

Why Open Source Is Good For Your Economy

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Professorship of Open Source Software

- Professor of Computer Science
 - For software engineering and open source software
 - At the computer science department of the engineering faculty
- Previously held research positions at ...
 - SAP Labs (Silicon Valley) leading the open source research group
 - UBS (Swiss Bank, Zurich) leading the software engineering group
- Previously worked in development at ...
 - Skyva Inc. (supply chain software, Boston) as software architect
 - Bayave GmbH (on-demand business software, Berlin) as CTO



Professorship of Open Source Software

- At the computer science department
 - Also teaches in information systems at FAU
 - Led by Prof. Dr. Dirk Riehle, M.B.A.
- Core research and teaching areas
 - Open source software
 - Governance and license compliance
 - Open source strategies
 - Open source business models
 - Inner source software development
 - Program management, project management
 - Quality assurance and security
 - Transfer pricing and intellectual property
 - Artificial intelligence techniques in applications

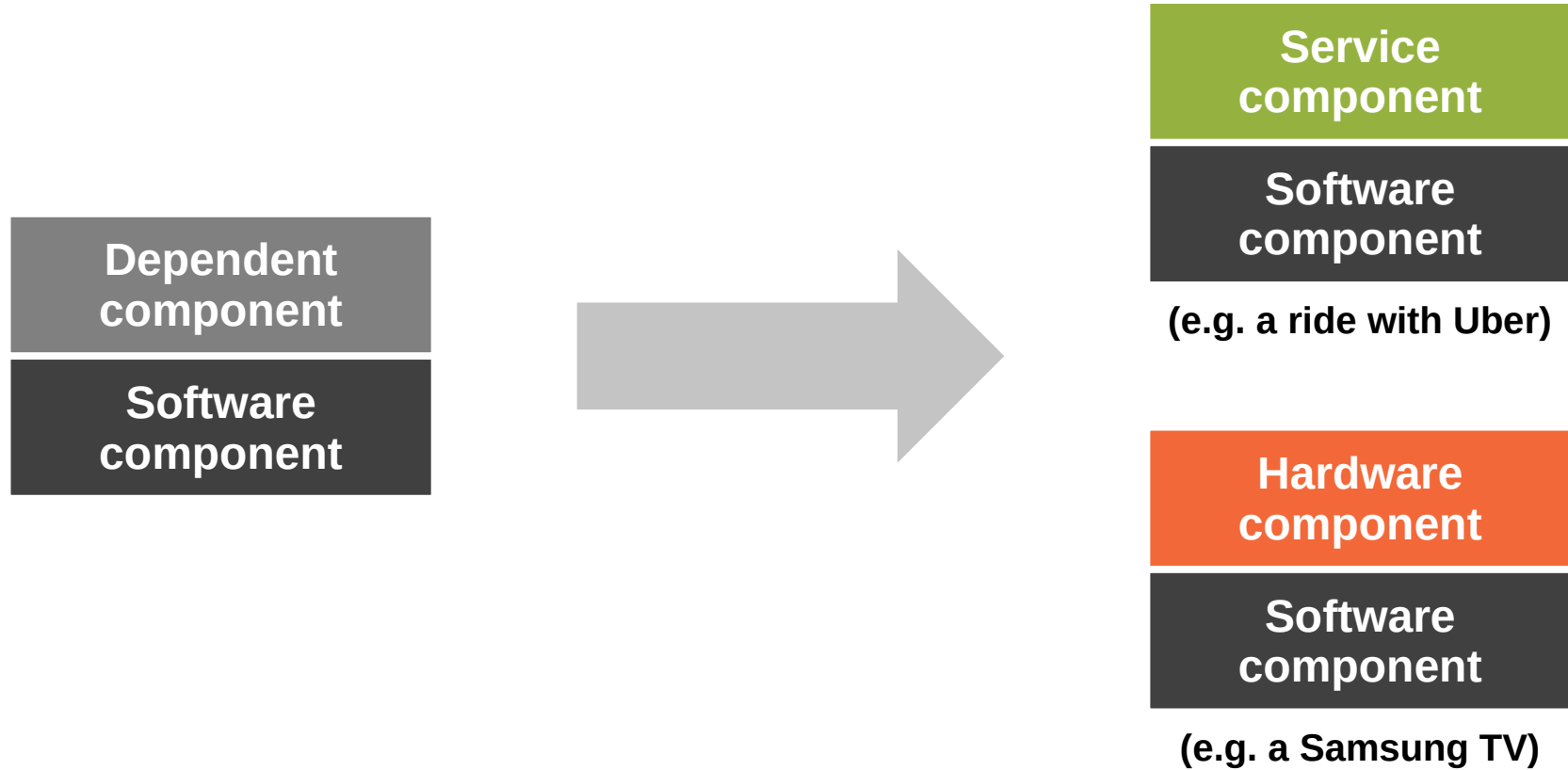


Software is eating the world

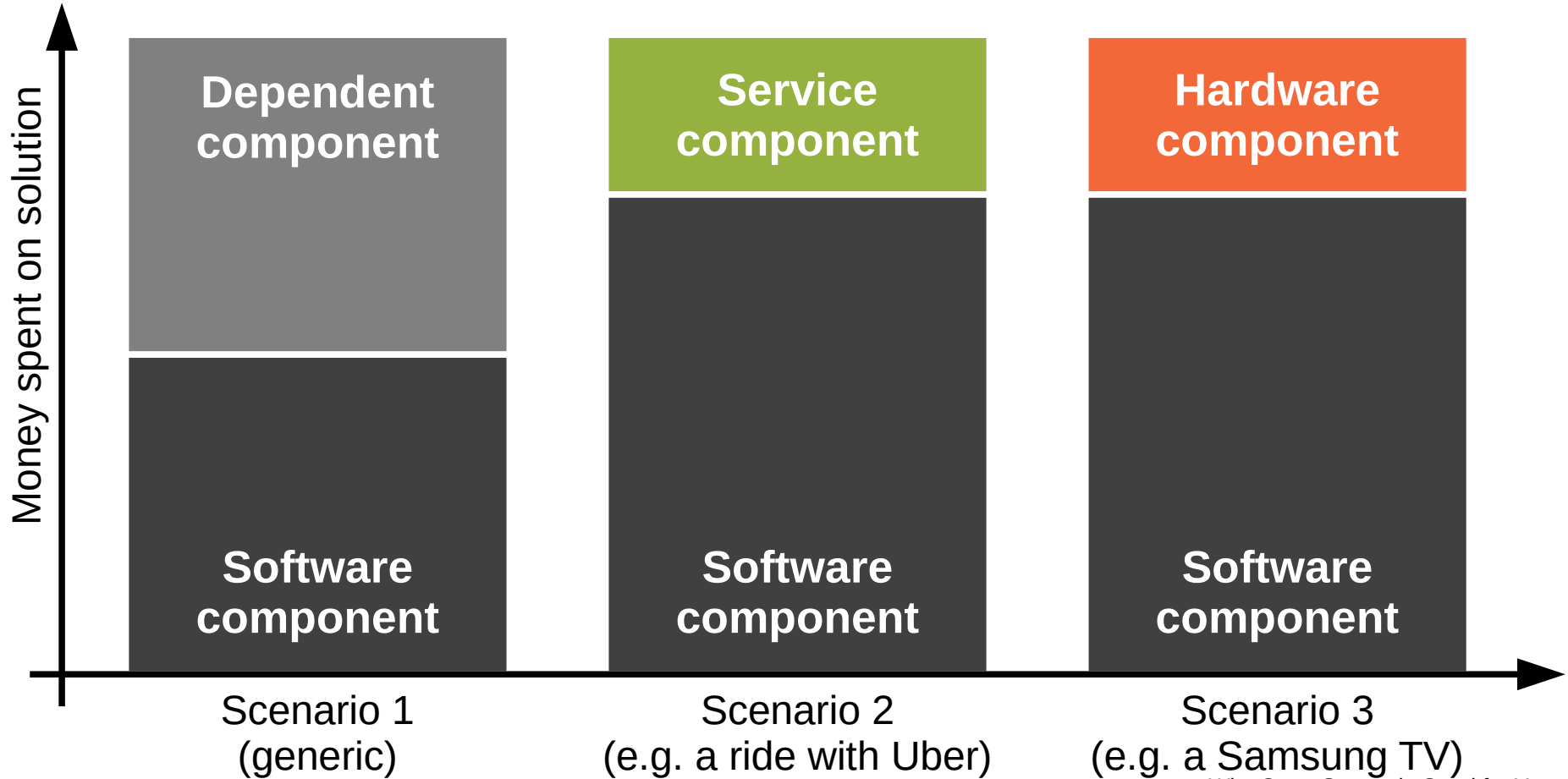
WSJ, 2011-08-20



Products And Services Are Built From Components



Pricing Power 1 / 2



Pricing Power 2 / 2

- Monopolist
 - No alternative, complete dependency
- Vendor lock-in
 - Some alternatives, but switching costs

Problems with Vendor Lock-in

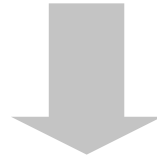
- High total cost
 - High license fees
 - High customization costs
- Slower innovation
 - Missed or late product or service innovation
 - Missed or late windows of opportunity
 - No or late reaction to changing markets
 - Limited predictability of future capabilities
- Higher operational risk
 - What to do if a vendor goes out of business?

Which Economy Benefits Most?

Rank ↕		Organization ↕	Sales (B\$) ↕	FY ↕	Market cap (B\$) ↕	Headquarters ↕
1		Microsoft	86.6	2017	601	Redmond, WA, US
2		Oracle	37.2	2017	205	Redwood City, CA, US
3		SAP	23.2	2017	117	Walldorf, Germany
4		Salesforce.com	8.4	2017	69	San Francisco, CA, US
5		VMware	6.7	2017	48	Palo Alto, CA, US
6		Fiserv	5.3	2017	26	Brookfield, WI, US
7		Adobe Systems	5	2017	84	San Jose, CA, US
8		Symantec	5.4	2017	19	Mountain View, CA, US
9		Amadeus IT Holdings	4.3	2017	25	Madrid, Spain

[1] https://en.wikipedia.org/wiki/List_of_the_largest_software_companies

Open Source to The Rescue



Open Source Definition

- Open source software is **software** whose license fulfills
 - Ten specific requirements [1]; these include
 - Free (of cost) to use
 - Free access to source code
 - Free to modify to meet one's needs
 - Free to pass on to other parties
- Open source development is a **collaboration process**
 - “With the following characteristics
 - Transparent process
 - Distributed peer review
 - And these resulting qualities
 - Better quality, higher reliability, and more flexibility of software
 - At lower cost
 - An end to predatory vendor lock-in”

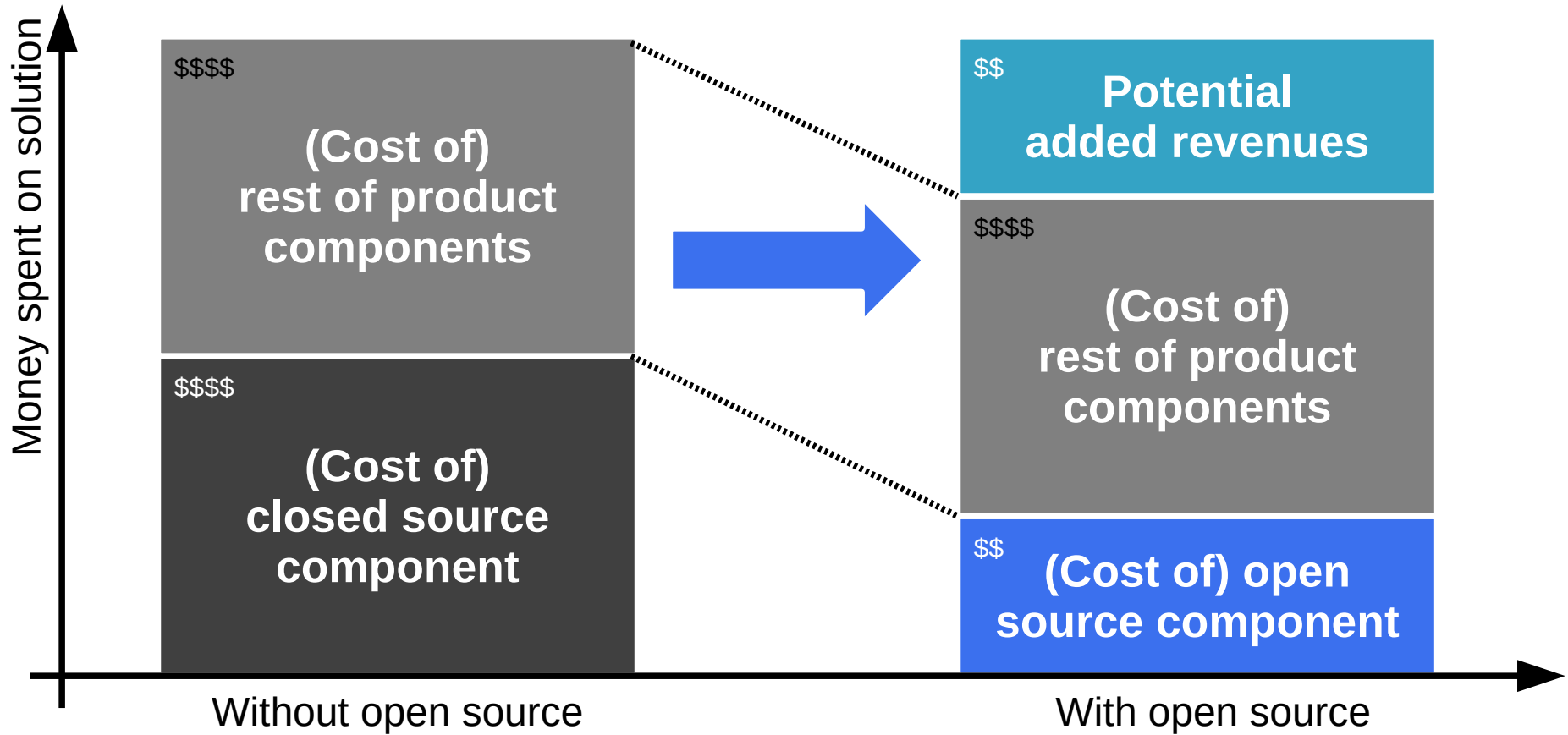


[1] Please see <https://opensource.org/osd>

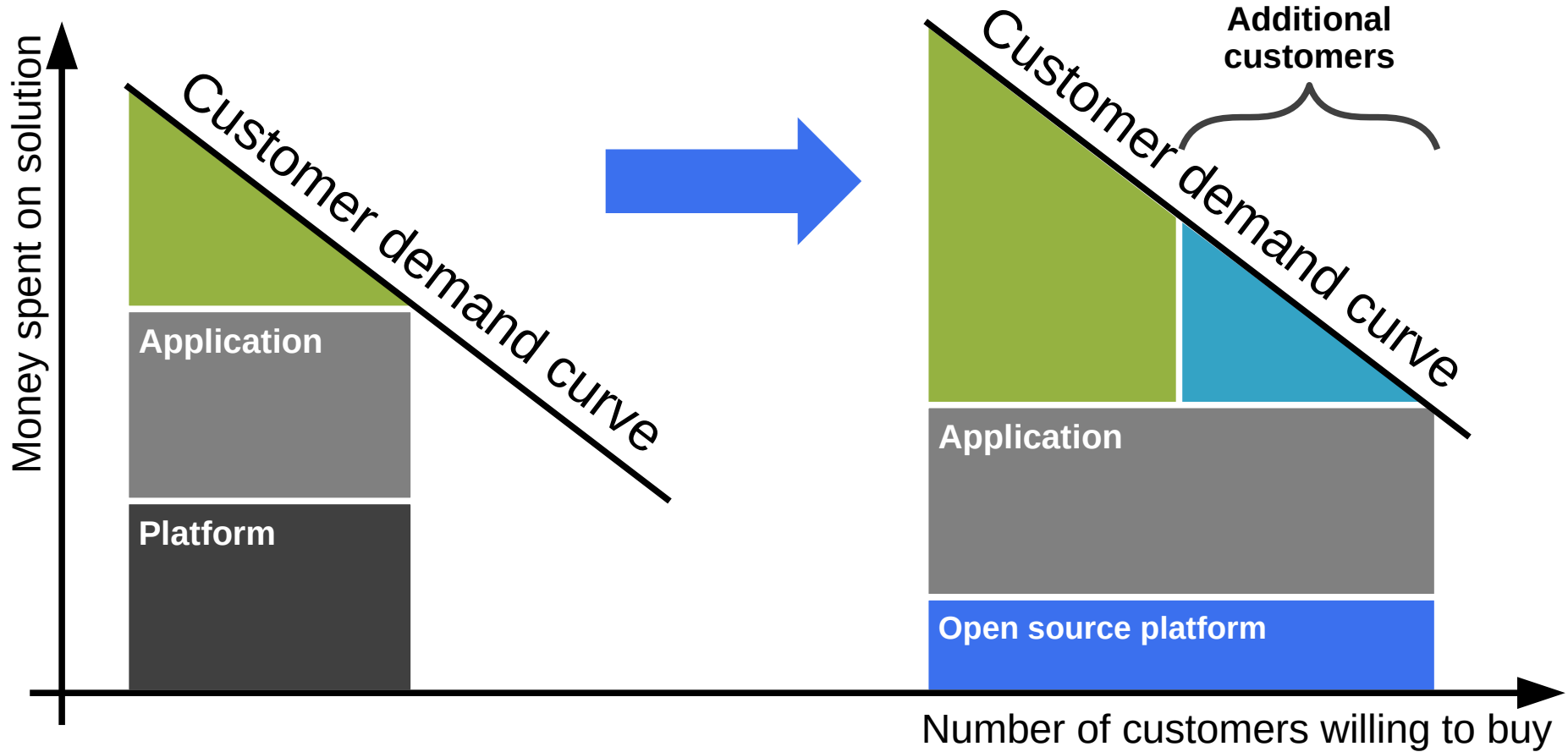
Open Source Foundations

- An **open source foundation** is
 - a **non-profit organization** (foundation, consortium)
 - with the purpose of **sponsoring, managing and/or performing the development** of
 - **non-differentiating open source software**
 - made available to foundation members and **the general public**
- Typical members of an open source foundation are
 - Software vendors
 - Service providers
 - Consulting firms
 - Software users

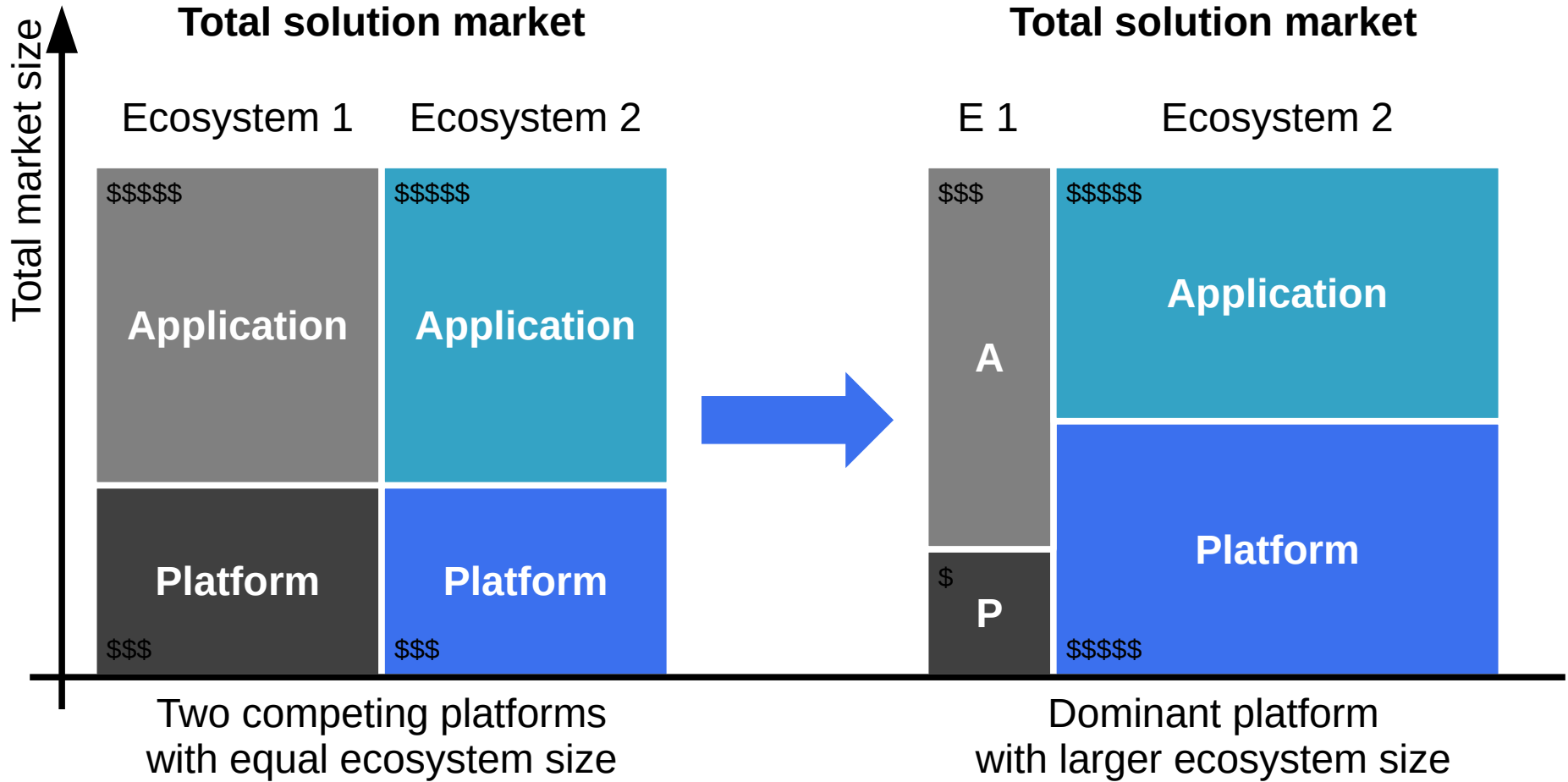
1. Increase Share of Wallet



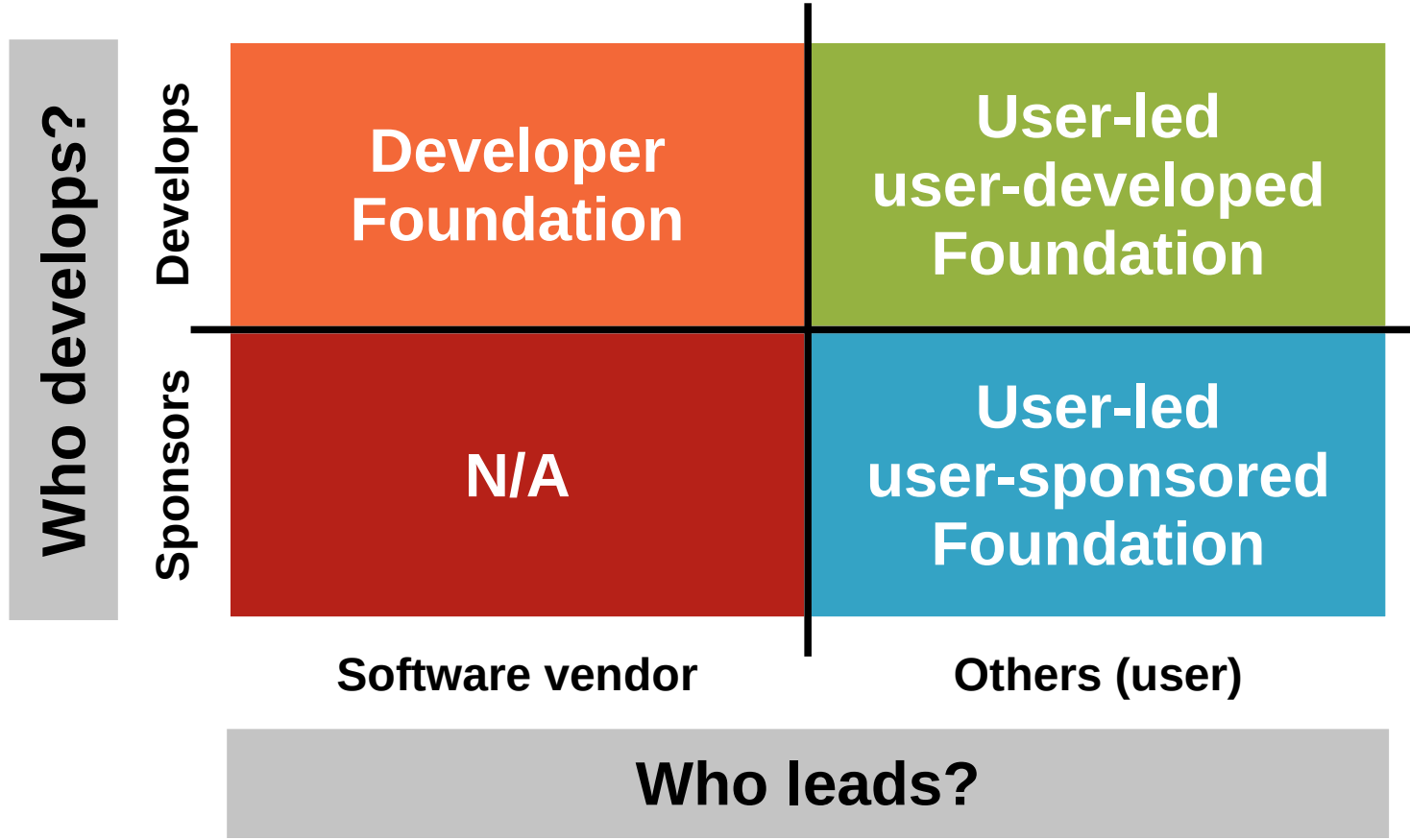
2. Reach More Price-Sensitive Customers



3. Grow Addressable Market



Types of Open Source Foundations



Three Examples of User-led Open Source Foundations



Name	Kuali Foundation	openMDM IWG	openKONSEQUENZ
Industry	Higher education	Automotive	Energy
User-led	Yes	Yes	Yes
User-developed	Yes	No	No
IP regulations	Owns	Does not own	Owns

Advantages over Plain Open Source

- Clear intellectual property situation
 - Clarifies intellectual property situation (trademarks, patents, licenses)
 - Helps ensure good open source governance (“IP cleanliness”)
 - Allows for proper legal representation in the courts
- Improved longevity and survivability
 - Makes software people-independent (somewhat, “bus factor”)
 - Establishes good corporate governance, collaboration rules
 - Increases attractiveness of software ecosystem to developers

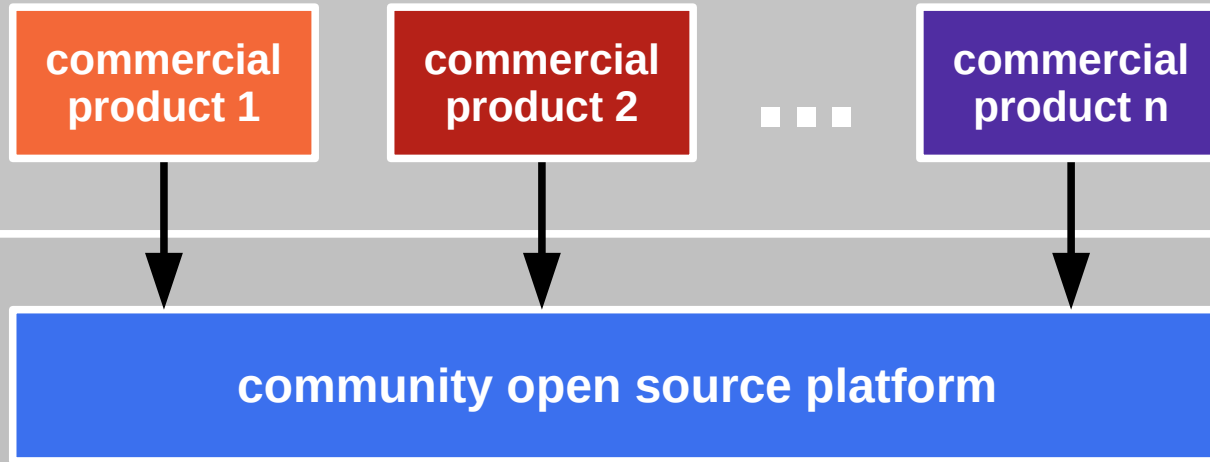
Advantages over Traditional Consortia

- Established framework
 - Increasingly well-understood legal and governance framework
 - Increasingly well-understood collaboration behavior
- Resulting benefits
 - Faster creation at lower cost, less friction, more trust
 - More legal and collaboration predictability
 - Easier to get skilled developers and firms
- Ultimately, higher likelihood of success

Software and Services Ecosystem

- The goal of an open source user-led foundation is
 - To establish a **software ecosystem**
 - In which **vendors and suppliers** can provide products and services
 - On an **equal playing field**
 - Thus **preventing vendor lock-in**.

Commercial Products and Services



Community Open Source Software

Other Industries / Possible Complications

- Oil and gas
 - State-owned and private players, confounded by political issues
- Tourism
 - Centralized state-run services and many small private players
- Healthcare
 - One single-payer healthcare system per country, possibly
 - Cf. openIMIS initiative on open source insurance management
 - Many other open source healthcare systems / software

Why Open Source is Good for You

- Open source foundations help...
 - Keep potential monopolists in check
 - Thereby foster innovation
 - Give local industry a chance
- User-led open source foundations help...
 - Avoid dominance of software industry
 - Keep pricing power with established companies
 - Allow local industry to compete on strengths

Consequences for Public Policy

- Support developer foundations
 - To avoid dominance of Silicon Valley
- At present, mostly helping to self-help
 - German companies often have no grasp
- Scope is the overall software industry
 - About \$1.3 trillion market capitalization in 2016
- Support user foundations
 - To avoid dominance of software industry
- At present, mostly means waking up users
 - Still prevalent attitude is that “we buy software”

Thank you! Questions?

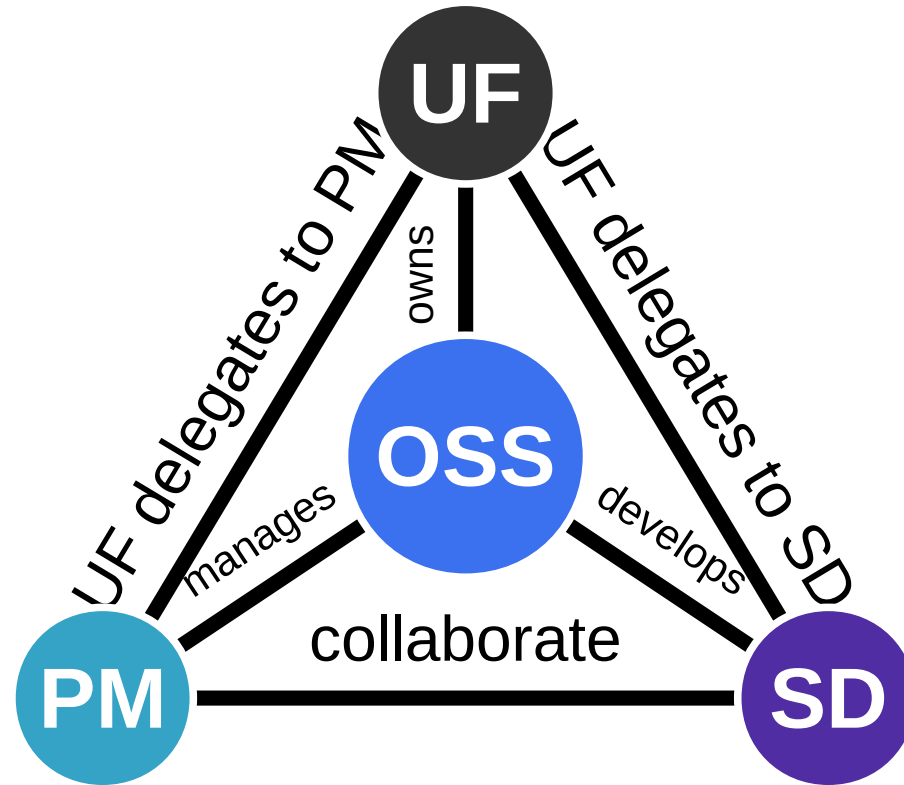
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Credits and License

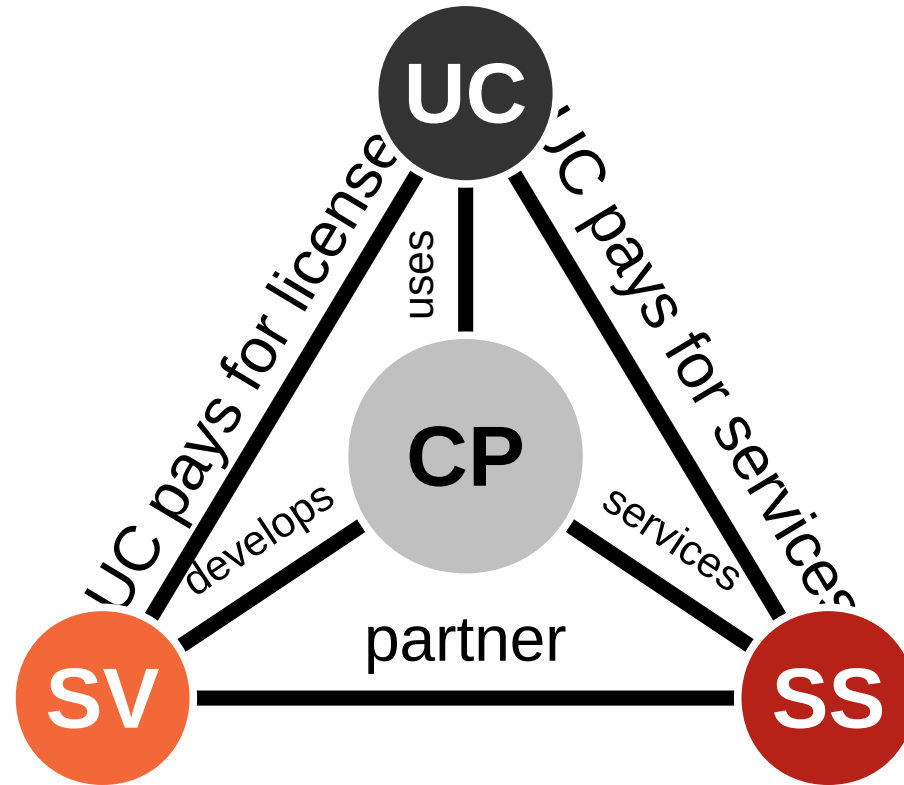
- Original version
 - © 2019 Dirk Riehle, all rights reserved
- Contributions
 - ...

Community Open Source Software



UF = User foundation
PM = Project management
SD = Software developers

Commercial Products and Services



UC = User company
SV = Software vendor
SS = Services supplier

Challenges for User Foundations

- Dysfunctional relationships between users
- Not enough sustaining members for user foundation
- Users underestimate complexity of software

Problems and Solutions

- (Abuse of) copyright and patents → Solved by license
 - A good license contains patent provisions
- (Abuse of) trademarks → Solved by foundation
 - Foundation clarifies access to and usage rights of trademarks
- (Abuse of) social leadership → Can be solved by foundation
 - If necessary, the foundation can employ project leaders
- (Abuse of) process control → Solved by foundation
 - Through by-laws, the foundation can define a proper development process
- (Abuse of) other IP rights → Solved by foundation
 - Foundation can also own other critical IP rights (e.g. domains)

Innovation and Commoditization

