


Research Operations M&M: Things not to Take for Grant(ed)

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Disclosures

- The research discussed in this presentation was funded by the U.S. Department of Defense (DoD)
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Learning Objectives

1. Discuss coordination of roles and responsibilities using a research process map
2. Identify benefits and challenges in operationalizing research
3. Highlight lessons learned in managing a funded research project

Agenda

Time (min)	Topic
5	Introductions, disclosures, learning objectives
15	Overview of research coordination, process map
20	Benefits & challenges of conducting research by role
10	Takeaways & future plans
10	Q&A

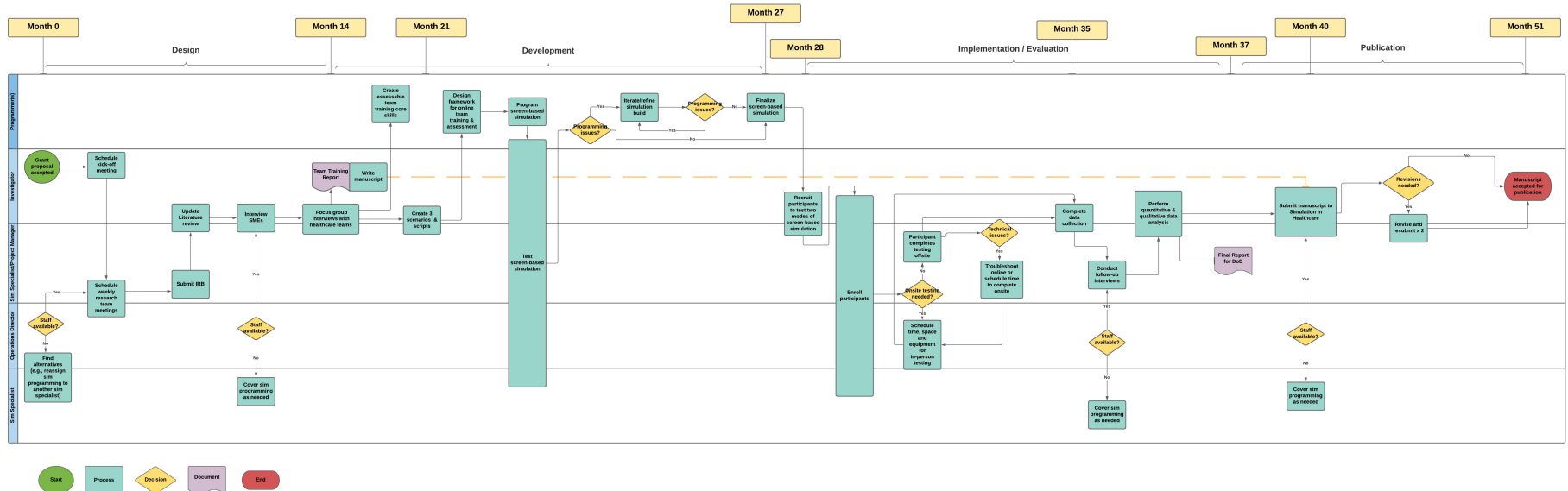
Overview of Research Project

- Funded by the Department of Defense for 2 years
- Total project timeline: July 2016 – July 2019
- Collaborative effort between four UCLA departments
- Goal was to develop a screen-based simulation that could teach and assess teamwork skills to licensed healthcare professionals
- Research focused on evaluating learning and performance differences between two modes of the screen-based simulation

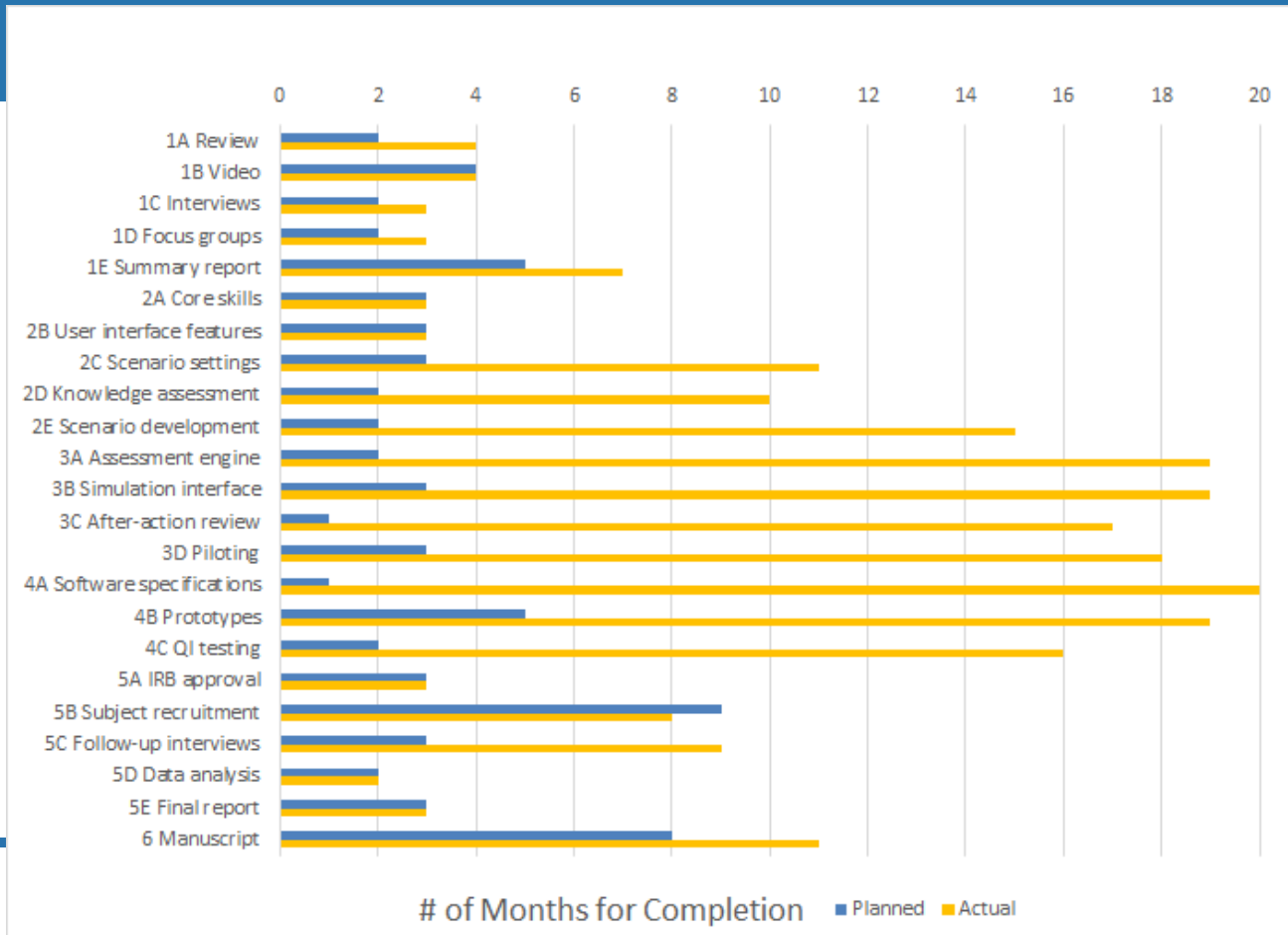
Research Process Map

- What is process mapping?
 - Visual flowchart of a process
 - Helps give a clear understanding of what the process entails
 - Can be cross-functional using a timeline & swim lanes
 - Can help identify improvement opportunities
- We created a process map of our research project. Let's review!

Process Map



Actual vs. Projected Timeline



Benefits & Challenges of Implementing Research

Benefits

- Extramural funding
- Institutional notoriety
- Professional growth
- Collaboration opportunities with different experts
- Discovery/development of mastery and expertise in a field/topic
 - Continuing projects related to this research
 - Enlist new sim instructors as part of their career development

Challenges & Mitigation Strategies (Investigator Perspective)

Challenges

- Time: Faculty stretched thin (15% effort is more like 50% effort!)
- Running out of money-->time-->interest
- Other projects/tasks get placed on back burner
- Tedious work (subject recruitment, reviewing and analyzing data, manuscript revisions, etc.)

Mitigations

- Set expectations
- Apply organizational and time management skills – ask all to commit to recurring meetings
- Budgeted time buys out clinical duties
- Say no to other projects
- Divide and conquer – only certain personnel used for different tasks

Challenges & Mitigation Strategies (Operations Director Perspective)

Challenges

- Difficult to prioritize time for research with daily educational activity
- Staffing and workload distribution challenges
- Sim center priorities and resource allocation
- Challenging to stay up to date with project if not directly involved

Mitigations

- Priority matrix
- Daily huddles with sim team
- 1:1 meetings with individual staff
- All-staff meetings and annual business retreat
- Hand-offs with project manager

Challenges & Mitigation Strategies (Sim Specialist Perspective)

Challenges

- Shift in sim center priorities/focus (Siloing)
- Make do with what we have
- No time for innovation or re-evaluation of current programming
- Avoiding burdening overworked research personnel
- General burnout

Mitigations

- Allocate % time for staffing and enforce it
- Bring in non-research members into research team meetings
- Increase FTEs
- Communication and teambuilding activities to create a cohesive team culture
- Post-grant reintegration of staff into daily duties

Challenges & Mitigation Strategies (Sim Specialist/Project Manager Perspective)

Challenges

- Requires more resources than planned or budgeted for
- Original timeline is almost never accurate
- Difficult to manage large research team with differing ideas
- Takes away valuable players from daily educational activity

Mitigations

- Use of project management apps to keep everyone on track
- Subgroup meetings to keep work focused and speed things along
- Mutual support and transparency with team

Helpful Tools

- Asana – project management app (<https://asana.com/>)
- Bitbucket – code hosting and collaboration tool (<https://bitbucket.org/>)
- Twine – open-source tool to create interactive stories (<https://twinery.org/>)
- Qualtrics – online survey platform (<https://www.qualtrics.com/>)
- Weekly sim research meetings with meeting notes – keep everyone apprised of progress for research projects

Lessons Learned & Future Plans

- Create a shared mental model of center's vision, mission & goals
- Engage team in research project from the beginning
- Post-project debriefing
- Establish organizational infrastructure to support research
 - Hope to hire research director and research coordinator(s)
- Continue doing research in teamwork & communication

Q&A

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Manuscript published in SSH journal:

Steadman RH, Huang YM, Iseli MR, Lee JJ, Tillou A, Rudolph MDD, Lewin R, Koenig AD, Khan R, Raia F, Smith SM, Juo YY, Rice C, Poorsattar SP, Webb NM. Screen-Based Simulation for Training and Automated Assessment of Teamwork Skills: Comparing 2 Modes With Different Interactivity. *Simul Healthc.* 2020 Oct 20. doi: 10.1097/SIH.0000000000000510. Epub ahead of print. PMID: 33086370.

Screen-Based Simulation for Training and Automated Assessment of Teamwork Skills

Comparing 2 Modes With Different Interactivity

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Introduction: The need for teamwork training is well documented; however, teaching these skills is challenging given the logistics of assembling individual team members together to train in person. We designed 2 modes of screen-based simulation for training teamwork skills to assess whether interactivity with nonplayer characters was necessary for in-game performance gains or for player satisfaction with the experience.

Methods: Mixed, randomized, repeated measures study with licensed healthcare providers block-stratified and randomized to evaluation—participant observes and evaluates the team player in 3 scenarios—and game play—participant is immersed as the leader in the same 3 scenarios. Teamwork construct scores (leadership, communication, situation monitoring, mutual support) from an ontology-based, Bayesian network assessment model were analyzed using mixed randomized repeated measures analyses of variance to compare performance, across scenarios and modes. Learning was measured by pretest and posttest quiz scores. User experience was evaluated using χ^2 analyses.

Results: Among 166 recruited and randomized participants, 120 enrolled in the study and 109 had complete data for analysis. Mean composite teamwork Bayesian network scores improved for successive scenarios in both modes, with evaluation scores statistically higher than game play for every teamwork construct and scenario ($r = 0.73$, $P = 0.000$). Quiz scores improved from pretest to posttest ($P = 0.004$), but differences between modes were not significant.

Conclusions: For training teamwork skills using screen-based simulation, interactivity of the player with the nonplayer characters is not necessary for in-game performance gains or for player satisfaction with the experience.

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Key Words: Simulation, screen-based simulation, virtual simulation, experiential learning, teamwork training, assessment, automated assessment.

Thank you for attending!