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Legal Aspects of Software Development

MVV59K Software Law

26th October 2011, Brno

Tento projekt je spolufinancován Evropským sociálním fondem a státním rozpočtem České republiky.

EVROPSKÁ UNIE esf MINISTERSTVO ŠKOLSTVÍ, MLÁDEŽE A TĚLOVÝCHOVY OP Vzdělávání pro konkurenceschopnost UNIVERSITAS MASARYKIANA BRUNENSIS

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Jaromír Šavelka

Department of Law and Technology
Faculty of Law
Masaryk University
Room no. s61 (office hours Mon 12:00 – 13:30)

Email: jaromir.savelka@law.muni.cz
Telephone: +420 549 495 377

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Software Development

Reverse Engineering

Works Contract (Software Development Contract)

Service Level Agreement

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References:

Ráček, Strukturovaná analýza systémů (2006)
Ráček, Analýza a návrh systémů course materials (2009)
Otevřel, Jansa, Softwarové právo (2011)

Pressman, Software Engineering (2010)
The Service Level Agreement SLA Guide

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Software Development

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Software Development Key Elements

Developed within a process of engineering activities (is not manufactured)

It does not wear off

It is almost always custom made

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Mass Marketed Products

- Independent systems produced by a developer and “sold” at the market to wide variety of customers who can “buy” the product.
- Specification is an internal process of a developer.

Custom-Made Products

- System development ordered by a specific customer/client. It is developed by contractually binded developer.
- Specification of the product is an important part of the contract between a client and a developer. Any changes must be agreed upon and price updated.

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Software Crysis

The end of 60s of 20th century
- 28 % of software deployed successfully
- 49 % serious problems
- 23 % failures

A need for systematic analysis and design

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Software Crysis

USA government funded software projects (6,8 billion USD):

- 3,2 billion: was not paid, never delivered
- 2,0 billion: was paid but never delivered
- 1,3 billion: vast changes requested, never deployed
- 0,2 billion: deployed after some major changes
- 0,1 billion: deployed as was delivered

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Additional Key Elements

Difficult Maintenance
Software tends to be rather expensive
Productivity of the programmers
Programming Language not very important
Expensive debugging

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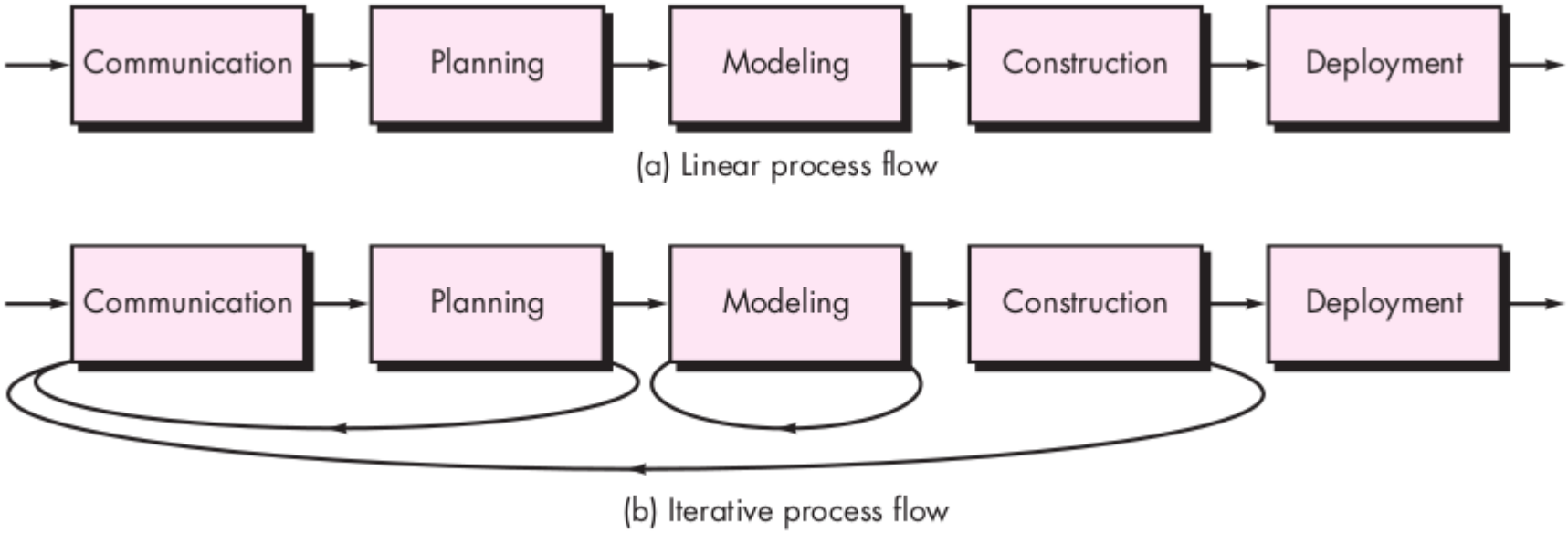
Linear Process Flow



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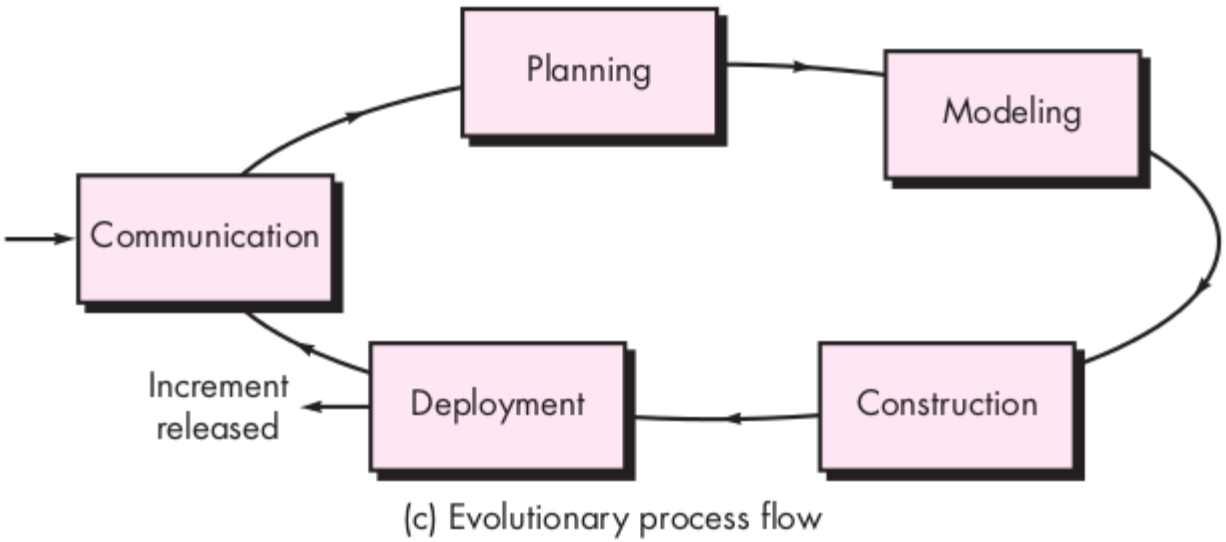
Evolutionary Process Flow



(c) Evolutionary process flow

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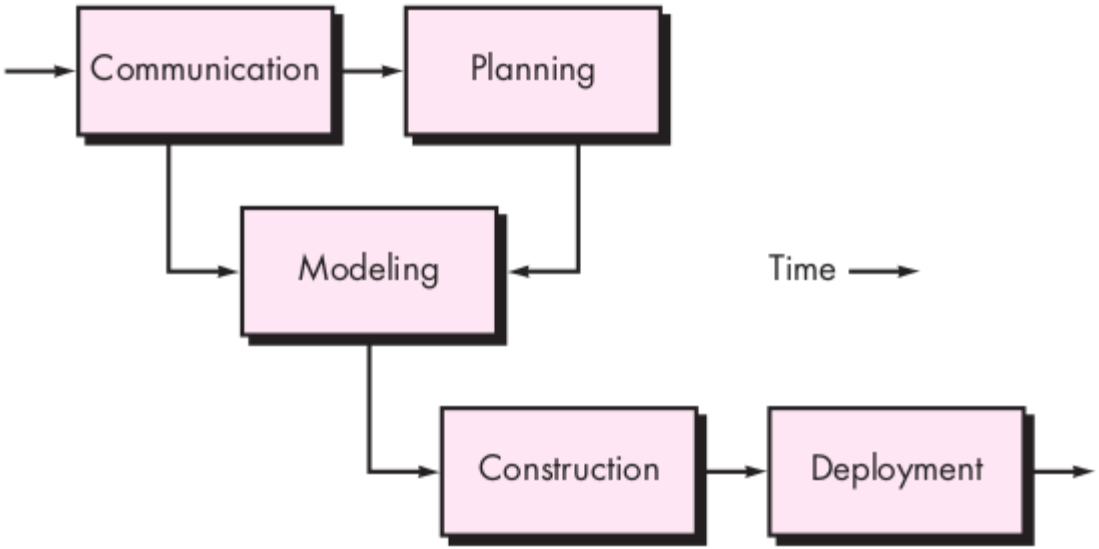
Parallel Process Flow



(d) Parallel process flow

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Well Deployed Software

Maintainability

Reliability

Effectiveness

Usability

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Other Key Elements

Complexity
Scale
Communication
Time Management
Intangibility

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Developing Smaller Scale Products (web pages, simple applications)

Established techniques
Top-down, structured coding, step-wise refinement
Logical framework and code inspection
Tools – compilers, debuggers

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Developing Larger Scale Products (web pages, simple applications)

Planning Mechanisms – work distribution, schedule, resources
Well documented specification
Structured team
Formalized sets of tests, trial scenarios
Formalized inspection

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During the software development

User's needs are transformed to …

Software specification that is transformed to …

Software design that is implemented as …

Software code which is tested, documented and deployed for operation.

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Specification – defining of SW functioning and deployment limitations.
Development – necessary to develop software in accordance with the specification.
Validation – software must be validated to demonstrate that it is a solution to user's needs
Evolution – software must be further developed to be able to adapt for changing needs of a client.

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Observables

"Artifacts"

- software output
- documentation
- data
- source codes

Processes

- work processes
- established rules (rules-of-thumb)
- interaction among team members

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Development Characteristics

Understandability
Observability
Reliability
Acceptability
Robustness
Maintanability
Duration

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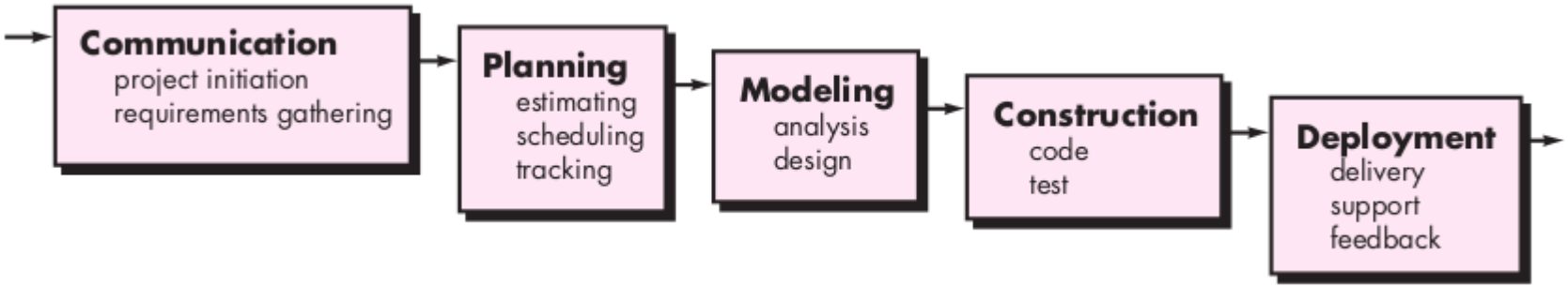
Water-fall Lifecycle



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Problems of the Water-fall Lifecycle

In reality it is difficult to carry out individual steps in the precise order.
At the beginning client is not capable of defining the needs.
Client must be patient.
Late discovery of defects may jeopardize the whole project.

Preferred by the managers.

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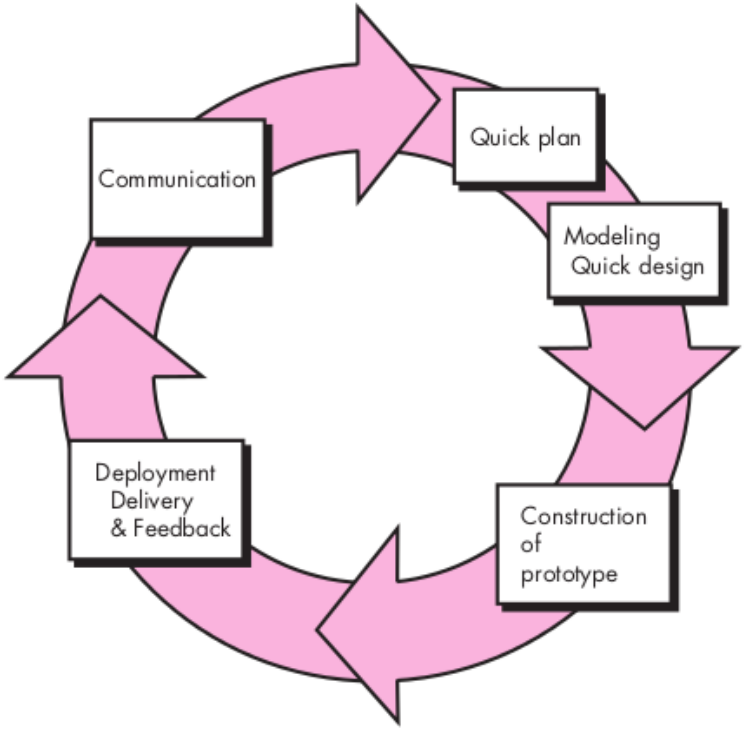
Prototyping Lifecycle



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Managing Defects

The later a defect is discovered the more it costs to be fixed.
A lot of defects remain hidden and is discovered withint the consequent phase.
User requirements usually contain a lot of defects (facts, controversions, ambiguities).
Can be detected.

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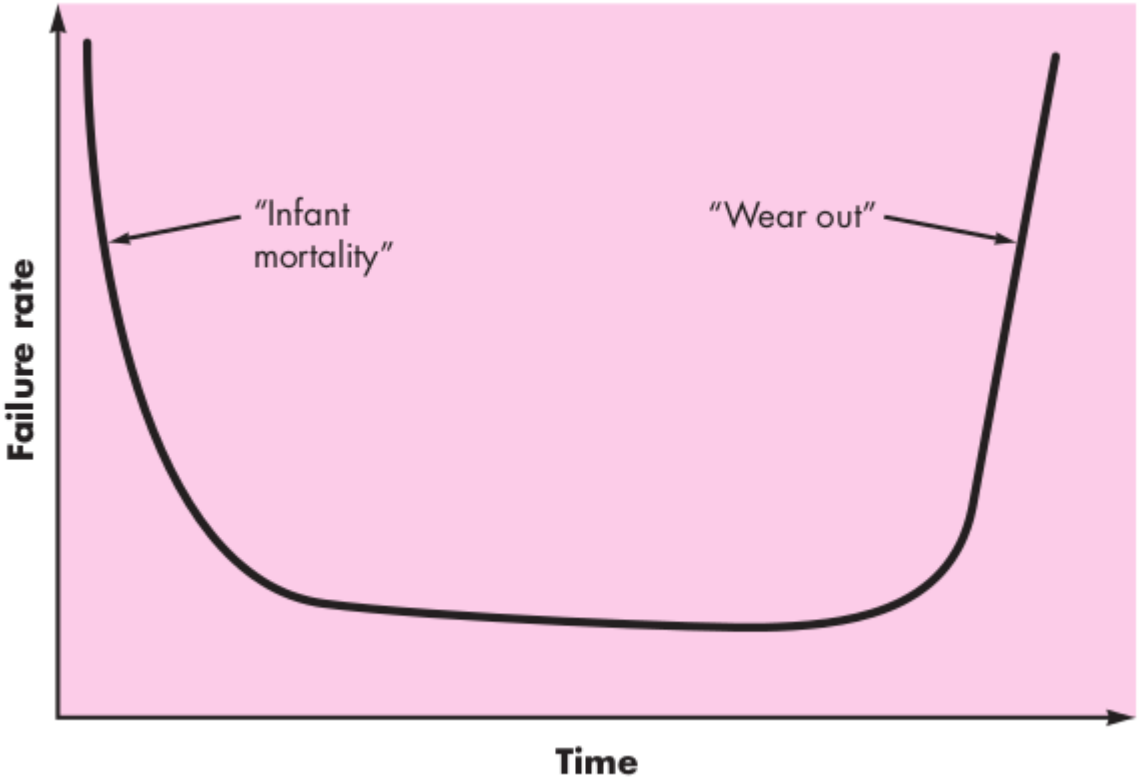
Hardware



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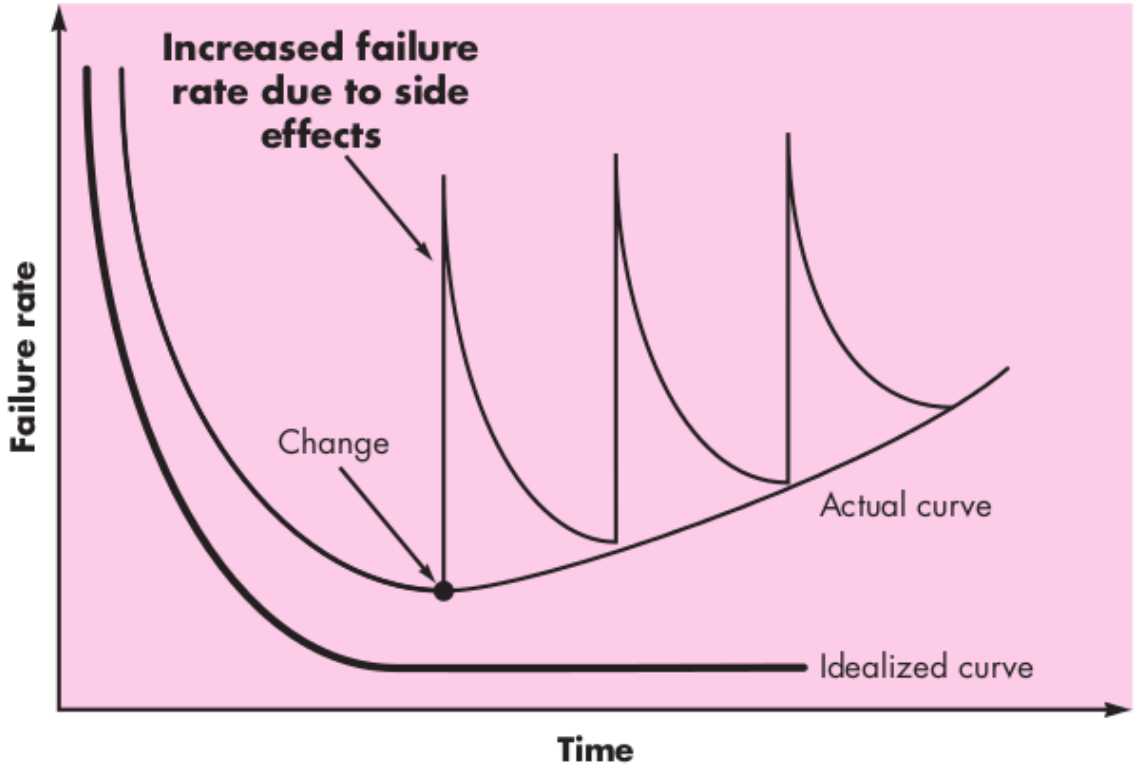
Software



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Lehman's Principles

Permanent change
Increasing complexity
Software evolution
Invariant progress
Limited increment

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Common Myths – management myths

We already have a book that's full of standards and procedures for building software. Won't that provide my people with everything they need to know?

If we get behind schedule, we can add more programmers and catch up (sometimes called the "Mongolian horde" concept).

If I decide to outsource the software project to a third party, I can just relax and let that firm build it.

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Common Myths – customer myths

A general statement of objectives is sufficient to begin writing programs—we can fill in the details later.

Software requirements continually change, but change can be easily accommodated because software is flexible.

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Common Myths – practitioner myths

Once we write the program and get it to work, our job is done.

Until I get the program “running” I have no way of assessing its quality.

The only deliverable work product for a successful project is the working program.

Software engineering will make us create voluminous and unnecessary documentation and will invariably slow us down.

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Software Reverse Engineering

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"the process of developing a set of specifications for a complex hardware system by an orderly examination of specimens of that system"
(Rekoff, 1985)

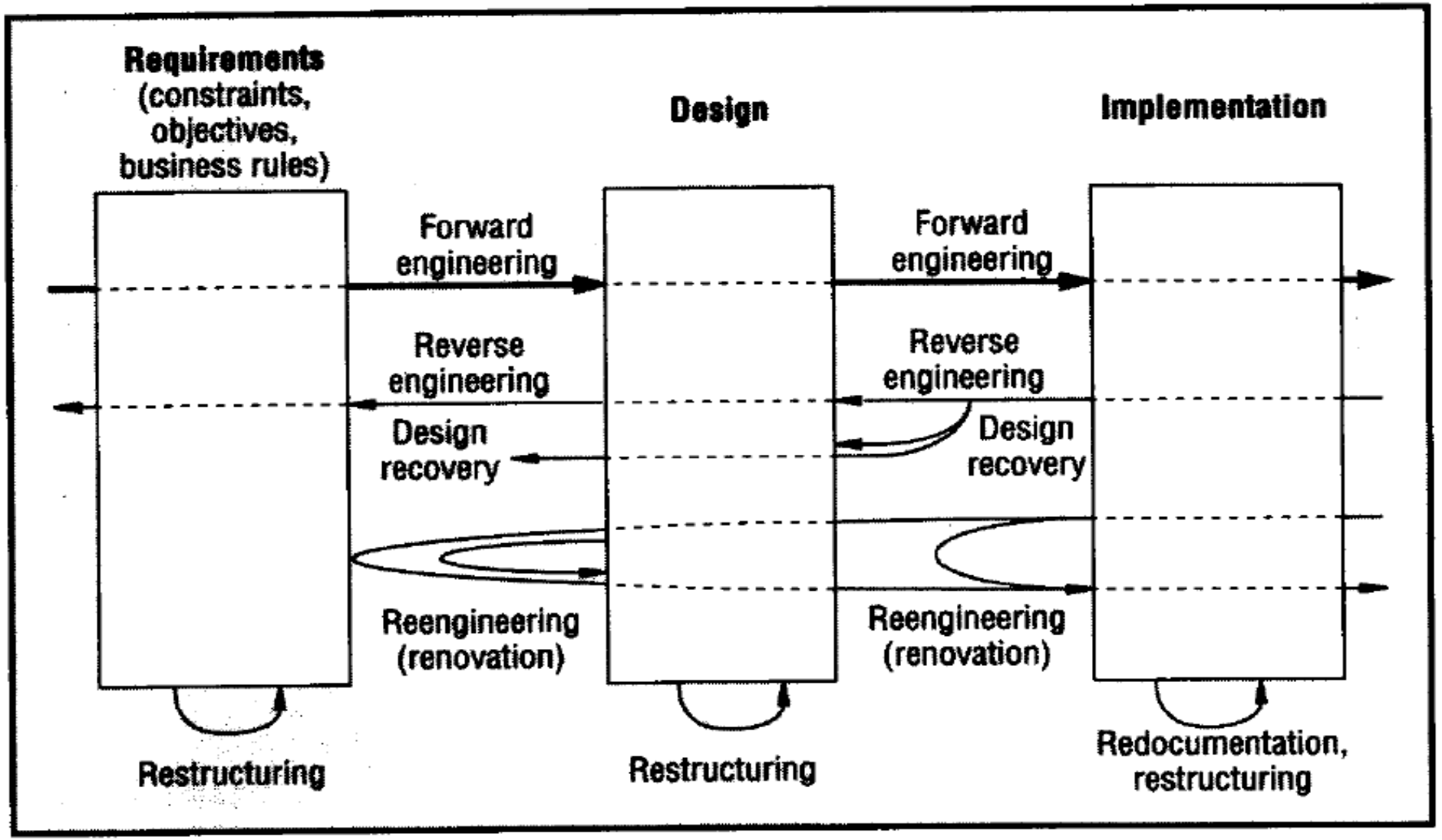

Figure 1. Relationship between terms. Reverse engineering and related processes are transformations between or within abstraction levels, represented here in terms of life-cycle phases.

Chikofsky, E.J. & Cross, J.H., 1990. Reverse Engineering and Design Recovery: A Taxonomy. *IEEE Software*.

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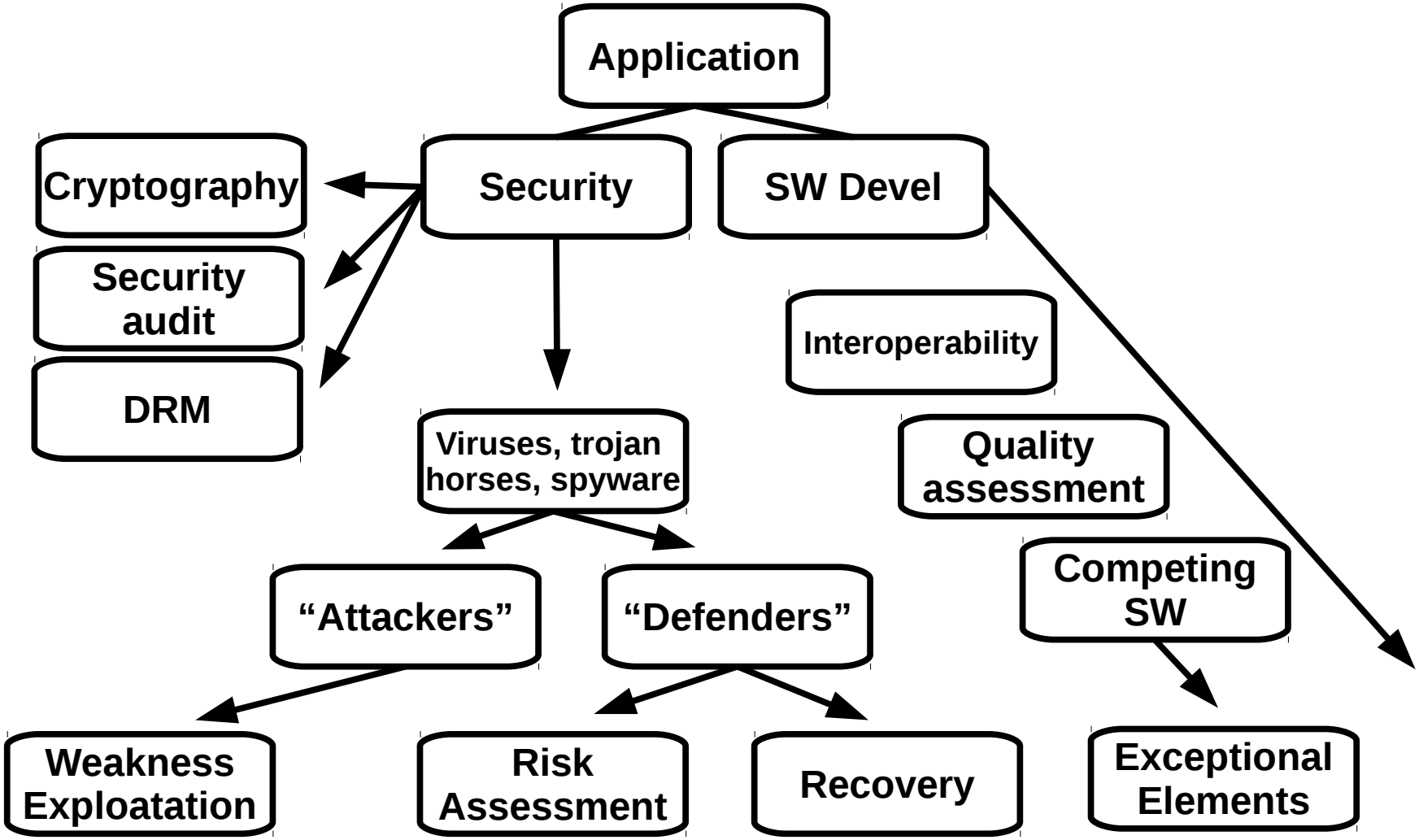

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Works Contract
Software Development Contract

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Software Development (and Deployment / Implementation) Contract

Specific regulation does not exist

=> Works contract as a basis

Framework Contract

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The Purpose and Aims of the Contract

Often missing (usually signals high quality of the contract)
Can be used as interpretative framework for the whole contract
Current status of the client (customer)
Desired status of the client (customer)

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The Object of the Contract

The actual description of the software solution - key element, often missing (referrence to an external document), often vague

Sometimes advisable to use negative definitions

Time and place of the delivery

Possible to specify during the actual development, Sometimes necessary to change

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Involvement of Third Parties

Hardware supply

- Developer
- Client
- Third Party

Software supply

- Developer
- Client
- Third Party

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The Project Management

Project team

Documentation policy

Internal communivation

Rights, obligations and repsonsibilities within the project team

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Change Management

Substantial changes

Accessory changes

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Training and Documentation

Vital in case of more complicated software

Training sessions for the employees of the client that are expected to use the software or provide support

High quality documentation, tutorials

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Software Delivery

Acceptance based on pre-defined tests (formal requirements)

Delaye delivery (default)

Developer in default

Client in default

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Software Delivery II

Source codes
delivered
escrow

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Cooperation of the Client

Extremely important

Not-fulfillment may jeopardize the whole project

Serious legal consequences

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Rights to the Software

Transfer of Rights

License Contract

The client entitled to use the software in such a way to fulfill the purpose of the contract.

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Price

Fixed or budget

Changes – raise, reductions (additional work)

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Defects

Liability for Defects

What can be considered a defect?

Hidden defects, trial operation

Delivery inspection

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Defects

Actual and legal defects

Claims

Warranty

Agreed properties of the software

Damages

Liability for damages

Disclaimers

Limitations

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Contract Termination

Fulfillment

Substantial Breach of Contract

Withdrawal

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Service Level Agreement

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Definition

Written agreement between a service provider and Customers), that documents agreed Service Levels for a Service (SLA)

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SLA Structures

Sevice Based SLA

Customer Based SLA

Multi-level SLA
Corporate level
Customer level
Service level

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Designing the Contents of SLA

Service hours
Availability targets
Reliability
Support arrangements
Transaction response times
Disaster recovery
Reporting requirements
Incentives and penalties

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Other Important Documents

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Service Catalogue

Underpinning Contracts

Operational Level Agreement

Service Level Requirements

Thank you for your attention!

(jaromir.savelka@law.muni.cz)

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