

E/F Workshop 2006



espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

Open Source Software & Software Engineering

Morkel Theunissen

mtheunis@cs.up.ac.za

17 November 2006

WARNING



espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

Please note that some Real Computer Scientists may be offended by the following presentation.

The Goal



espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

TRY Understand Contemporary Software Engineering

Towards?



espresso

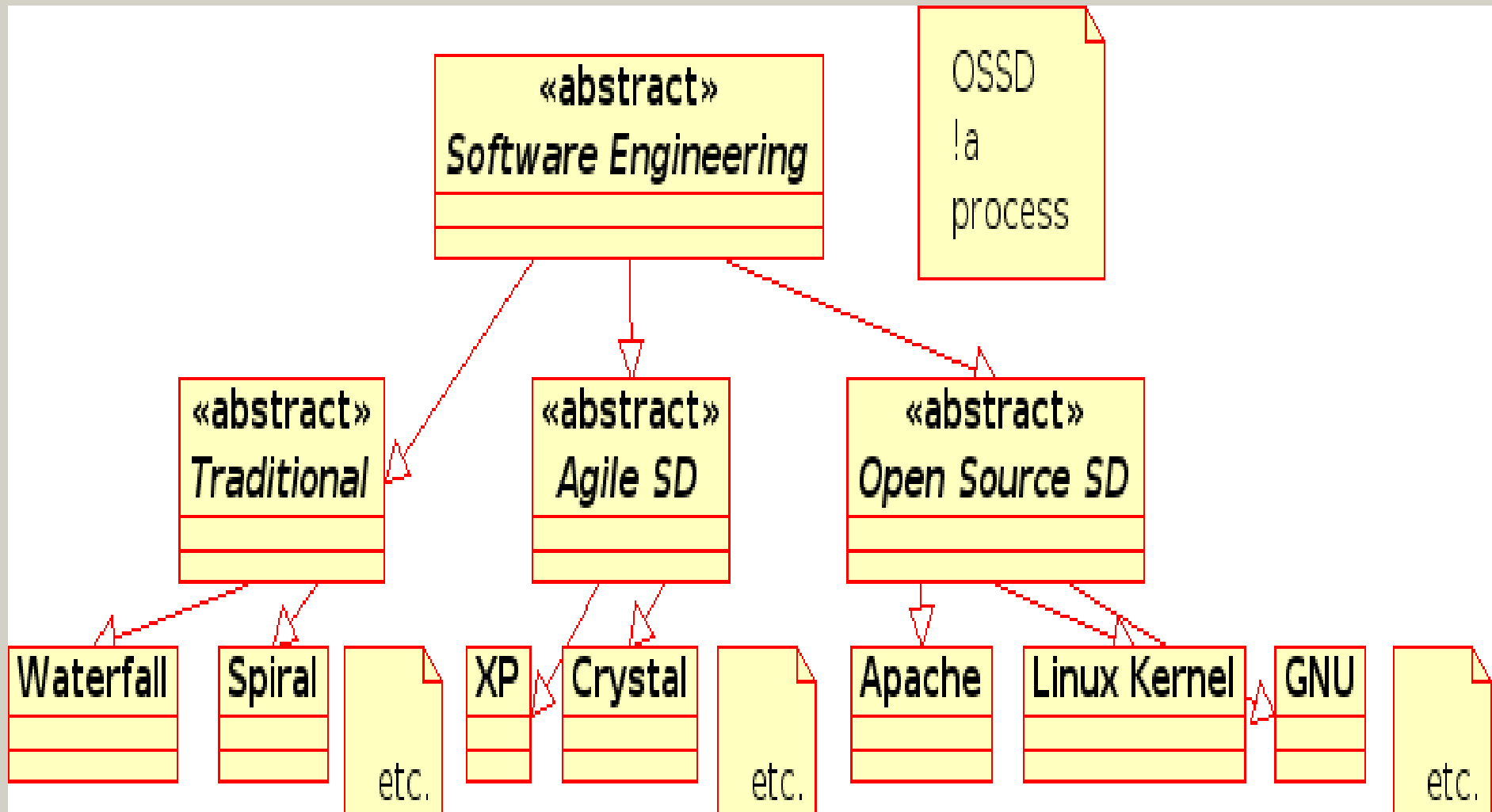
Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

- What is SE?
- Is OSSD SE?
- How do you incorporate OSSD in a organisation?

SE Landscape in UML ;-)



Defining SE (1)



espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

“(1) The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software.

(2) The study of approaches as in (1).”

[IEEE 610.12-1990]

Defining SE (1)



espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

“Just as electrical engineering is based upon the science of physics, software engineering should be based, among other things, upon computer science. In these two cases, though, the emphasis is necessarily different. Scientists extend our knowledge of the laws of nature while engineers apply those laws of nature to build useful artifacts, under a number of constraints.” [SWEBOK]

CS vs SE



espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

- SE a subfield of CS II Eng *consistof* {Civil Eng, Chemical Eng, SE, ...} [Parnas 1999]
- Does it matter?
 - Value systems! (next slide)
- Parnas:
 - “An engineer is a professional who is held responsible for producing products that are fit for use.”
 - “Engineers learn science plus the methods needed to apply science.”

Analysing Processes



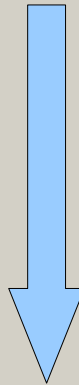
espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

- Values
- Principles
- Practices



Diminishing Live Expectancy

But ...



espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

- In SE we have:
 - Individuals
 - Discipline
 - Teams
 - Organisations
- Each with its own set of Values, Principles & Practices

Principles



espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

- Traditional SD
 - 201 stated/summarised in [Davis 1995]
- Agile SD
 - 12 [Agile Principles URL]
- OSSD
 - ?
 - Unix Influence

Furthermore ...



espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

- What are the forces at play for SD projects:
 - First dimension
 - Requirements Usually Δ
 - Technologies Δ
 - People Δ
 - Secondary dimension
 - Time
 - Geography (Distribution of stakeholders)

Thus ...



espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

Project = Δ Req + Δ Tech + Δ People

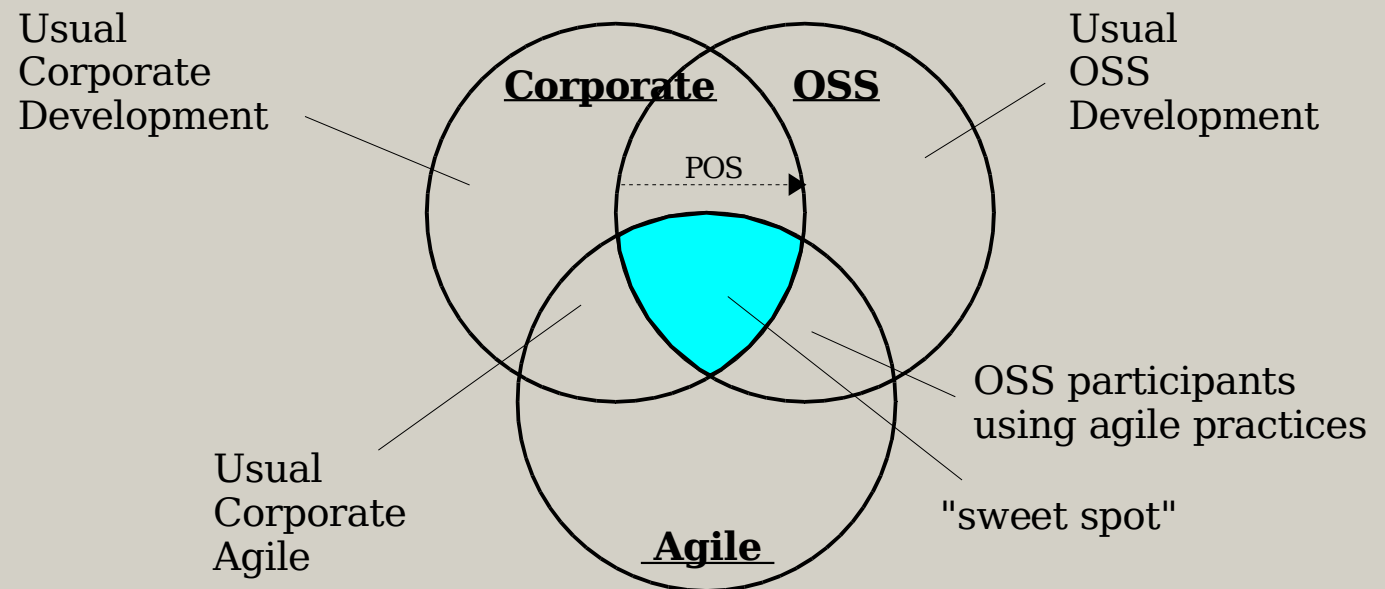
=> No CONSTANT

=> Process per Project

What else have we stated/observed so far



- OSSD !instance of ASD (even tough it is a style vs process)
- Synergy is possible between OSSD & ASD
- SweetSpot



Current Hypotheses



espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

- Every project is unique
 - Thus define a process per project
 - Cockburn advocates this
 - OSSD does this naturally
- Evolution EXISTS in SE
 - Thus adjust process as project progresses
 - Agile principle (No. 12) [Agile Principles URL]

Decision Forces



espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

- Use **Decision Forces** and Radar Maps to define project characteristics
- Use these to select/define the process/practices
- Observe patterns and historical practices => use as guide??

OSS news during 2006



espresso
Research Group
<http://www.espresso-soft.org>
<http://espresso.cs.up.ac.za>

- MS funds Mozilla 2 optimisation for Vista
- MS & Novell deal
- Sun:
 - OpenSolaris
 - javac & HotSpot GPLed, rest to follow in 2007
- RedHat buys JBoss
- Oracle looking for Linux distro

References (1)



espresso
Research Group
<http://www.espresso-soft.org>
<http://espresso.cs.up.ac.za>

- [Davis 1995]

A. M. Davis, *201 Principles of Software Development*, McGraw-Hill, 1995, ISBN 0-07-015840-1

- [IEEE 610.12-1990]

Standards Coordinating Committee of the IEEE CS, *IEEE standard glossary of software engineering terminology*, Tech. Rep. 610.12-1990, IEEE, December 1990.

- [SWEBOK]

IEEE Computer Society, *SWEBOK: Guide to the Software Engineering Body of Knowledge*, 2004, http://www.swebok.org/ironman/pdf/SWEBOK_Guide_2004.pdf

References (2)



espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

- [Parnas 1999]

D. L. Parnas. *Software engineering programmes are not computer science programmes*, Ann. Softw. Eng., vol. 6, no. 1-4, pp. 19–37, 1999, ISSN 1022-7091.

- [Agile Principles URL]

<http://www.agilemanifesto.org/principles.html>

Thank you



espresso
Research Group
<http://www.espresso-soft.org>
<http://espresso.cs.up.ac.za>

...

Discussion & Opinions



espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

Q&A



espresso

Research Group

<http://www.espresso-soft.org>

<http://espresso.cs.up.ac.za>

