

# E/F Workshop 2006



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## Open Source Software & Software Engineering

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# WARNING



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

# The Goal



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TRY Understand Contemporary Software Engineering

# Towards?



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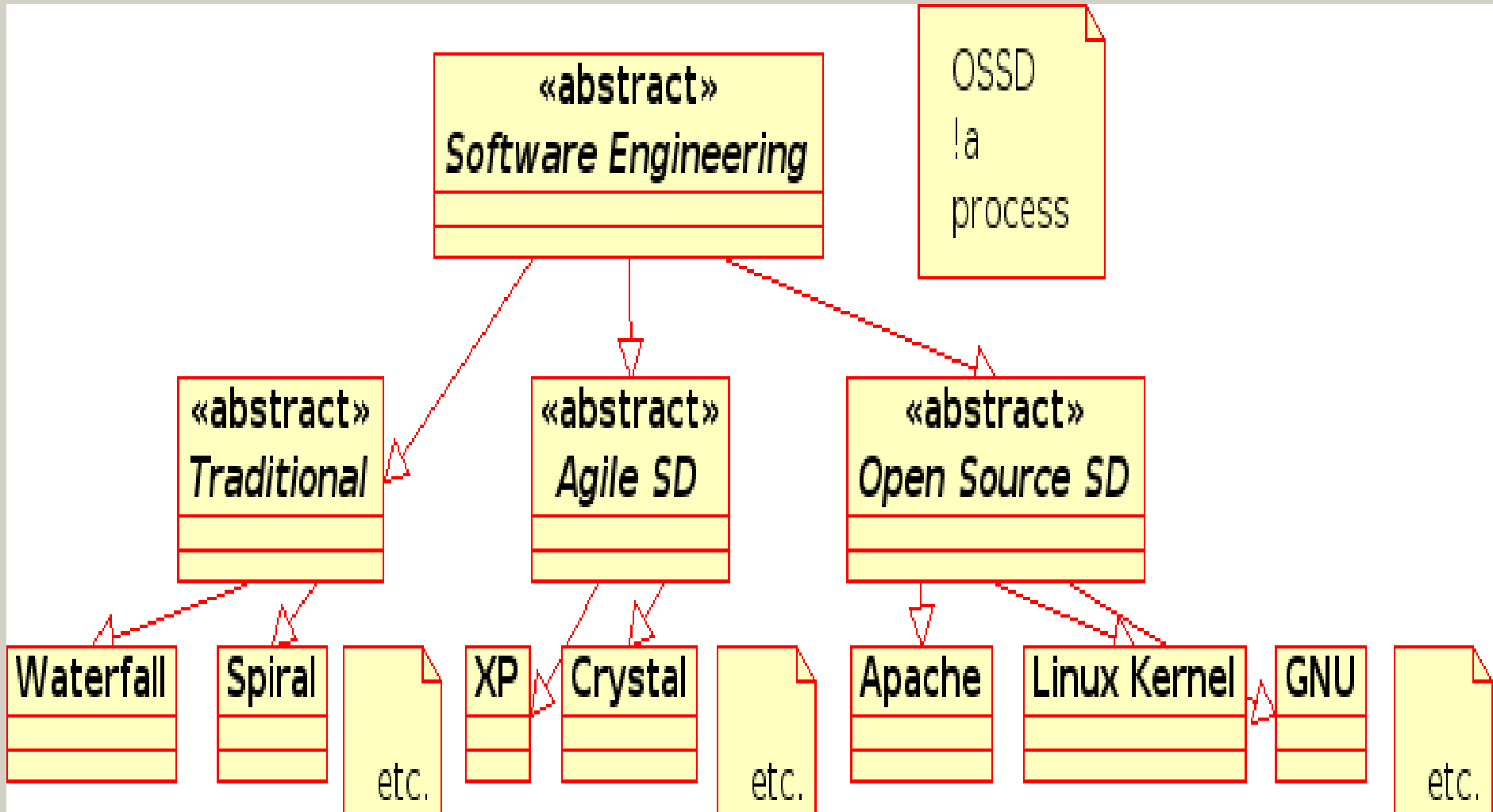
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- What is SE?
- Is OSSD SE?
- How do you incorporate OSSD in a organisation?

# SE Landscape in UML ;-)



# Defining SE (1)



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“(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)



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“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



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- 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



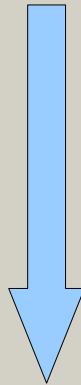
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- Values
- Principles
- Practices



Diminishing Live Expectancy

# But ...



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

# Principles



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

# Furthermore ...



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

# Thus ...



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Project =  $\Delta$  Req +  $\Delta$  Tech +  $\Delta$  People

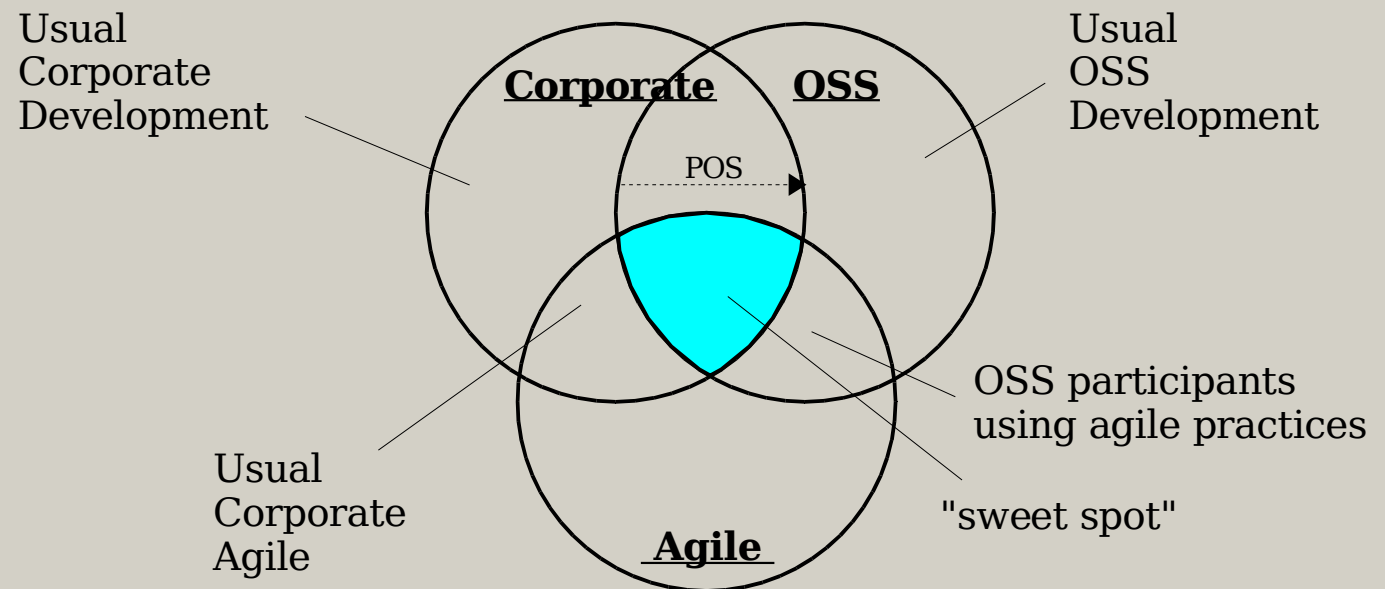
=> No CONSTANT

=> 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



- 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



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- 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



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- 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)



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- [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](http://www.swebok.org/ironman/pdf/SWEBOK_Guide_2004.pdf)

# References (2)



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- [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



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# Discussion & Opinions



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# Q&A



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