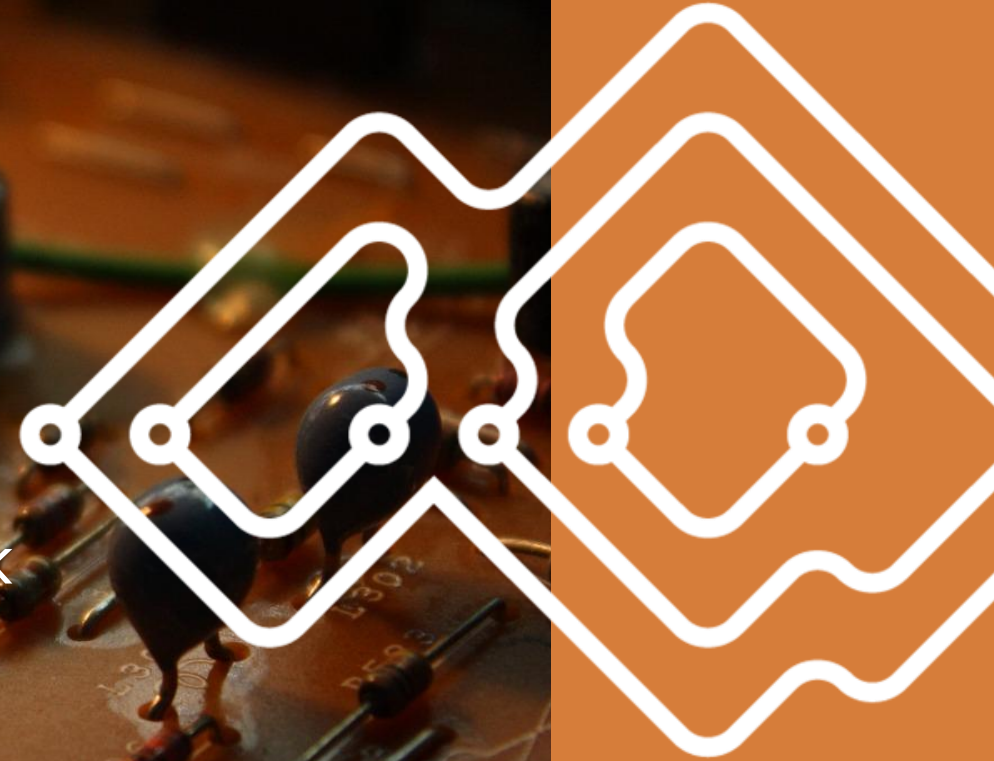


Measuring the contribution of peer communities to sustainable innovation

J. Peuckert, F. Kern, J. Pohlisch, J.-P. Mesenbrock
IST2021, 6th of October 2021

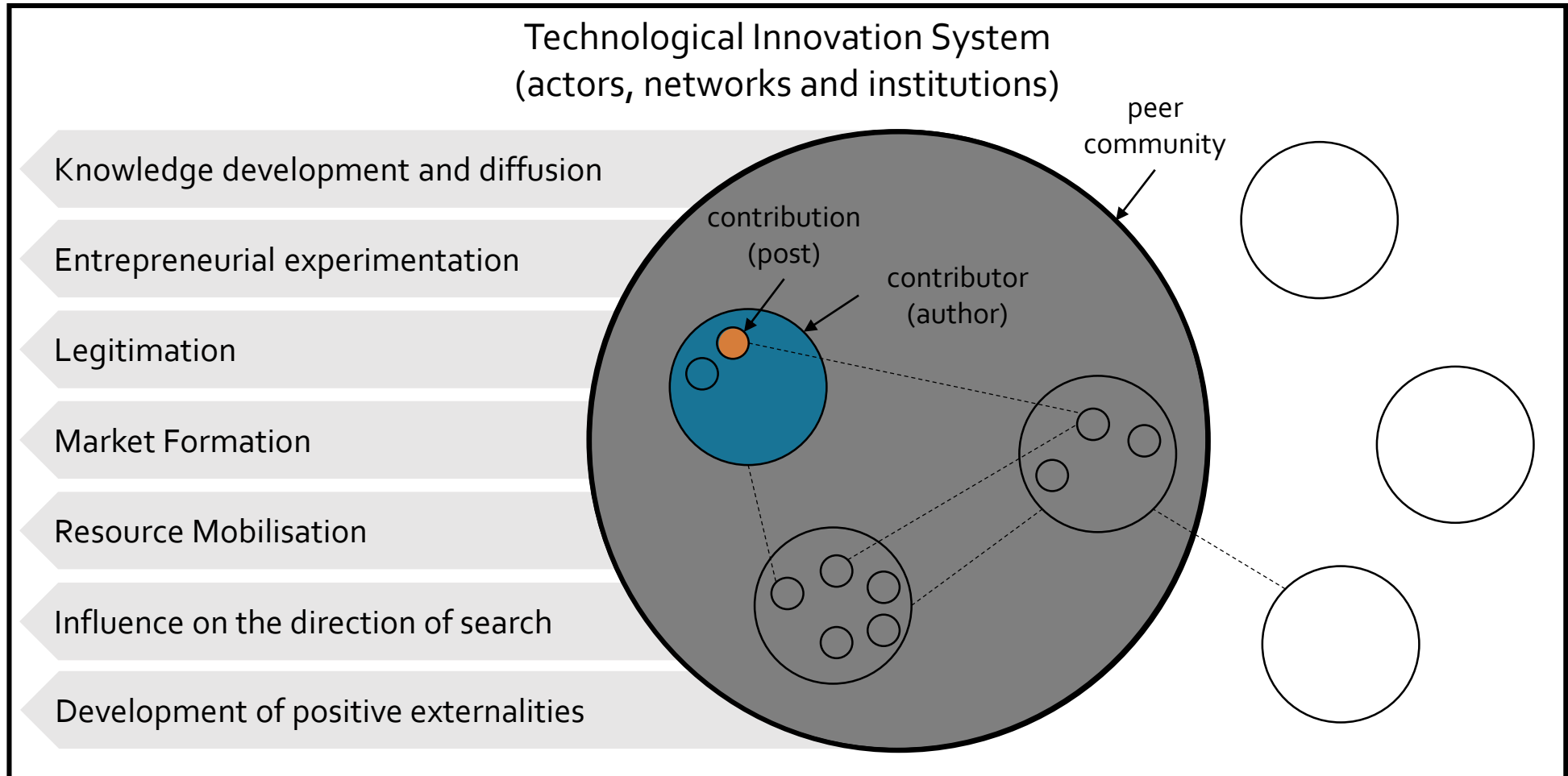
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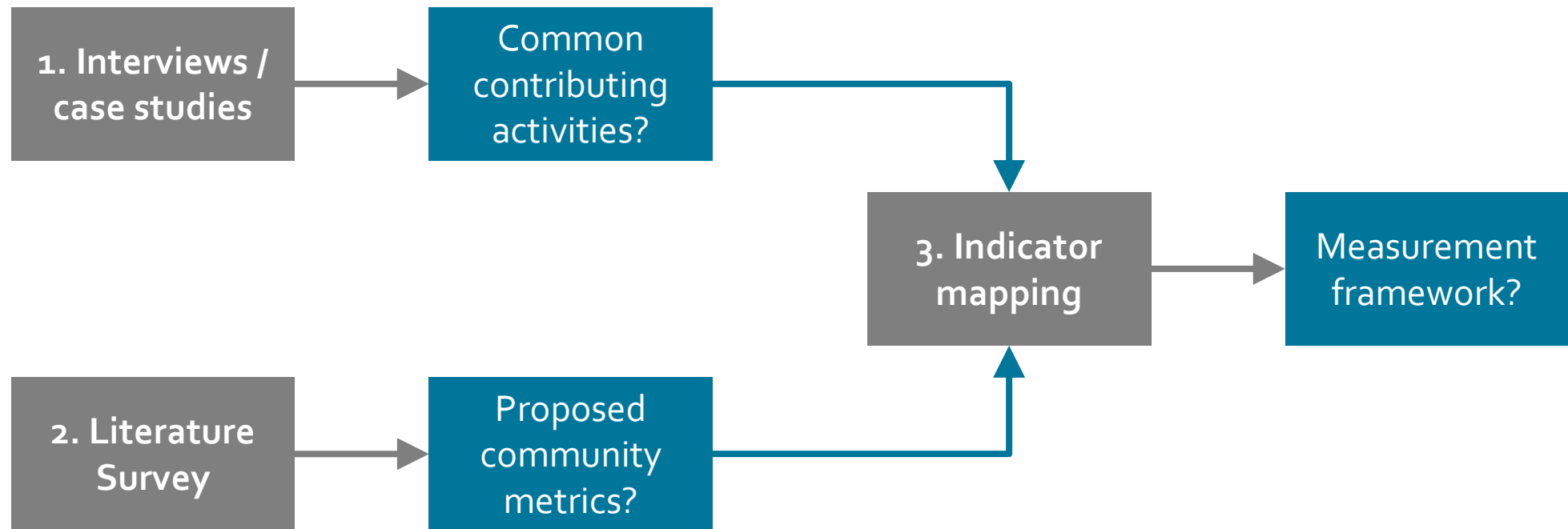
Peer Innovation?

- Definition:
 - a specific mode of household sector innovation (as opposed to business) where actors are self-motivated and collaborate via online platforms
- How peer communities advance sustainable innovation?
 1. How online communities contribute to development, diffusion and use of sustainable solutions?
 2. How can the data available in online community forums be used to measure this contribution?

Theoretical Framework



Methodological Steps



Case Studies

Oem

OpenEnergyMonitor (OEM)

open-source electronic tools
for monitoring
energy consumption

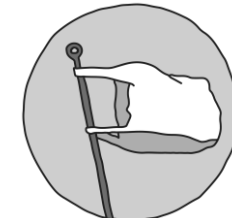
3.200 contributors
65.000 posts
since 2016



OpenStreetMap (OSM)

open maps and free editable
geographic database

22.000 contributors
806.000 posts
since 2006



Precious Plastic (PP)

open-source machines
to reuse and creatively recycle
plastic waste

4.700 contributors
37.000 posts
since 2013

Contributing Activities

Resource mobilisation

investing time and effort
posting, reading and evaluating ideas
experimenting and documenting experiences

Knowledge development and diffusion

working on solutions
sharing ideas and experiences
suggesting improvements

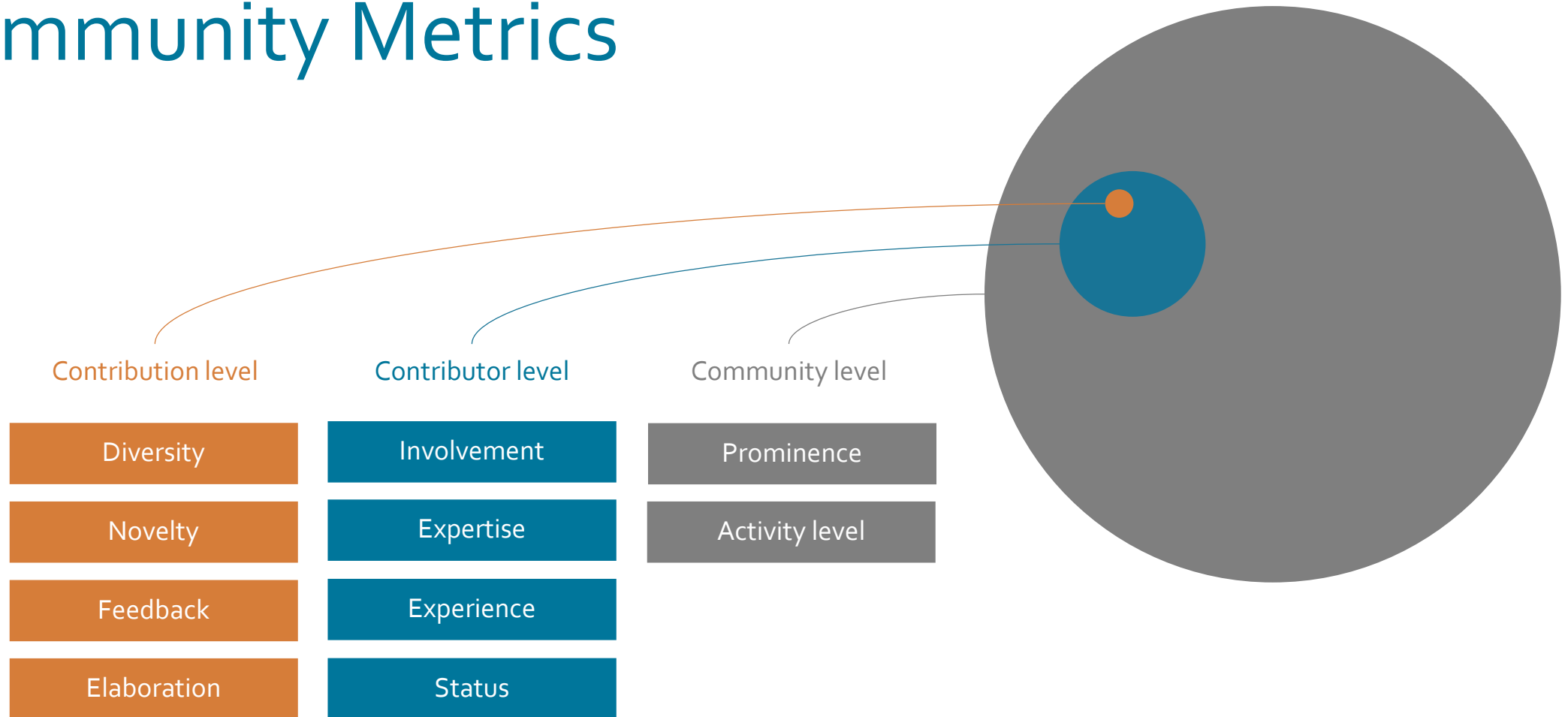
Development of positive externalities

creating free tutorials
offering technical support and workshops
assembling starter-kits

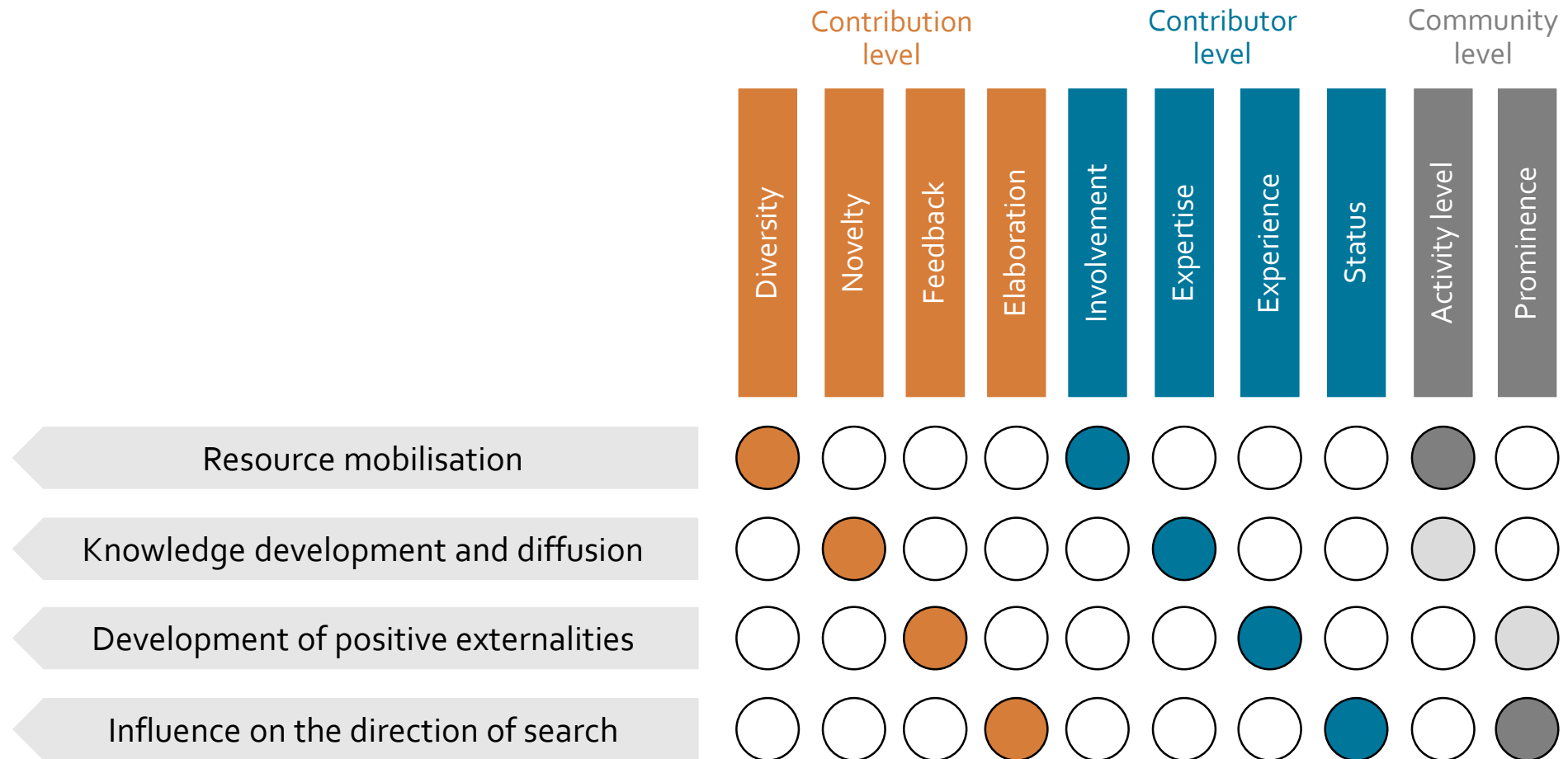
Influence on the direction of search

responding to community feedback
building status and reputation
establishing de-facto standards

Community Metrics



Indicator Mapping



Measurement Framework

- How can contributions to the TIS functions be measured?

	Community-level indicators	Contributor-level indicators	Contribution-level indicators
RM	Activity level of community (e.g. number of same-day submissions)	Prior involvement of author (e.g. number of prior posts)	Diversity of knowledge (e.g. number of collaborators)
KDD		Expertise of author (e.g. commenting intensity)	Novelty of contribution (e.g. text-based comparison to previous contributions)
PE	Prominence of community (e.g. Google search ranking)	Experience of contributor (e.g. time spent in the community)	Community feedback (e.g. number of likes)
IDS		Status of contributor (e.g. community badges)	Elaboration of post (e.g. number of words)



Summary

1. Empirical analysis of open-source communities
 - We identify key processes and dynamics within peer communities that contribute to technological development and diffusion.
2. Survey and mapping of indicators
 - We propose how innovation processes within peer communities can be measured along TIS functions.
3. Contribution to the measurement of peer innovation
 - We propose how the data available in online community forums can be used to measure peer innovation.

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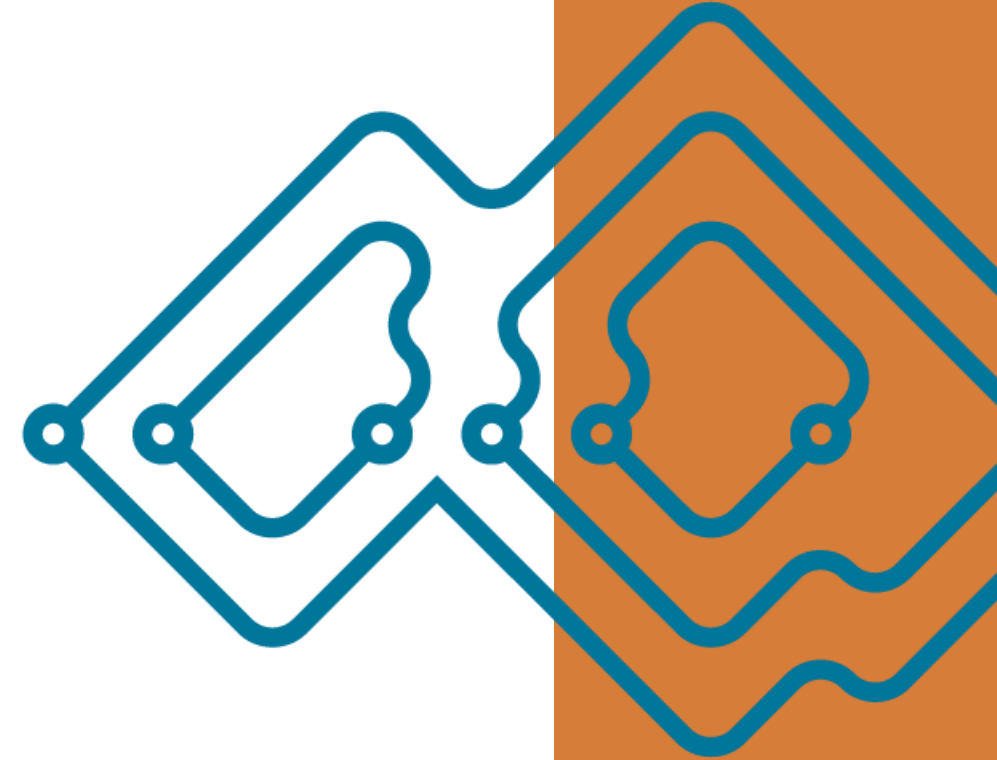
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