Applying team science best practices to manage a large, multi-site Lung Cancer Screening research consortium

Authors: Julie Steiner, MA[1], Erica Blum-Barnett, MSPH[1], Betsy Rolland, PhD, MLIS, MPH[2], Courtney R. Kraus, MSPH[1], Jocelyn V. Wainwright, MS[3], Ruth Bedoy, MPH[1], Andrew Sterrett, PhD[1], Brian Hixon, MPH[1], Katharine A Rendle, PhD, MSW, MPH[3], Yannica Theda Martinez, MS[4], Elizabeth Alleman, MPH[5], Roxy Eibergen, BS[6], Chelsea Saia, MPH[3], Lisa E. Pieper, MBA, MSHA[1], Anil Vachani, MD, MS[3], Debra P. Ritzwoller, PhD[1], Andrea Burnett-Hartman, PhD, MPH[1]

[1]Institute for Health Research, Kaiser Permanente Colorado, Aurora; [2]Michigan Institute for Clinical & Health Research, University of Michigan, Ann Arbor, Michigan; [3]Perelman School of Medicine, University of Pennsylvania, Philadelphia; [4]Center for Integrated Health Care Research, Kaiser Permanente Hawaii, Oahu; [5]Henry Ford Health System and Henry Ford Cancer Institute, Detroit, Michigan; [6]Marshfield Clinic Research Institute, Marshfield, Wisconsin

How do I use SciTS concepts to manage my study?

PROSPR-Lung applied team science best practices to promote effective collaboration and streamline processes for administrative and data management of a large, multi-site research consortia. Read on for details about how PROSPR-Lung implemented these principles, and to find some guidance that is applicable to a variety of academic and community-based health system research settings.

Why?

As research is increasingly conducted through multi-institutional consortia, scientific research teams must develop an effective infrastructure that increases collaboration, communication, and coordination. Recognizing unique challenges faced by translational research teams, the growing field of the Science of Team Science (SciTS) developed evidence-based best practices[1]:

1. Develop a shared **mission, vision and goals**; build consensus and ensure individual goals are also met.
2. Build a **culture of trust**, accountability, openness, inclusivity, and constant learning; create a culture of psychological safety.
3. Facilitate **interdisciplinary conversation** on approaches, methods and results.
4. Build strong and transparent **research support systems**: information management, scientific coordination, project management, and communication systems.
5. Build accessible, transparent **data management systems** with clear data analysis pipelines.
6. Foster strong, functional **leadership** that values inclusive authorship and transparent intellectual product responsibilities.

Here we describe the structure and processes employed by the NCI-funded Population-based Research to Optimize the Screening Process – Lung Consortium (PROSPR-Lung)[2] from 2018-2021 that contributed to the successful launch and management of this large, multi-site research center and data repository (Figure 1).

How exactly?

Figure 1. PROSPR-Lung Strategies to Implement Science of Team Science (SciTS) Best Practices

SciTS Best Practices	How PROSPR-Lung Actualized
1. Mission/Vision/Goals (MVGs)	• Prioritized consensus with all PROSPR-Lung team members at study kick off • Deliverables and scope are repeatedly checked against mission/vision/goals before advancing • Study branding provides consistent messaging: o Logo, Website, Twitter, Presentation templates, One pager, Email signature block
2. Culture of Trust (CoT)	• Strengths-based project leadership • Incorporated operational feedback from Annual Feedback Surveys • Proposal Access Review Committee (PARC) (Figure 2) o All intellectual products (e.g., abstracts, presentations, publications) reviewed & approved by PARC at intellectual product conception; author receives reviewer feedback; Governance document created and disseminated early in project
3. Interdisciplinary Conversations (ICs)	• Built academically and clinically-diverse study team • Study team members strategically included in discussions based on specialty and task • Monthly biostatistician meetings to share methods • Frequent lead author and/or biostatistician presentations to Steering Committee
4. Research Support Systems (RSS)	• Utilized centralized IRB • Executed Reciprocal Data Use Agreement • Streamlined data request processes • On-demand web-based access to Timelines, Decision Log, Manuscript tracking, Terms/Definitions
5. Data Management (DM)	• Strategic data element identification • Code transparency • Collaboratively developed detailed, clear Workplans & Timelines for each Common Data Model • Distributed Abstraction training, data dictionary and instructions
6. Leadership (L)	• Shared leadership responsibilities • Transparent intellectual product development process (PARC) (Figure 2) • Developed clear authorship policies • Required analyses & conclusion checks and consensus via PARC and meeting presentations

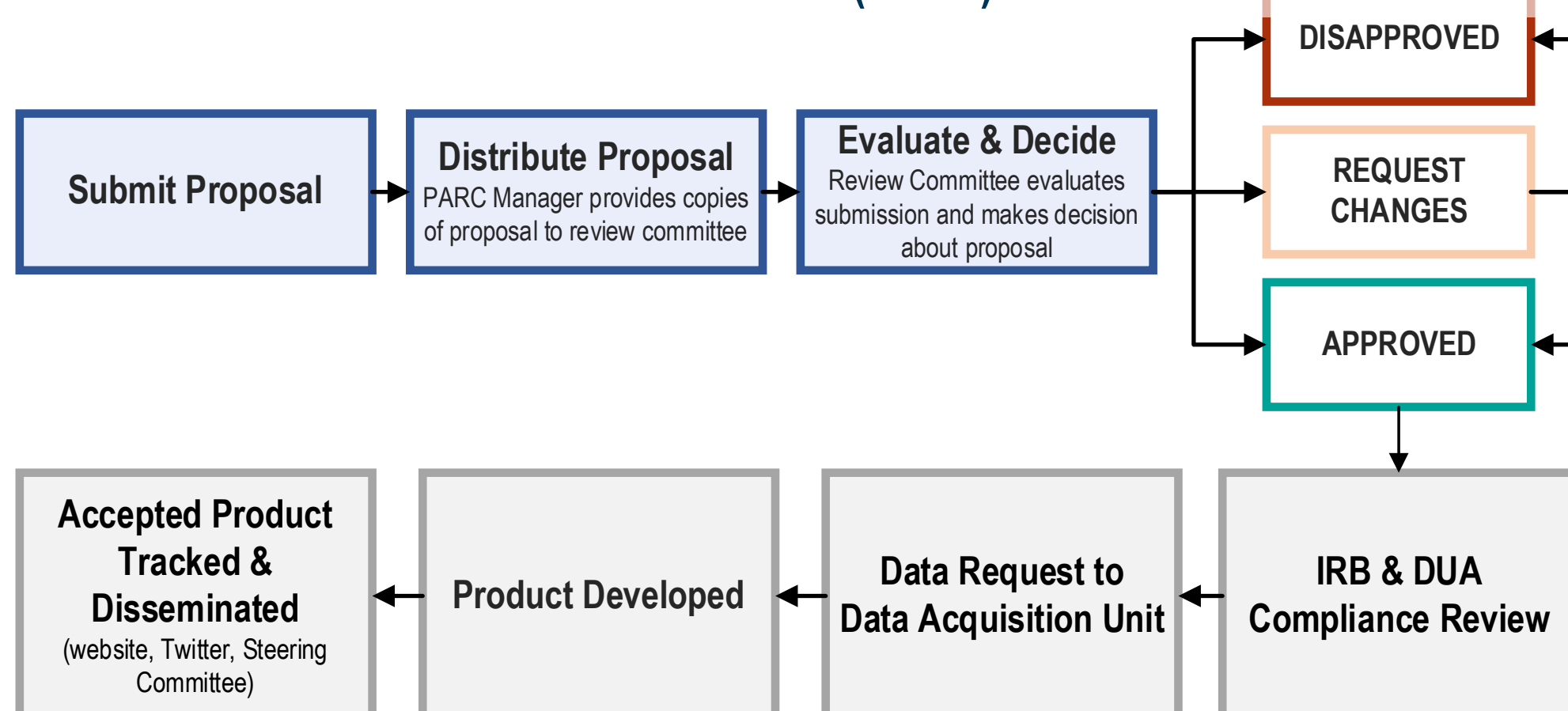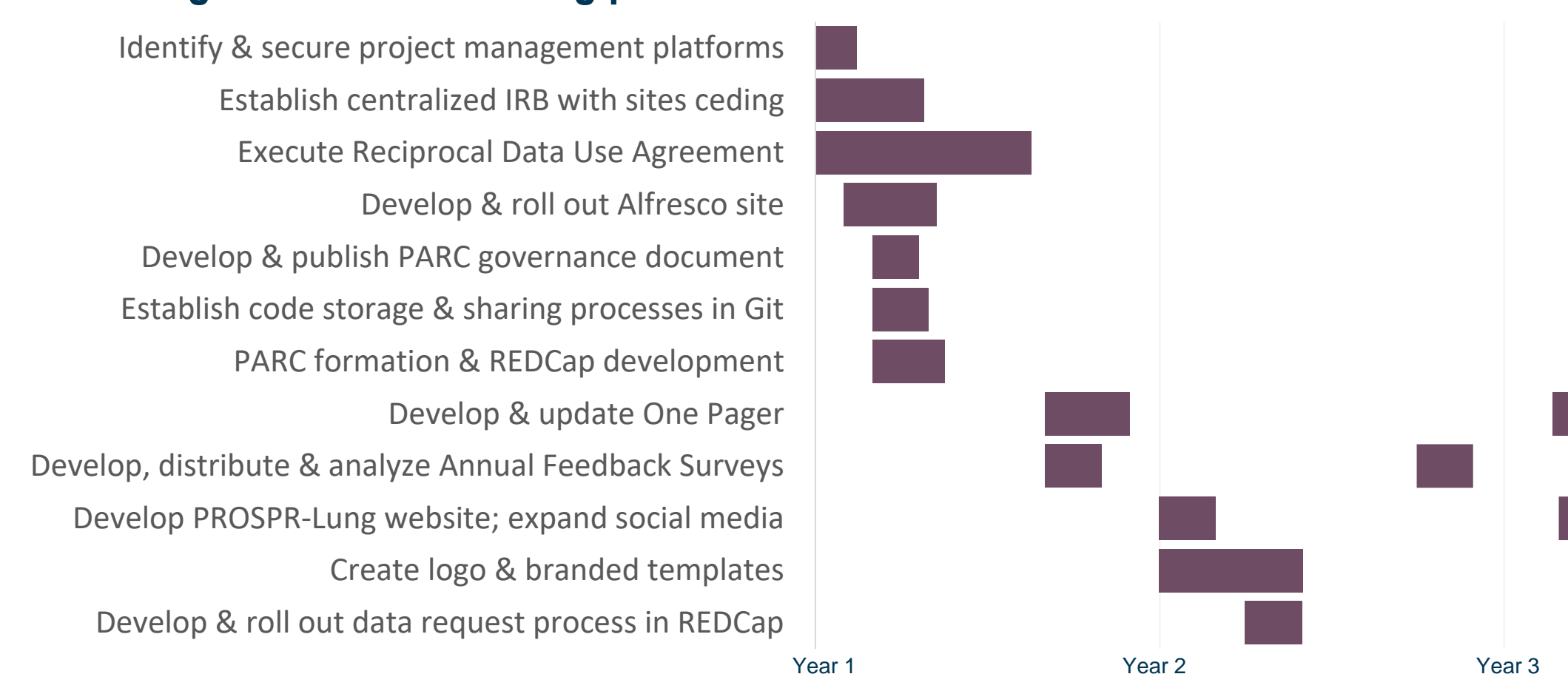**Figure 2. PROSPR-Lung Intellectual Product Review, Data Request, and Tracking Process (PARC)**

Figure 3. Tools used to drive collaboration, efficiency and scientific progress

Figure 4. PROSPR-Lung prioritization of research infrastructure establishment

Conclusion

Our work highlights the importance of intentionally and methodically prioritizing project management that applies SciTS best practices to establish translational research consortia, and throughout study implementation, to facilitate high-impact research. Using these strategies removed barriers and enabled PROSPR-Lung to ensure compliance, provide clear direction, manage challenges, and demonstrate productivity.

Visit our website for more on what PROSPR-Lung has produced thus far:

More details on our work, including templates and infrastructure diagrams, can be found here:

SOURCES
1. Rolland B, Burnside ES, Voils CI, Shah MN, and Brasier AR. Enhancing reproducibility using interprofessional team best practices. Journal of Clinical and Translational Science 5: e20, 1–8. doi: 10.1017/cts.2020.512
2. Rendle KA, Burnett-Hartman AN, Neslund-Dudas C, et al. Evaluating lung cancer screening across diverse healthcare systems: a process model from the lung PROSPR consortium. Cancer Prev Res (Phila). 2020;13(2):129–136. doi: 10.1158/1940-6207.CAPR-19-0378.