

Open Source Projects

Prof. Dr. Dirk Riehle

Friedrich-Alexander University Erlangen-Nürnberg

COSS C02

Licensed under [CC BY 4.0 International](#)

Agenda

1. Process definition
2. Project communities
3. Open source foundations
4. Vendor-led foundations
5. User-led foundations
6. Project life-cycle

1. Process Definition

The Other Definition of Open Source

“Open source is **a development method** for software that harnesses the power of **distributed peer review** and **transparency of process**. The promise of open source is better quality, higher reliability, more flexibility, lower cost, and an end to predatory vendor lock-in.” [O10]

Open Source Project (= People + Software)

- An open source project is
 - A piece of open source software
 - Developed by a community of people
 - Using the principles of open collaboration
- A community of people is a
 - Group of people independent of each other
 - That relate to and collaborate with each other
 - For a shared common goal of the software
- Apache's definition of independence
 - At least from three different legal entities
 - Legal entities = {legal person, natural person}
 - Called committer diversity

Open Collaboration [R+09]

- Open Collaboration

- Egalitarian
 - Open for contribution
 - Everyone can contribute
- Meritocratic
 - Public discussion process
 - Decisions based on merit
- Self-organizing
 - People find their process
 - People find their project

- Traditional Work

- Hierarchical
 - Closed and hidden silos
 - Assigned to project
- Status-based
 - Public + private discussions
 - Hierarchical status decides
- Assigned tasks
 - Prescribed process
 - Prescribed jobs

The Cathedral and the Bazaar [R99]

- The Cathedral

- Carefully crafted work
 - Performed by small group
 - Evolves slowly
- Bugs and problems are tricky, require deep analysis
- Project is led by command and control approach
- No early releases nor beta

- The Bazaar

- Incremental work
 - Performed by large group
 - Evolves rapidly
- Linus' law: "Given enough eyeballs, all bugs are shallow"
- Project is lead by convincing people, nudging them on
- "Release early, release often"

The Apache Way

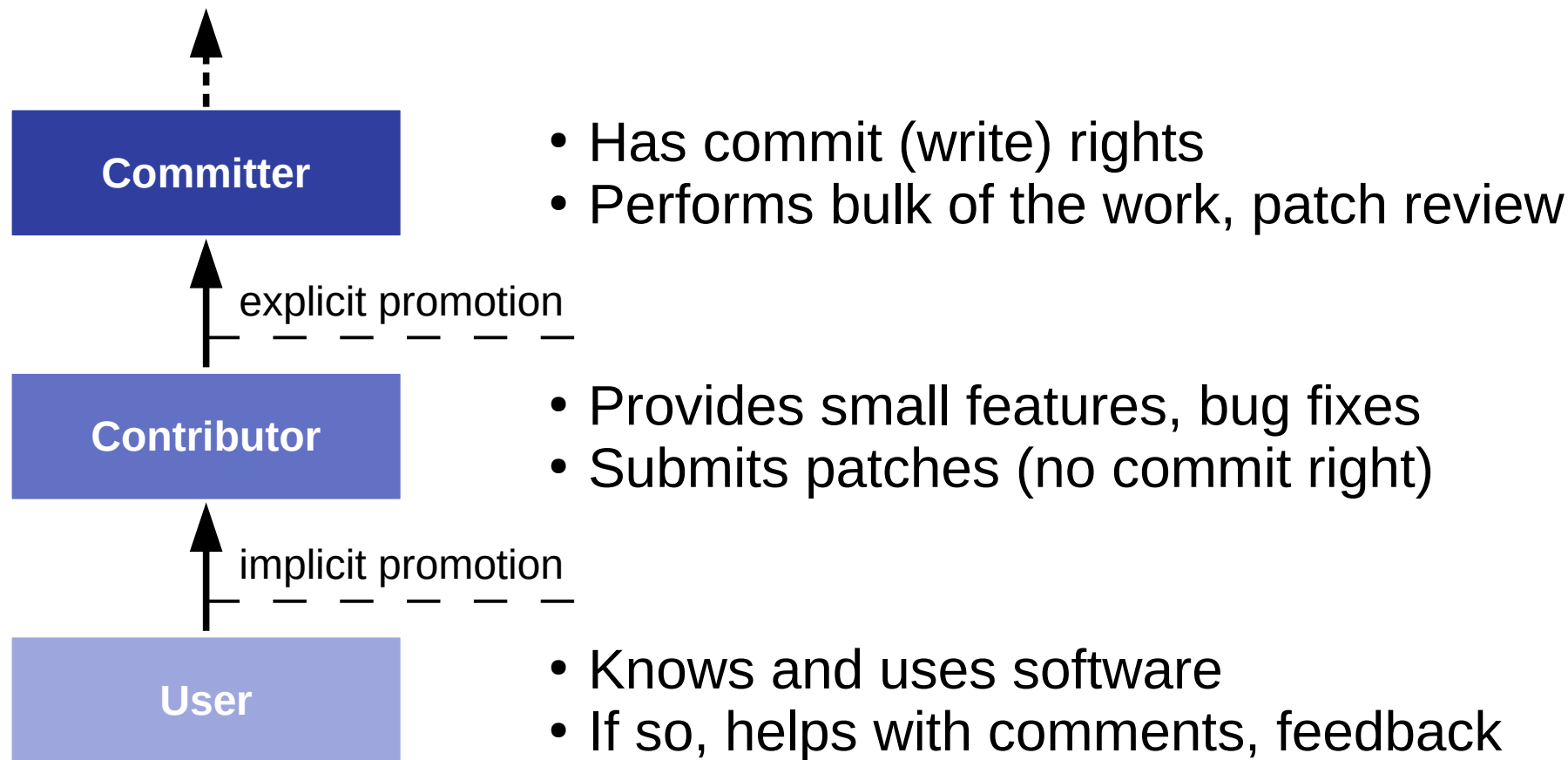
- Official [A10b]
 - Collaborative software development
 - Commercial-friendly standard license
 - Consistently high quality software
 - Respectful, honest, technical interaction
 - Faithful implementation of standards
 - Security as a mandatory feature
- Curcuru [C17]
 - Charity
 - Community
 - Consensus
 - Merit
 - Open
 - Pragmatic

2. Project Communities

Open Source Project Community

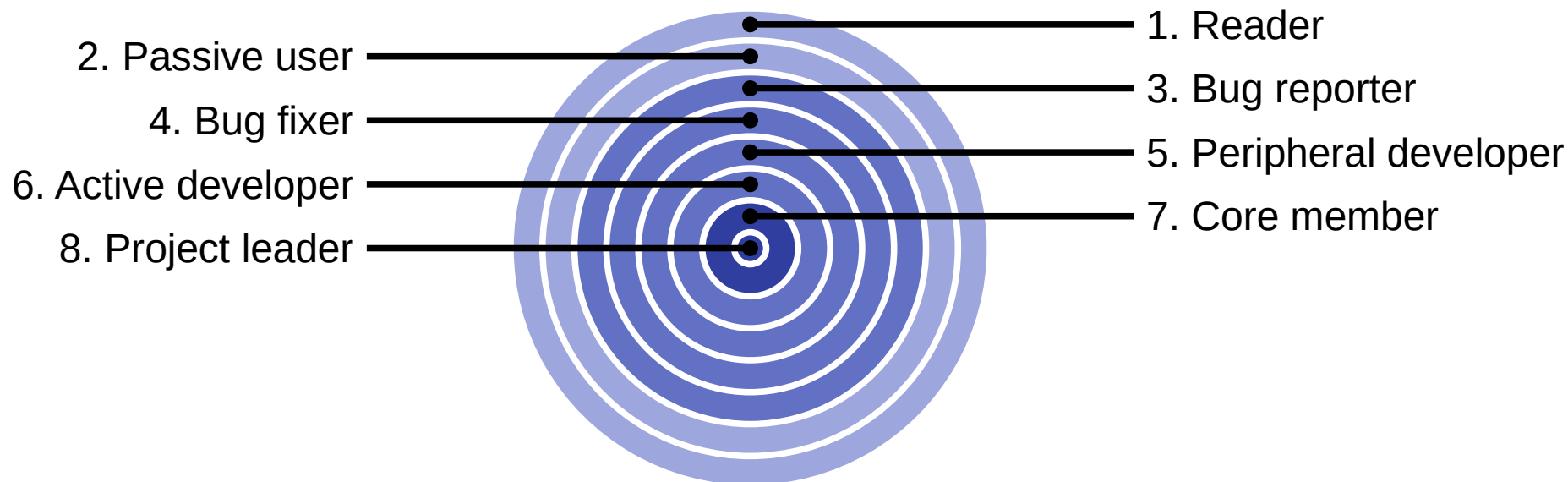
- An open source project community is
 - The group of people and companies engaged in an open source project
- The developer community is
 - The subset of the project community that is developing the software
- The user community is
 - The subset of the project community that is using the software

The Basic Career Path [R15a]



[1] Committers are also called “maintainers” (mostly in the Linux context)

The Onion Model [CH11]

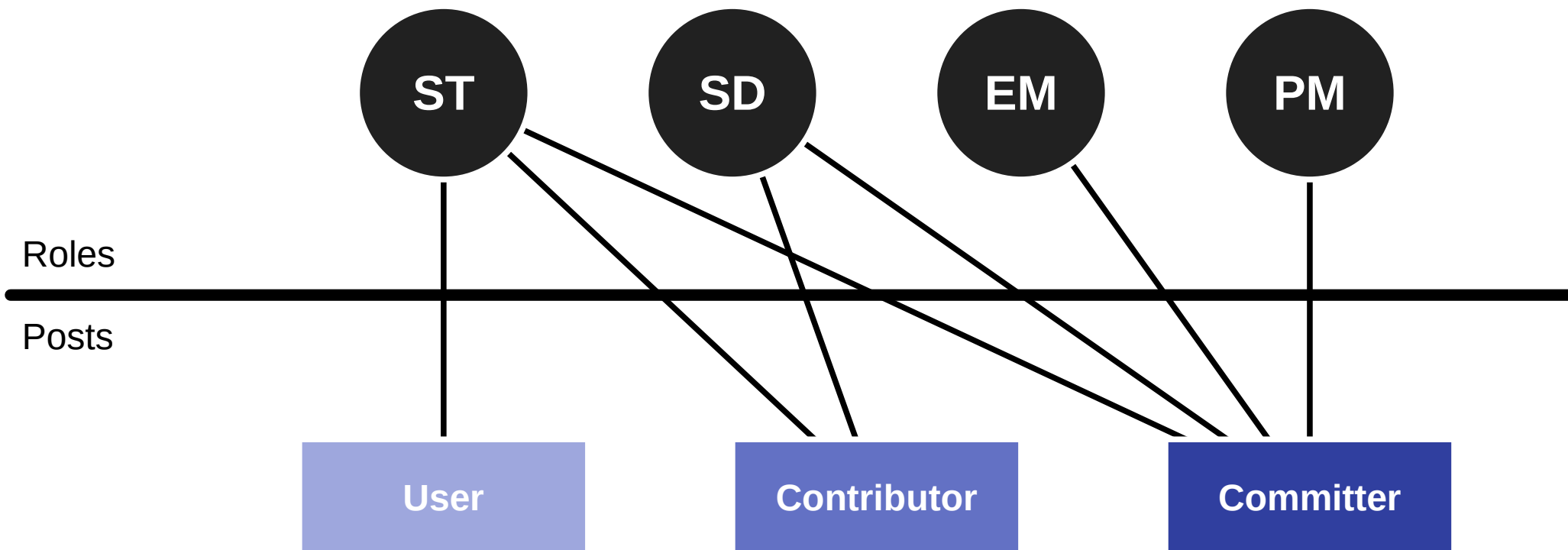


User

Contributor

Committer

Roles and Posts in Open Source Projects



ST = Software tester
SD = Software developer
EM = Engineering manager
PM = Product manager

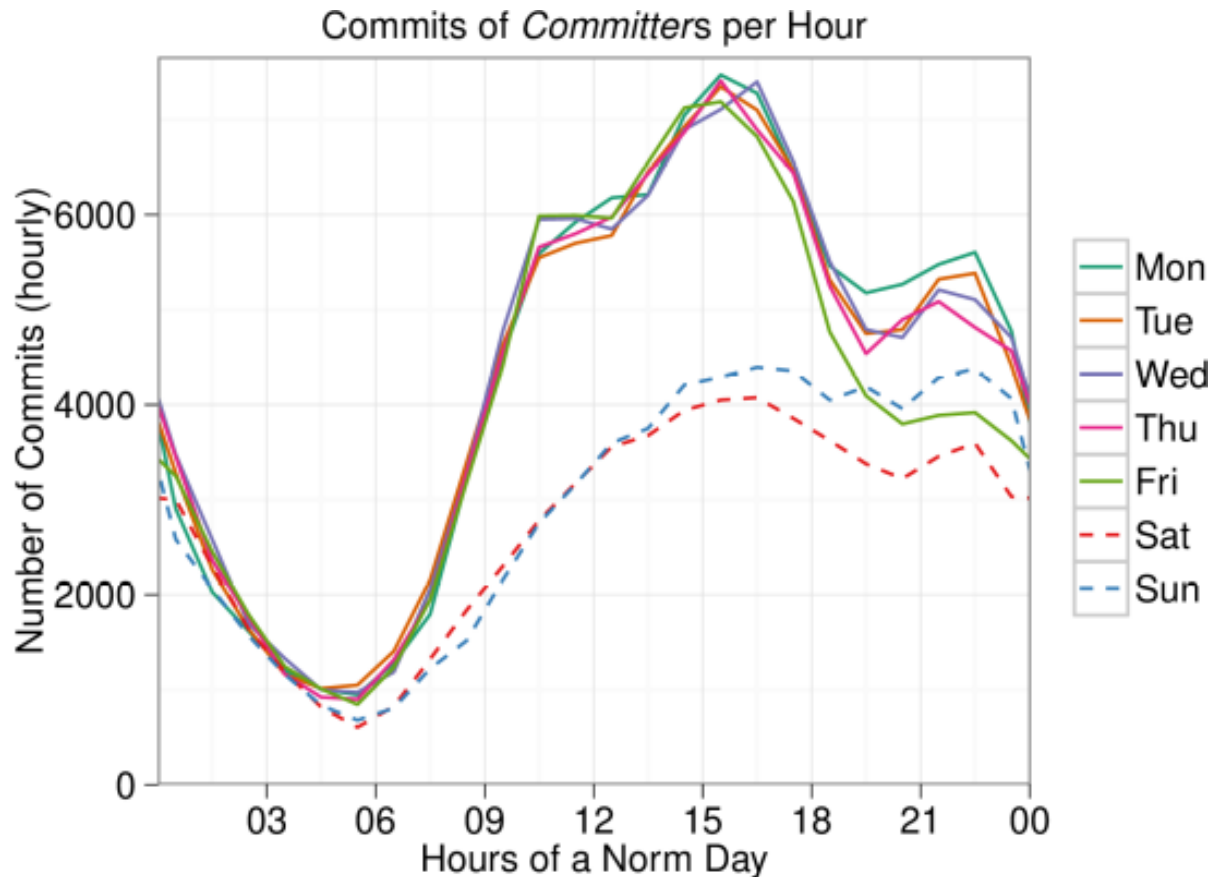
Open Source Project Governance

- Governance (recap)
 - Is the set of processes, practices, institutions, and roles used to lead and manage a social system
- **Open source project governance**
 - Is the governance of an open source project

Three Different Governance Models

- The BDFL Model
 - Hierarchical with strong code ownership
 - Example: The Linux kernel
- The Peer Group model
 - Core group of committers and evangelists
 - Example: The PostgreSQL RDBMS
- The Do-ocracy
 - Those who do, rule
 - Example: Tiki Wiki CMS Groupware

Daily and Weekly Work in Open Source Projects [R+14]



3. Open Source Foundations

Open Source Foundations [R10a]

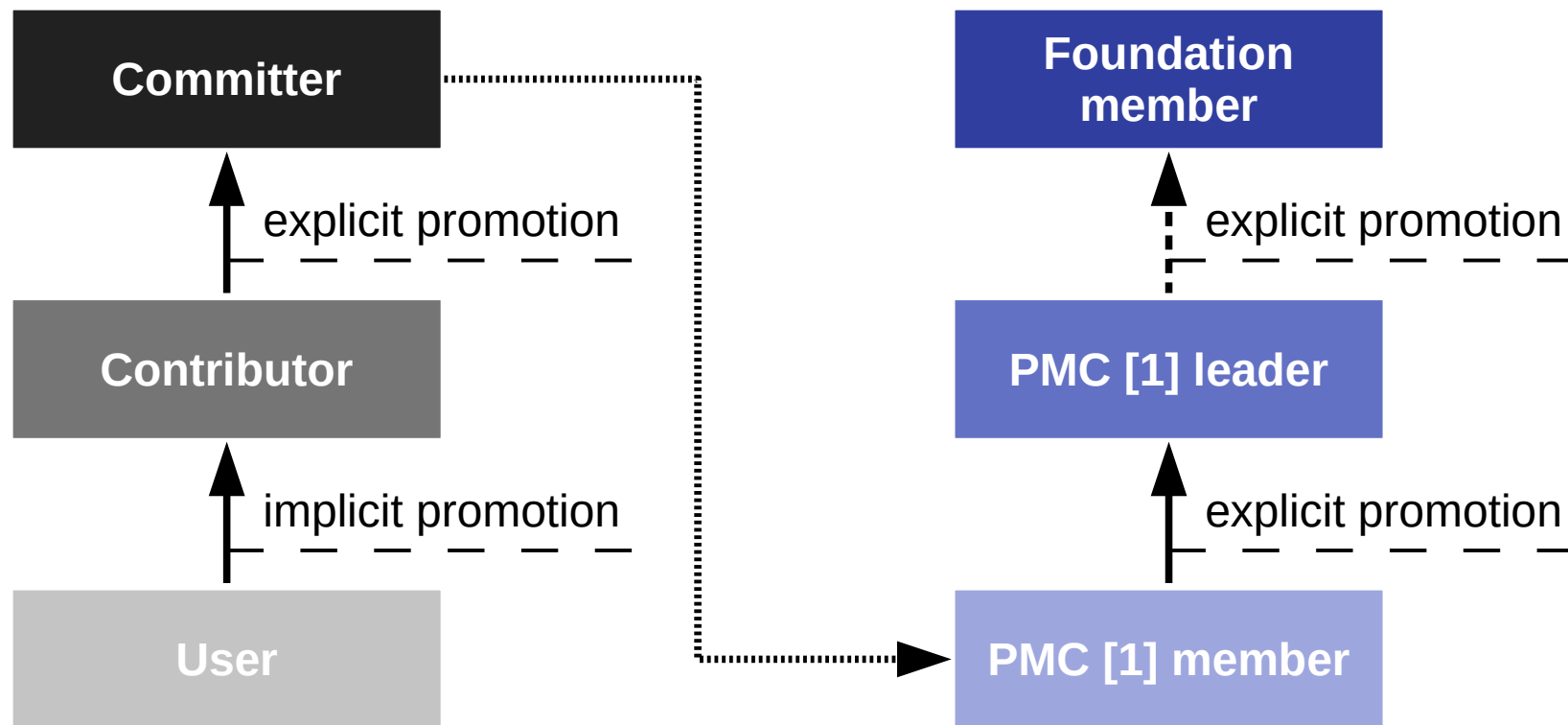
- An open source foundation is
 - a non-profit organization (foundation, consortium)
 - with the purpose of managing and performing the development of
 - non-differentiating (community, sic!) open source software
 - made available to foundation members and the general public
- Members of an open source foundation can be
 - Natural people
 - Companies, e.g.
 - Software vendors
 - Service providers
 - Consulting firms
 - User firms

Motivation for Open Source Foundations

1. Support and protect people and their projects
 - Protect developers from lawsuits
 - Accept donations; manage books
 - Legally represent project interests
2. Create a fair and equal playing field for members
 - Regulate access to intellectual property
 - Regulate access to marketing channels
 - Regulate product roadmap and development

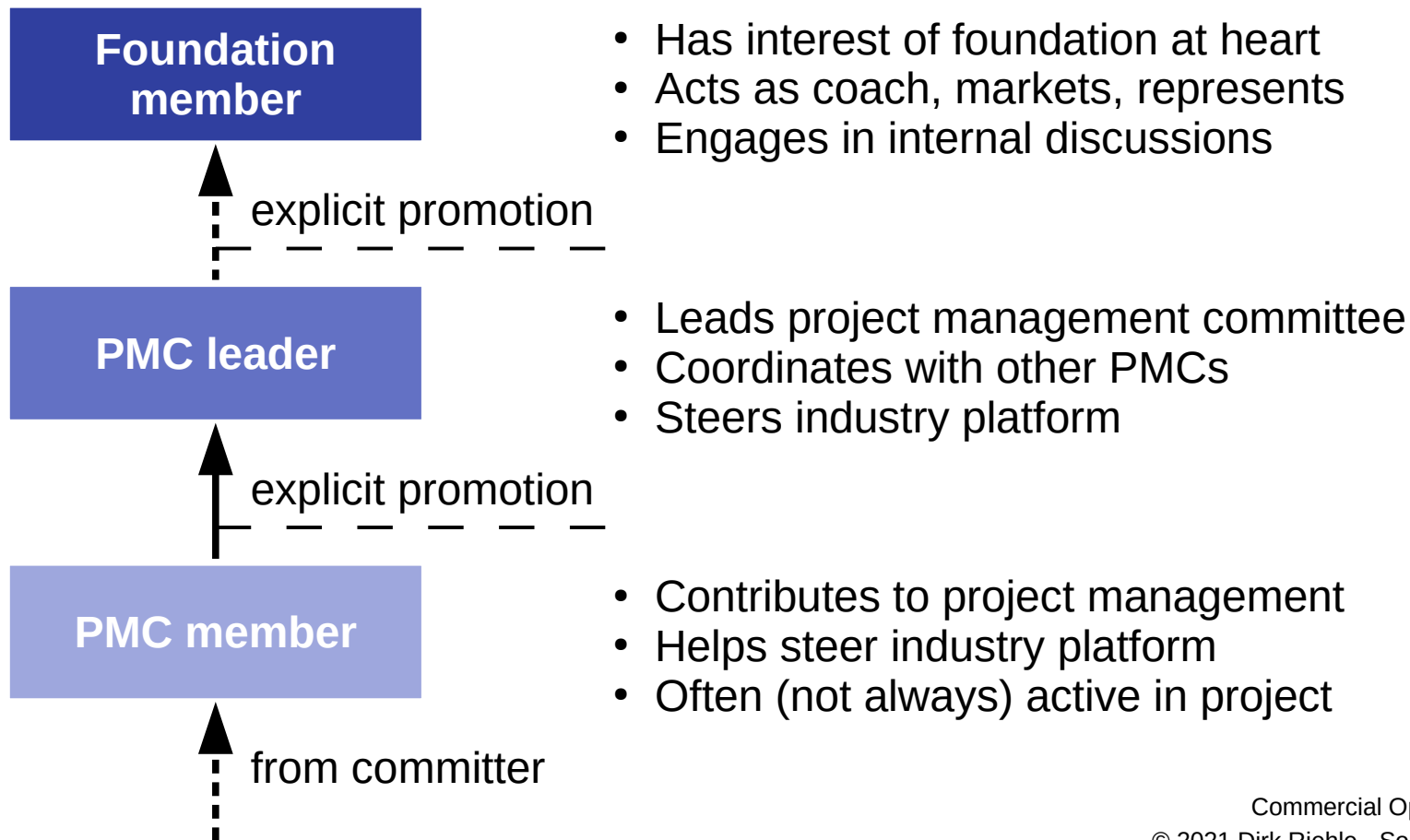
The Apache Software Foundation [...] provides **an established framework for intellectual property** and financial contributions that simultaneously **limits contributors potential legal exposure**. Through a collaborative and meritocratic development process, Apache projects deliver [...] software products [...]

The Extended Open Source (Foundation) Career Path



[1] PMC = project management committee

Tasks and Purpose of New Positions



Solutions to Abuse of Intellectual Property Ownership

- The foundation becomes the owner of all relevant (“chokepoint”) properties
 - Re: copyright
 - The foundation acquires copyright via contributor license agreement
 - The foundation licenses out using an agreed-upon open source license
 - Re: patent rights
 - The foundation chooses an open source license with a patent usage rights grant
 - The foundation arranges for a FRAND [1] patent usage rights grant (uncommon)
 - Re: trademark rights
 - The foundation acquires all necessary trademark rights
 - The foundation clarifies access to and usage rights of trademarks
 - Re: other properties (e.g. domain names)
 - The foundation acquires them and handles them appropriately

[1] FRAND = “fair, reasonable, and non-discriminatory”

Solutions to Abuse of Social Leadership

- The foundation defines governance processes that resolve project strife
 - Re: social leadership / committer status
 - The foundation sets-up appropriate processes to avoid strife in the first place
 - If necessary, the foundation can still step in if project leaders misbehave

Types of Community Open Source Projects

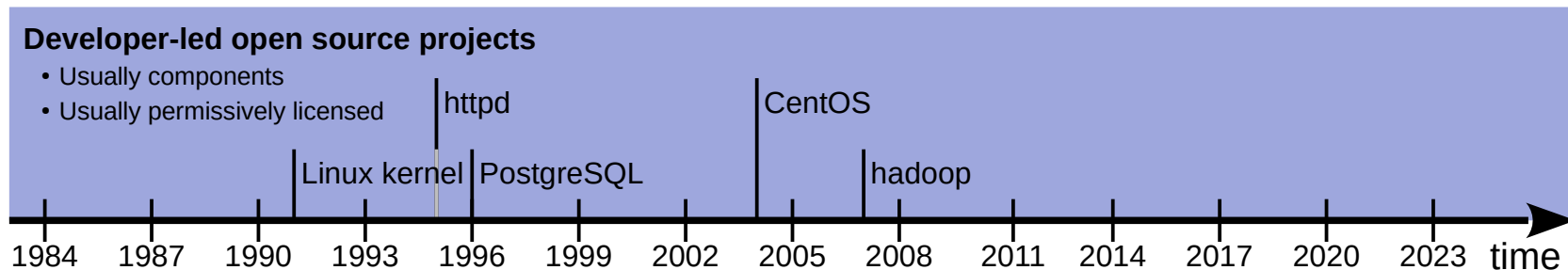
- Developer-led projects
 - Develop components (for use in products)
 - Are usually permissively licensed
 - Are performed by developers (mostly vendors)
- User-led projects
 - Develop applications
 - Are often copyleft licensed
 - Are sponsored by user companies

Project Types, Governance, and Foundations

- Different types of projects need different forms of governance
- Foundations often specialize in one type of project, hence
 - Developer-led project → vendor-led foundation
 - User-led project → user-led foundation

4. Vendor-led Foundation

Time-line of Example Developer-led Projects



Vendor-led Open Source Foundation

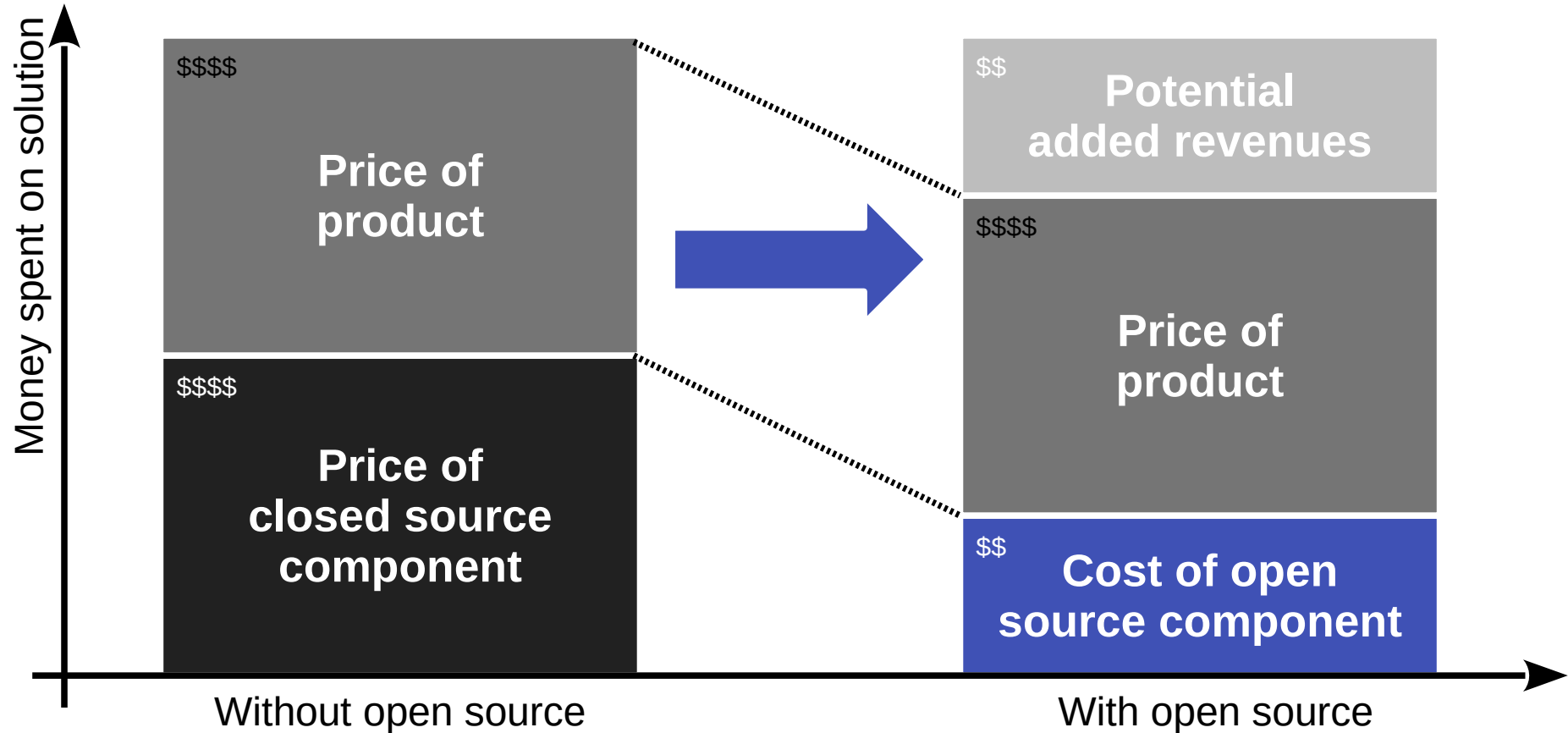
- A vendor-led open source foundation is
 - Is an open source foundation predominantly led by software vendors
 - To collaboratively develop non-differentiating components for products



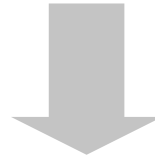
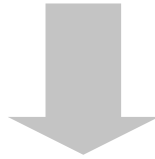
Motivation for Vendor-led Foundations

1. Support and protect people and their projects
 - Protect developers from lawsuits
 - Accept donations; manage books
 - Legally represent project interests
2. Create a fair and equal playing field for members
 - Regulate access to intellectual property
 - Regulate access to marketing channels
 - Regulate product roadmap and development
3. **Create a stronger more competitive ecosystem**
 - **Increase share of customer wallet**
 - **Reach more price-sensitive customers**
 - **Grow addressable market**

Increase Share of Customer Wallet



“Ganging Up On The 800lb Gorilla”

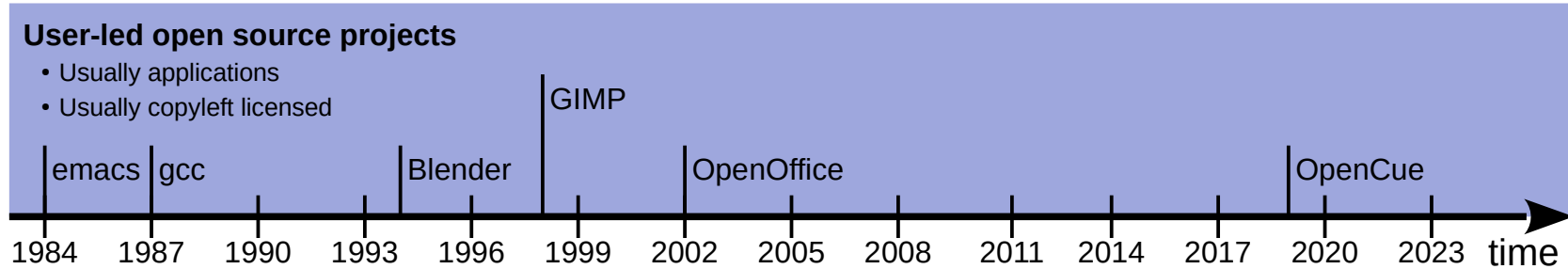


Dysfunctions of Vendor-led Foundations

- Misuse of projects as marketing channels
- Special provisions in bylaws for ensuring influence

6. User-led Foundations

Time-line of Example User-led Projects



User-led Open Source Foundation

- A user-led open source foundation
 - Is an open source foundation predominantly led by software user (firms)
 - To sponsor / develop the software needed to operate their business

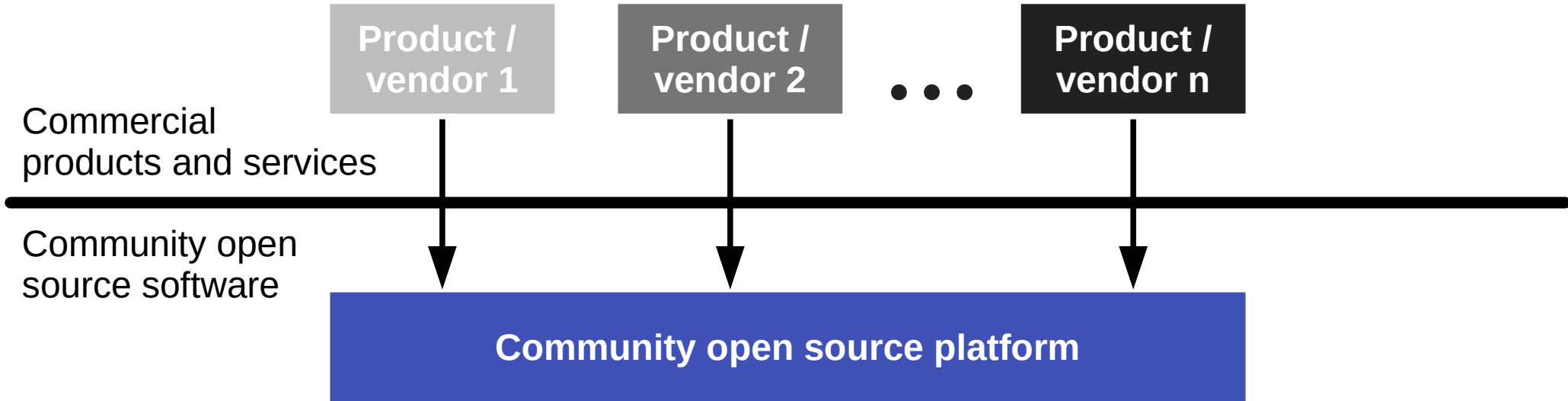
Example User-led Foundations



Motivation for a User-led Foundation

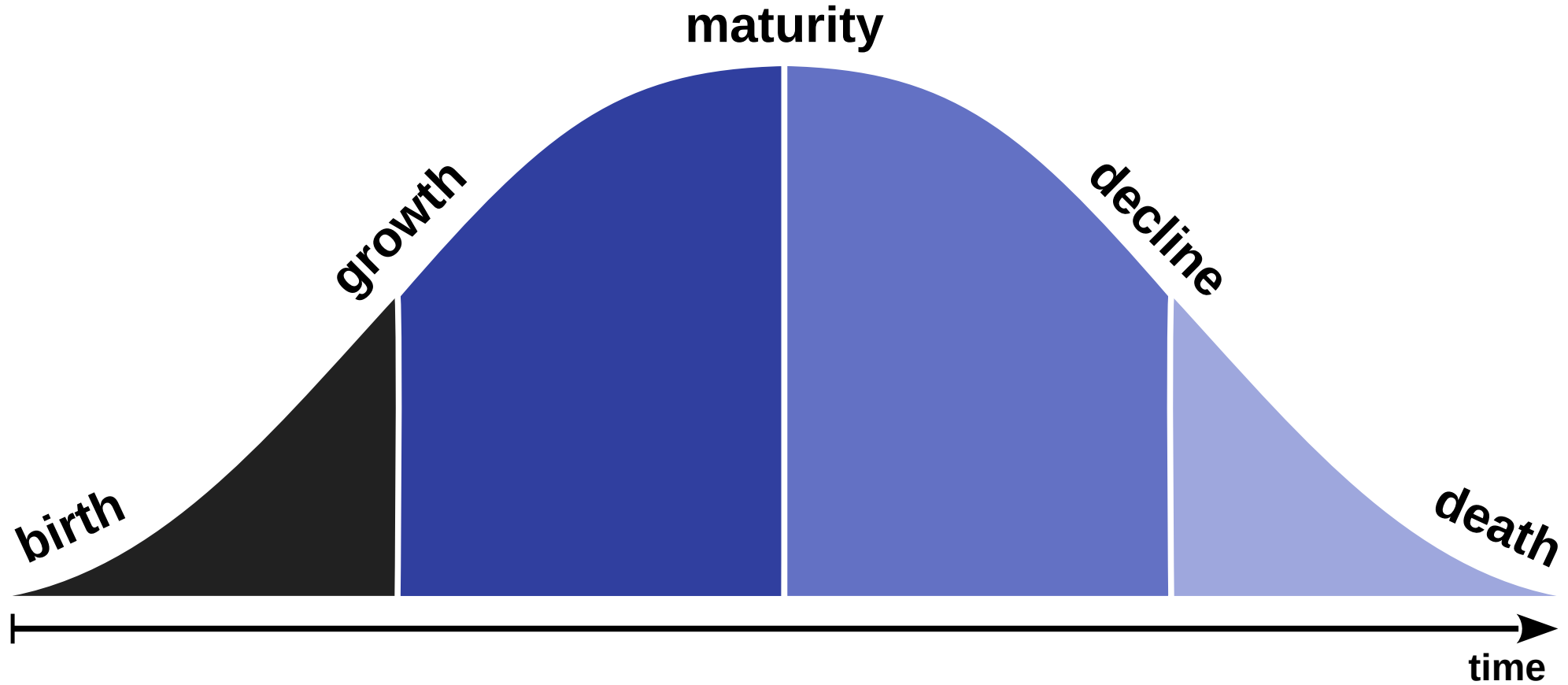
- To get rid of or reduce the problems of vendor lock-in
 - High total cost of ownership
 - Innovation blockage
 - Operational risk
- By establishing a supplier ecosystem
 - For software products and services that
 - Is based on community open source software and
 - Conforms to the economics of the sponsors

Software and Services Ecosystem of Suppliers

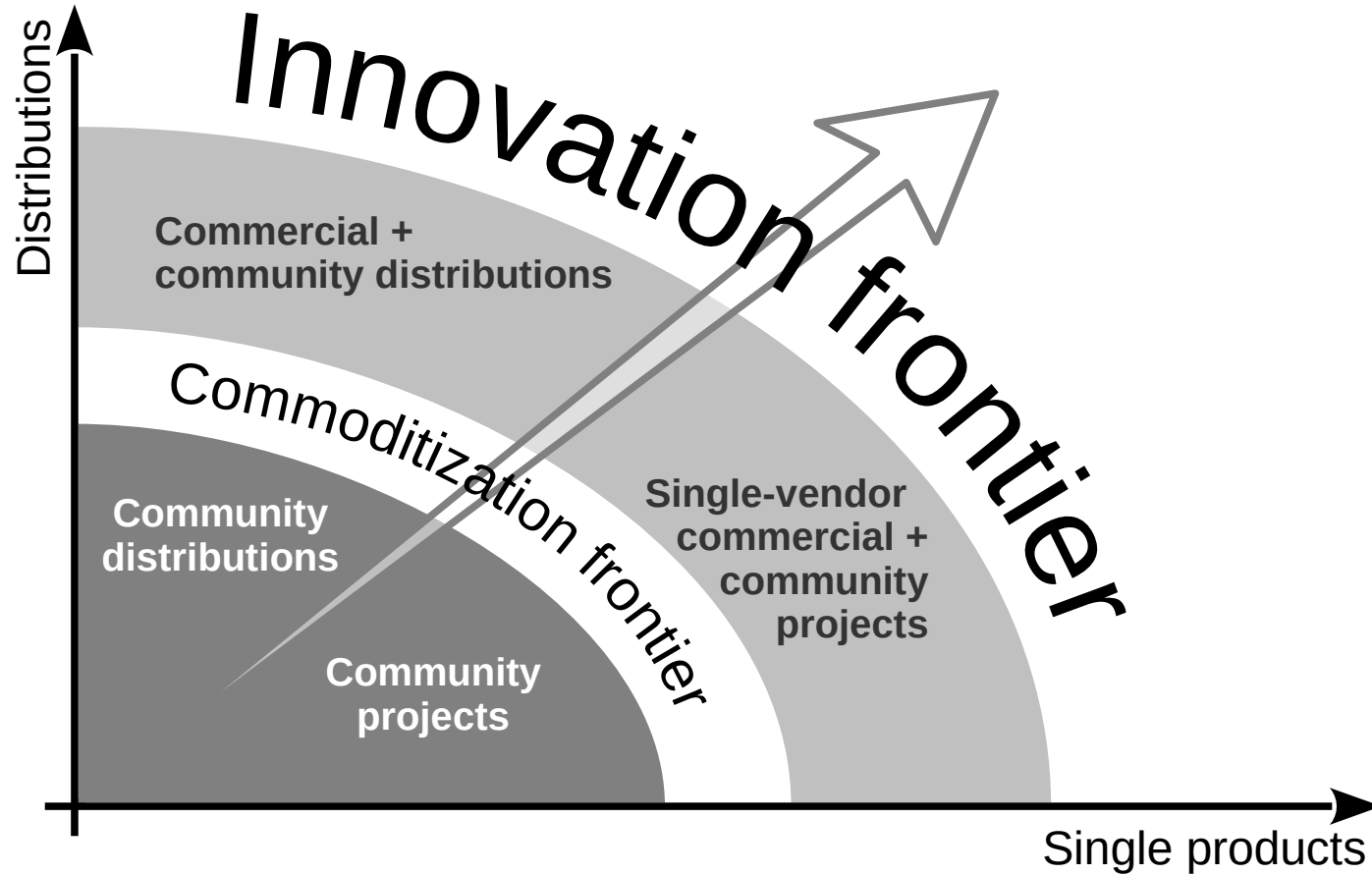


7. Project Life-cycles

Life-cycle of Open Source Projects (Similar to Products)



Innovation and Commoditization



Summary

1. Process definition
2. Project communities
3. Open source foundations
4. Vendor-led foundations
5. User-led foundations
6. Project life-cycle

Thank you! Questions?

dirk.riehle@fau.de – <https://oss.cs.fau.de>

dirk@riehle.org – <https://dirkriehle.com> – [@dirkriehle](#)

Legal Notices

- License
 - Licensed under the [CC BY 4.0 International](#) license
- Copyright
 - © 2020-2021 Dirk Riehle, some rights reserved