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Development of SAS Standard Macro Systems



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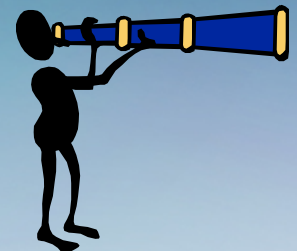
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Introduction

- Productivity, Quality
- Standardized programs / results
- Reduced validation effort
- "Source generator"
- Commercial software



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Macro System Paradigms - Purpose

- "Toolbox" - bunch of tools
 - Daily needed supporting tools
- "closed" macro systems
 - Few parameters with low complexity and flexibility
- "open" macro systems
 - Many options with high complexity and flexibility



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Macro System Paradigms - Types

- SAS Macros called in SAS
- SAS Macros called by a GUI
- SAS Macros called via Web

- User groups
- Efficiency
- System confidence



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Macro System Paradigms - Developer



Resources

- In house development
 - Company knowledge, workflow, processes, cases
 - Motivation, Acceptance
- External development
 - Expertise, efficiency for documentation, implementation and validation
 - Less user-friendly, enhancement barriers



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Macro System Paradigms - Models

- Design Models

- Waterfall Model

- (Requirements, Design, Implementation, Verification, Maintenance)

- V Model

- (Concept, Architecture, Detailed Design, Test & Verifications)

- Rapid Prototyping

- Agile Programming

- e.g. Extreme Programming (XP)

- (Frequent Loops)



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Macro System Paradigms

- Extreme Programming (XP)
 - Frequent releases
 - Short development cycles
 - Changing customer requirements
 - High user acceptance
 - Quick wins

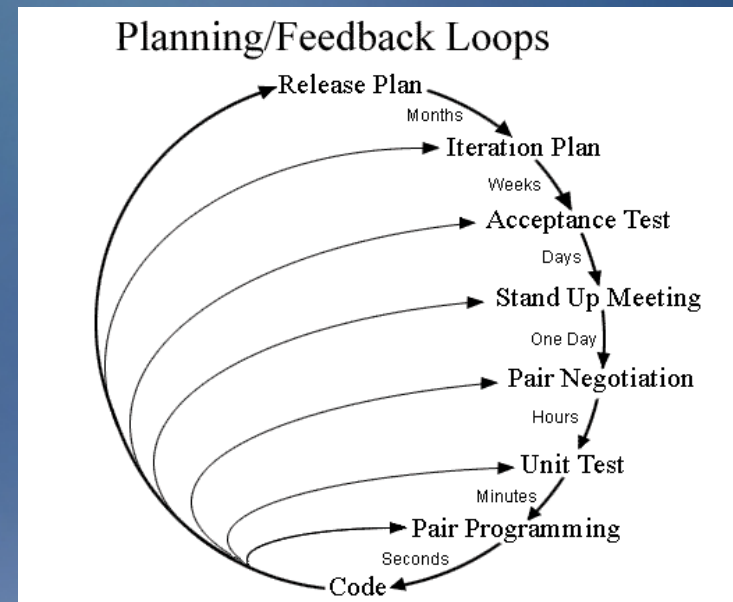


Figure 1: Extreme Programming



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Specifications



How the customer
explained it



How the analyst
designed it



What the customer
really needed

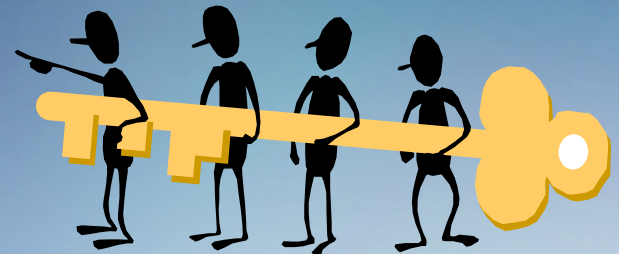
Figure 2: Specifications



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Specifications

- Who is creating specifications (specifications via group)
 - Technical / content knowledge
 - Group size
 - Small → efficient
 - Large → comprehensive
- Types
 - Enforced ⇔ pleased
 - Skills
 - Functions
 - Empowered



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Specifications

- How is the specification
 - Technical, content wise
 - Detailed, strict, interpretation open
 - Exception handling

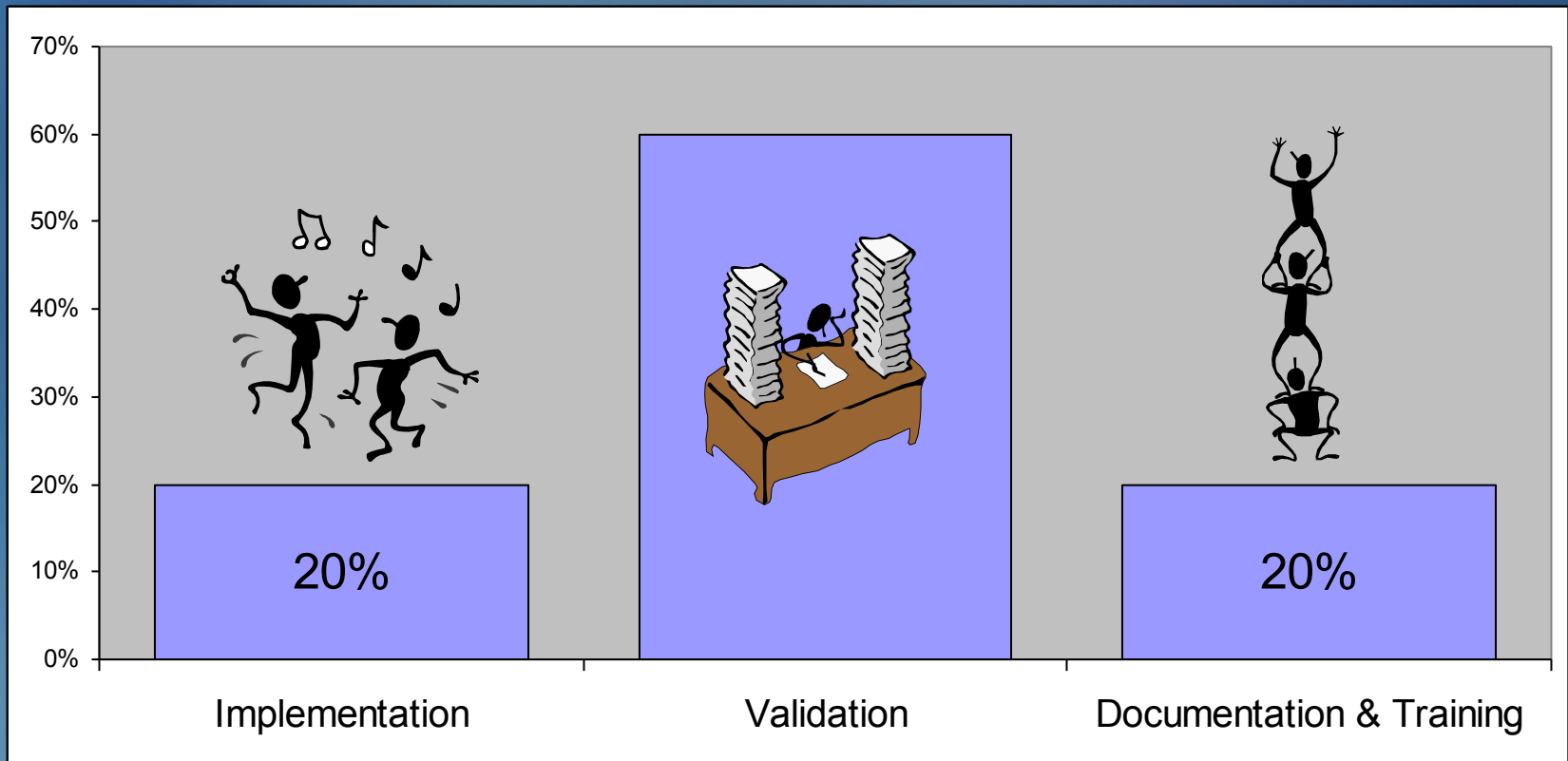
Less is more, but not enough!



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Implementation

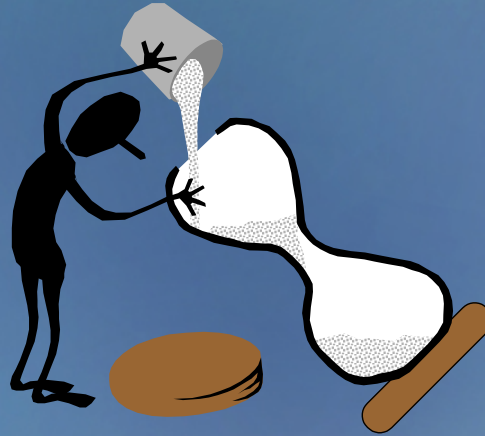
- Phases and motivation during implementation



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Rollout – Background of Users

Daily work



Training sessions

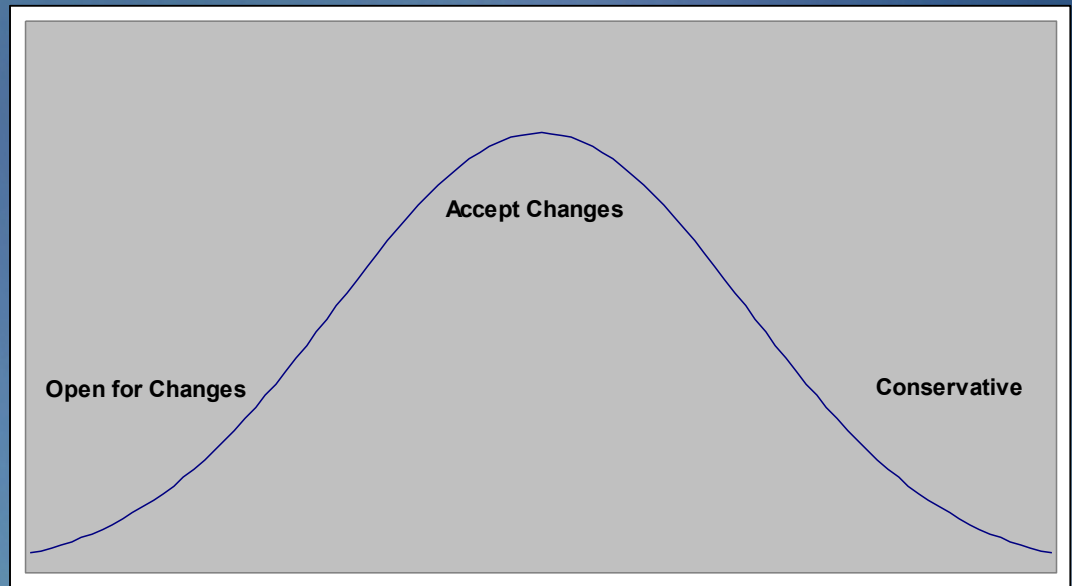
Learning Curve



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Rollout – Background of Users

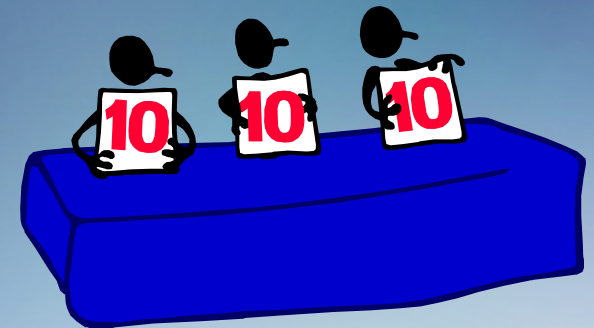
- Open for changes
- Accept changes
- Conservative



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Rollout – Motivation of Users

- User-friendly
- Support, training, documentation, intuitive parameters
- From-Ourselves-For-Ourselves
 - Implementation / Specification
- Embedding in enhancement cycle
 - Change request lists (easy to address)
- Confidence into the system
 - No black box
- “Fun” part
- Management support
 - Enable / force learning time



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Additional Tips



- Collect any idea
 - Could result in significant improvements
- New ideas by students
 - Work experiences, bachelor and master theses
 - Recruitment support
- Focus on users



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Summary

- General principles (SAS macros, GUI, inhouse, ...)
- User as developer
- Teams as small as possible
- Rapid Prototyping for fast benefits
- One-Person-Projects
- Continues improvements through user ideas
- Focus on Users



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References

- Figure 1: <http://en.wikipedia.org/wiki/File:XP-feedback.gif> by DonWells 1 May 2001
- Figure 2: <http://www.projectcartoon.com/cartoon/2>

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Make your users happy!!!

