



Improving Video Game Development: Facilitating Heterogeneous Team Collaboration Through Flexible Software Processes

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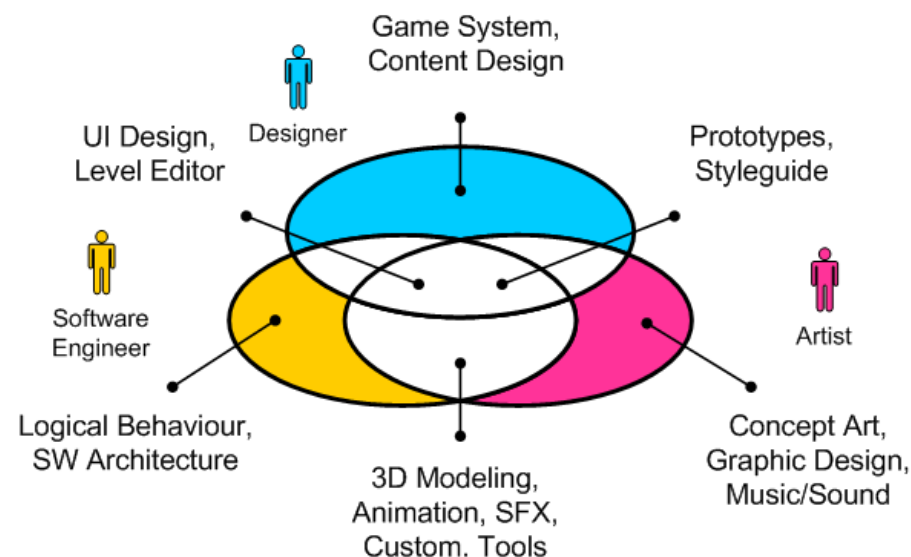
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Background & Motivation

- Video games are **complex and interactive (software+) systems**, e.g., real-time graphics, artificial intelligence, distributed systems.
- Collaboration in game development requires the **involvement of heterogeneous disciplines**, e.g., software engineers, artists, game designers.
- Observations in the Austrian game development community showed a **lack of systematic methodologies, process support, and collaboration across disciplines**.
 - Results of a previous survey was that 77% of the developers apply flexible processes for project management (SCRUM) and development (XP).
 - Nevertheless, ongoing challenges focus on a **comprehensive process support** for game development and **interaction between disciplines** .

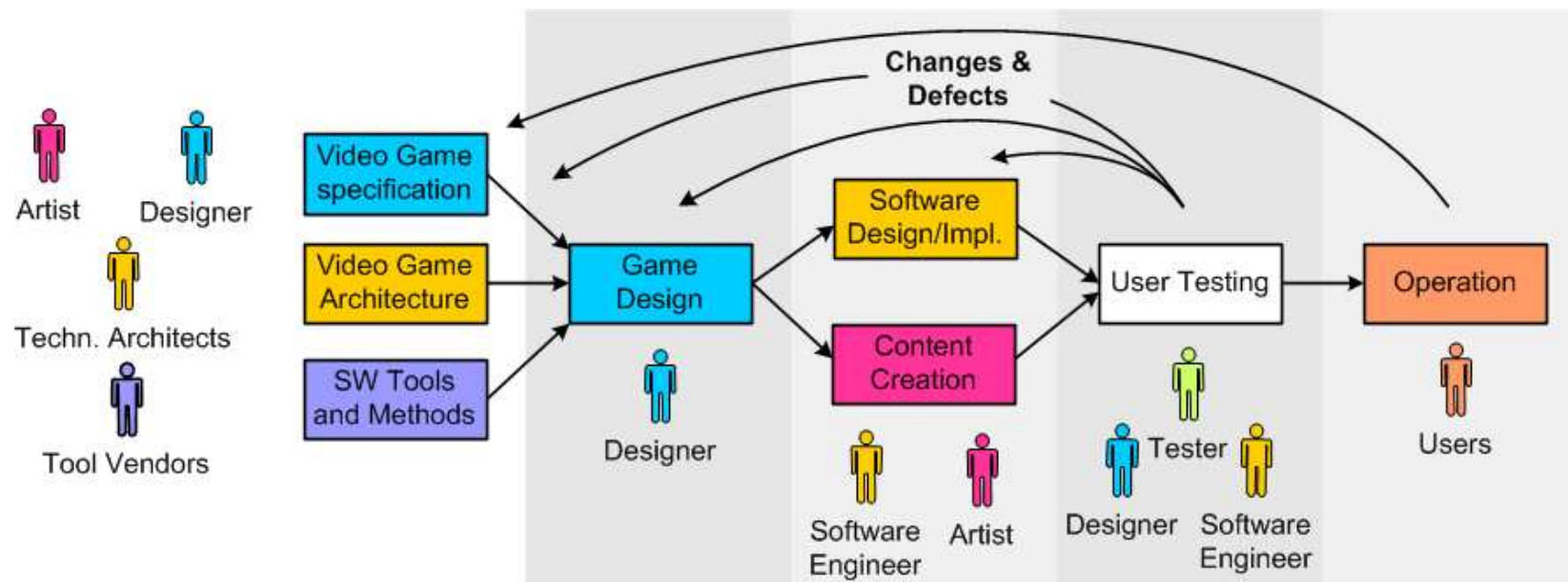


Simplified Development Workflow



Challenges:

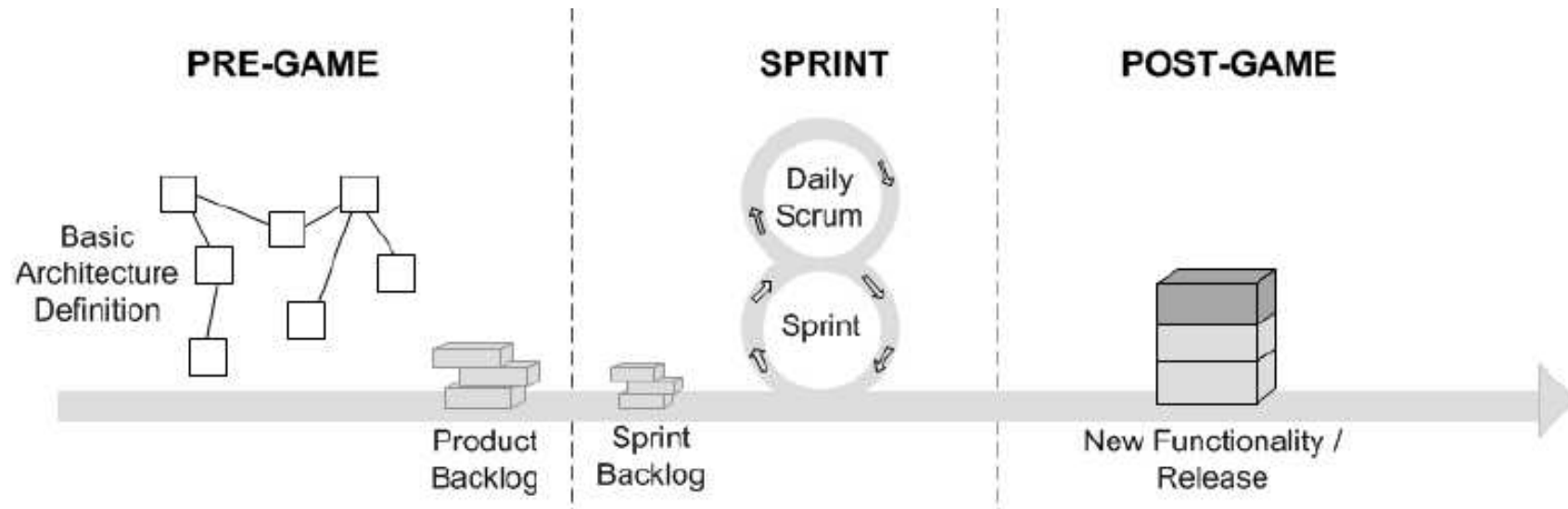
- Various disciplines work concurrently, e.g., for multiple target platforms.
- Specific tool support for different disciplines.
- Changes can have a major impact on product quality and project schedule.
- Late changing requirements focus on individual disciplines and on overlapping topics across disciplines.
- Hard distribution deadlines.



- A challenge is how to address special needs of game development.

Traditional Scrum Approach

- Observations in the Austrian game development community showed that a majority (77%) of 20 game development studios apply Scrum and/or XP for parts of game development.
- Nevertheless, there are **limitations in collaboration of heterogeneous teams**.

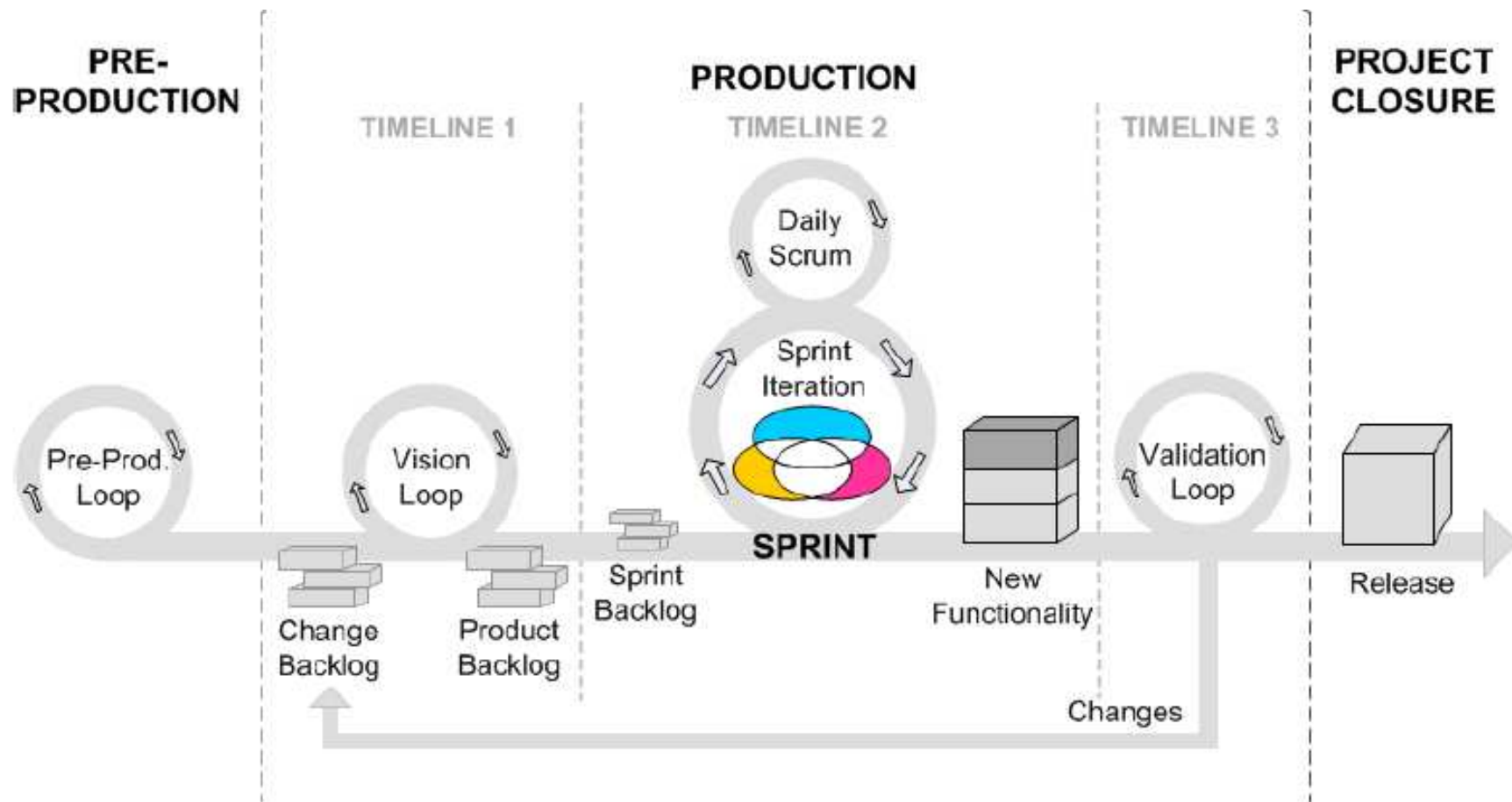


Research Issues:

- How can we apply Scrum to “creative” projects (e.g., in game development)?
- How can we support collaboration across disciplines?

Proposed Game Development Process based on Scrum

- **Pre-Production**: comparable to rapid prototyping approaches.
- **Production**: (a) Vision loop (assessment of changes), (b) parallel implementation of sprint backlogs across disciplines, and (c) validation loop (e.g., user testing).
- **Project Closure**: delivery and wrap-up.



Expected Key Benefits



- **Pre-production** enables “informal” elaboration on promising ideas, e.g., concept-/prototype driven design.
- Verification and Validation of requirements and changes during the **vision loop**.
- **Sprint**: Systematic and flexible game design and development during the production phase (involving related disciplines in parallel) based on **defined sprint backlogs**.
- **Heterogeneous team integration** through execution of multiple discipline-specific workflows during one production sprint iteration that are adjusted by daily Scrums.
- **Validation loop** includes an assessment of the product snapshot from user perspective and might lead to changes.
- **Short-Term Feedback**: Results are fed back into a synthesis process (vision loop) where the findings are evaluated and lead to artistic, technical and interaction design changes in the product backlog.

Summary & Further Work

Summary

- Video game development involves heterogeneous disciplines with limited support on systematic process guidance.
- Observations showed a lack in process support and collaboration across disciplines.
- Collaboration and interaction of various stakeholders is a key success criteria in game development.

Lessons Learned

- The proposed Scrum extension was reviewed by experts from the gaming community and was found a useful in context of game development.
- Nevertheless, a systematic evaluation of the proposed approach is an open issue.

Future work

- Evaluation of the proposed process approach in a prototype study with respect to verify/validate expected benefits more systematically.
- Empirical studies to get more detailed insight in game development characteristics.
- Integrating heterogeneous tools to improve collaboration and communication between various stakeholder across disciplines.

Thank you ...

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