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# Agile Software Development Methodologies

Gruppe 8

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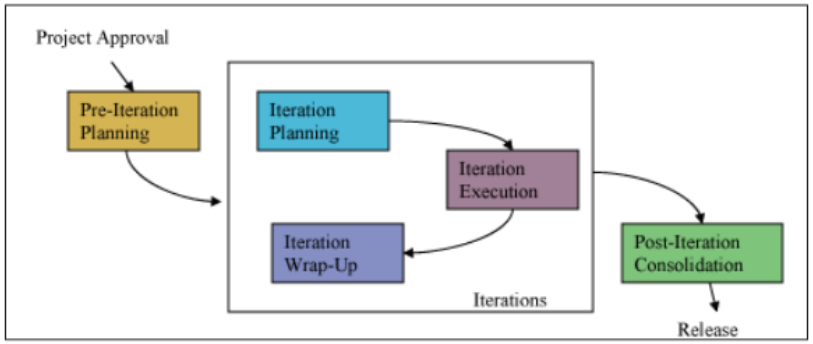
# **Topic** Motivation, Problem statement

- Agile Software Development
- Light-weight Software Development Methodologies
  - Not Heavy-Weight like e.g. Waterfall
- Agile Manifesto
  - **Individuals and interactions** over processes and tools
  - **Working software** over comprehensive documentation
  - **Customer collaboration** over contract negotiation
  - **Responding to change** over following a plan
- „Agile is an *idea* supported by a set of *values* and *beliefs*“

# Technical Details

- Quick definition of prototypes & requirements, code development, testing and verification per iteration
- Iterative, incremental development
  - One to three months increments
- User Stories, Co-Location, Pair Programming, Unit testing, Test-Driven Development, …
  - Two to eight people in one room
  - Onsite usage experts offer continuous feedback
  - Fully automated regression tests



# **Important** Works/Systems/Researchers

- Agile Manifesto
  - Adjunct: Declaration of Interdependence
- Important Systems, e.g.
  - Scrum
  - eXtreme Programming
  - Crystal Methods
- Manifesto Signatories
  - Kent Beck, Mike Beedle, Arie van Bennekum, Alistair Cockburn, Ward Cunningham, Martin Fowler, James Grenning, Jim Highsmith, Andrew Hunt, Ron Jeffries, Jon Kern, Brian Marick, Robert C. Martin, Steve Mellor, Ken Schwaber, Jeff Sutherland, Dave Thomas,

# **Scrum** Scrum Team

- Product Owner
  - Maximizes value of the product & work of the development team
  - Manages the Product Backlog
- Development Team
  - Self-organizing, cross-functional
  - Fewer than 3, more than 9 members problematic
- Scrum Master
  - Servant-leader
  - Ensures Scrum Team adheres to Scrum theory, pratice, rules
  - Supports interaction between Scrum Team and „Outside“

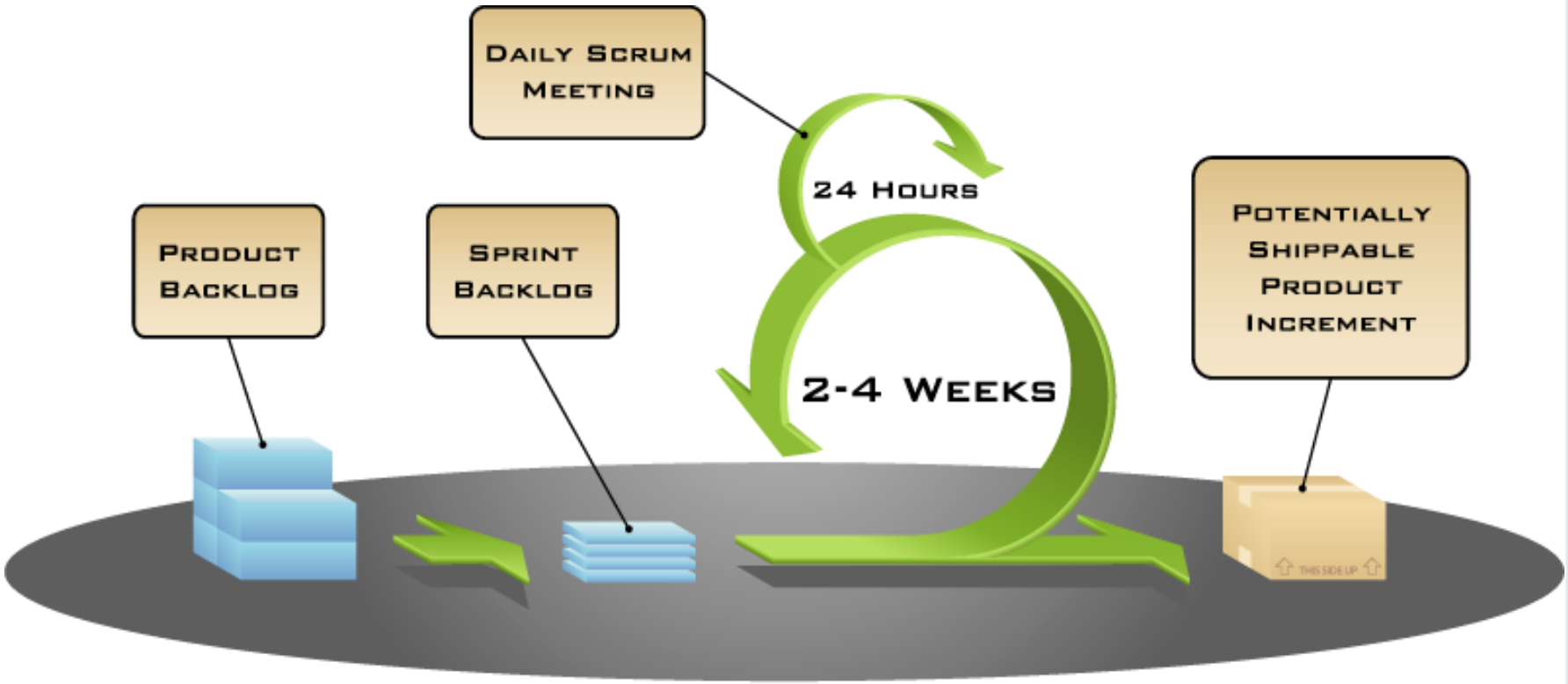
# **Scrum** Scrum Events

- Sprint – 1 Month or less
  - Container for other events
  - Ends with a releasable increment of „Done“
- Sprint Planning Meeting – 8 hours/1 month Sprint
  - Planning the work to be performed in a Sprint
- Daily Scrum – 15 Minutes Daily
  - Plan for the next 24 hours
- Sprint Review – 4 hours/ 1 month Sprint
  - Review work done this Sprint
  - Inspect Increment, Adapt Product Backlog
- Sprint Retrospective
  - Sprint Team inspects itself
  - Creates plan for improvements

# **Scrum** Scrum Artifacts

- Product Backlog
  - List of all all features, functions, requirements, enhancements, fixes
  - Attributes: Description, Order, Estimate
  - Never complete, evolves
- Sprint Backlog
  - Set of Product Backlog items to be accomplished in a Sprint
  - Plan for delivering product Increment and realizing Sprint Goal
- Increment
  - Sum of all Product Backlog items completed during a Sprint and all previous Sprints
  - Must be „Done“ at the end of a Sprint

# **Scrum** Lifecycle



# **Conclusion** & Current research questions

- Traditional Software Development Methodologies often not used in practice, too mechanistic to be used in detail
- Agile is more light-weight, is …
  - Incremental
  - Cooperative
  - Straightforward
  - adaptive
- Still relatively young, require more empirical studies to achieve higher acceptance, mostly case studies, anecdotic evidence currently
- Possibly inefficient in larger organizations, but e.g. Microsoft has started using Agile methods

# Q&A

# References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