

Appendix C.

Questionnaire for Researchers

The questionnaire tailored to the Researchers was divided into four distinct sections as follows. The overlapping questions with administrators have been marked as $[R + A]$.

Understanding Scientific Collaboration

- 1) $[R + A]$ Can you describe the notion of a “research team” from a research collaboration perspective, specifically *why researchers form teams*, and *how these teams are formed*?
- 2) From the team management perspective, is there any specific structure of a team?
- 3) Are you part of such a team/teams?
 - a) What kind of collaborative tasks do you engage in for scientific research?

Understanding Resource Sharing

- 4) Do you share any digital resources with the other research team members including both computing and non-computing resources?
 - a) *[Follow up] (If they mention computing resources)*
 - i) What computing resources do you share?
 - ii) Is it shared only internally within your institution, or externally as well? Why?
 - b) *[Follow up] (Otherwise)*
 - i) Are there any specific factors that have been preventing you from sharing computing resources?
 - ii) If given the facility, what computing resources would you like to share?
- 5) On a high level, how do you manage access permissions to digital resources within your collaborative team?
- 6) Do you keep track of what resources are being shared by the different members of the research team?
 - a) How do you keep track of this? Any software/tool in this context?
 - b) Is the tracking process “manual” or “automated”? Can you elaborate on the exact process?
 - c) Is there any dedicated person on the team for this?
 - d) How frequently the sharing records are updated?
 - e) If no tracking, then why?
- 7) In your collaborative teams, how is it decided who is going to access what resources? Are there *any specific rules or policies* in place?
 - a) *[Follow up] (If answered yes)* Can you elaborate more on the current rules?
 - b) *[Follow up] (If answered no)* Why do you think you do not have a rule system in place? Is there any benefit of implementing rules?
- 8) How these constraints or rules are usually formed or should be formed? Is it the *discretion of the PI*, or a *consensus of the team*, or *something else*?
- 9) How do you keep track of whether these access rules are being followed?

- 10) What do you think usually causes such changes in the rules? Is there any systematic approach for such changes?

Understanding Challenges and Needs

- 11) $[R + A]$ Are there any factors that contribute to your feelings of frustration when interacting with the RC environment in your day-to-day life?
- 12) $[R + A]$ Could there be any better support for more secure collaboration in RC?
- 13) $[R + A]$ In the context of access management, how much of the administrative privileges or autonomy can be delegated to the users?
- 14) Do you think the RC infrastructure should support such features through which you can implement/enforce custom rules for your privately owned resources?
- 15) $[R + A]$ Are there any aspects that should be enhanced/updated to improve the overall user experience of the RC infrastructure?

Understanding Satisfaction and Future Plan

- 16) $[R + A]$ Are you satisfied enough with the RC infrastructure that you will continue using it for the foreseeable future?

Appendix D.

Questionnaire for Administrators

The questionnaire tailored to the System Administrators was divided into four distinct sections as follows. The overlapping questions with researchers have been marked as $[R + A]$.

Understanding Existing Infrastructure

- 1) What digital resources are currently being managed by the Research Computing infrastructure?
- 2) What are the processes of how these different resources are managed? Can you tell us about the different software/tools you use in such a context?
- 3) How are these digital resources restricted on an individual user level? Can all users access all the same resources in the system or otherwise?

Understanding Support for Collaboration

- 4) How many different types of user accounts are there in the RC System?
 - a) *[Follow up]* Do the sponsor accounts get any special privileges on restricting access to the accounts they are sponsoring?
- 5) How can each user in the system be characterized?
- 6) What is the user management process in the system including the tools/software involved?
- 7) $[R + A]$ Can you describe the notion of a “team” from a research collaboration perspective?
- 8) From a system administrator’s perspective, how are these teams usually managed?
- 9) In the current infrastructure, is there any way that users can share resources among themselves?
 - a) *[Follow up] (If yes)* Can you elaborate on what resources can be shared, with whom, and what is the process of sharing?

- b) *[Follow up] (If no)* Can you think of any ways the resources could possibly be shared?
- 10) Does the current system support the users proposing/implementing their own rules/constraints on how resources can be shared between team members?
 - a) *[Follow up] (If yes)* How do they achieve it? Are there any such rules?
 - b) *[Follow up] (If no)* What could be the possible benefit of this feature from an administrative perspective? Can you think of any possible issues?

Understanding Challenges and Needs

- 11) $[R + A]$ Are there any factors that contribute to your feelings of frustration while administering the RC environment in your day-to-day life?
- 12) $[R + A]$ What kinds of support for collaboration would be more effective in research computing infrastructures?
- 13) $[R + A]$ In the context of access management, how much administrative privileges or autonomy can be delegated to the users?
- 14) Are there any features that are not implemented yet, but could potentially ease the process of managing resources and giving users access to those resources?
 - a) *[Follow up]* Can you think of any already existing tools or software in this context?
 - a) If a dedicated access control system is to be implemented for the research computing infrastructure, what features should it have?
- 15) $[R + A]$ Are there any aspects of the administrative policies that should be enhanced/updated to improve the overall experience of the users of the RC infrastructure?

Understanding Satisfaction and Future Plan

- 16) $[R + A]$ Can you tell us about the future plans of the RC Infrastructure that you are aware of to enable better service to its potential users?