

Forming and Supporting RSE Groups and Communities

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Lifecycle of RSEs in an organization (v1)

- Someone hears about RSEs, and realizes they are one
- Talk about this with colleagues, leading to informal community
- Formalize the community
 - Mailing list, slack, lunches, meetings
- Community and its members joins international, national, local RSE groups
- Share experiences, learn from each other
- Talk about their work with HR, create proper official roles
- Everyone lives (and works) happily ever after

Lifecycle of RSEs in an organization (v2)

- Alternatively, software developers group together to more effectively manage changing projects/staffing needs over time and provide some semblance of a career path in a soft-funded environment
 - One hears about RSEs, and realizes that's what they are
- Talk about this with colleagues, leading to informal community
- Formalize a group (if enough are in a unit, e.g., department, IT, research)
 - Develop mission, working internally and with stakeholders
 - Discuss institutional funding support for the group (full, partial, none)
 - Create career path, including how they fit into formal HR positions
- Group and its members joins international, national, local RSE groups
- Share experiences, learn from each other
- Everyone lives (and works) happily ever after
- Until the group gets too big, then need to rethink funding, structure, ...

Lifecycle of RSEs in an organization (v3)

- Someone hears about RSEs, and realizes they either have some or should
 - To compete with other universities
 - To recognize work done within the company
- Formalize a group (e.g., in a department, IT, research center)
 - Stakeholders develop mission
 - Determine institutional funding support for the group (full, partial, none)
 - Create career path, including how they fit into formal HR positions
 - Hire leader and group members (or reorganize existing staff)
- Group and its members joins international, national, local RSE groups
- Share experiences, learn from each other
- Everyone lives (and works) happily ever after
- Same potential scaling issue as v2

Group & community models

- Any of these three models and combinations can occur
- Other elements
 - If group, how it is organized
 - How it chooses or attracts projects
 - How projects are staffed
 - How staff are recruited and hired
 - Mentoring, career paths, promotion
 - Potential roles inside the group (lead, programmers, scrum master, ...)
 - How the group fits into its larger institution
 - How RSEs will be credited in publications/research outcomes
 - Training/education

Advantages & disadvantages

Institutional memory spanning projects, domains, time
 Flexible workforce with flexible skills
 Can support varying levels of effort, in particular portions of staff members
 Supports mentoring/coaching
 Reduced bus factor with regards to project core knowledge
 Enables scalable growth to more rapidly take on new/large efforts
 Fosters reuse and sustainability of built software
 Costlier staff, however, better more maintainable code
 Perpetual precarious staffing allocations when solely reliant on grants
 Difference from status quo makes model hard to describe to funding agencies/PIs
 Not possible to fund permanent staff under some agencies
 Risk of siloed staff after prolonged embedding in projects
 Lack of assimilation into domain if project is too short
 Projects today too often do not consider/reward reuse

Effect	Manchester	Illinois	Notre Dame
+	✓	✓	✓
+	✓	✓	
+	✓	✓	✓
+	✓	✓	✓
+	✓		✓
+	✓	✓	
±	✓	✓	✓
-	✓	✓	✓
-	✓	✓	
-	✓	✓	
-			✓
-			✓

From Daniel S. Katz, Kenton McHenry, Caleb Reinking, Robert Haines, "Research Software Development & Management in Universities: Case Studies from Manchester's RSDS Group, Illinois' NCSA, and Notre Dame's CRC," SE4Science, 2019. [10.1109/SE4Science.2019.00009](https://doi.org/10.1109/SE4Science.2019.00009) & <https://arxiv.org/abs/1903.00732>