



# Implementing Models and Standards for Software Development

## Benefits and Risks

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# Agenda

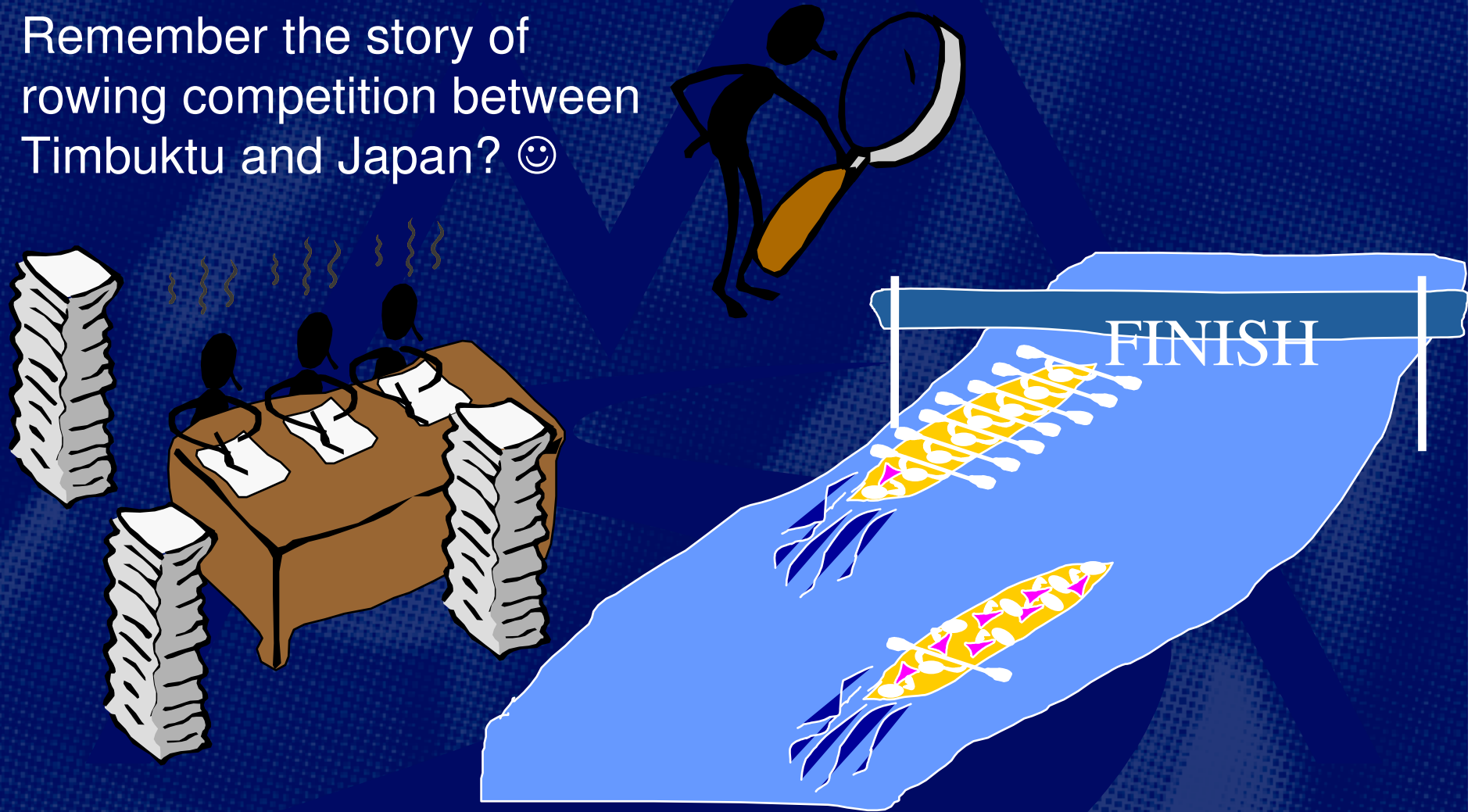
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- Difference between Model and Standard
- Software Development Models
- Software Development Standards
- ISO and CMMI
- No single universal solution - Tailoring
- Risks and Benefits

# Process Interpretation

Remember the story of rowing competition between Timbuktu and Japan? 😊



# The Difference Between Model and Standard

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- **Model**
  - a framework of practices; usually provides a guideline of what to implement and not how to implement it
- **Standard**
  - provides a unique approach of how to perform specific practices

# Software Development Standards



- ISO Standards

- 9001:2000 - Quality Management; there is a new version 90003 for Software Quality Management
- 12207 - Software Life Cycle Processes, also known as SPICE
- 9126 - Software Engineering

- IEEE Standards

- 1074 Std for Developing Software Life Cycle Processes
- 1058 Std for Software Project Management Plans
- 1012 Std for Software Verification and Validation
- ...

# Software Development Models

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- Waterfall – sequential based
- Iterative – incremental development
  - Rational Unified Process
  - Spiral – combines design and prototyping
- Agile
  - Scrum, Extreme Programming, Crystal Clear, Feature Driven Development (FDD), Dynamic Systems Development Method (DSDM), ...
- Capability Maturity Model Integration (CMMI)

# ISO 9001:2000

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- Widespread international standard - applies to all types of organizations
- Oriented towards quality based on customer satisfaction
- Establishes the basis for company quality processes

# Things to consider when implementing ISO 9001:2000

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- Promotes specification, control, and procedures rather than understanding and improvement
- Requires significant time resource and there is much paperwork
- Prone to failure when a company is interested in certification before quality

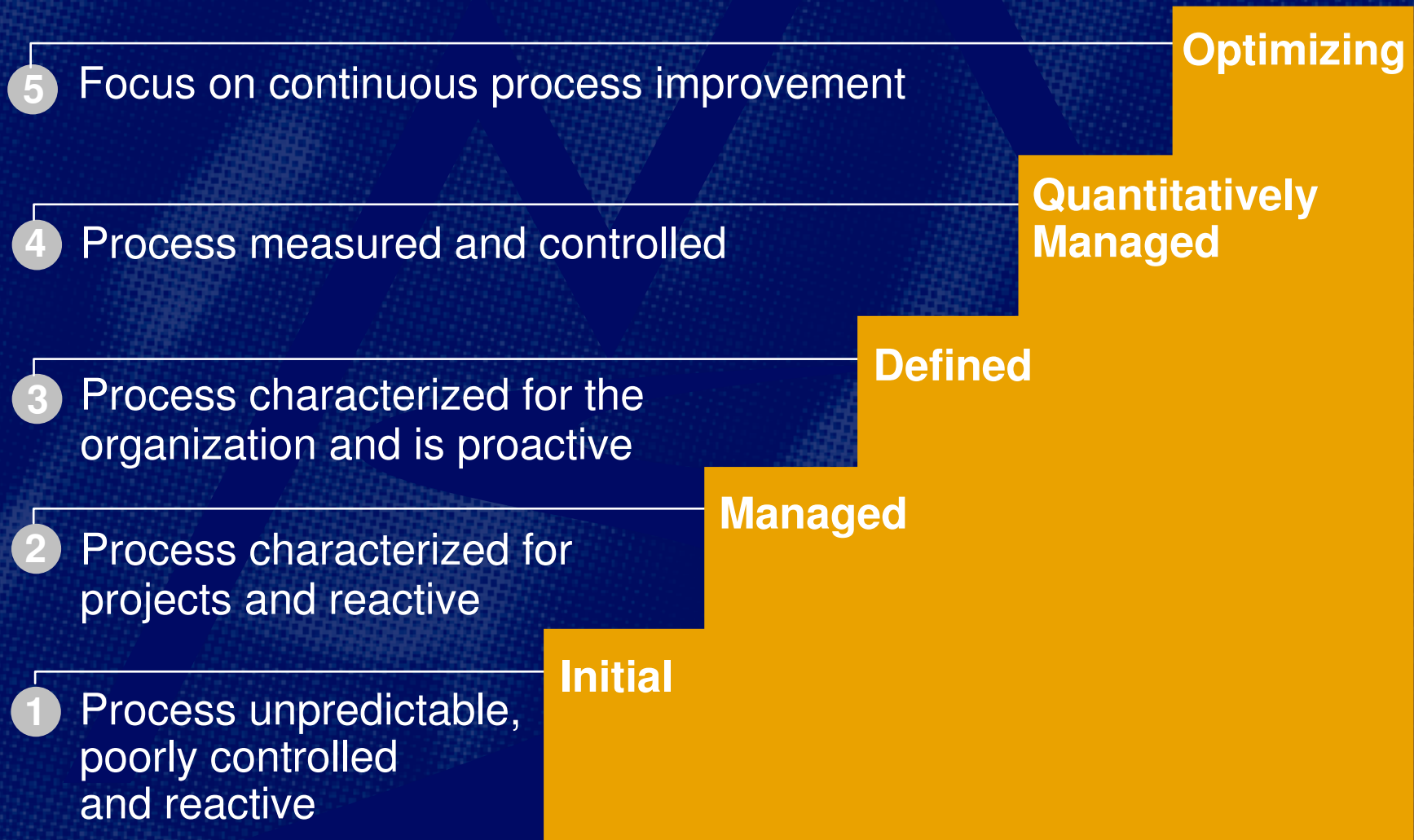
# CMMI - a Model for Process Improvement

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- Based on continuous improvement - 5 levels of process maturity and practices capability
- Strongly oriented to *What* and not *How* – the organization defines its own approach
- Addresses and guides through best practices for:
  - Project Management
  - Software Design
  - Quality Assurance and Testing
  - Risk Management
  - Configuration Management
  - Organizational Process Implementation

# CMMI - a Model for Process Improvement (cont.)



# There is no universal solution

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- A plain model or standard is not a priority applicable to an organization!
- Tailoring is always needed in regard with the specific Environment, Scope and Infrastructure

# Mistakes and Risks

## Common mistakes:

- the organization is not mature enough
- the implementation does not consider the environment
- the implementation is not supported with adequate resources
- lack of management commitment and support

## Risks:

- bureaucracy instead of flexibility
- high costs and low performance
- decreased motivation



# When implementing a model or standard

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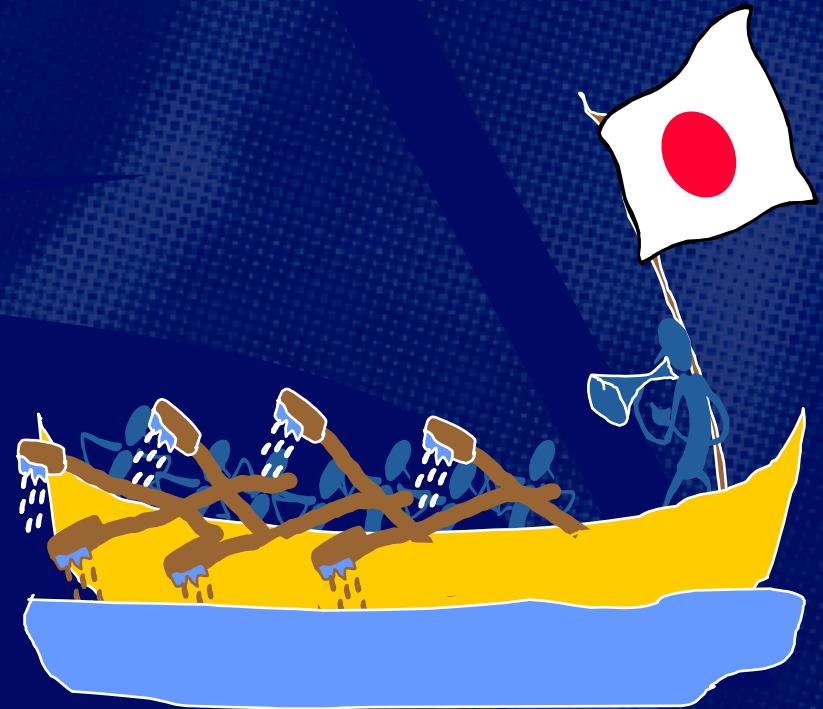


1. Analyze your environment and identify weaknesses and points for improvement you are really interested in
2. Research and choose the best practices from standards and models that address your needs
3. Tailor the practices according to your specific environment

# Common Benefits



- More projects on time and on budget
- Predictable projects
- Less overhead
- People motivation 😊



# References



- Institute of Electrical and Electronics Engineers
  - [www.ieee.org](http://www.ieee.org)
- International Organization for Standardization
  - [www.iso.org](http://www.iso.org)
- Capability Maturity Model® Integration
  - [www.sei.cmu.edu/cmml/](http://www.sei.cmu.edu/cmml/)
- Rational Unified Process
  - [www.ibm.com/software/awdtools/rup](http://www.ibm.com/software/awdtools/rup)
- Agile Software Development
  - [www.agilemanifesto.org](http://www.agilemanifesto.org)
- Extreme Programming
  - [www.extremeprogramming.org](http://www.extremeprogramming.org)



# Thank You!

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