

Is Academic Open-source Software Dependable?

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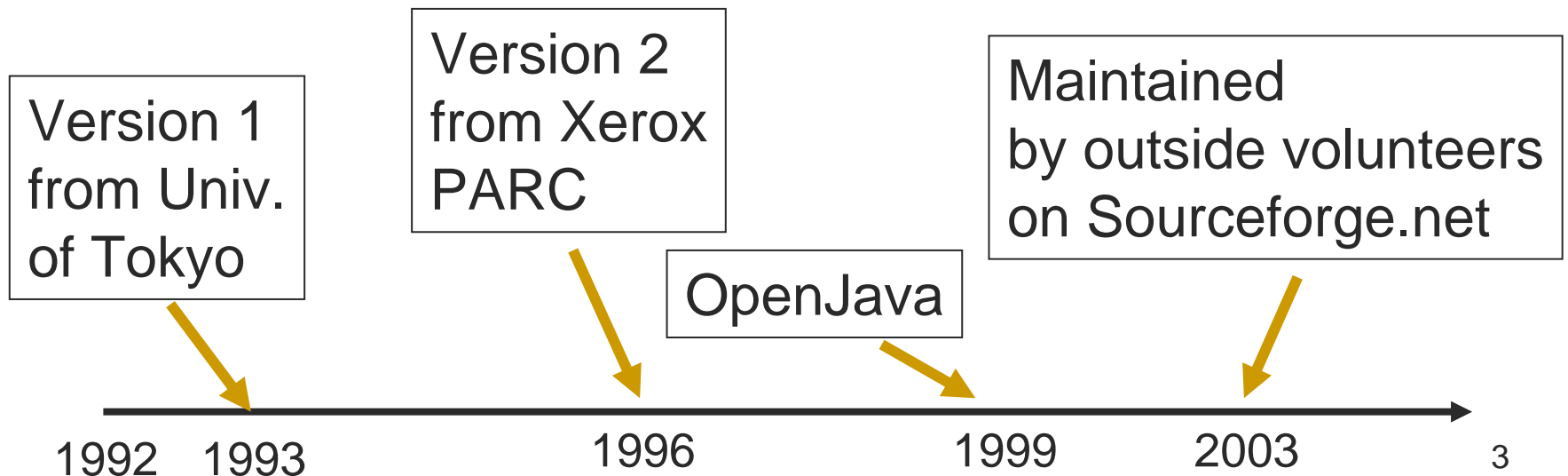
Topical Days: Open-Source Software in Dependable Systems
18th IFIP World Computer Congress
In Toulouse, France on Thursday 26 August 2004

[My experiences..]

- My job
 - Research and teaching as a university prof.
- Research projects
 - Explore academic ideas
 - Develop software products as “proof of concepts”
 - Resulting products are distributed as Open Source Software.

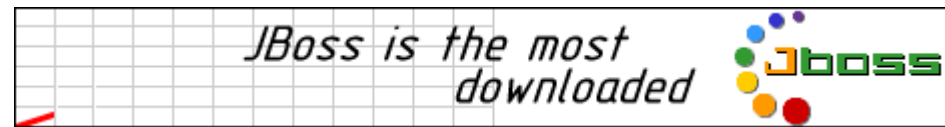
[OpenC++ and OpenJava]

- Extensible C++/Java compiler
 - Method-call behavior, syntax, ...
 - Research on reflective computing
- Project started in 1992



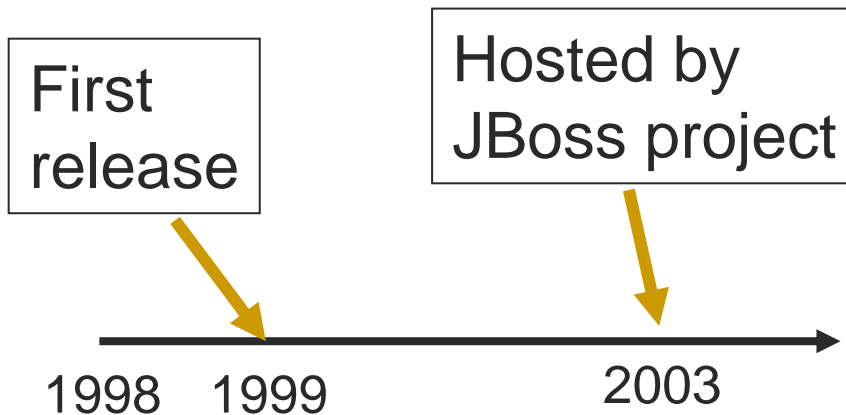
[OpenC++ Users]

- Mainly used as a research platform
 - e.g.
 - To implement their middleware for dependable computing by J. C. Fabre at LAAS-CNRS
 - Downloads
 - $\geq 6,000$ copies from 2000 to 2003 both academia and **industry**



[Javassist

- Java bytecode engineering library
 - **Easy to use** due to source-level abstraction
 - Research on Aspect-Oriented Programming
- Project started in 1998



JBoss is no.1 open-source J2EE server.

Market share:

No.1 WebSphere

No.2 WebLogic

No.3 **JBoss** 27%

[Javassist Users]

- Used as a library for implementing middleware for Web applications.
 - e.g. JBoss J2EE server, Tapestry, ...
 - **Industry-strength** open source software as well as research systems
- Downloads
 - ≥ 500 /month in 2003Q4
 - $\geq 7,000$ /month as part of JBoss

[The topic of this talk]

Is Academic Open-Source
Software (OSS) Dependable?

[Yes!]

- Code quality
Industry-strength as other open source software
 - A larger user base tests on more platforms and finds more bugs.

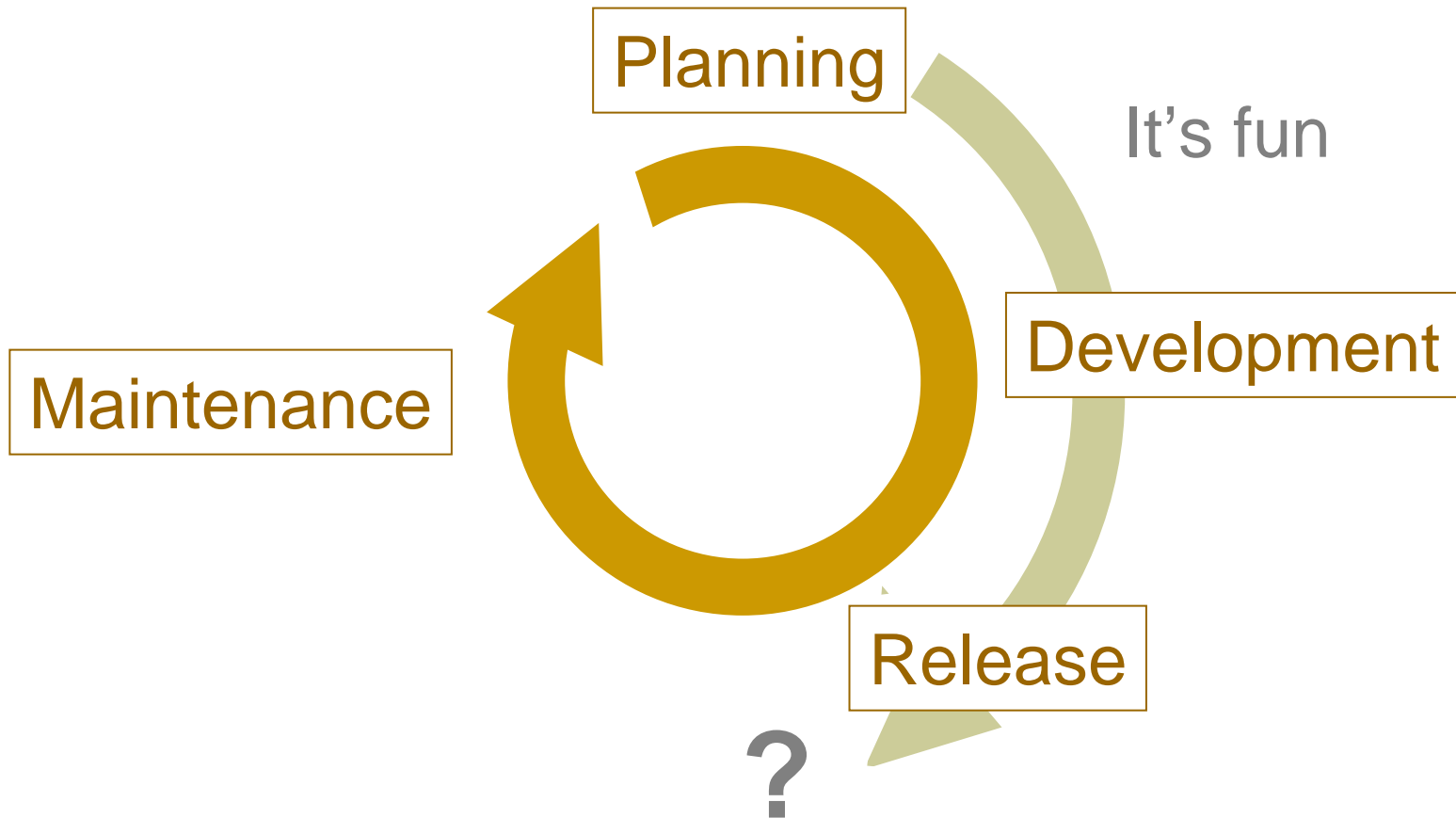
[Yes!? (I'm not sure...)]

- Long-term supports and maintenance
 - Key to **dependable** software
- Academic open source project
 - The goal is to publish academic papers.
 - It is funded; not a volunteers' project.
 - After the project ends, the software is...

[Life Cycle of Academic OSS]

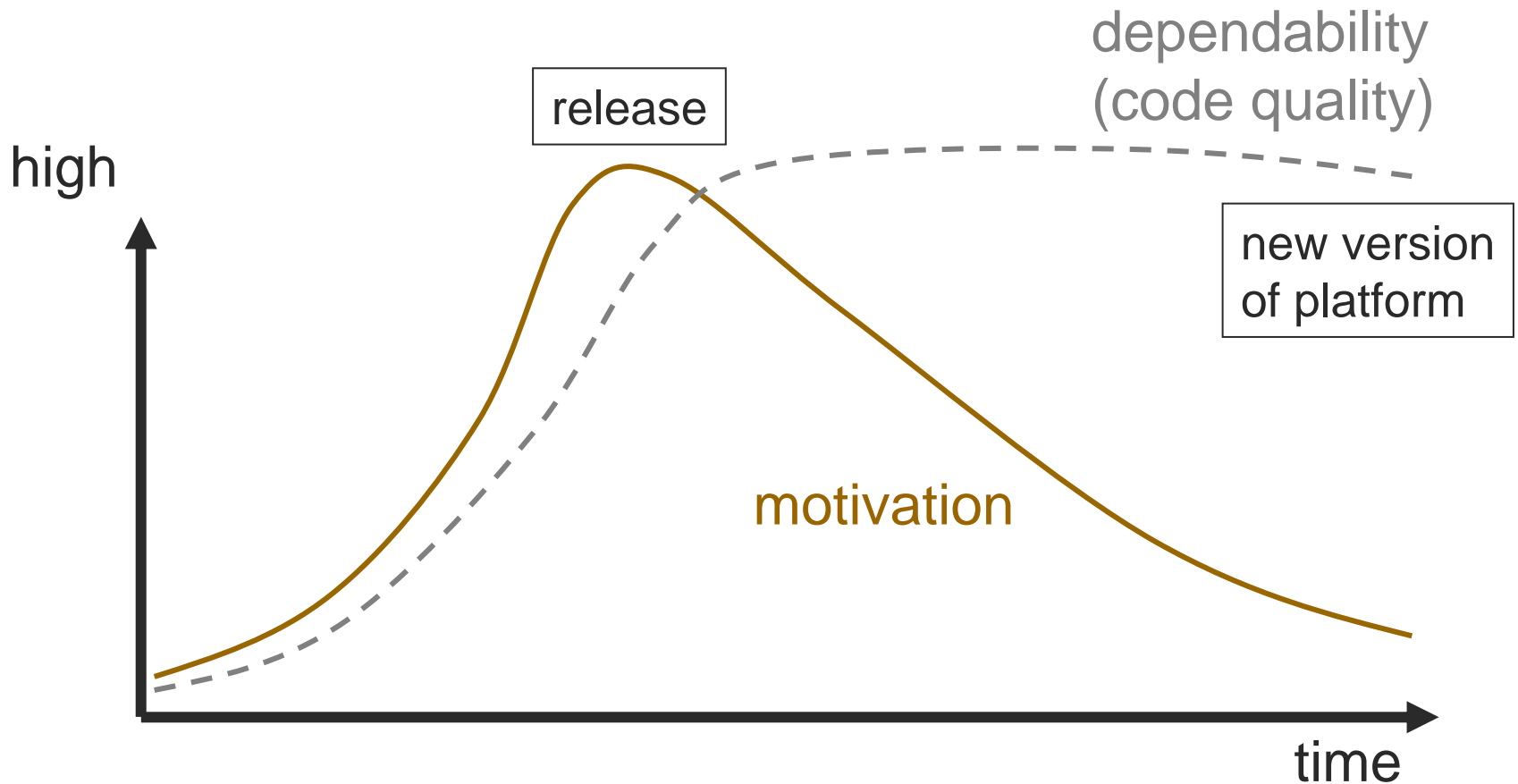


[Life Cycle of Regular OSS]

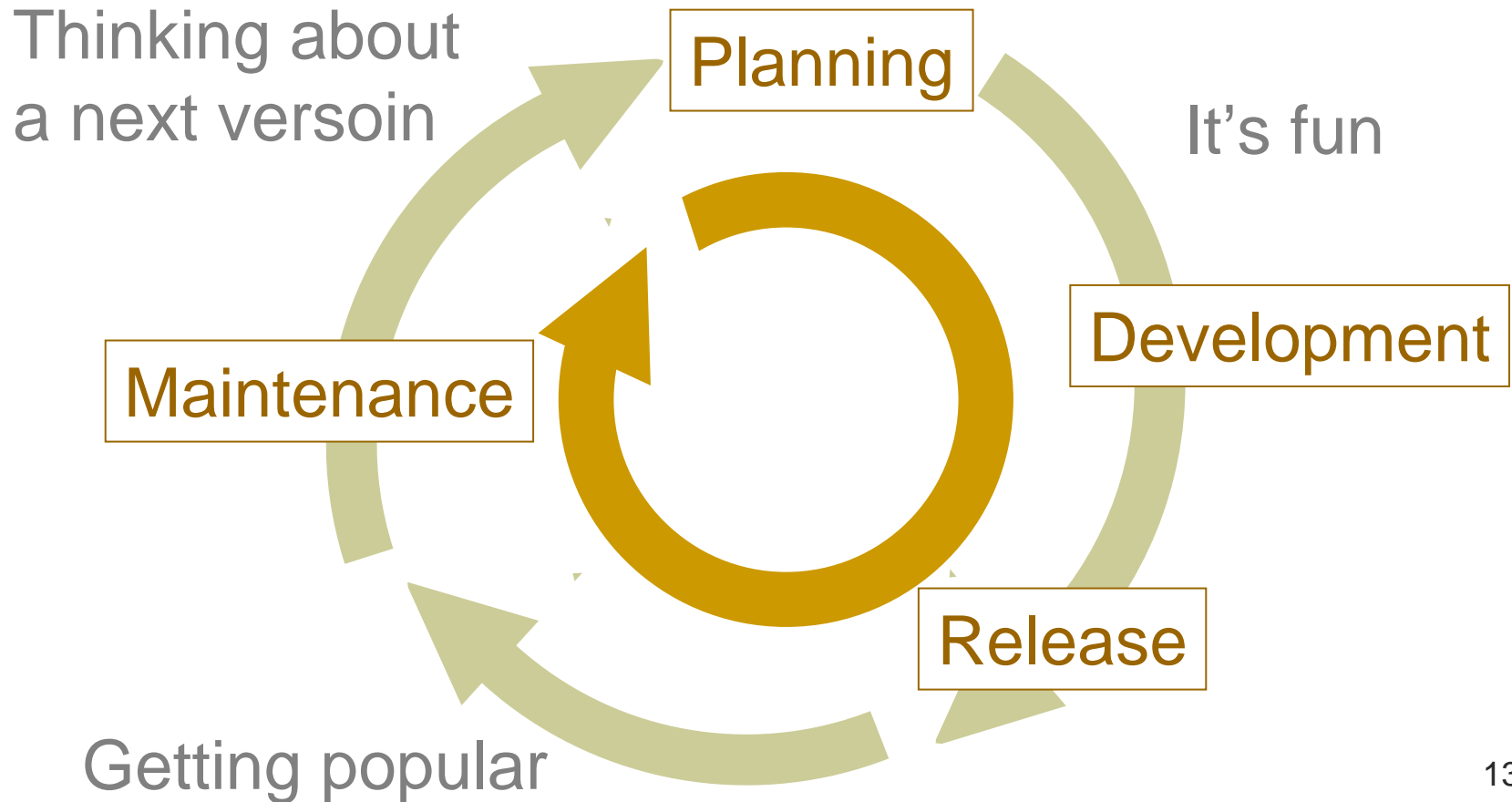


[Software development is fun.]

■ But...



[Life Cycle of Successful OSS]



[Short Release Cycle]

- Motivates developers
 - Thinking a new version is fun.
- Bad for dependability
 - Which release fixes this bug?
 - Which release is stable?
 - Not perfect compatibility between releases.

[Professional Open Source]

- Business model of JBoss Inc.
 - Employees spend their time
 - 50% for new OSS development
 - 50% for maintenance of their old OSS
 - The company sells supports and consultation of old OSS by the authors.

Open Source Software is not free!

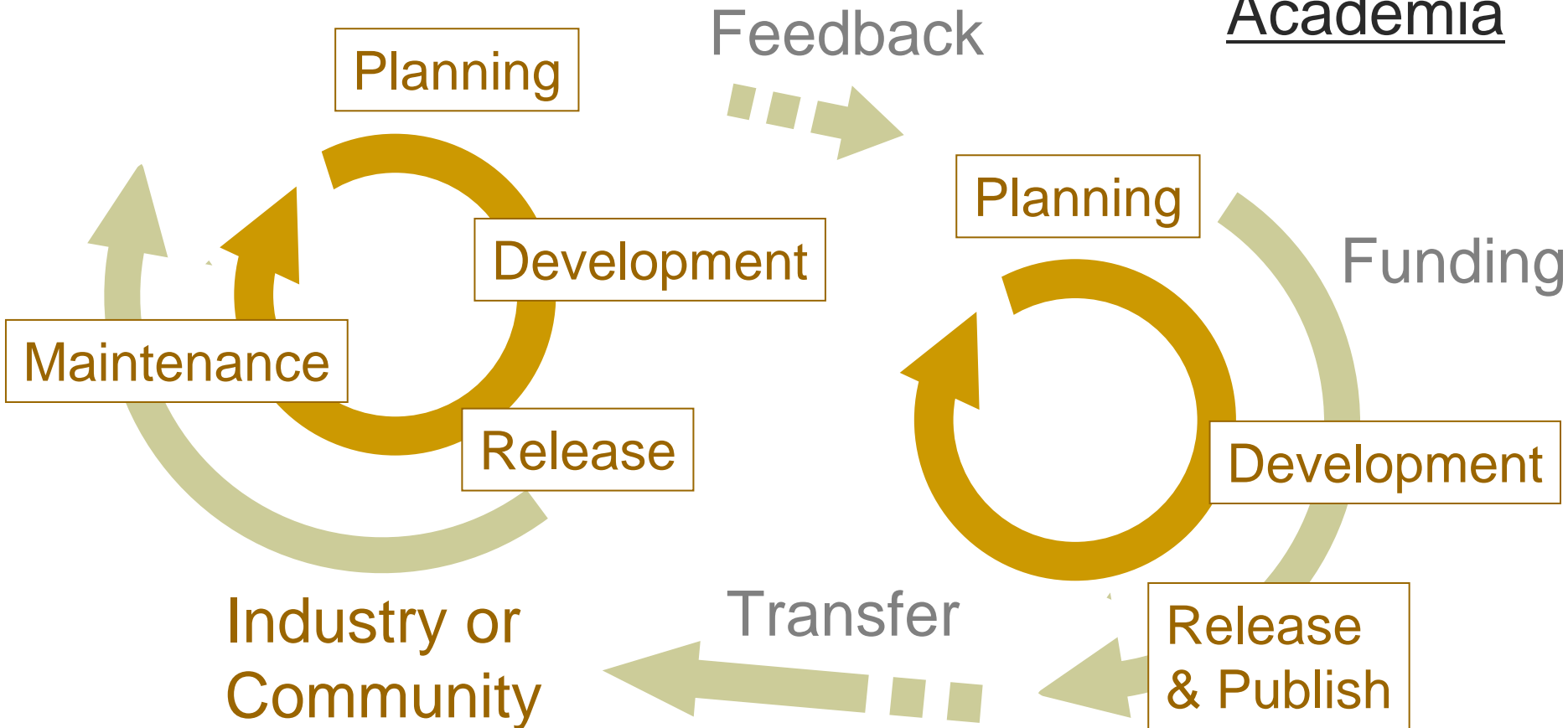
[To Make Academic OSS Dependable]

How can we keep
motivation?

Technology Transfer?

Pro. OS Company

Academia



Who is interested in academic OSS?

[Final Remarks]

- If you use academic OSS for a commercial dependable system,
 - Acquire the OSS project,
 - And start Professional OSS business
 - Contract with the OSS developer for consultation, or
 - Hire the OSS developer if she is a student.