Architecture Engagement Purposes
Towards a Framework for Planning "Just Enough"-Architecting

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WICSA/ECSA 2012
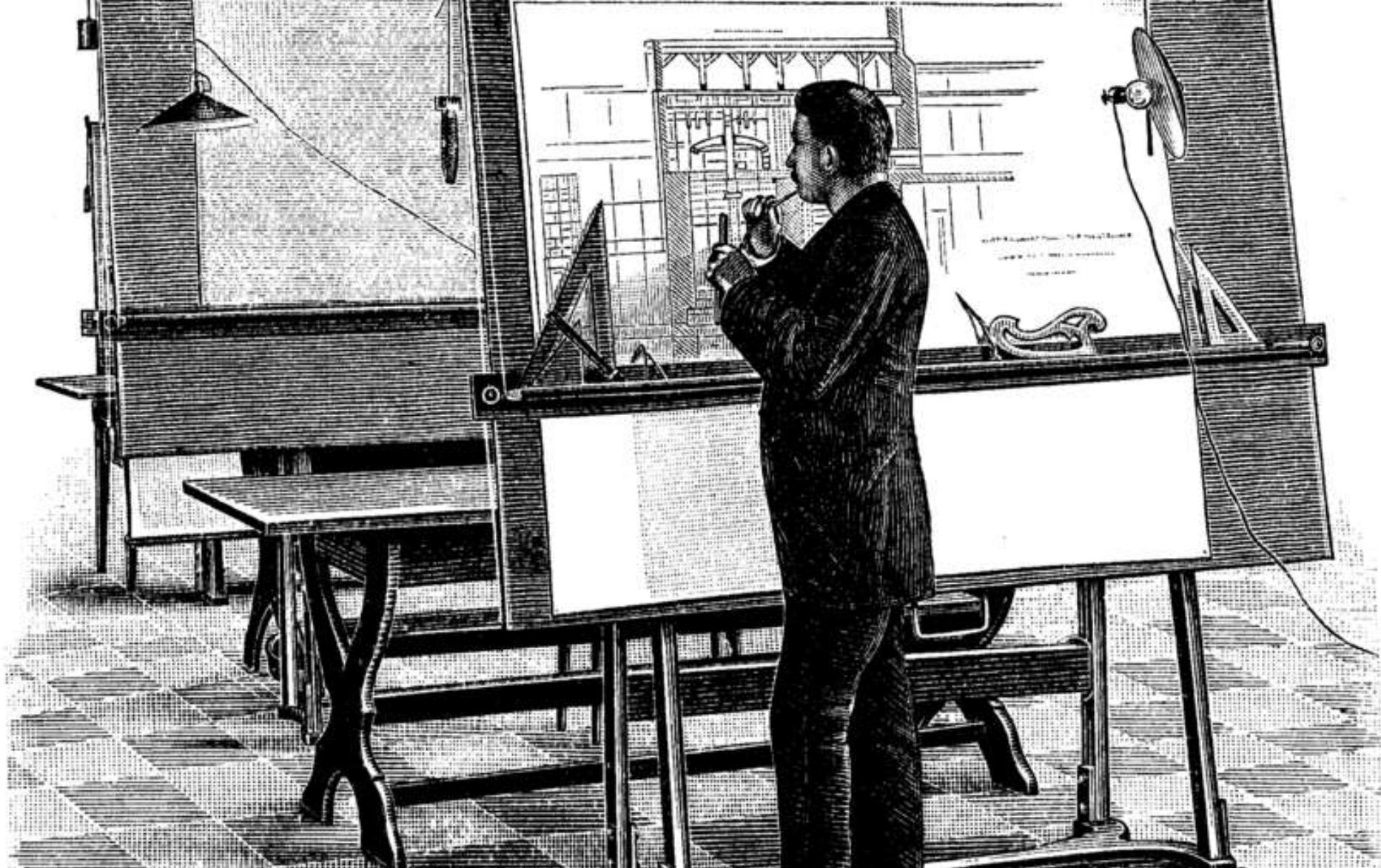
„The system shall be capable to handle three times more parallel users than before. You have one person month of effort."

Questions Arise

- How to invest available effort for architecture work?

- What activities need to be done to achieve a goal?

- What level of detail is sufficient?

- When to stop?

- How to convince management of the necessity of architecture work?

- How to prove benefit of architecture work?

- What is the return on investment?

- …

Planning Architecture Work

Definition

*An Architecture Engagement Purpose (AEP) is a
crisp and concise description of
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Template for Guidance of Architect

Specification

AEP

Realization

Specific purpose

Architecting activities to be performed to satisfy this purpose

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Purposes to be Addressed with Architecture

- Achieving a certain quality

- System migration

- Decision about redevelopment
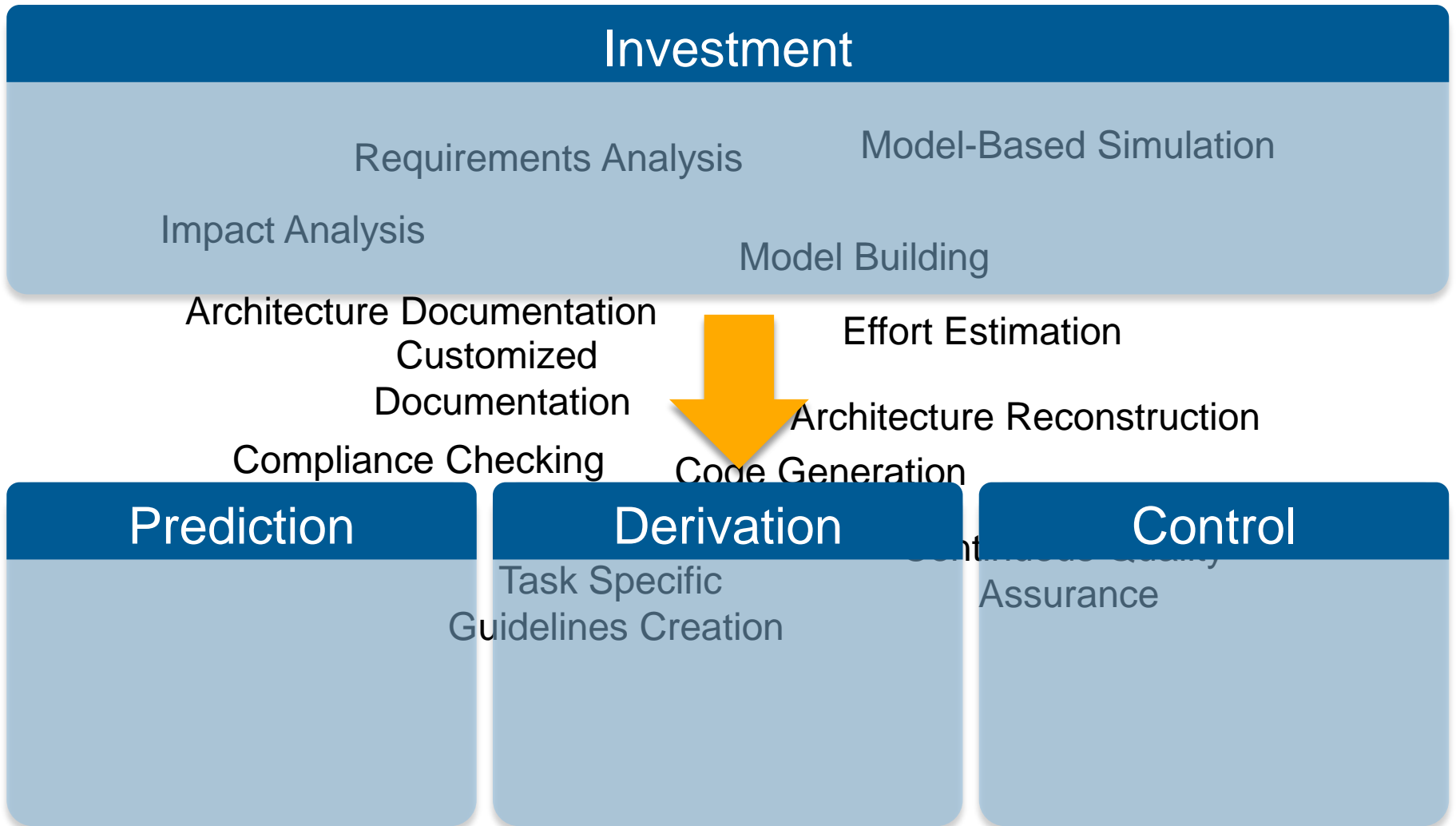
- Evolution of a system

- Technology selection

- …

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3x #Users: AEP Specification

Name	3x #users
Purpose	Change system to support 3 times of the number of today's users
Lifecycle Trigger	New business opportunity in new sector
Lifecycle Impact	Change has to be implemented Change has to be tested
Constraints	In Budget: One person month architecting effort
Level of Confidence	Agreement between architect and developer that the concepts work Feasibility checked with prototype
Confidence Measure	Working prototype achieving new user numbers

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Typical Architecture Activities

Investment

Requirements Analysis

Model-Based Simulation

Impact Analysis

Model Building

Architecture Documentation
Customized
Documentation

Effort Estimation

Architecture Reconstruction

Compliance Checking

Code Generation

Prediction

Derivation

Control

Task Specific
Guidelines Creation

Continuous Quality
Assurance

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3x #Users: AEP Realization

Architecting Activities				
Name	Define high-performance architecture	Predict and test performance	Migrate implementation to high-performance architecture	Check compliance
Category	**Investment**	**Prediction**	**Derivation**	**Control**
Effort	10 PD	5 PD	3 PD	2 PD
Due Date	April 08	April 29	May 10	May 15
Precondition	-	Sufficient architecture model	Agreement that concepts work	Implementation complete
Postcondition				
Detailed Description	Clarify requirements Identify bottlenecks Build performance model Build prototypes	Simulate usage load Build prototype	Generate change documentation Generate stubs	Check architecture compliance of changed implementation
Status	Started	Not Started	Not Started	Not Started

Experiences with AEPs in Action

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Benefits & Challenges of Planning Architecting with AEPs

- Benefits
  - Focusing architecture work
  - Transparency in architecture costs and benefits
  - Coordination of teams

- Challenges & Future Work
  - Defining confidence levels
  - Measurability
  - Too little guidance for estimations
  - Some aspects not possible to predict
  - Continuous refinement
  - Empirical evidence

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