

# The organization of open source communities

**A first introduction**

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# Many different terms for very similar things

- Free software
- Open source software
- Libre software
- Free, Libre and Open Source Software (FLOSS)

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# Open source communities: a number of characteristics

- The basics of software (source code) is available to users of the software
- The source code can be modified by anyone
- The communities are groups of people who cluster around one piece of software

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# Who are the developers? A founding father



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# Who are the developers?

## Some facts

- Typically white male
- Aged between 16 and 40
- High educational level
- 80% are somehow involved in the IT sector
- Developers mostly live in Europe and US
- Most of the developers spend less than 10 hours a week in the communities

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The information on this sheet is based on the Floss Survey:  
<http://www.infonomics.nl/FLOSS/report/>

# Developers have many different motives to participate

- To have fun
- Ideology
- Get paid
- To exchange knowledge
- Own need: 'to scratch an itch'

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# Open source communities are strange organizations

- Volunteers participate in its development
- Ownership and control are unclear
- Companies participate and are willing to open the basics of their products
- Much confusion and misunderstanding about open source communities

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“Open source is anarchy!”

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“Linus Torvalds, the benevolent dictator the whole community trusts”

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“Open source is communism”

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# Yet, open source communities are popular and successful

- Software dominates specific markets
- Many companies adopt open source
  - Garner predicts: impact of OSS in 2008 exceeds \$5 billion
- Governments and municipalities advocate the use of open source software
- Certain programs are qualitatively high

# Central question

*Hoe are open source communities organized?*

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# Three important characteristics

- Open source communities are highly decentralized, self-organizing
- Formal institutions cannot explain how open source communities are organized
- Developers want to achieve their own goals, which ensures a constant rise of innovation

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# Four aspects of the communities in more detail

- How are software development activities coordinated?
- How are conflicts solved?
- How are collective decisions made?
- What are the interfaces between the communities and the 'outside world'?

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# Coordination of software development activities

- Individualism is dominant

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“You have a pool of people who do what  
they want to do...

They work on what they run into.”

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An open source community is:

“a big ant colony.

You don't know what someone else is  
doing.”

# Mechanisms to relieve the need for coordination

- Elegance
- Modularity

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# Mechanisms to coordinate massive amount of individual effort

- Concurrent Versions System
- Bug-tracking system
- Manuals and coding style guides
- To-do lists
- Orphanage
- Added text in the source code
- Small and incremental patches

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# A high potential for conflicts

- A high level of diversity between developers
- Developers are professionals
- Developers need others
- Mediation and arbitration have a limited role

→ Many conflicts

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Quotes

# Deflecting conflict: parallel development lines

- New heads in the CVS
- A stable and experimental development line
- A commercial development line
- Python in a tie

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“It seems like there are often  
2 different ways of tackling a problem  
and people try both.”

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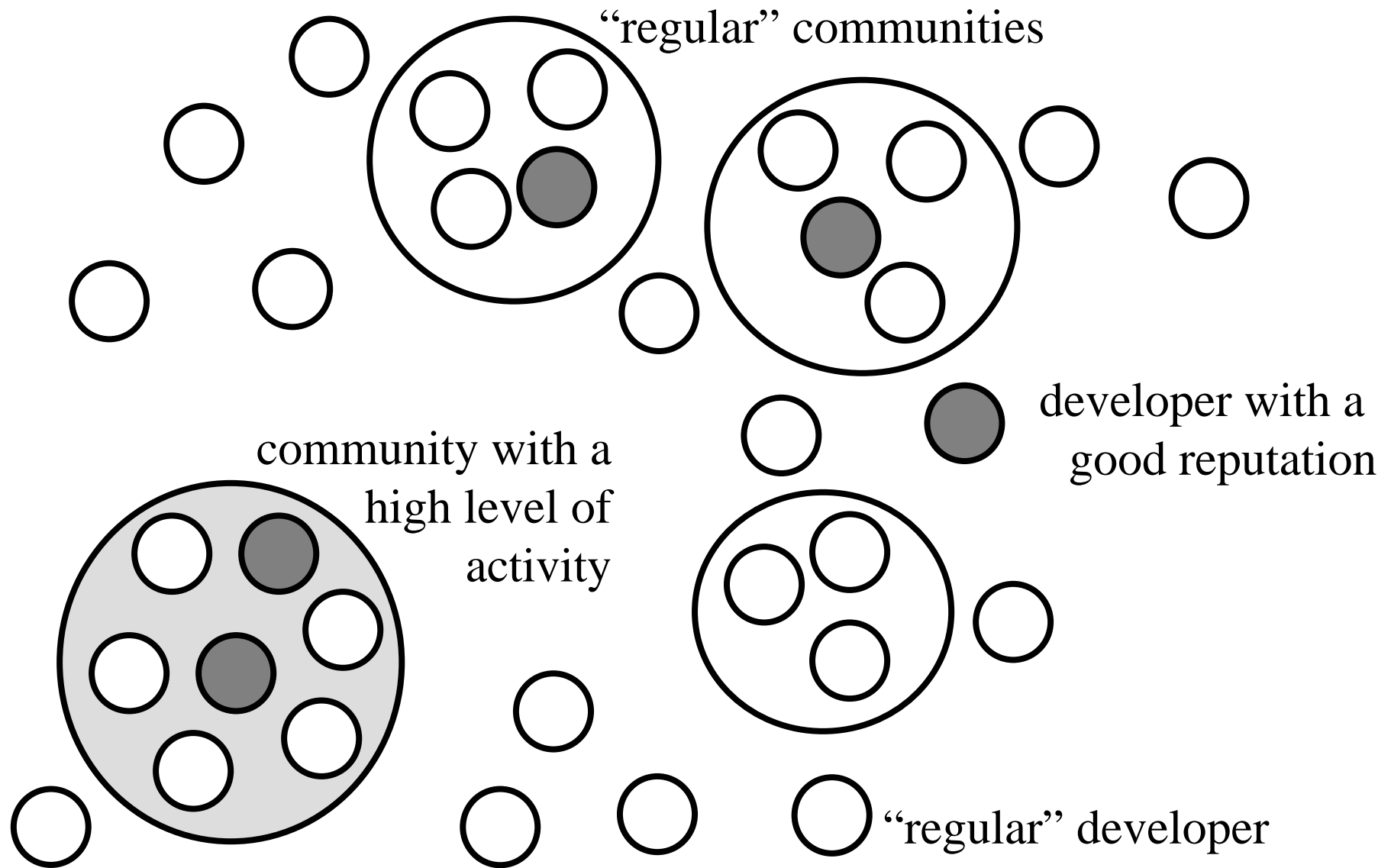
 **TU**Delft

# Collective decision making

- Limited influence of leadership and voting systems
- Many choices are made without having the 'check under the hood'
- Many attractors to replace informed choices, e.g.
  - the level of activity in a project
  - reputation

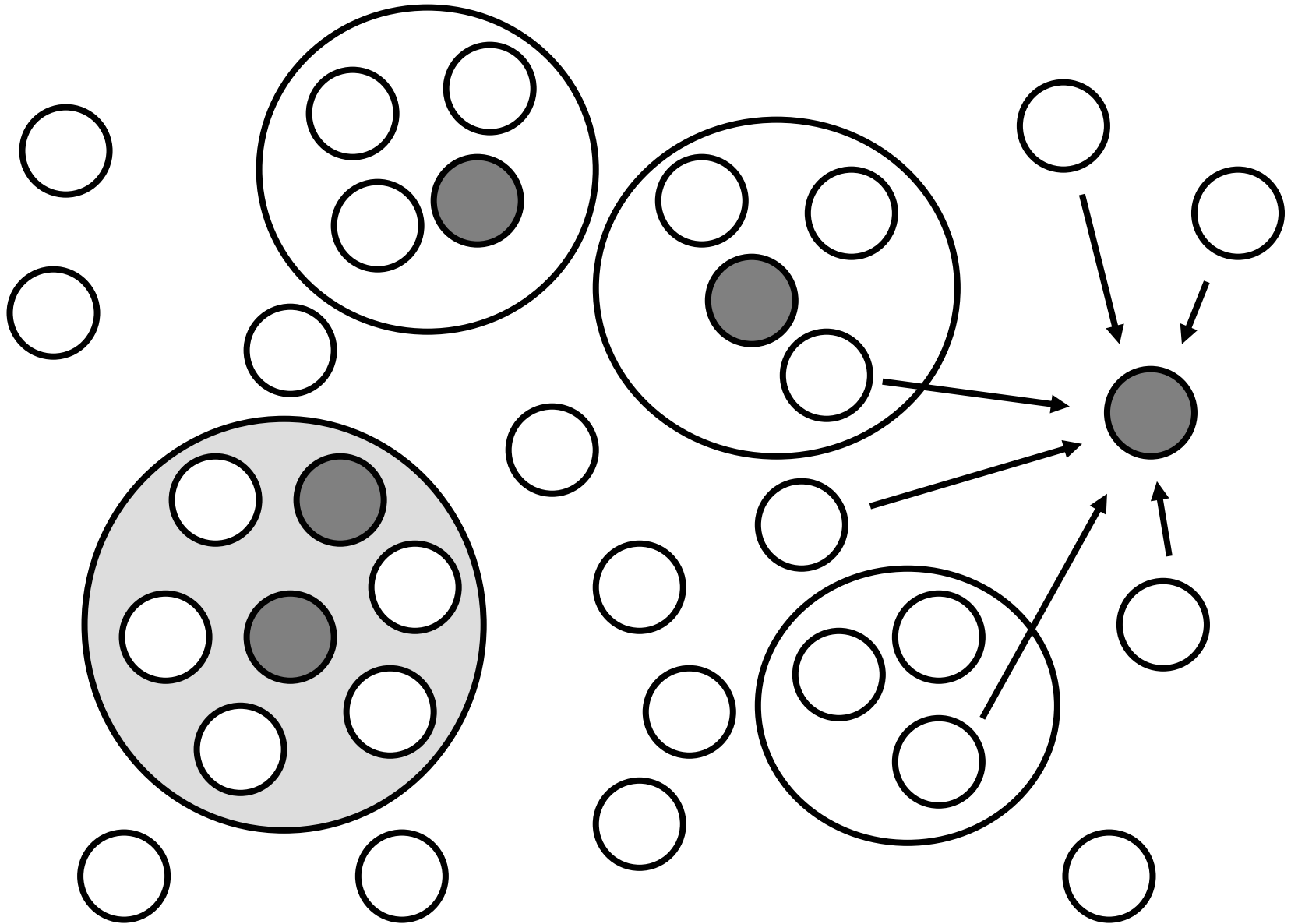
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Quote

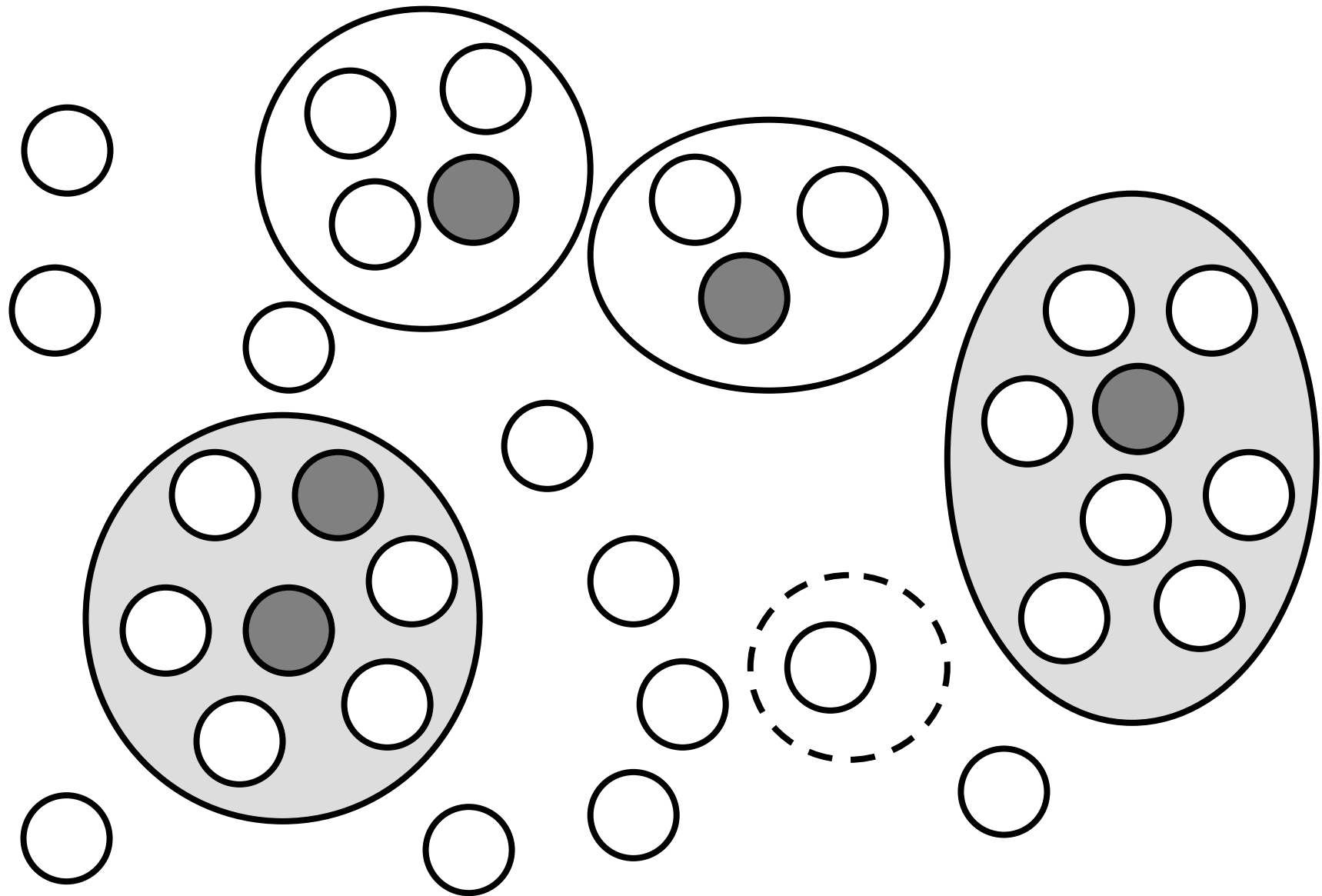


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# Interfaces between communities and 'outside world'

- Open source is ill-understood
  - Uncertainty & doubt about open source
- Open source communities face pressures
  - Patents
  - Adoption in commercial settings

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# Boundary spanners & protection measures

- Project leaders
- News sites
- Companies
- Open source licenses
- Foundations
- Developer's Certificate of Origin

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# Open source licenses

- Enormous variety in licenses
  - More than 48 distinct licenses
- Three most popular licenses
  - General Public License
  - Lesser General Public License
  - Berkeley Software Distribution License
- Licenses are dynamic

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Licenses

# Foundations

- Many open source foundations, e.g.
  - Free Software Foundation
  - Apache Software Foundation
- Foundations serve a number of goals:
  - To 'host' a community
  - To maintain one or more licenses
  - To evaluate the openness of licenses

# Developer's Certificate of Origin

By making a contribution to this project, I certify that:

- a) The contribution was created in whole or in part by me and I have the right to submit it under the open source license indicated in the file; or
- b) The contribution is based upon previous work that, to the best of my knowledge, is covered under an appropriate open source license and I have the right under that license to submit that work with modifications, whether created in whole or in part by me, under the same open source license (unless I am permitted to submit under a different license), as indicated in the file; or
- c) The contribution was provided directly to me by some other person who certified (a), (b) or (c) and I have not modified it.

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# Three important characteristics

- Open source communities are highly decentralized, self-organizing
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- Developers want to achieve their own goals, which ensures a constant rise of innovation



# The implications

- Open source communities are innovative
- Innovation in open source communities requires redundancy
- Although the level of innovation is impressive, the underlying organizational model is surprisingly simple
- Although the model is simple, we cannot control open source communities
- Although the model is simple, it is doubtful whether we can purposefully design open source communities

*Questions?*

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*Questions?*

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# Differences between the licenses

	Required to open distributed code	'Viral' character
<b>GPL</b>	Yes	Yes
<b>LGPL</b>	Yes	No
<b>BSD license</b>	No	No

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“Decisions are made  
‘by those who are willing to do the work’”

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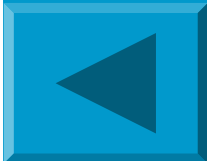


Cited from McCormick, 2003

‘One of the problems is  
that individuals who develop on Apache  
and come from Sun have deadlines.

This creates frustration  
when they need to work together  
with people who do it for fun.’

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‘People who have no cultural or language skills  
cause problems.

Native speakers would understand things  
that non-native didn’t understand  
and they would get pissed of.

They became counter-productive...’

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‘Rik van Riel and Andrea Arcangeli just don't get along...

Andrea said, “Your arguments are senseless.”

Rik finally took the bait, with,  
“I could say the same of yours if I let myself sink to that level...””

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