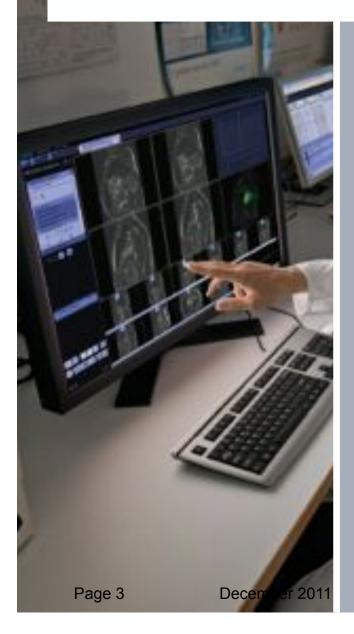


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Siemens Healthcare

- Siemens Healthcare provides innovative products and complete solutions.
- Our software-based high tech medical imaging products enable an improved life of our customers and their patients.

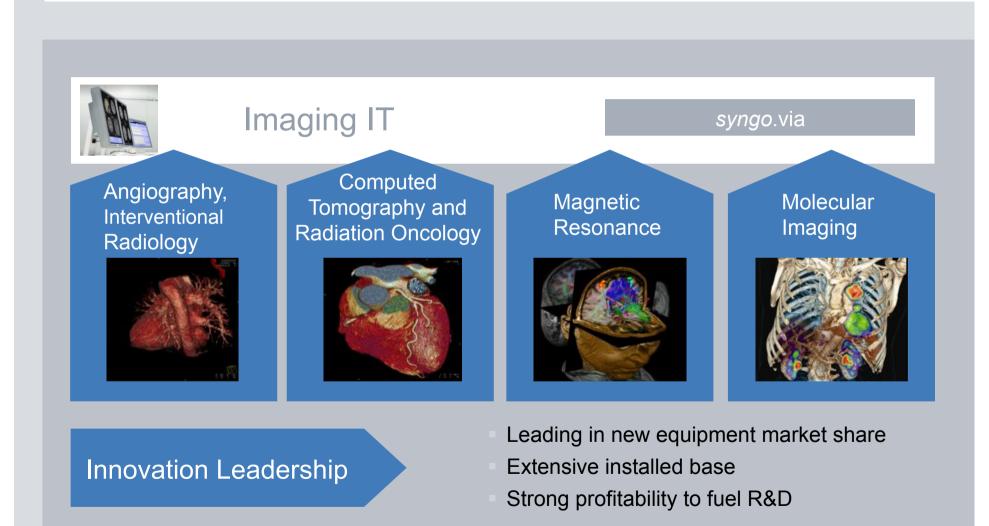
www.siemens.com/healthcare

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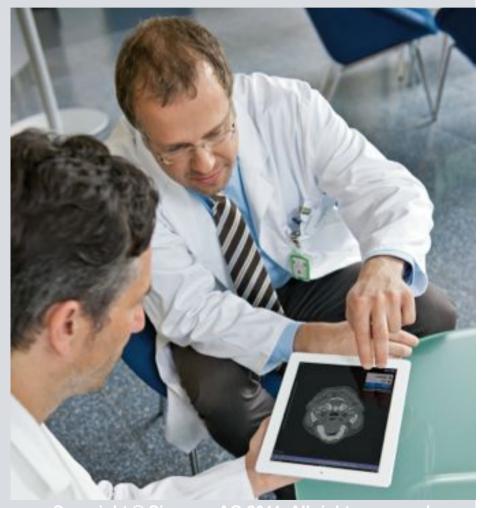
We are a leader in imaging, therapy, and IT



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SYNGO

- SYNGO creates several products:
- Radiology Information Systems (RIS)
- Picture archiving and communication systems (PACS)
- A client-server advanced
 visualization system syngo.via
- Mobile imaging applications (Not intended for diagnostic use)



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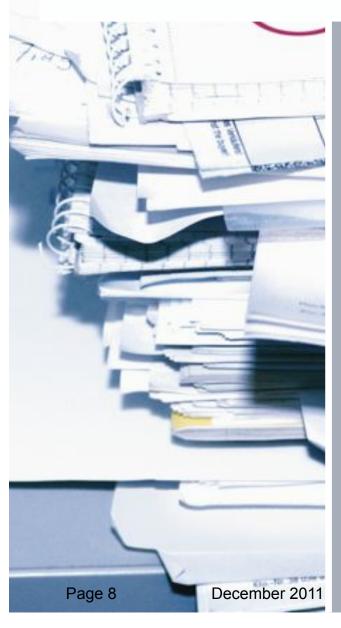
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Medical Product Development

Medical software development requires to be compliant with special regulations, according to laws of the respective countries where the products are being sold.



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Development Distributed Over Sites

Big development organization

- Several hundred persons
- Millions lines of code
- Component oriented

Distributed to sites along these dimensions over the world:

- Software layers and specialty
- Functional:
 - Requirements Engineering
 - Development
 - Test



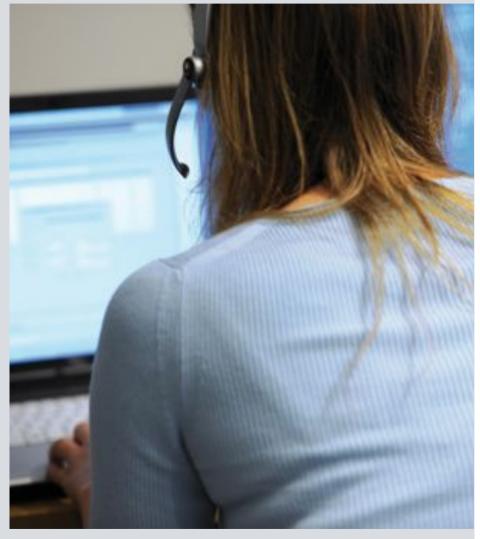
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"Conway's Law"



Supplier Strategy: Extended Workbench Model

- Cost as selection criteria
- Incentives for suppliers by dates& bug fixing rate
- In case of delay, add more people or shift deadlines
- Responsibility of supplier engineer for component
- Documents as interfaces
- Incredible number of real interfaces, due to splitting to components and integration



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The Agile/Lean Change - Motivation



We developed great products, but it was difficult and tedious to predict when they would be ready for release.

GOALS

- Improve time to market
- Improve quality of delivered products
- Customer centered development
- Increase productivity

The Agile/Lean Change - Motivation





Agile Transition at SYNGO

Learning and piloting

- Learn: trainers, books, real life examples
- Create pilot teams and get feedback
- Get support! FEW, but GOOD Consultants

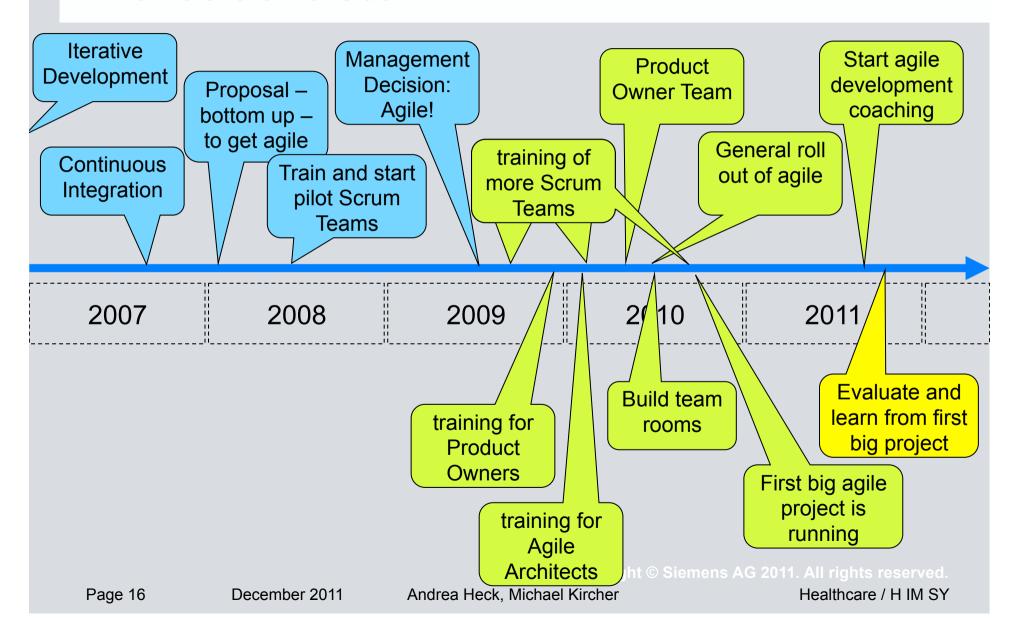
Agile Transition

 BIG CHANGE: organization, people, training, facilities, project, process, suppliers

Continuous Improvement

- Proposals from Scrum teams & benchmarking
- Lightweight processes and tools
- Kaizen, A3 thinking tools

Timeline of the Transition

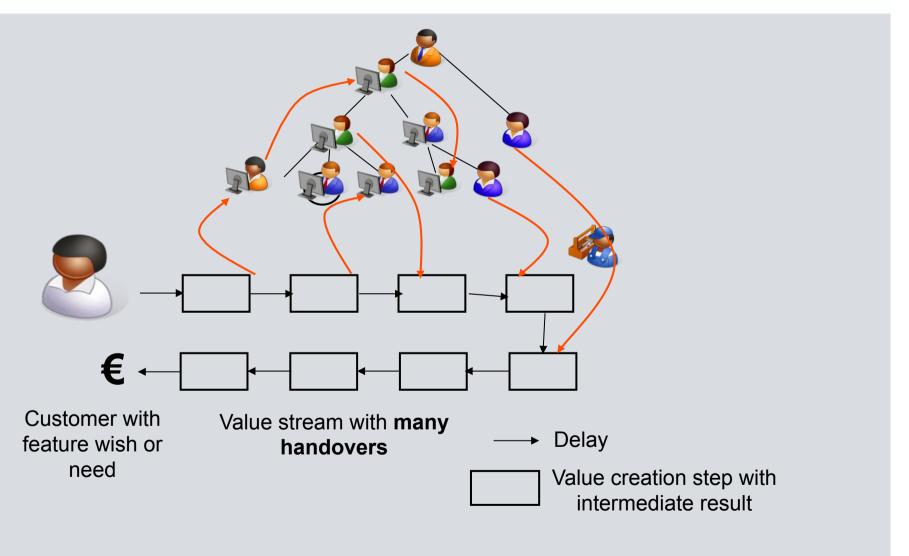


Agile Transition – Key Principles

- Every employee contributes directly to customer value
- Avoid waste: minimize handovers, delay, overproduction
- Partners instead of suppliers
- Empowerment, active collaboration, and self-organization
- Continuous learning
- Organize around value stream

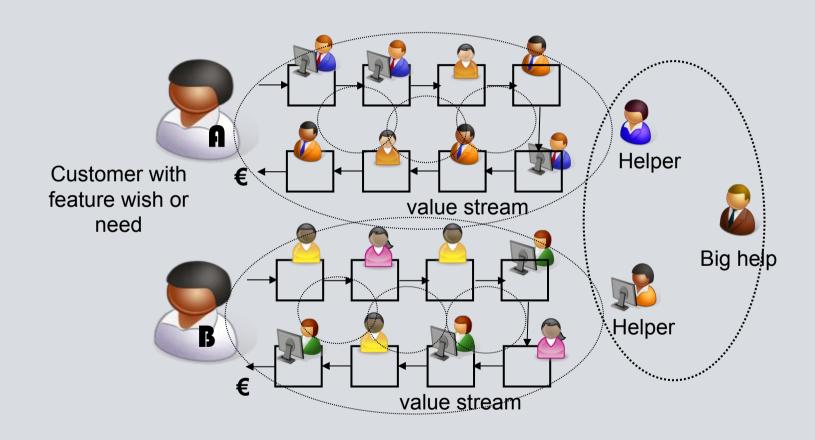


Value Stream Before – Hierarchical Organization





Value Stream After – Customer Centric Organization



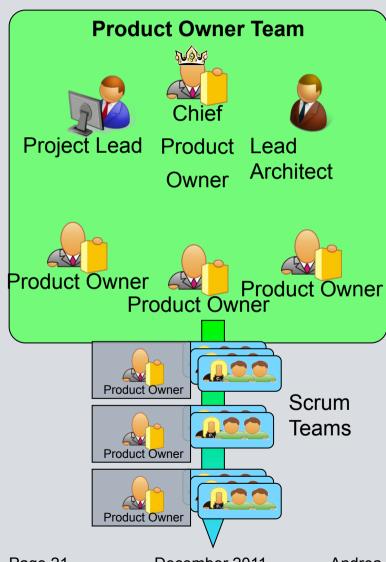
Using Scrum as Starting Point

- Proven and well known
- Easy to teach
- Experiences on scalability available
- **Training & Coaching**
- Covers mainly project management
- Plus: Seeding engineering practices





Scrum at SYNGO — Product Owner Team



Product Owners are responsible across product releases to:

- Provide vision
- Maximize customer value
- **Prioritize** the Product Backlog
- Define and plan releases
- Define and communicate features
- Manage defect backlog
- Review **DONEness definition**
- Involve **customers**

Scrum at SYNGO – Feature-oriented Scrum Teams

- Self-organizing, cross-functional teams
- In most cases they are feature teams
- Each Scrum team is collocated on one site
- Team members come into the teams with different roles, yet all together are responsible for the team's success
- Being compliant with medical regulations is part of **DONEness**



Scrum at SYNGO – Supplier Strategy

- Feature-oriented Scrum teams
- Local **Product Owners** as part of Product Owners Team
- Common Product Backlog
- Increased qualification and domain knowledge

Transition:

- Jointly defined cornerstones as framework for agile transition
- Partners decide their own way and pace, frequent exchange



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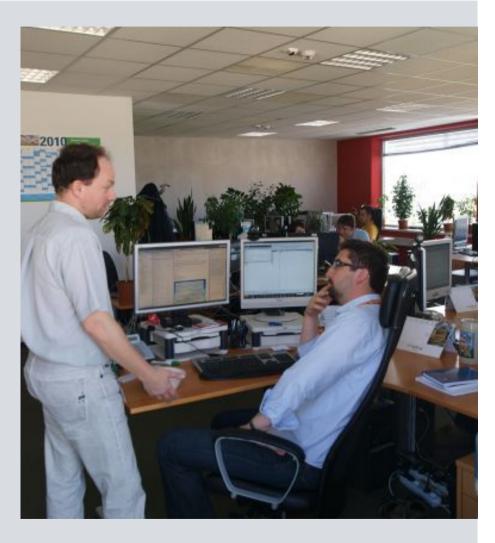
Scrum at SYNGO – From Supplier to Partner

Before

- Participation
- Defensive contract-based work
- Too many interfaces, information hell
- Component know-how

After

- Full accountability
- Constructive,solution-oriented work
- Faster communication
- Product know-how



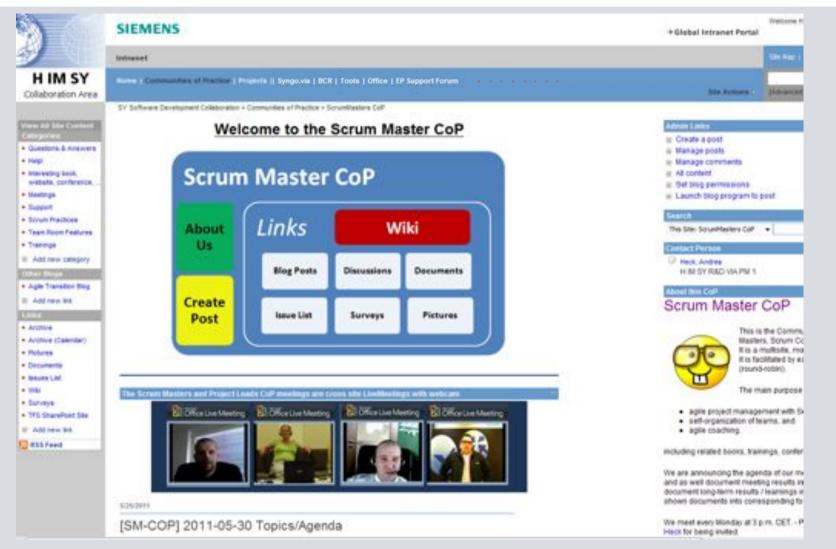
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Learning – Best Practice Sharing

- 'Communities of Practice' to learn, and align, share across sites
- A CoP is set up by **leaders** for roles e.g. Scrum Masters, Architects, Developers, Testers, Line Managers, and others
- Mixture of face-to-face meetings, trainings and workshops, as well as regular remote on-line meetings
- CoPs are supported with Wikis and Sharepoint sites



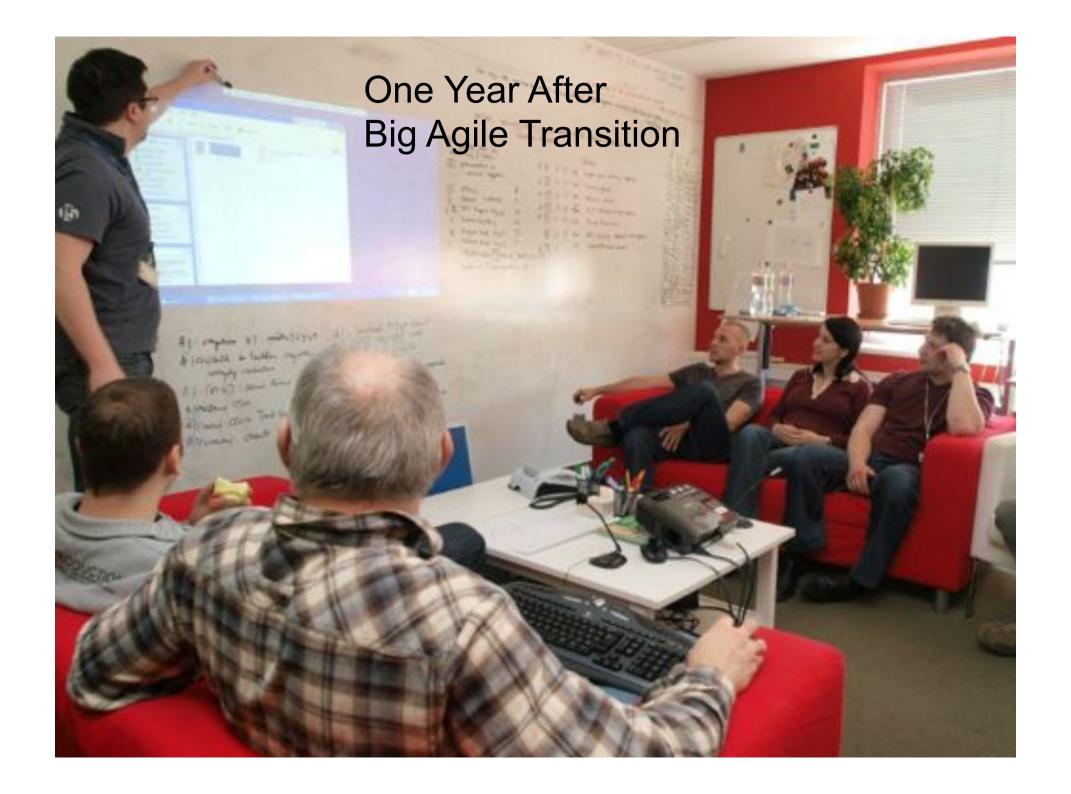
Communities of Practice – Screenshot



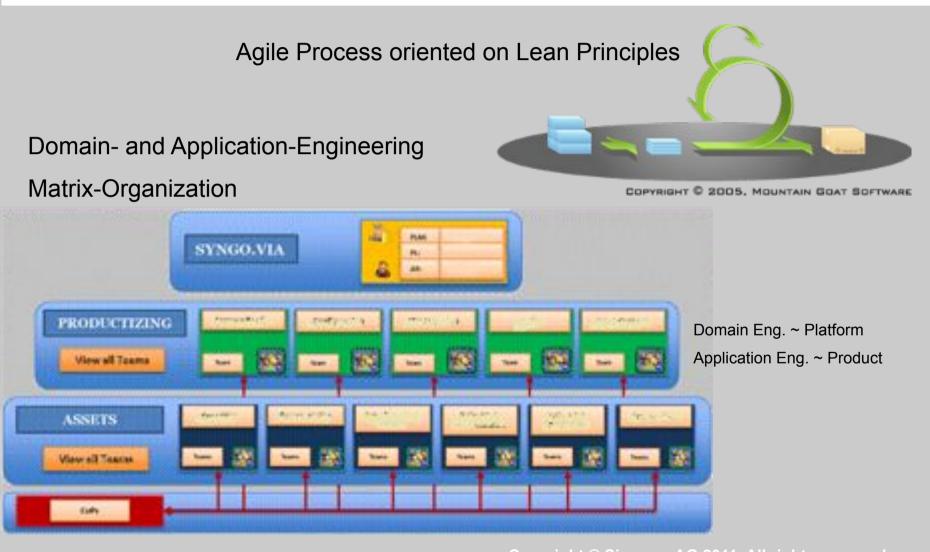
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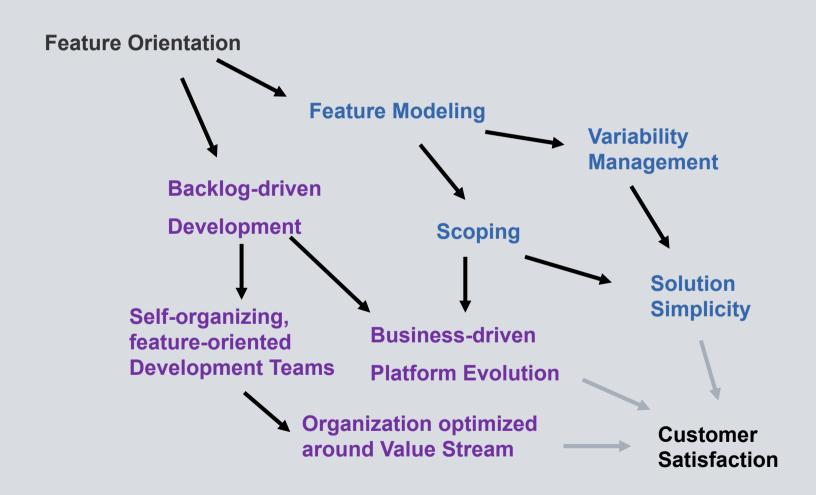


The Brave New World



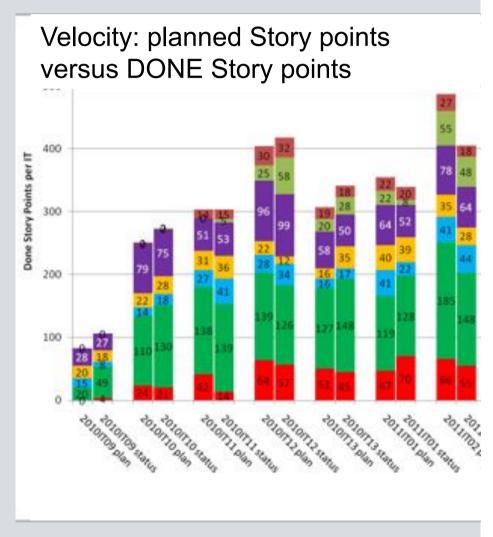
Product Line Engineering and Lean Development work hand-in-hand

SIEMENS

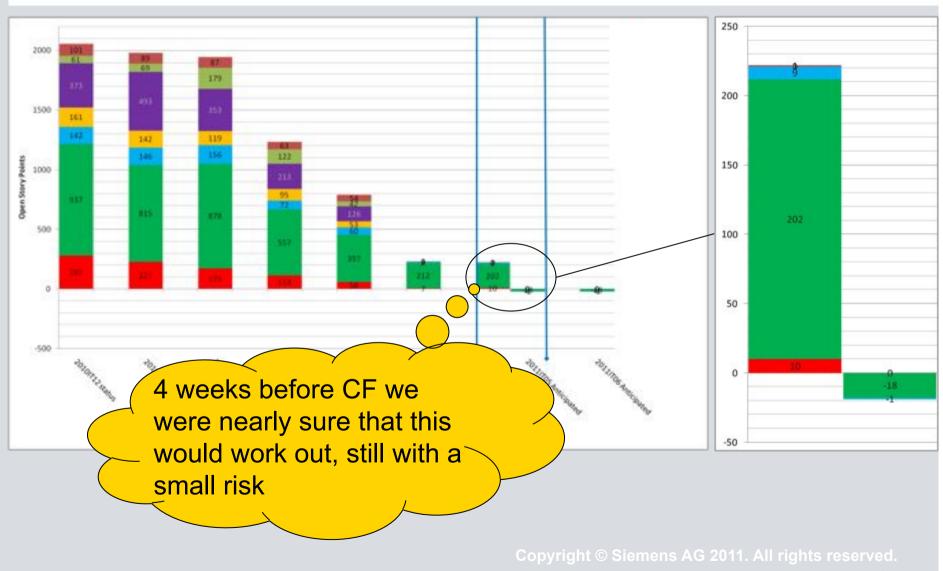


Project Velocity

- Big project with more than20 Scrum teams
- Scrum allows high transparency on project progress
- Story point estimate by teams is quick, rough, yet good enough to take decisions



Release Burn Down until Code Freeze



Meanwhile ...

The project passed **successful**ly its milestones and is now in customer use test.

Reasons?

- Early and repetitive testing in agile set up
- Better understanding by teams of the product and their impact
- Less waste
- Much more and earlier feedback from product owners

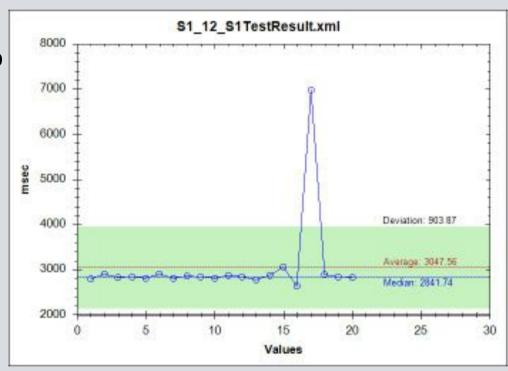


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Continuous Integration, Testing and Deployment

- Staged integration helps to integrate quickly and respond to automated test suites' feedback
- Performance trending –
 no performance degradation during the complete project
- Stability tests give immediate feedback



Lots of automated governance

End Customer Collaboration – Workshops

End customer workshop by Product Owner Team to present concepts and features, support prioritization and get feedback.

- Most features appreciated
- Some feature prioritization changes
- Few feature ideas abandoned



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Employee and Team Motivation

Ups

- more interesting work more learning
- more different topics and disciplines
- more info about end customer needs
- more team spirit
- happy testers as feature team members

Downs

- Working from backlog creates pressure
- Less free individual decision room
- Specialists partially unhappy to loose their special role

Sustainability

- Over-hours decreased to 60% compared to previous releases
- Average working time is fairly constant during a release cycle, less peaks

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Continuous Improvement

A main pillar of lean and agile methods is

continuous improvement

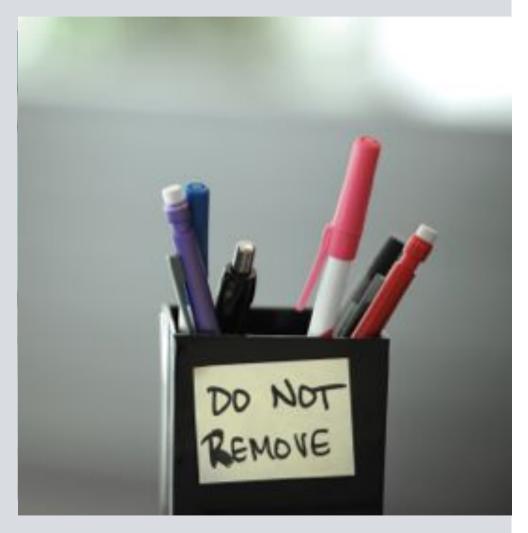
- Teams improve their own work in retrospectives
- Everybody is getting better by learning new things
- Working beyond his or her specialization
- Analyzing root cause of obstacles before solving



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Continuous Organizational Improvement

- Apply Lean A3 Thinking to obstacles and proposals
- Lean processes
- Simple, supporting tools
- Seeding technical excellence



Organizational Impediments: Process Overhead

- Iteration DONEness contributes significantly to fulfillment of medical regulations
- But the process is still quite heavy weight and asks for more than we need for fulfilling the regulations.
- We need to **simplify**.



If Nothing Impedes You, Only The Sky Is The Limit



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All photos are either from Siemens CC database, or syngo product photos, except pp. 13-35 which are from SYNGO Scrum teams and Product Owner Team. The shown medical images contain no real-life personal data, but dummy data.





SIEMENS Thank you for your attention!! - Questions?

Andrea Heck Agile Coach at H IM SYNGO Siemens AG Healthcare mailto:andrea.heck@siemens.com @AgileAndrea

Blog: Andrea's Agile Blog

Michael Kircher Director of Architecture at H IM SYNGO Siemens AG Healthcare mailto:michael.kircher@siemens.com

Podcast: se-radio.net