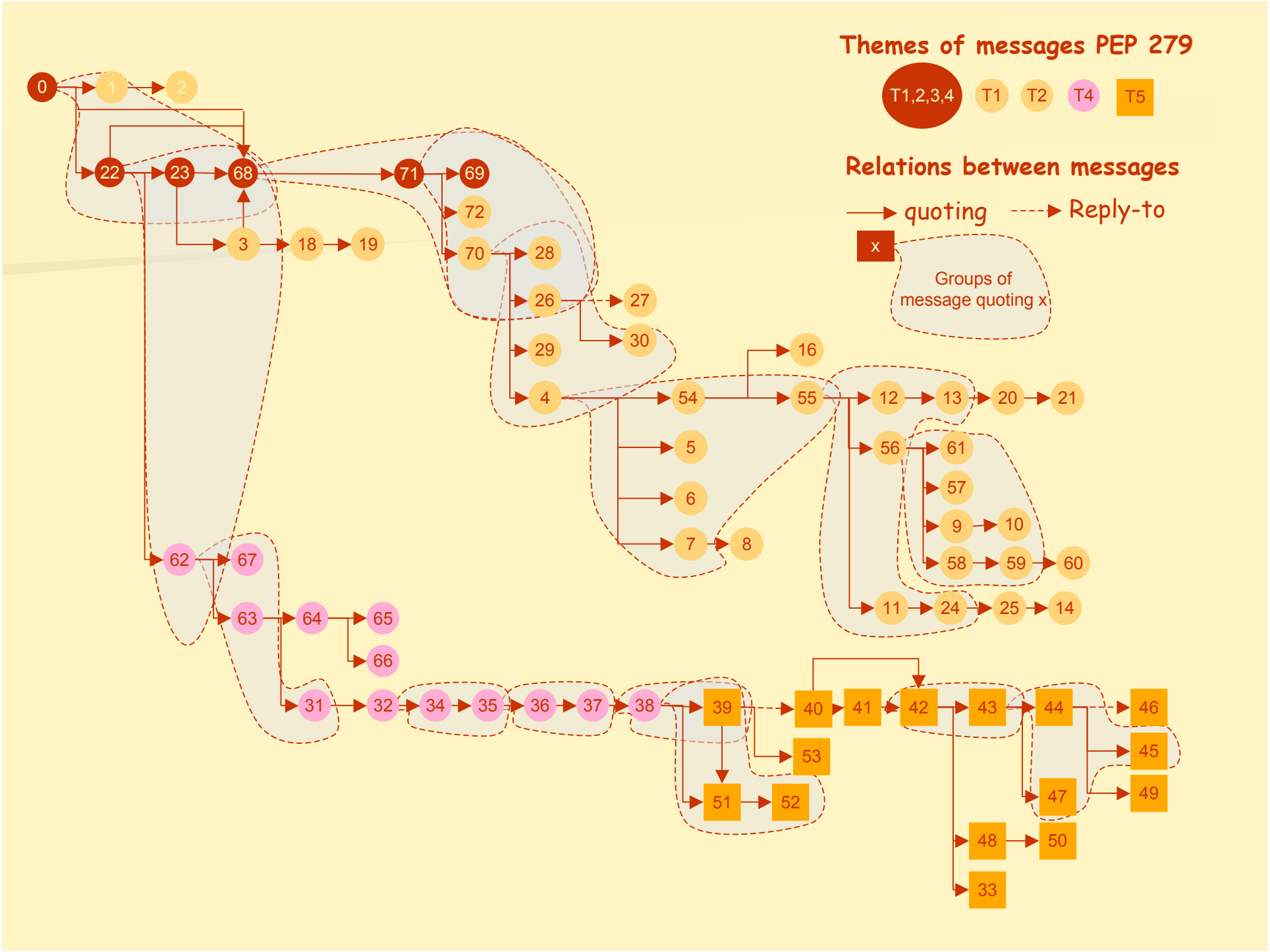
Themes of messages PEP 279
T1,2,3,4
T1
T2
T4
T5
Relations between messages
quoting
Reply-to
x
Groups of message quoting x
0
1
2
22
23
68
71
69
72
3
18
19
70
28
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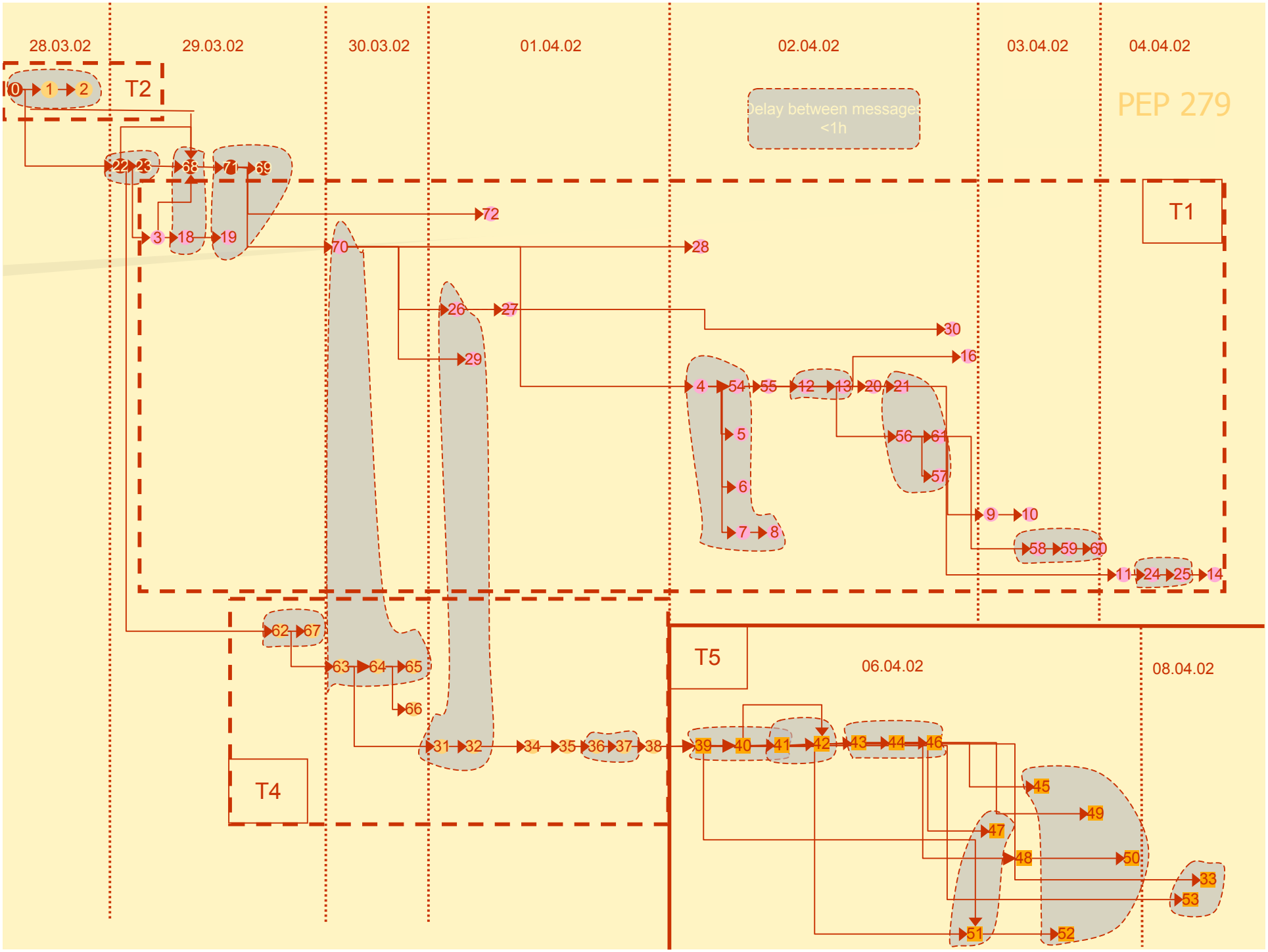
28.03.02
29.03.02
30.03.02
01.04.02
02.04.02
03.04.02
04.04.02
PEP 279
Delay between messages
<1h
T1
T2
T4
T5
06.04.02
08.04.02
0
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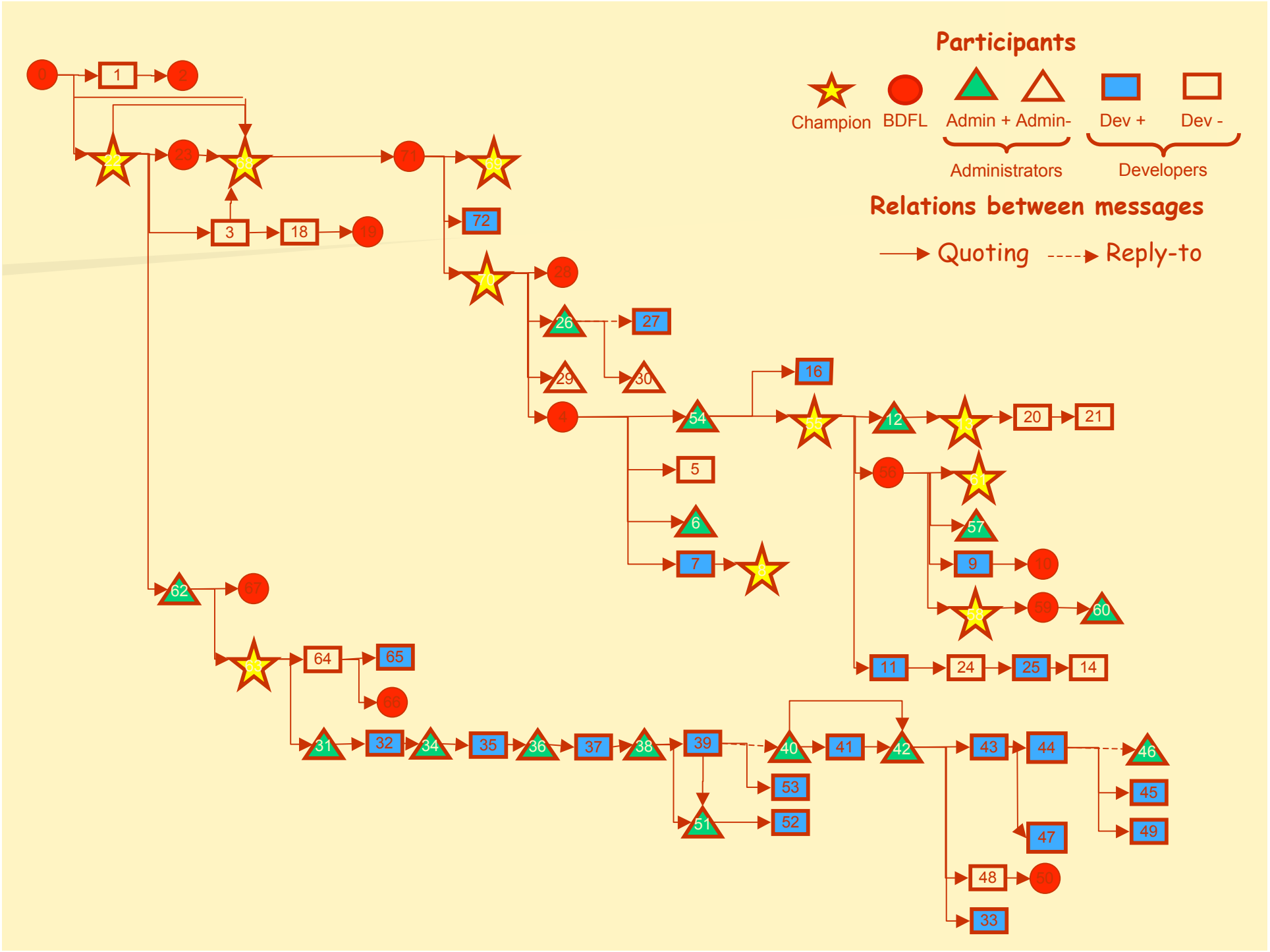
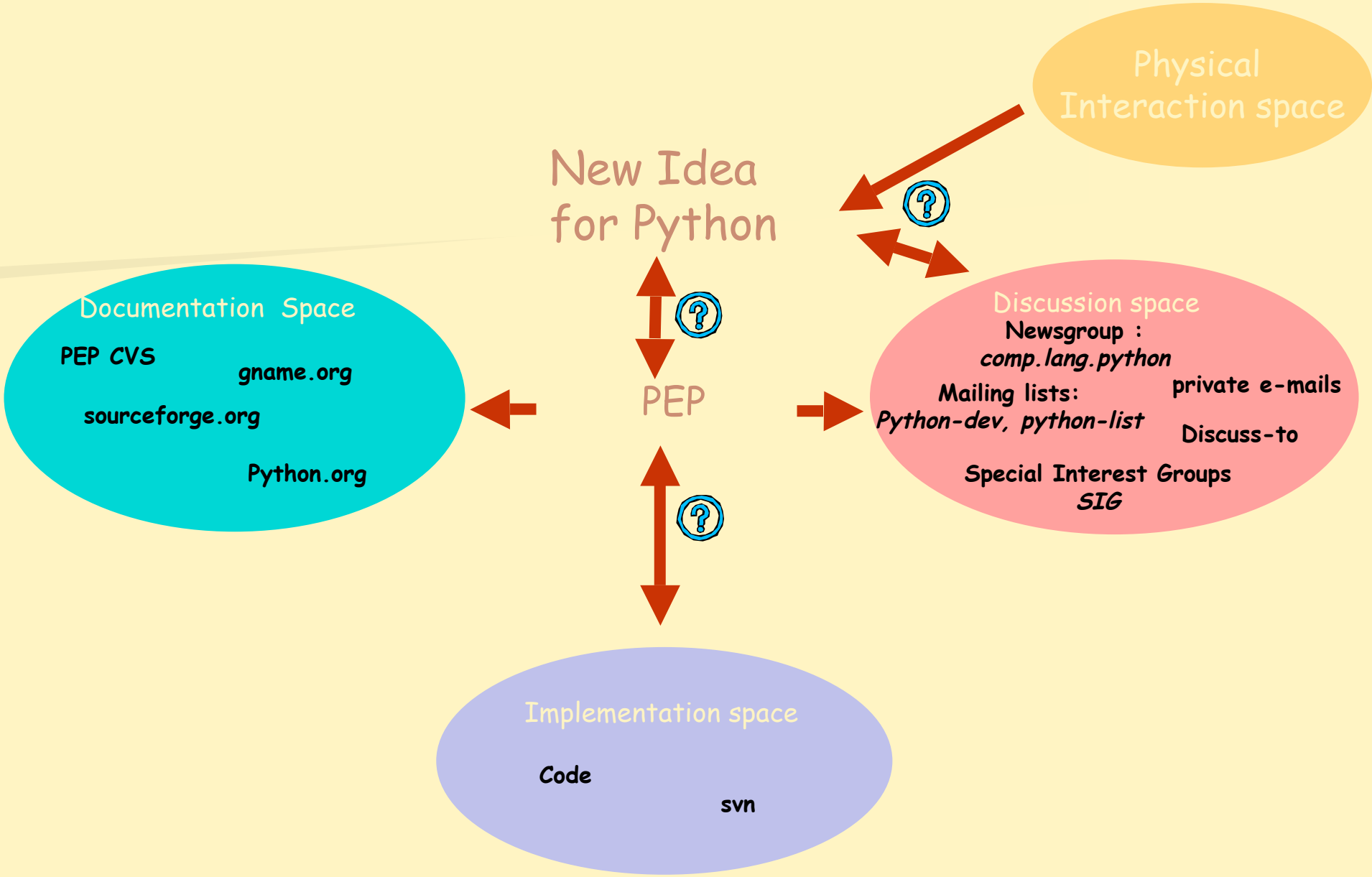
Results 1st study

- Thematic coherence and online design discussions dynamic
- Temporality of discussions
- Status influence on the design process


Participants
Champion
BDFL
Admin +
Admin-
Dev +
Dev -
Administrators
Developers
Relations between messages
Quoting
Reply-to

Conclusion 1st study

- New approach to visualize online discussions
  - Thematic coherence is better preserved by a quoting representation
  - Specific positions in the graph
- Dynamic of discussions and PEP process on python-dev
  - Discussions less asynchronous than expected
  - Influence of the social rules of OSS communities
  - Focalization and boosting of the discussions
  - Project leader and champion roles correspond to their status
  - Complementarity of project leader and administrators roles
  - Supervised discussions but not closed ones


Physical
Interaction space
New Idea
for Python
Documentation Space
PEP CVS
gname.org
sourceforge.org
Python.org
PEP
Discussion space
Newsgroup :
comp.lang.python
Mailing lists:
Python-dev, python-list
private e-mails
Discuss-to
Special Interest Groups
SIG
Implementation space
Code
svn

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Analysis of Python-list and Python-dev

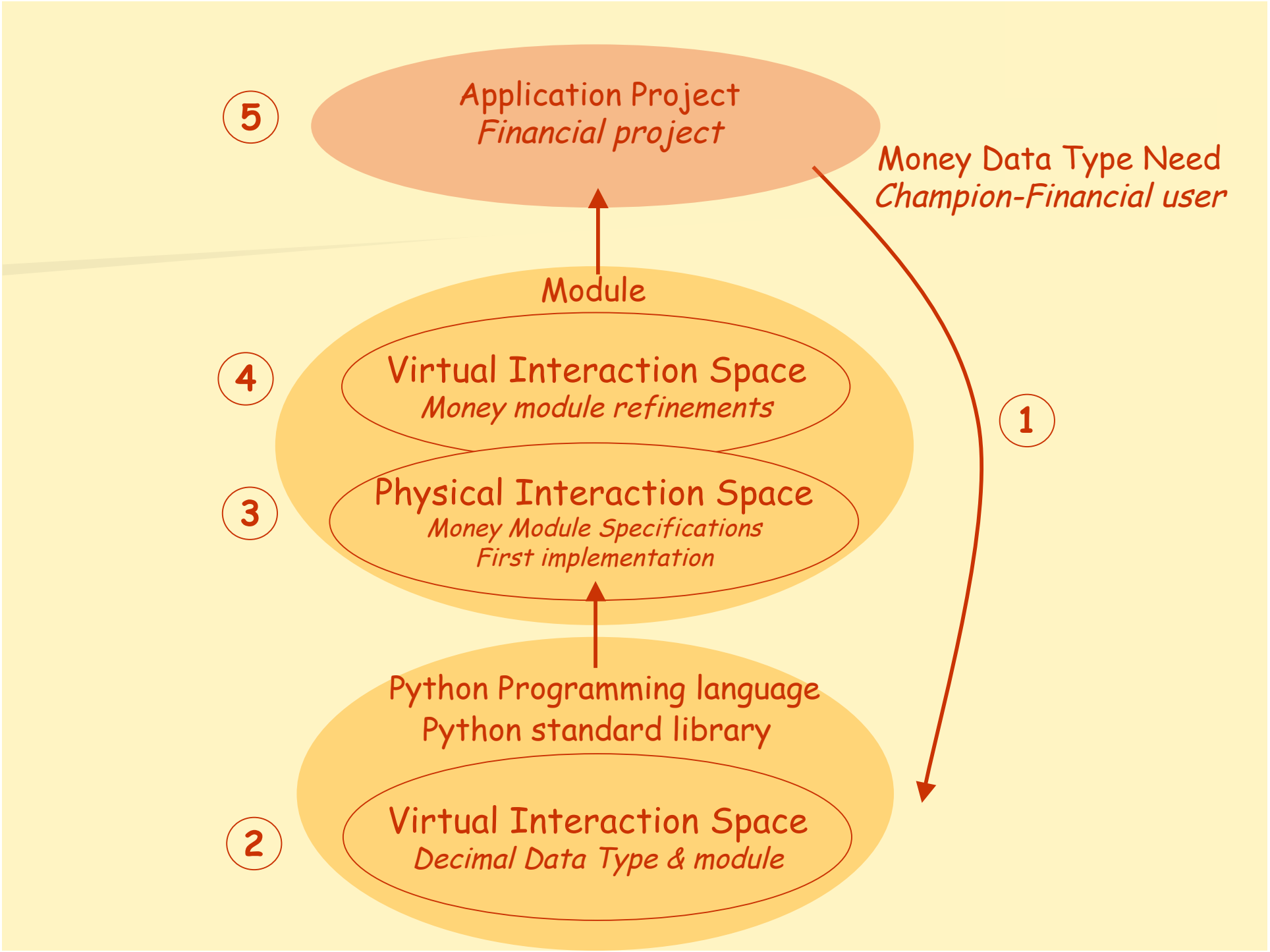
- Focus on all active participants *(users, developers, administrators)*
  - By whom do the *new idea for Python* are elaborated and discussed?
  - In which spaces (mailing-list or others spaces) do this happen?
  - What are the forms of participation
    - during the elicitations of needs and requirements?
    - during the design process of these new functionalities?
  - Are they key participants that are linking users and administrators-developers communities or support new idea?

Results A pushed-by-users PEP

- *PEP 327* introduction of a decimal data type in Python in Python 2.4
  - Decimal module
  - Money module

- Proposition of introduction of a money data type proposed by Facundo Batista (and others before) in October 2003 for financial application

- Evolution to a decimal data type during discussions in python-dev
  - PEP327-Temporal-design-process.ppt


5
Application Project
Financial project
Money Data Type Need
Champion-Financial user
Module
4
Virtual Interaction Space
Money module refinements
1
3
Physical Interaction Space
Money Module Specifications
First implementation
Python Programming language
Python standard library
2
Virtual Interaction Space
Decimal Data Type & module

Conclusion A pushed-by-users PEP

- Specialization of discussions in python-dev and python-list
- Process distributed between the online and the physical spaces
- *Cross-participants* as links between the two lists and maybe different communities
- Support the champion received

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Further works

- What occurred before the first post by the user-champion in the Python Interactions spaces (with private e-mails or IRC for instance)?
- What are the form of participations during the phase of specification of the PEP (participants involved and the nature of activities)?
  - Support, cross-participants
- Extension to other pushed-by-users PEP in the Python project, or in other OSS project
- Python at the core of a galaxy of related application domain modules and projects

Thank you for your attention!

Questions

Feedback