



Open Source Community Building by Firms and Institutions

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Workshop on Open Source Software with
Technology Transfer Perspective

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Advisory

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- ▶ Information Security
- ▶ IMAS (Info. Mgmt. & Analysis)
- ▶ IT Effectiveness

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- ▶ External IT Audit
- ▶ Third Party Reporting
- ▶ IT Due Diligence
- ▶ IT Program Assurance

Speaker

- ▶ **Senior, Ernst & Young AG in Bern**
- ▶ **Dr. sc. ETH Zurich:** Research program of Swiss National Science Foundation (SNSF) on Open Source Dynamics at the Chair of Strategic Management and Innovation
- ▶ **lic.rer.pol. University of Bern:** Licenciante of Business Administration and Computer Science
- ▶ Board member of **Swiss Open Systems User Group /ch/open:** OpenExpo etc.
- ▶ Secretary of the **Parliamentarian Group of Digital Sustainability**

**Dr. Matthias
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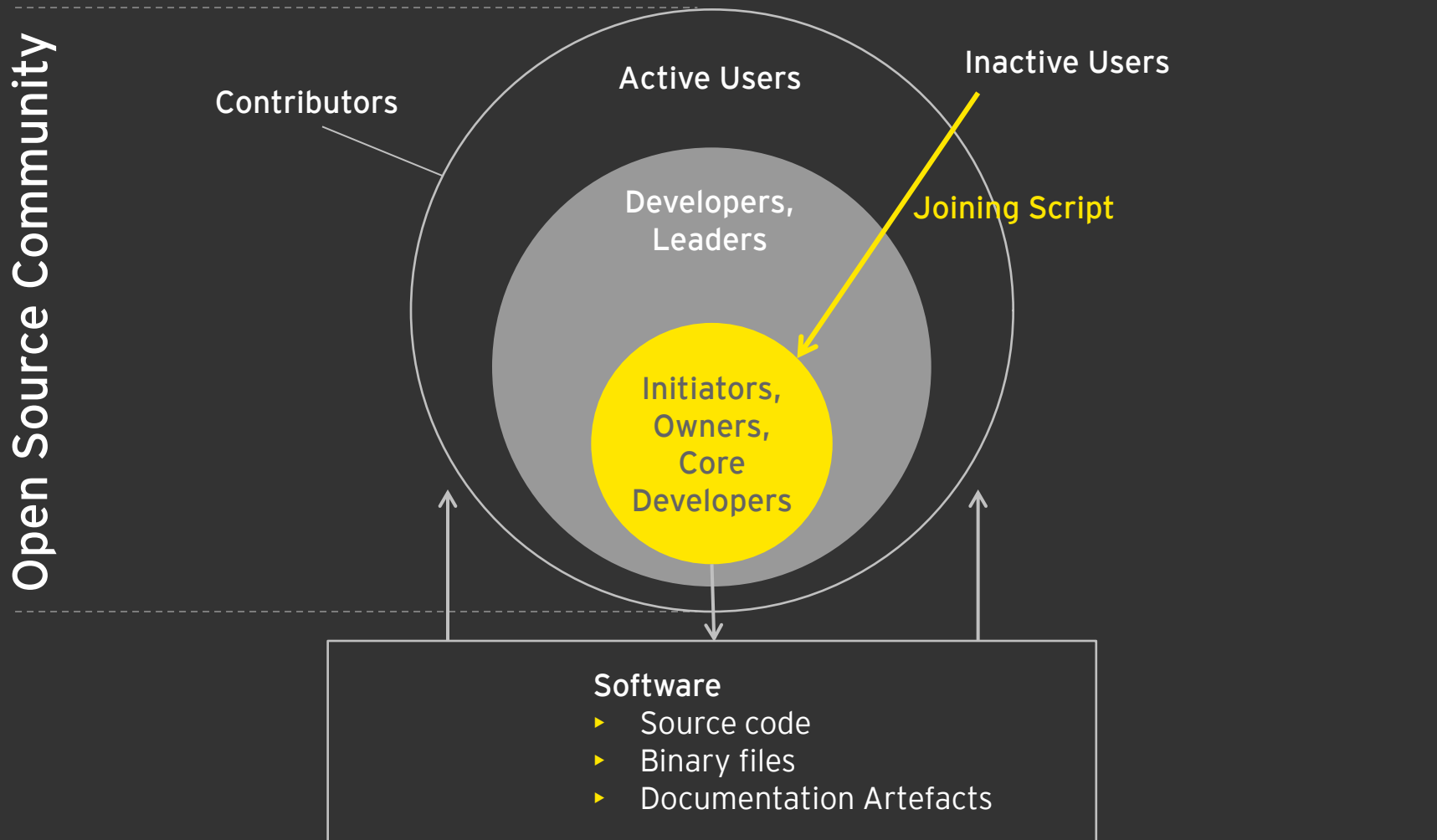
Agenda

- 1) Introduction on Open Source Communities
- 2) Benefits and Costs when Releasing Open Source Software
- 3) Balancing Act between Openness and Control
- 4) Case Studies in Community Building
- 5) Conclusions

Introduction on Open Source Communities

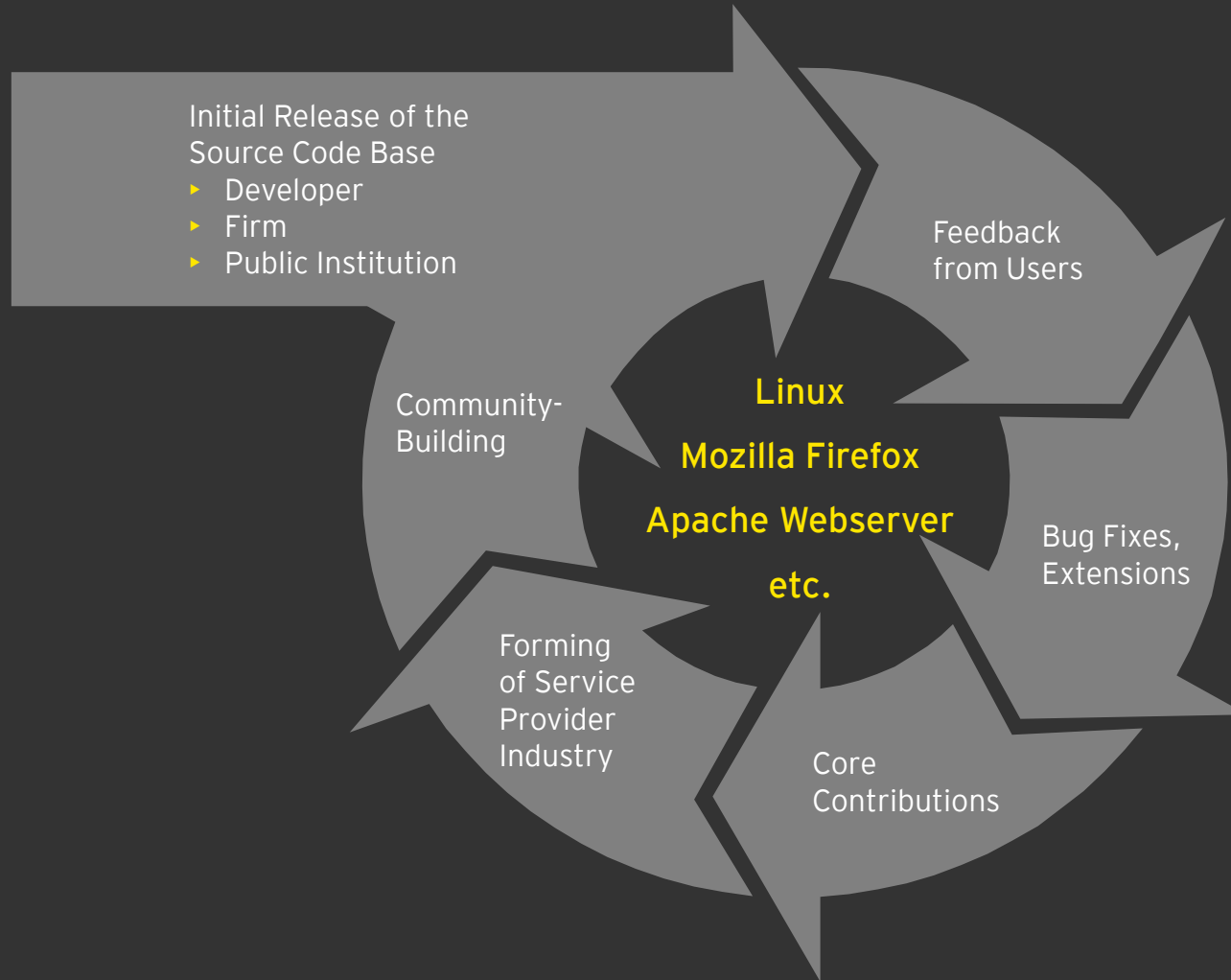


Typical Structure of an Open Source Community

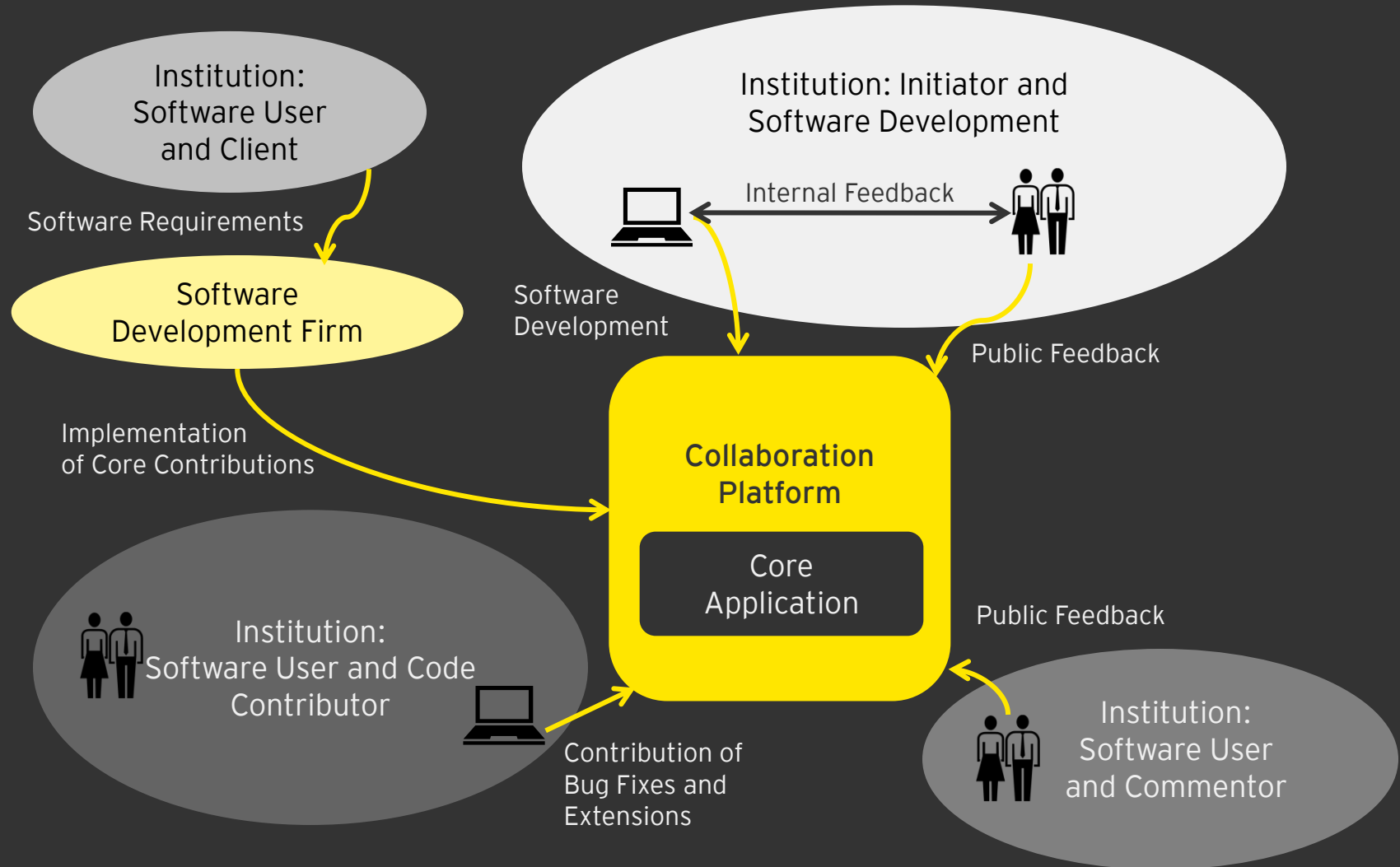


Source: Matthias Stuermer „Open Source Community Building“

Development Lifecycle



Community Stakeholders



Motivation to Contribute

Reasons for **individuals** to contribute to open source software:

Intrinsic Motivation

- ▶ Ideology
- ▶ Altruism
- ▶ Kinship
- ▶ Fun

Externalized Extrinsic Motivation

- ▶ Reputation
- ▶ Reciprocity
- ▶ Learning
- ▶ Own-use

Extrinsic Motivation

- ▶ Career
- ▶ Pay

Source: G. F. von Krogh, S. Haefliger, S. Spaeth, M. W. Wallin "Open Source Software: a Review of Motivations to Contribute"

Motivation to Contribute

Reasons for **firms** to contribute to open source software:

Business benefits

- ▶ Low knowledge protection costs
- ▶ Learning effects for the organization
- ▶ Reputation gain
- ▶ Lower costs of innovation
- ▶ Lower manufacturing costs
- ▶ Faster time to market

Legal constraints

- ▶ GPL demands contributions

Source: Matthias Stuermer, Sebastian Spaeth, Georg von Krogh, "Incentives and costs in implementing Private-Collective Innovation: A case study"

Benefits and Costs Releasing Open Source



Benefits when Releasing Open Source Software

Incentives and their findings in the case

Incentive	Findings in the Nokia case
Low knowledge protection costs	Revealing of source code, no protection required
Learning effects	Collaboration with external firms and individuals
Reputation gain	Increased attraction of Nokia as employer and building an own developer community
Adoption of innovation	Standard setting of the platform configuration
Lower costs of innovation	Reuse of Open Source Software, outsourcing of software testing and bug fixing and maintenance to open source communities
Lower manufacturing costs	No licensing fees for software platform
Faster time to market	Tapping of distributed technology expertise and high flexibility of software platform

Source: Matthias Stuermer, Sebastian Spaeth, Georg von Krogh, "Incentives and costs in implementing Private-Collective Innovation: A case study"

Costs and Mitigations Strategies

Cost	Findings in the Nokia case	Mitigation strategy
Difficulty to differentiate	Released source code can be reused by competitors	Partial revealing of source code to retain control of hardware integration and look and feel
Guarding business secrets	Plans for new products	Selective revealing of future plans and protection of information through NDAs
Reducing network entry barriers	Investments for Software Development Kit, preview version of platform, device program, staff for community management, and increased communication effort	Sharing the costs with other actors in the network
Giving up control	Development direction such as scope of functionality of Open Source projects are controlled by external parties	Hiring of key developers and participation in upstream communities. No single vendor controls platform
Organizational inertia	Required internal restructuring of processes	Adapt and open up processes

Source: Matthias Stuermer, Sebastian Spaeth, Georg von Krogh, "Incentives and costs in implementing Private-Collective Innovation: A case study"

Balancing Act between Openness and Control



How to Gain Control in an Open Source Project

Community-driven OSS projects

- ▶ Meritocracy: exercise of control on the basis of knowledge
- ▶ Technical contributions and organizational-building
- ▶ behavior lead to authority and control

Firm-driven OSS projects

- ▶ Business model: value creation and value appropriation
- ▶ Firms need control to appropriate returns of investment
- ▶ Balancing act between openness and control

*Source: Matthias Stuermer, Defense Doctoral Thesis ETH Zürich
"How Firms Make Friends: Communities in Private-Collective Innovation"*

How May Firms Influence on OSS Communities

Influence of corporations increases when:

- ▶ Firms reveal previously proprietary code
- ▶ Firms employ core developers who previously contributed as unpaid volunteers
- ▶ Firms contract intermediary OSS firms and individuals

New challenges in firm-driven OSS projects:

- ▶ Possible crowding-out effects of intrinsic motivation
- ▶ Create incentives to attract external contributions

Source: Matthias Stuermer, Defense Doctoral Thesis ETH Zürich "How Firms Make Friends: Communities in Private-Collective Innovation"

Balancing Act Between Openness and Control

Control decreases contributions

- ▶ Transparency increases contributions strongly
- ▶ Accessibility increases contributions slightly

Balancing is difficult

- ▶ Too little control: results may not serve the firm's goals
- ▶ Too much control: communities may not contribute with all of their energy, interest, and creativity
- ▶ Worst case: forking of the source code

Source: Matthias Stuermer, Defense Doctoral Thesis ETH Zürich "How Firms Make Friends: Communities in Private-Collective Innovation"

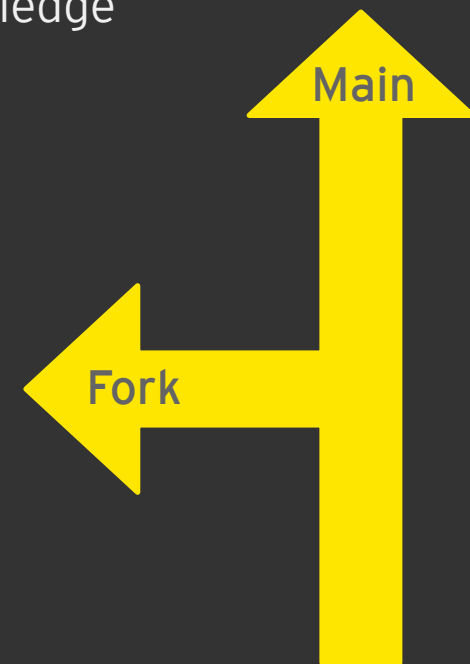
Forking

The Community's Sword of Damocles

- ▶ Worst case scenario in a community when the project's governance failed
- ▶ Division of open source community: same code but new name for the fork
- ▶ Specialty of open source software: everyone can „make it their own“
- ▶ Success of a fork: tacit knowledge vs. explicit knowledge

Famous cases of unfriendly forks:

- ▶ OpenOffice.org became LibreOffice
- ▶ MySQL became MariaDB
- ▶ Compiere became ADempiere
- ▶ SugarCRM became vTiger
- ▶ Mambo became Joomla



Case Studies in Community Building



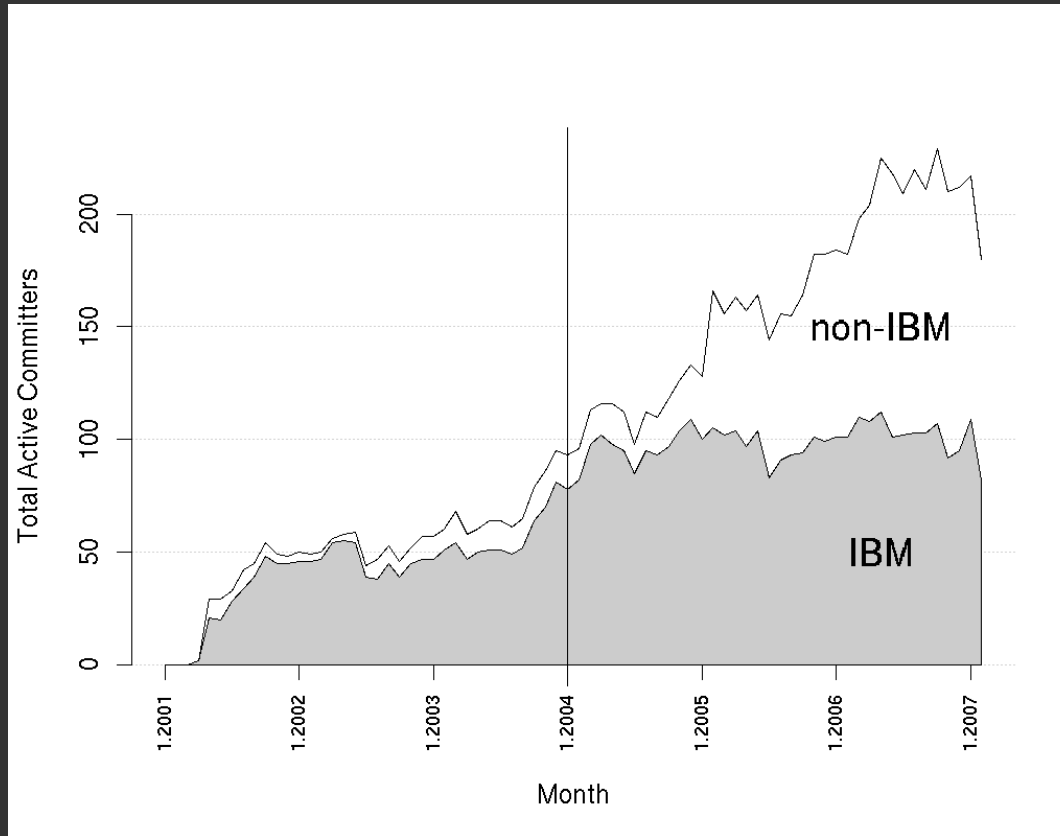
Community Building by Nokia

- ▶ Sale of **1500 discounted Tablets** to active OSS developers
- ▶ **maemo.org** for tutorials, road map, API docs, Wiki, Blog Planet...
- ▶ 244 registered **Maemo projects** on garage.maemo.org [2007-06-30]
- ▶ **Mailing Lists** (June 2005 - December 2006) and IRC chat
 - ▶ Developer: 6795 mails from 832 email addresses (79 Nokia)
 - ▶ User: 2534 mails from 511 email addresses (33 von Nokia)
- ▶ Bugzilla for **bug reporting**: about 1000 reported issues
- ▶ Maemo **software development kit (SDK)**
- ▶ **Sardine**: development (unstable) version of the operating system

Source: Matthias Stuermer, Sebastian Spaeth, Georg von Krogh, "Incentives and costs in implementing Private-Collective Innovation: A case study"

Community Building by IBM for Eclipse

Active Code Committers in the Eclipse Open Source Community



Source: Sebastian Spaeth, Matthias Stuermer, Georg von Krogh (2010)
"Enabling Knowledge Creation Through Outsiders: Towards a Push Model of Open Innovation"

Community Building by IBM for Eclipse

Contexts enabling the push model of open innovation

1. Preemptive generosity

Revealing of initial Eclipse source code by IBM

2. Continuous commitment

Constant number of IBM programmers in Eclipse

Constant level of participation in newsgroups

3. Adaptive governance structures (giving up control)

Non-profit foundation with equal membership of firms

4. Lowering barriers to entry

Sub-projects by non-IBM people; modular architecture

*Source: Sebastian Spaeth, Matthias Stuermer, Georg von Krogh (2010)
"Enabling Knowledge Creation Through Outsiders: Towards a Push Model of
Open Innovation"*

Community Building by European Commission

OSOR - Open Source Observation Repository - www.osor.eu

OSOR.EU

- ▶ European information and development platform on open source
- ▶ For open source projects of public authorities

Hosting collaboration platform

- ▶ For national and international open source projects

Links all European open source collaboration platforms

- ▶ Currently 2331 open source projects in public authorities

Publishes

- ▶ Established case studies about the use of open source in authorities
- ▶ Well researched news about open source from all over Europe

Community Building by European Commission

National open source platforms linked to OSOR.EU



Adullact (France)



OpenSource Plattform des Digitalen Österreich (Austria)



Guadalinux forge (Andalucia, Spain)



Software Repository of the Junta de Andalucía (Andalucia, Spain)



The Free Knowledge Forge of the RedIRIS Community (Spain)



Forja.linex.org (Extremadura, Spain)



Morfeo Free Software Community Forge



lafarga.cat (Catalonia, Spain)



ASC - Ambiente di Sviluppo Cooperativo (Italy)



Mancomun forge (Galicia, Spain)

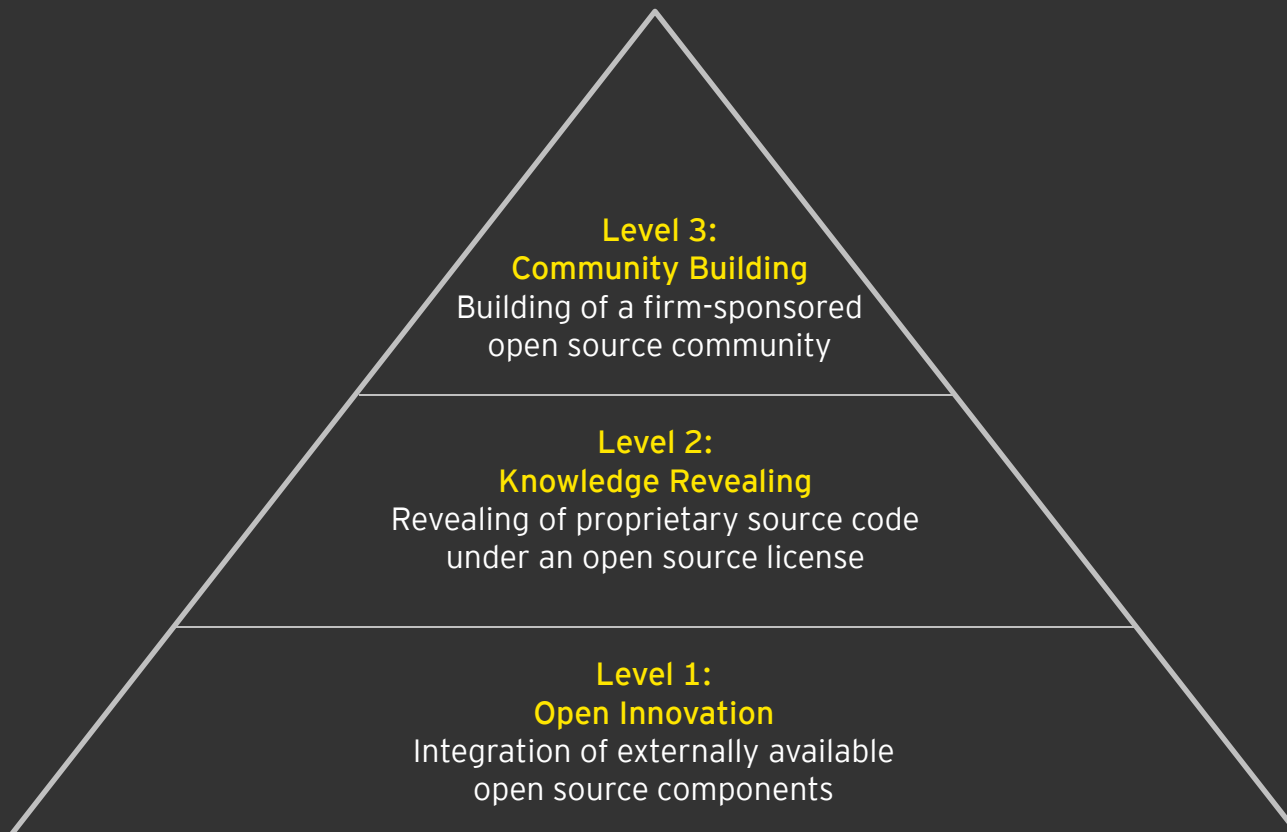


Technology Transfer Centre (Spain)

Conclusions

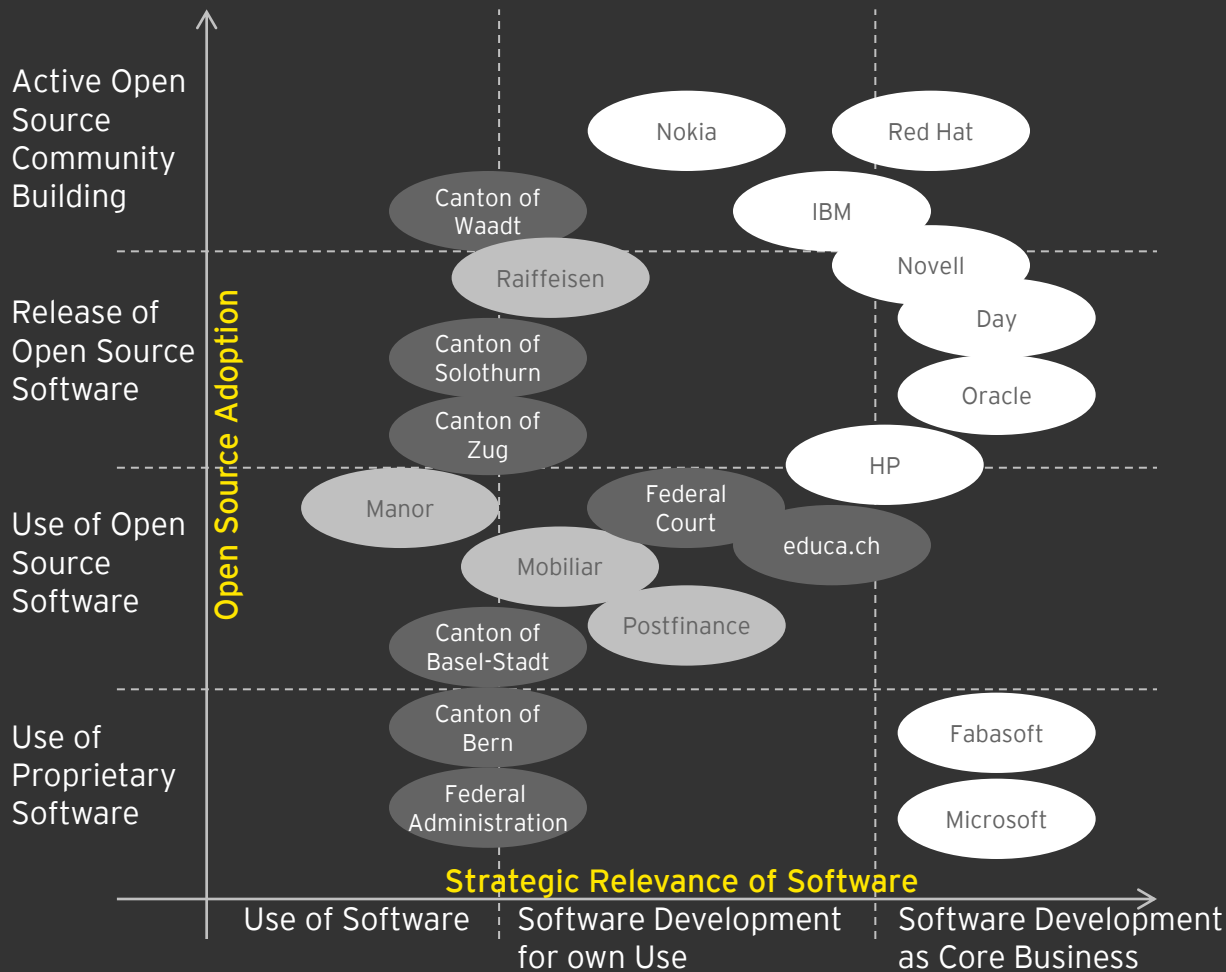


Open Source Adoption Levels



Source: Matthias Stuermer "How Firms Make Friends: Communities in Private-Collective Innovation"

Open Source Adoption Matrix



Data Sources

- ▶ **Blog**
www.digitale-nachhaltigkeit.ch
"Bedeutung von Open Source Software in sieben internationalen Software-Unternehmen"
- ▶ **Press releases**
of the Parliamentarian Group for Digital Sustainability
- ▶ **OpenExpo 2009 und 2010**
speeches on www.openexpo.ch
- ▶ **Open Source Observatory and Repository** for European public administrations www.osor.eu
- ▶ **PhD thesis of Dr. Matthias Stürmer 2009**
"How Firms Make Friends: Communities in Private-Collective Innovation"

Thank you!

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