



Leonardo's Workshop Agile Simulation

STUDENT MANUAL

MICHELE M. KROLL, PHD CANDIDATE & DEVON WHETSTONE, PHD STUDENT

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Simulation Objectives

Leonardo's Workshop is an agile project management simulation, which lets students experience what might happen in a real-life software development scenario. Students play in competitive teams where each gets to take a shot at being the Scrum Master. This simulation is played the last four weeks of the course so that students have a basic understanding of agile methods such as Scrum. There will be no readings during this time but it is encouraged to reflect back on previous assigned readings to complete each Sprint week.

Learning Objectives

- Complete an APM protocol
- Use Ravetree to complete and APM Project
- Assign roles to team members
- Set APM project goals
- Conduct Scrum sessions
- Complete at least three iterations per week
- Produce a final presentation
- Create a product based on APM method

Simulation Resources

- ❖ Student Manual
- ❖ Simulation Setting (PPTX)
- ❖ Event Cards- these will be events announced during the simulation in Canvas that could affect project efficiency and delivery
- ❖ Ravetree Tutorial- How to set up the agile project management board
- ❖ Guild Contract
- ❖ Sprint Week Checklist
- ❖ Final Project Rubric and Checklist
- ❖ Project Evaluation and Peer Assessment

Simulation Preparation (Week 4)

Sim Introduction:

Watch the simulation introduction video and review the sim story (pptx) found in the course module.

Ravetree Software Set-Up:

Review Ravetree video tutorials and set up an account- The first 30 days are free so calculate the time needed for the project so you are not assessed the monthly fee.

- Creating a Project in Ravetree <https://youtu.be/yY2cc6hu2nU>
- Extended overview of Ravetree <https://youtu.be/bD1-iHCGr4M>

Create Ravetree Board as a team. Set Up these features:

- Planning Task Board
- Velocity
- BackLog
- Time Log
- Burn down Chart
- Team may decide to use other features as well
- Add the instructor to Ravetree so that team accomplishments can be tracked for

course points each week.

Guild Contract:

The guild contract is a communication tool for your team.

- Choose a Guild name to represent your team (sample contract in course module)
- Decide who will act as “scrum master” each week (team members must rotate)
- Fill out each section and submit in “Assignments” (one member submits for team)

Getting Started in Agile:

- Team sets overall project goals with clear measurable objectives (see final project rubric)
- Before the first Sprint week, the guild will meet by Zoom, Skype or other method to create and rate user stories- Post to Ravetree using the appropriate feature.
- Prioritize user stories and product backlog for Sprint week 1- Post to Ravetree
- Read simulation resources thoroughly and refer to course text and other resources provided.

Tasks to complete each sprint week

Weeks 5 through 7 will be sprint weeks to accomplish the final mobile app prototype and presentation.

Week 8: Close Out Project Phase

Final Sprint week:

- Finalize Prototype and Presentation Slides
- Present Prototype to Leonardo's Apprentices in Milan- Presentation with Slides using Voice Thread
- Turn in assignment- Project and Peer assessment

Sprint Weeks: Iterations (weeks 5-8)

The Scrum Master will lead the sprint. Every week a different team member will play the “Scrum Master.” This is noted in the guild contract. Each week consists of three iterations in a sprint week. The team should decide when these will be. A suggestion is Monday, Wednesday and Friday so that the team can prepare over the weekend for the next sprint week. During these iterations, teams will hold daily scrum meetings through Ravetree. The Scrum Master will be able to communicate to the team what is needed to accomplish the goals set for the week. There are four total weeks.

Daily Scrum:

The daily scrum meeting is not used as a problem-solving or issue resolution meeting. Issues that are raised are usually dealt with by the relevant team member immediately after the meeting. During the daily scrum, each team member answers the following three questions:

- What have you completed since the last meeting?
- What do you plan to complete by the next meeting?
- What is getting in your way?

By focusing on what each person accomplished yesterday and will accomplish today, the team gains an excellent understanding of what work has been done and what work remains. The daily scrum meeting is not a status update meeting in which a boss is collecting information about who is behind schedule. Rather, it is a meeting in which team members make commitments to each other.

Basic Sprint Meeting:

Teams hold a planning meeting before the week begins with the Scrum Master to determine goals. User stories are pulled from the top of the backlog to determine team velocity needed to accomplish tasks. Each sprint iteration contains a short daily scrum. During the week members will enter data in Ravetree to track product backlog, velocity, burn down chart, and time. At the end of the week, something of value should be produced. The Scrum review and retrospective meeting is held to set goals for the following weekly Scrum and reprioritizing of the backlog if needed.

- **Product Backlog**-Behind every project is a backlog. The backlog is a list of all the product features generally defined by user stories. User stories define everything potential users want to do on the mobile app.
- User stories are one to two sentences that describe a specific type of user need to accomplish a goal. As a (type of user), I want to be (able to do this), so that I can (purpose).
- User stories are selected for implementation during each sprint, managed by the team. This is a time-boxed (ends exactly at the scheduled time) activity.
- After all the user stories are created, they are ranked and prioritized. Teams can use the rating scale of 1, 2, or 3 for each story, planning poker, or talking it out. Refer to your course textbook for these options.
- The scrum master is in charge of reprioritizing the backlog during the sprint week. New features can be added or addressed but should not be added during the current sprint session.
- **Sprint Velocity**- How much work a project team can get done per sprint. How many features can be accomplished per sprint? (based on feature points) The more sprints done, the more accurate velocity becomes. Some sprints may hit the team's goal; others may exceed it or not hit it at all.
- **Sprint Burn down Chart**- a chart that shows the amount of work left vs. time left. Each team member reports time spent on backlogs.

Sprint Review + Retrospective

After the iterations are completed, the Sprint is over for the week.

- Compare actual result with initial plan.
- Review undone work and discuss the reason, also discuss how to account for these un-done tasks in the next Sprint to make sure the team maintains the total number from the original estimations.

Retrospect on how to perform in the next Sprint to achieve more.

- What went well?
- What has gone wrong?
- What could be improved and how?

Retrospective

Here are some topics for teams to discuss before completing the next iteration:

- Planned vs Actual
- Hours Estimate vs Size (Original Estimate)
- Major risks that happened (Technical, People, Unplanned Events)

Things that can happen during a Sprint week

Events:

These will be posted through announcements that can affect how and what your team is working on. Each "event" is a situation from real life that many APM experience. Sometimes positive events could also appear! Teams should apply solutions to solve the issue during the same sprint week the event is introduced. This will effect overall weekly sprint points.

Criteria for tasks:

Teams should check that all tasks are completed. See check list below.

The Product Owner:

Accepts or rejects sprint results (graded weekly sprint)

Sprint Checklist:

Rubric Criteria:

- Task board kept current by all members
- Three daily scrums held per week
- Team members log time spent on tasks
- Velocity reported
- Burn down chart reported
- Event cards resolved
- Sprint Review
- Sprint Retrospective
- New user stories and back log reprioritized
- Discuss new features and/or issues for next Sprint

Criteria	Unacceptable (1 point)	Satisfactory (5 points)	Exemplary (10 points)
Sprint Checklist	Contributes very little or nothing to sprint iterations. Does not meet deadline. Event cards not resolved.	Sprint iterations completed and meets deadline but needs improvement. Event cards resolved.	Sprint iterations fully developed and completed. Meets deadline. Event cards are resolved in an efficient manner.

Developing the Prototype

Requirements:

Design a prototype with required features and additional features determined by the team. Identify the problem and have a clear understanding of why the app is being developed. Create multiple wireframes into a storyboard with annotations that describe the product. Prototype should include all main features required by the product owner. Additional features are identified by the team based on users. Key functionality requirements should be met based on the platform the app is designed for.

The prime purpose of a wireframe is to design a layout that best gives the direction to the user with the help of annotated information, which provides an additional layer of understanding and navigation of the interface. The wire framing stage is vital as it gives the design team an idea about the layout and user interactions without being overwhelmed with all the colors and visuals.

High-fidelity wireframe has more realistic content, specific typeface choices and can even give out particular information on image dimensions and button styles.

Wireframe Tips: <https://fireart.studio/blog/7-best-tips-to-create-effective-wireframes-for-mobile-apps/>

Fully developed high fidelity wireframes of the product are designed using the PPT wire framing template provided: (downloaded in the Canvas sim module)

Wireframe Template: <https://knockoutprezo.com/freethings/free-powerpoint-templates/entrepreneurs-wireframe-kit-powerpoint-free-version/>

Prototype Requirements:

❖ Wireframes are high fidelity.
❖ Design elements conform to platform standards.
❖ Multiple user choices considered.
❖ Key functionality requirements are met.
❖ Wireframes are annotated describing features.
❖ Product storyboard is created from wireframes.

Final Checklist for Project

Category: Overall SCRUM Performance		
Requirements: Each team member completed weekly sprints to fully experience the SCRUM agile project management method.		
Quality Indicators	Self-assessment: Done?	Notes
1. Three daily Scrum meetings completed per sprint week.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2. User stories for product backlog identified and monitored each sprint week.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3. Project task board completed each sprint week.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4. Burn down/Velocity charts calculated and reported for each sprint week.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Sprint Review and Retrospective completed and reported.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6. Scrum master and team members planned for each sprint week to discuss user stories and back log for upcoming sprint week.	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Category: Project Goals		
Requirements: Project goals and objectives are created by team before Sprint weeks begin.		
Quality Indicators	Self-assessment: Done?	Notes
1. Project goals are identified with clearly defined objectives.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2. Each objective clearly defines the criterion for acceptable performance.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3. Objectives are well aligned with the stated goals for the project.	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Category: Quality of Prototype		
Requirements: Design a prototype with required features and additional features determined by the team. Create multiple wireframes into a storyboard with annotations that describe the product.		
Quality Indicators	Self-assessment: Done?	Notes
1. Identified the problem and have a clear understanding of why the app is being developed.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2. Prototype includes all main features required by product owner. Additional features are identified. Key functionality requirements are met.	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Category: Wireframe		
Requirements: Fully developed high fidelity wireframes of the product are designed using wire framing template provided. An annotated product storyboard is illustrated.		
Quality Indicators	Self-assessment: Done?	Notes
1. Wireframes are high fidelity.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2. Design elements conform to platform standards.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3. Multiple user choices considered.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4. Key functionality requirements are met.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Wireframes are annotated describing features.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6. Product storyboard is created from wireframes.	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Category: VT Presentation		
Requirements: Well-designed quality presentation created by all team members presented to the product owner using Voice Thread. Slides and graphics used persuade product owner that the team's prototype is the best among all competitive teams and should be chosen.		
Quality Indicators	Self-assessment: Done?	Notes
1. Project goals and objectives are clearly stated.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2. Product Features list identified and explained.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3. Wireframes are clearly developed and articulated into a storyboard.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4. Presentation slides organized and designed for the product owner.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Presentation created and presented using Voice Thread.	<input type="checkbox"/> Yes <input type="checkbox"/> No	

*Adapted from Dr. Jane Howland, ISD

About Michele and Devon

Michele Meinke Kroll-



Michele is currently of PhD student in the School of Information Science and Learning technologies at the University of Missouri-Columbia. She is also an off-campus faculty member for the University of Missouri Extension and has spent her career designing, implementing and assessing STEM curriculum for youth and adults.

Michele enjoys designing interactive online courses by using technology as a tool to collaborate and bring meaningful learning experiences to students. She uses gamification methods in many courses to engage learners. She uses a variety of web 2.0 tools in the classroom to provide real-world learner centered opportunities through collaborative projects.

Devon Whetstone-



Devon is currently a PhD student in the School of Information Science and Learning Technologies at the University of Missouri – Columbia. She has extensive experience in curriculum design and student learning assessment. Prior to becoming a student at MU, she was the Director of Assessment at Stephens College. With strong roots in improving student learning, Devon enjoys creating environments that facilitate authentic and deep-level learning of knowledge and skills that students can carry with

them beyond the classroom.