

An Analysis of Collaborative Problem-Solving Mechanisms in Sponsored Projects: Applying the 5-Day Sprint Model

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Abstract: *In May 2016, the office of Finance and Sponsored Projects at The Research Institute at Nationwide Children's Hospital conducted a 5-day design sprint session to re-evaluate and redesign a flawed final reporting process within the department. The department sprint was modeled after the design sprint sessions that occur routinely in software development and manufacturing processes fields. The Research Performance Progress Report (RPPR) process was not consistent among all Sponsored Project Officers (SPOs), and the department needed to develop and implement quality control measures to safeguard compliance and assure quality in the reporting process. This study in adapting a software design process for use in sponsored projects assesses how this problem-solving mechanism can be utilized with success to replace the formal workgroup model and improve the research administration enterprise. Findings illustrate that several factors influence the success of the sprint application to research administration, including increased time spent dedicated to the problem and a gained shared understanding of the problem and possible solutions. Finally, findings indicate a strong preference for the individual problem-solving technique inherent in the sprint model in combination with the intense and deadline-driven collaboration mechanism.*

Keywords: *sprint, agile methods, efficiency, work group, teams, organizational science, sponsored projects management, RPPR report, collaboration, problem-solving*

Introduction

Sprint design sessions are routinely employed by Google Ventures and at numerous other software companies both nationally and internationally (Knapp, Zeratsky, & Kowitz, 2016). The sprint model puts key members of the team in a room with a Decider and a Facilitator for six hours a day for five days to solve a problem, design a product, or develop a solution. Sprint team participants are forbidden from using cell phones or other technology while participating in the sprint session. By putting all stakeholders in a room, the sprint experience forces team members to commit to making progress, helps teams move abstract ideas and hunches into concrete action, keeps teams focused on what's important, and encourages prompt decision-making and follow-up (Knapp, Sprint, 2016). The sprint also often makes use of a "scrum master," whose job is to remind the team, via use of a bell or other sound device, when the team veers off-topic or begins developing solutions or ideas that may be valuable but are not applicable to the specific sprint goal. The sprint team must understand, map, develop, and test a working prototype in one week. A one-week deadline motivates sprint teams to produce quickly and efficiently.

Sprints are common in the development of websites, apps, and other software. Google Venture has also introduced the sprint model to manufacturing processes and seen successes emerge from its application in that field as well. The challenge in applying the sprint to sponsored projects is that research administration rarely develops a product or a single-user experience. Processes are multi-layered, over the span of a year or more, involve many players contributing to grant management, and must often be nimble and adaptable to changes in regulation or law. To meet the needs of research administration, the sprint concept would need to be modified to generate an improved process.

Current Problem-solving Mechanisms

Effective teamwork is key in research administration, and in all organizations. The Harvard Business Review published a study in 2016 that found that “the time spent by managers and employees in collaborative activities has ballooned by 50 percent or more” (Cross, 2016). The challenge is to make the most of these collaborative experiences. Sponsored Project offices typically employ long-term workgroups or committees. In these collaborative environments, team members meet for an hour each month or twice a month to analyze a process, project, or department need and to make recommendations for improvement and implementation. The workgroups use brain-storming, mapping, group discussion, and critical questioning to move towards recommendations and create deliverable materials that illustrate process changes or provide training. A variety of individuals with diverse roles appear as contributors on department committees. Workgroup duration commonly varies between several months to several years, with participation fluctuating with staff turnover and committee burn-out. The workgroup model of problem-solving has flaws. Progress towards solutions is slow, individuals miss meetings and lose motivation to contribute, staff turnover challenges process towards achieving goals, outspoken individuals in brainstorming sessions tend to drive progress in a single direction, schedules grow increasingly clogged by meetings, and department morale flags. Teams spend a long time on critical tasks, leading the project to fall behind, and can struggle to complete tasks and achieve their goals (Kisielnicki, 2016).

Additionally, work groups strive to produce a final product or recommendation and do not experience critical iterative design sequences. These final products occur at the end of a work group’s convened effort. Redesign of those end products is slow and cumbersome since the time it takes to convene the work group, gather feedback on needed revisions, and collaborate on a new design stretches over weeks or months, sometimes years. Finally, the larger the work group size, the more prone its team members are to decreased individual effort towards accomplishment of the group’s goal (Latane, 1979). Devine suggests “a great deal of time, effort, and perhaps money is spent in creating teams, but little is done for them once they are in place.”

However, factors impacting team effectiveness are contingent on the team’s context (Devine, 1999). Devine finds that organizations boast a variety of team types: management teams, autonomous work groups, semiautonomous work groups, and project teams. The sponsored projects department tends to rely on semiautonomous work groups, defined as a group of diverse co-workers tasked with a goal or problem to solve and that reports their recommendations to management. This problem-solving model assumes that problems are well defined, processes can

be optimized, and results can be predicted (Devi, 2013). The sprint model is an ad hoc project team, as defined by Devine, responsible for developing a specific project in a specified duration, tasked with being adaptive, collaborative, and in employing design iterations.

Outside of the workgroup model, staff members choose to solve problems on their own and present possible solutions to managers, collaborate with each other on solutions via email communication, or discuss problems and possible solutions during department meetings. The workgroup model is the standard problem-solving mechanism endorsed by the sponsored projects department at The Research Institute at Nationwide Children's Hospital.

Rapid-response

Google Venture's 5-day sprint accelerates a team's understanding of the problem at hand and engenders in team members shared understanding of complexity and possible solutions. The sprint model offers an additional advantage in that it is a rapid-response solution team, capable of gathering feedback on a prototype and redesigning in real-time to meet the deadline. Sprints are commonly one piece of the Agile methodology in which projects are managed progressively, with iterations over time. These rapid-response iterations quickly incorporate feedback and redesign a product to eliminate unsuccessful product elements (Kisielnicki, 2016). The Sponsored Projects sprint encouraged iterative design in both the sketching and prototyping days. Iterative design elements are new and offer a potentially valuable alternative to the traditionally linear problem-solving methods evidenced in workgroups.

Rethinking RPPR Submission

In 2014, the National Institute of Health began requiring institutions to submit a Research Performance Progress Report (RPPR) for all annual, type 5 noncompeting NIH awards (National Institute of Health [NIH], 2014). In the RPPR, "recipients describe scientific progress, identify significant changes, report on personnel, and describe plans for the subsequent budget period or year." It is essential to be accurate and timely in working with principal investigators to complete and submit RPPRs.

From 2015-2016, the Sponsored Project Officer team replaced two of its four members and increased the team by an additional two new positions, growing the dedicated SPO team from four to six, including the transition of one SPO to SPO Manager. Consequently, two-thirds of the team was new to submitting RPPRs. The significant staffing changes, in combination with the implementation of the RPPR requirement, resulted in inconsistent submission and a lack of understanding among the SPO team members as to what was truly required on the report, whose role it was to collect and enter different pieces of the report, and how best to organize and communicate regarding the RPPR submission and due date. The director reported significant variation in the information he reviewed in the RPPRs submitted by the SPO team. These inconsistencies and errors required the institution's signing official to return to the SPO at submission to gain complete information on publications, inventions, intellectual property, aims, and budgets before submitting the RPPR on behalf of the investigator. The process was time-consuming, inefficient, and inconvenient for all parties. Additionally, the SPO team was projected

to grow with the addition of another position, to seven in total by the fall of 2016, and would need a way to train that individual in RPPR submission or risk the same lack of understanding and errors in a new cycle. The SPO team needed to work together to outline best practices for submission, but the team was consistently buried in work and unable to determine how best to dissect the complex process from start to finish in order to educate new members of the team on the multilayered RPPR submission process.

According to the National Institute of Health, “review of the RPPR by NIH staff is a key element in NIH’s monitoring of the grant award” and “funding for non-competing years of the grant can only be awarded after the NIH program and grants management staff review and approve the progress report” (2016). It was imperative for the SPO team to improve their submission process and better communicate with the signing official in order for the principal investigator to continue to receive timely non-competitive funding. Streamlined Non-Competing Award Process (SNAP) RPPRs are due 45 days from the next grant year budget period start date, whereas Non-SNAP RPPRs are due 60 days before the next grant year budget period. In optimal conditions, a principal investigator will initiate an RPPR 60 days before it is due, starting the clock on that submission for the Sponsored Project Officer team. Within that window, SPOs must often coordinate with subsites to gain budget information and documents, complete administrative sections of the report regarding budgets, effort, inventions, and more, and sometimes help train new investigators to use the system and complete their sections of the report.

An RPPR User Guide exists to help guide research staff and investigators in submitting through eRA Commons (NIH, 2016), and yet, because the process involves several different handoff points and individuals along the way through the year of the award, and because each grant funding mechanism is unique, the reporting process is rife for complexity. While the SPO team acknowledged their use of the Instruction Guide in submitting their own RPPRs to the signing official, the team needed best practices in place for handoff, communication, training, and coordination among different roles that all play a part in a successful submission. The team needed to map the process to identify pressure points and common errors.

An Alternative Problem-solving Model

The Research Institute’s Sponsored Project Officer team was willing to pilot the sprint project in May 2016. There were a few key problems to overcome in adapting the sprint for sponsored projects. A review of the literature on sprints did not yield any instances of this model being employed in research administration or to retool a complex internal, multi-user process. The traditional sprint focuses on satisfying the needs of the customer and produces a product to meet that need. In seeking to re-invent the department process, the sponsored project sprint team would be its own customers and the product created by the sprint would be a process for their own use. Would this change the sprint’s success or value to the department?

Resource allocation was another hurdle in implementing the sprint in sponsored projects. Knapp advises a 5-day sprint, with each day consisting of 6 hours. The department could not afford to allocate all the Sponsored Project Officers, two Research Business Coordinators (RBCs), two Grants and Contract Officers (GCOs), and the SPO Manager, a total of ten staff, for six hours

a day for five days, for a total of 300 hours. As a compromise, the department allocated two hours a day for five days—a significant reduction in allocation, yielding just 100 hours. It was an abbreviated version of a sprint, but would it still work?

Conducting the Sprint

The Google Venture team recommends specific tasks for each day of the design sprint. The first day would be dedicated to developing a group understanding of the problem by hearing from experts on the problem. The team would employ “How Might We” notes to contribute to the team understanding of gaps in service or questions about how the team might improve the process. On Tuesday, the team would map the process and develop the goal. On Wednesday, the sprint team would sketch solutions and create storyboards for the process. The team would also use “heat-map” type sticker voting to determine which sketches to incorporate into the new process. On Thursday, the team would develop a working prototype. On Friday, the team would test the prototype on users. To modify the recommended sprint days to fit the time constraints and the unique needs of sponsored projects, Friday’s session developed into a day devoted to designing the process. SPOs would need to test the process over the course of several months after the sprint session.

Day 1: Understanding

The sprint Facilitator explained the origin of the sprint with software teams and Google Ventures and discussed that the session would be an abbreviated version, piloted as alternative problem-solving model. The team would be reinventing the department’s RPPR process throughout the course of the week. The team identified a “Scrum Master” who would keep the team on task and alert the team by striking a toy xylophone when the team drifted off topic. The SPO Manager would serve as the “Decider” and would assist by making the tough decisions, as needed, throughout the week. The SPO team invited two Research Business Coordinators and two Grants and Contracts Officers to be a part of the sprint team as well. The Research Business Coordinators manage the grant budgets and personnel and their perspective would be valuable to the process. The Grants and Contracts Officers issue subawards and communicate with subsites and the SPO team considered that their input on the RPPR process would be valued as well.

Chiu proposes that people who do not share an understanding of the immediate problem may work together collaboratively to generate multiple perspectives and synthesize them to form an effective solution. Sprint team members did not share a universal understanding of the problem. By bringing this divergent team together and achieving a shared understanding, the sprint would allow the team to bring their different perspectives to develop a solution. Two experts were on hand to discuss the problems with the RPPR process and to go over the RPPR form in detail. The sprint team included both seasoned Sponsored Project Officers who had submitted dozens of RPPRs, new staff who had never submitted a report, and Research Business Coordinators who have traditionally contributed a piece of the RPPR for submission and Grants and Contracts Officers who may contribute to the process in the future. On the first day, the Director was on hand to explain the issues he was seeing come up in the RPPRs. The team created a list of the issues he reviewed and asked questions. The team also contributed by compiling lists of “How

Might We” notes. These notes gave team members the opportunity to identify opportunities for improvement in the process. “How Might We...improve communication with investigators about RPPR deadlines?” or “How Might We...ensure all documentation is available from the subsite?” The team went through each section of the RPPR in detail to identify the different roles that contribute and the time points of interaction in the process. The team ended the Monday session by identifying the goal for the week to be: *Accurate, compliant, timely reporting by clarifying and redefining roles and responsibilities and streamlining the process.*

Critical to the process of team learning is the concept of psychological group safety. In safe learning environments, team members feel comfortable asking questions, taking risks, and sharing perspectives (Edmondson, 2001). The sprint model attempts to inoculate team members from interpersonal anxiety by offering them a distraction-free zone (no electronics) and a dedicated space and time to learn from experts and from each other about the process and problems. Coordinated action is best accomplished when individuals can synchronize their thoughts, feelings, and behavior (Hackman, 1992) and the sprint model offers individuals a safe place to learn, share, build, and accomplish in a deadline-driven team environment. Membership continuity and familiarity influence group mood and stability (Bartel, 2000); since the sprint model promotes intimacy and familiarity among members who are tasked to show up and contribute to a shared and specific purpose within the teams’ short duration, the sprint model offers strong continuity and builds familiarity quickly. In traditional sprints, team members spend the majority of those five days together, breeding trust and comfort among team members. The greater the degree of stability, the stronger the team’s mood convergence.

Before concluding Monday’s session, the team discussed Tuesday’s plans to map the their understanding of the process and organize the “How Might We” notes. Monday was an intensive day of learning and questioning. Team members seemed overloaded with information, but as they were packing up, several expressed hope that the team could improve the RPPR problem with use of the sprint. They expressed frustration with the department’s traditional workgroup model, citing that it was time-consuming and did not produce results efficiently.

Day 2: Mapping

Tuesday’s task was to create a simple map of the process (5-15 steps) that would illustrate the team’s understanding of how the process currently worked and help identify flaws or gaps in the process. The team quickly determined that they first wanted to draw a quick graph of the different roles involved in the RPPR process, since the investigator, the SPO, the RBC, the GCO, and the signing officer all had different roles to play at unique times and in relationship to the RPPR form. The Facilitator helped graph form sections A-H and the team isolated the roles involved with each section. This helped the team feel more unified and clear on the sections discussed on Monday.

The map began with the moment of “RPPR Awareness” and ended with “RPPR Submitted and Uploaded.” Defining the middle section of the map was more challenging. The team processed backwards in time from the end point and then forward from the beginning until able to define the middle zone tasks and handoff points accurately. It was a challenge for the team not to recommend solutions to improve the process at this point. The team struggled against this barrier in the sprint

format initially, since seeing the map immediately triggered awareness of flaws and dialogue about how it could improve. Department workgroups not only allow for this free-form idea generation, but encourage it. In workgroup sessions, teams are often free to follow a new idea or solution and explore it through brainstorming. However, evidence has shown that brainstorming sessions do not produce more average quality ideas; in Diehl and Stoebe's study, they determined that *production blocking*, or the brainstorming condition of waiting in turn to present ideas while others speak, yields fewer average quality ideas than situations in which individuals produce their own ideas or write their ideas on paper while others speak. Group brainstorming doesn't tend to work because dominant, outspoken personalities tend to "win" in those sessions, while quiet or new staffers can be overlooked (Novellino, 2016).

The purpose of the sprint mapping exercise is to coalesce group understanding of the existing process, as it related to the RPPR form detailed in Monday's session.

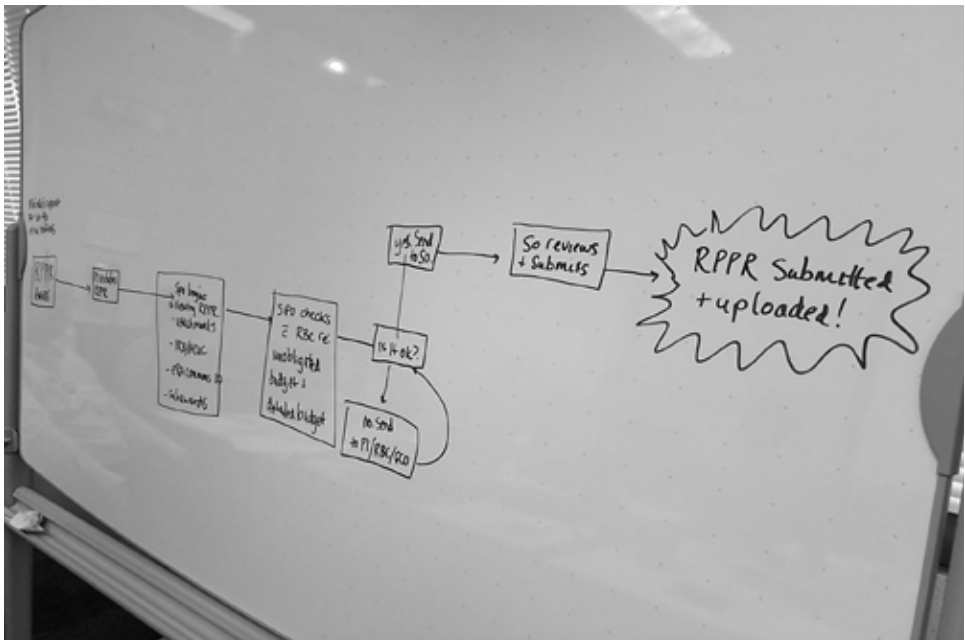


Figure 1. Mapping the RPPR process.

Once the team was satisfied with the map, the Facilitator began reviewing the "How Might We" notes from Monday's session, allowing the team to determine where they fit into the map or if they should be on the "parking lot" for discussion at a later date. The "How Might We" notes would help the team determine critical solution needs for Wednesday's sketching session.



Figure 2. “How We Might” notes enhance understanding of process flaws.

The team identified that there was a lot of potential for improvement around the Sponsored Project Officers’ final review of the RPPR, some potential new involvement for the Grants and Contracts Officers in contacting the subsites or collecting subsite information for the RPPR, some ideas for improvement at the moment of RPPR awareness, and a potential change in the Research Business Coordinators’ involvement in entering personnel into the RPPR.

Day 3: Sketching

The sketching day in the sprint most significantly departs from the department’s problem-solving traditions. In workgroup sessions, staff occasionally map processes and learn from experts on a topic, but the concept of individually developing solutions inside of a collaborative group experience was new. After talking about the problem for two days, the team was keen to begin developing solutions.

The Facilitator explained Knapp’s concept of “Crazy 8’s”: team members fold a blank sheet of paper in half four times, then unfold it, to get eight equal rectangles. The team had twenty minutes to develop a sketch and was free to get up and look at the map and notes before beginning. With limited time to develop a sketch, ideas are faster and staff members experience less self-editing.

The team experienced one round of Crazy 8's, but it may have been more fruitful to do two shorter sessions (Dinakaren, 2013) instead.

The sketching session yielded surprising results. It was incredibly difficult to develop a sketching concept, and the sketches the team developed were very text-heavy. This made them challenging to read and understand without the artist explaining the sketch. Each team member's sketch boxes were almost paragraphs explaining what happened next. The "sketching" element was minimal. Perhaps research administration processes lend themselves to more text and fewer diagrams. Or perhaps the sketching exercise needed further explanation. Did the team need words to explain what happened next or how the proposed changes would impact another person's role or part of the RPPR form? Perhaps the value of the sketching session was in helping individual sprint members organize and explore their own solutions for presentation to the team. More study is needed on this in future sprint sessions.

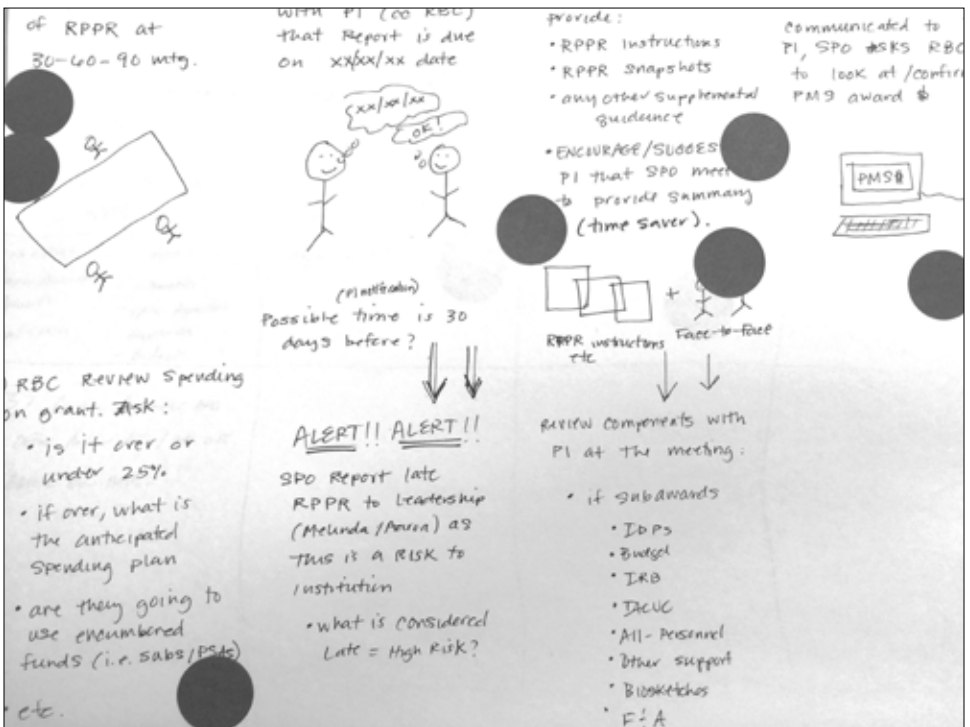


Figure 3. Sketching example.

Knapp recommends a few sketching sessions and then developing those sketches into storyboards (Sprint, 2016). The sprint team conducted one longer sketching session and eliminated the storyboards to save time. This may have been a mistake. The storyboards would have helped crystalize the content of the sketches; in future sprint sessions, the storyboard concept should

be reintroduced. The team felt rushed on the sketching day and could have used more time to develop and analyze the sketches as potential solutions. Despite the sketches' limitations in the department sprint, the team universally saw the sketching day as valuable in the post-sprint survey. Developing individual solutions within a team was a valuable part of the success of the sprint and the team felt invested in contributing their individual ideas within the safety of the sprint session.

Additionally, the sketches were surprising in that they were difficult to silently critique and grasp without explanation from the author of each sketch. The team allowed the authors to explain their sketches and concepts before moving on to vote on the ones that that added the most value to improving the RPPR process.

The team placed the sketches on the map and voted on pieces of the sketches that contained the most valuable contributions to the process improvement. The Facilitator passed out green stickers and each person had four stickers to place on the sketches in silence. The Decider had more stickers to use to vote. Silent voting with stickers was a valuable piece of the team effort. Team members recommended that future sprints allow pieces of sketches to be cut apart and moved around, as this would promote recombining the best ideas from different sketches. The storyboard concept may have promoted this recombination aspect as well and should certainly be re-introduced into future sprints to more fully explore how that element could contribute to the iterative process.

Day 4: Prototyping

By Thursday, the team was ready to build a new process and timeline to submission, based on shared understanding of the process, the most valuable "How Might We" notes, and the sketched ideas determined to contribute most to the process from the voting session. The Facilitator drew five timelines on the whiteboard, beginning at the moment of RPPR awareness and ending at the SPO uploading the final copy of the report into grant management system. The five lines represented each role that was to be involved in the process: the PI, the SPO, the RBC, the GCO, and the Authorized Official. The team began the mapping session on Tuesday by defining how the different roles interacted with the RPPR form, so it made sense to identify the different places where those roles came into play in the new process and how the team might refine those intersections in support of increased accuracy and compliance.

Next, the team identified key time points in the process: the notice of award, 120, 90, 60, and 30 days before the report was due and placed tasks into the timeline of roles, using ideas from the sketches and "How Might We" notes to guide discussion. The sprint team clarified important handoff intersections between roles, discussed potential changes in responsibilities related to the All Personnel report and to contacting subsites and obtaining required documentations and budgets.

The new maps helped the team identify the materials needed to empower these changes in process and guide the interactions. The team determined that it wanted an overall RPPR Process Checklist that would serve as a roadmap for all department roles in each RPPR submission, from notice of award through the upload of the final document. That document would be the sprint team's primary "product" by the end of the day Friday. However, the team identified the need for ancillary materials. The SPOs would create email templates that they would use to contact

investigators at different time points in the process. The first would be a template for contacting investigators at the time of Notice of Award and the second one would be an email that would go out to investigators at the 60-day mark before due date. That 60-day email would include language about routing the RPPR to the SPO. The SPOs would also create a final review checklist for the RPPR. The Grants and Contracts Officers would create an email template they would use to contact subsites to solicit documentation and budgets and a review checklist for verifying all subsite documents and budgets are correct at two weeks from submission. The team's goal for Friday would be the creation of the RPPR Process Checklist, and due to a shortage of time, the team would need to develop the ancillary materials outside of the sprint.

Day 5: Designing

Friday was a rush. After five days of collaboration that included individual problem-solving opportunities, the team was working together very well. Google conducted a study, entitled *Project Aristotle*, that attempted to quantify what makes good teams successful. The study found that conversational turn-taking and empathy help teams develop trust among one another and assure team members that they are being heard. The teams that can develop those skills and norms are high performing (Duhigg, 2016). By Friday, the sprint team had developed trust, conversational turn-taking and good listening skills. It had morphed into a high performing team. The Scrum Master role was largely forgotten, as team members were highly focused on achieving the goal and contributing to completing the product by the end of the two-hour session. The team had forged a strong bond, and by the close of Friday's session, had developed a working draft of the RPPR Process Checklist.

The team took the final ten minutes of Friday's session to discuss impression of the sprint as a problem-solving method in the department. The informal feedback session was positive, with team members saying that they would choose to be a part of a sprint again to solve a problem, specifically when given the choice of a sprint or a workgroup. The team felt that the time devoted to the sprint was insufficient, claiming to need three or four hours each day, or a couple of strategically placed three-hour days within the sprint week. The sprint team had developed a draft document outlining the new process and had identified related collateral materials and templates, but the time allotted in the sprint had been insufficient to develop all materials and to review their use. That sensation of just having clearly identified what the team needed to develop and then ending before the creation of those materials engendered frustration that would have been alleviated if we'd had more time allotted for the sprint. The team was able to begin building momentum towards an idea or decision and ended for the day. It was challenging to pick up immediately the next day at the same energy level and understanding.

Sprint Follow-up Sessions

The Decider scheduled two follow-up sessions for the sprint team in the weeks that followed the event. In these meetings, the team continued developing the supporting materials for the RPPR Process (RPPR Process Checklist, SPO Final Review Checklist, Subcontract Review Checklist, and email templates for key interaction moments in the process). The completed RPPR Checklist

and Subcontract Review Checklists are fillable PDFs that multiple parties can contribute to completing over time. The SPO Final Review is an online form with JotForm. It was much more challenging to motivate the team to produce materials outside of the sprint week.

A. Cover Page

	Yes	No	N/A
1. Verify all data fields are completed and accurate (most fields self-populate from the proposal, but confirm ALL data)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Add Signing Official (Aaron Ufferman)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Add Administrative Official (SPO)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

B. Accomplishments

	Yes	No	N/A
1. Verify all data fields have been completed (PI completes the majority of this section)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Confirm grant number/titles of renewals/supplements are accurate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Do grad students have effort applied?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Is this a T, K, R25, R13 or D43?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

C. Products

	Yes	No	N/A
1. Verify all data has been completed (PI completes a majority of this section, but confirm all fields are complete)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Are any publications listed as non-compliant? If yes, discuss with PI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Did the PI identify any inventions/patents? If yes, confirm with the Office of Tech Licensing that we reported in iEdison	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

D. Participants

	Yes	No	N/A
1. Confirm all data fields have been completed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Verify/Enter the All Personnel Report for each person who worked on the project at least one person month per year during the reporting period. If personnel are key or post-doc, an eRA Commons ID is required. For all other personnel, list name, degree, project role, and cal month (no DOB or SSN)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Subsites? If yes, enter All Personnel data for subsite	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Work with RBC/PI to address level of effort or new key personnel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Work with PI/Admin to verify changes in Other Support and ensure this is included for any key personnel changes in active support since the last reporting period	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Confirm the completed Other Support does not list active effort over 12 cal months (100%). If over, work with PI/RBC to make changes prior to submission	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Confirm with the PI if there are any changes in the Multi-PI Leadership Plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 4. RPPR Final Checklist for Review.

Feedback on the Sprint Session

Two weeks after the sprint session, all members of the sprint team completed the online anonymous survey. When asked what could have improved the sprint session, respondents overwhelmingly chose: *Dedicated room space* (62.5%) and *More time dedicated to the sprint* (62.5%). *Prior education on the problem* (37.5%), *Increased group participation* (25%), and *Clearer understanding of how the sprint would work* (25%) also scored highly. The team moved rooms three times throughout the week, and it was a challenge to travel the large whiteboard to each room and get set up and cleaned up on time each day. A single dedicated space in which to conduct the sprint would have been ideal. In this adaptation of the sprint model, the department allocated one-third of the advised time for the sprint. While the team may not have needed the full six hours a day, more time is needed to yield a truly successful adaptation for sponsored projects use of the problem-solving model. The team felt rushed on several of the days and had to cut out some elements like storyboarding that may have really helped define the process and product earlier in the week.

Table 1. What could have improved the sprint session?

More time dedicated to the sprint	62.50%
Dedicated room space	62.50%
Prior education on the problem	37.50%
Clearer explanation of how the sprint would work	25.00%
Increased group participation during the sprint	25.00%
Daily take-away materials/handouts	12.50%
Improved facilitation/leadership of the sprint session	12.50%
Fewer sprint follow up sessions	12.50%
More individuals participating	0.00%
Fewer individuals participating	0.00%
Less time dedicated to the sprint	0.00%
More sprint follow up sessions	0.00%
More communication regarding the sprint	0.00%

When asked what day of the week specifically needed more time, responses varied. *Prototyping* day (score of 3.88) edged out *Sketching* (3.14), but the other three days also scored some votes with participants as well (*Designing*, 2.88; *Understanding*, 2.75; *Mapping*, 2.71). The data seems to indicate that the team could have used more time on all of the days of the sprint. Teams may see increased efficiency and effectiveness in sponsored projects sprints with 3-4 hours a day devoted to the process.

Table 2. Given the need to solve a complex problem in our department, rate these problem-solving mechanisms in order of your preference with 1 being your first choice.

	1	2	3	4	5
Workgroup	12.50%	12.50%	12.50%	25.00%	37.50%
Email	11.11%	0.00%	22.22%	22.22%	44.44%
Sprint	44.44%	44.44%	11.11%	0.00%	0.00%
Department Training	0.00%	11.11%	33.33%	33.33%	22.22%
Individual problem-solving followed by discussing a possible solution with manager	33.33%	33.33%	22.22%	11.11%	0.00%

Team members saw the sketching day as the most successful segment of the sprint. This day departs most significantly from the department's commonly used problem-solving methods of brainstorming in work groups. On the sketching day, the team quietly sketched and solved problems independently, and then discussed and voted on their sketches and recommendations. Team members relished the opportunity to solve the problem on their own and then present their idea for review. When the survey asked the team to rate their preferred problem-solving mechanism for complex problems, they chose the *Sprint* (4.33) but tellingly, *Individual problem-solving and presenting solutions to a manager* was the second choice (3.99), with *Workgroup* (2.38), *Department training* (2.33) and *Email* (2.11) following in the distance.

Table 3. Which of the five days of the sprint was the most successful?

Day 1: Understanding	0.00%
Day 2: Mapping the existing problem	0.00%
Day 3: Sketching and "How We Might" Notes	50.00%
Day 4: Prototyping/Mapping our new process	25.00%
Day 5: Designing our process	25.00%

This data, when combined with the interest in the sketching day, seems to indicate that the sketching day may have appealed because it brought this preference for individual problem-solving into the collaborative process of the sprint in a way that workgroups, the most common problem-solving mechanisms, do not. With their focus on brainstorming and group collaboration, workgroups do not allow for individual solutions and they can be challenging for more passive team members who struggle to contribute when faced with more vocal peers. Workgroups that build trust and conversational turn-taking can be high performing, but those dominated by a stronger voice will struggle. Workgroups that incorporate time for individual problem solving may see an increase in yields. The sketching day in the sprint model provides staff with the opportunity to individually

problem solve and then equitably discuss and vote on the concepts without the influence of strong personalities that often impacts the brainstorming sessions in workgroups. In the 1987 study, Diehl and Stroebe recommended this same concept in their study:

Because blocking slows down the generation of ideas in groups, it might be more effective to ask subjects first to develop their ideas in individual sessions and next have these ideas discussed and evaluated in a group session. The task of the group would then consist of evaluation rather than production of ideas. This procedure might comb the advantage of group and individual sessions without making unnecessary demands on individual time. (pp. 508-509)

The team found the prototyping day to be the most challenging day of the sprint (83.33%). On our prototyping day, the team struggled to merge understanding, mapping, sketching, and notes into a product to develop. It took the better part of an hour to formulate and identify the product. An hour would not have been a problem within the context of a four-hour sprint day, but with only two hours to use, that hour ate away at half of that session's productivity.

Table 4. If you could choose to double the time allotted on just one of the days of the sprint, which day would you choose? Rank them in order of preference for extra time, with 1 being your first choice.

	1	2	3	4	5
Day 1: Understanding	25.00%	0.00%	25.00%	25.00%	25.00%
Day 2: Mapping the existing problem	0.00%	28.57%	28.57%	28.57%	14.29%
Day 3: Sketching and "How We Might" Notes	0.00%	42.86%	42.86%	0.00%	14.29%
Day 4: Prototyping/Mapping our new process	62.50%	0.00%	0.00%	37.50%	0.00%
Day 5: Designing our process	12.50%	37.50%	12.50%	0.00%	37.50%

All nine of the respondents indicated that they would recommend the sprint model to solve future department problem and eight of the nine responded that they would be willing to participate in a future department sprint. All but one of the team members were satisfied with the checklists, materials, and process created as a result of the sprint.

Follow Up to the Sprint

In the months that followed the sprint, the team struggled to produce the remaining three deliverables. During the sprint sessions, the team determined a need for three email templates: an email to investigators at the time of the award that advises the investigator on the RPPR submission due date, an email to the investigator sixty days before the RPPR report is due, and an email to subrecipient to request their documentation and information for the RPPR report. Additionally, the sprint team identified the need for a consistent naming convention on documents and files, both for the sprint and throughout their processes. It is possible that sprint

members do not view these remaining tasks as significant and meaningful contributions and are, therefore, less motivated to complete them outside of the sprint sessions. It may be necessary to better connect completion of sprint-originated tasks outside of the sprint with the meaningful aspects of sponsored research in future sprint sessions. Additionally, sprint team members may see these final three auxiliary products as less important than the primary product, and are, therefore, less willing to carve out time in their daily tasks to complete them. Ultimately, sprint teams should strive to produce the primary product as well as any ancillary materials in the course of the sprint session to ensure maximum effectiveness.

Table 5. Would you recommend our department consider the sprint model to solve future problems?

Yes	100.00%
No	0.00%

Conclusion

The data on the sprint conducted by Sponsored Projects at The Research Institute at Nationwide Children's Hospital indicates that the sprint model would be a successful and welcome way to improve future complex department processes. Increasing the allocation of time for the sprint to four hours a day, gaining a dedicated and consistent room space for the session, and providing advance information on how a sprint works so participants feel prepared to participate fully would improve the sprint experience for all members. It may also be useful for the Facilitator to send out a summary of the problem and educational materials on the process to help increase team readiness in advance of the sprint session.

While a sprint does bind up those team members' time and limit the department's ability to provide service during the session, the sprint offers the chance to maximize problem-solving. When ten people engage in a one-hour monthly workgroup over a year (120 hours), problem-solving moves slowly, not everyone can always attend, staff turnover results in stagnation, and groups must spend a portion of each one-hour session getting everyone up to speed and re-focused, while dedicating 100 hours to an abbreviated sprint session produced a working prototype of a complex process without team members experiencing committee burn-out and without having to account for staff turnover within the team. The sprint feedback was overwhelmingly positive because a sprint combines individual problem-solving preferences with safe group spaces for learning and problem-solving and intense and focused collaboration and decision making; these factors empower the team to produce fast-paced, holistic solutions to complex problems.

In looking to fields like software and manufacturing, where process improvement is critical to marketplace success, sponsored projects offices can develop new ways to collaborate and solve the problems unique to research administration. The adapted sprint model proposed here is designed to be an experiment in alternative problem-solving mechanism and is not intended to be a universal blueprint of how best to adapt the sprint for all institutions. However, institutions that

are willing to learn from and adapt methods from other fields create opportunities to filter those problems through a new lens and potentially uncover solutions in a way that supports both the individual problem solving and rich collaborative connections necessary to promote innovation and agility in Sponsored Research and compliance needs.

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