

Understanding Software Community Formation






Daniel S. Katz, Michelle Barker, Wolfgang Bangerth, T. Daniel Crawford, Peter Elmer,
Jen Harrow, Lorraine Hwang, Fotis Psomopoulos, Graeme A Stewart, Michael Zentner

- Software is built and used in overlapping communities (disciplinary, technology, etc.)
- When thinking about new software, communities and their members (implicitly) consider:

- Adding to existing software vs. creating new software, competition, funding, career path & incentives

- Want to understand
 - How/why does/can a community form in a field to advance the software in the field?
 - What is needed to succeed?
 - What problems can occur, and be overcome?
 - What lessons can be learned? (for another community)
- by looking at High Energy Physics (HEP) Software Foundation (HSF), Community Infrastructure for Geodynamics (CIG), ELIXIR Tools Platform Best Practices group, Science Gateways, Molecular Science

- Early analysis: community formation initially depend on leadership, vision, community engagement
- Fits models like Educopia Community Cultivation Framework

	Formation	Validation	Acceleration	Transition
 Vision	document the core problem/challenge/opportunity the community addresses; set initial goals & assessments; pilot services/products; build alignment map	establish mission/vision/values statements, and articulate these to external audiences; test, evaluate, & improve services; conduct SWOT & market analysis; establish brand	build strategic plan & evaluation measures; show ROI & impact; monitor landscape; scale up services/products & evaluate at milestones; recalibrate as needed	revisit mission, vision, values; evaluate all projects' and programs' viability; identify service/product gaps & challenges; consider landscape changes and opportunities
 Infrastructure	establish communications & administrative structures; document current dependencies (e.g., host organization(s), service providers) & exit strategies	refine communications & administrative structures; create & implement communications plan; explore relationship management (CRM) & digital preservation tools	implement communications plan; streamline member onboarding procedures; add relationship management & digital preservation tools & strategies	evaluate platforms and operations; establish new communications & administrative support as necessary for transition(s); test promising new platforms and tools
 Finances and HR	establish administrative costs; evaluate HR needs; create financial plan; document fiscal milestones; establish initial pilot pricing for services & products	test & refine financial plan; build accounting framework, COA, and manuals; establish financial reserves; ensure HR structure supports staff & complies with laws	diversify funding streams; cover costs + 10% (reserves); evaluate scaling costs & returns; consider staff changes & prof. development; explore endowment opportunities	analyze income/expenses; explore available/needed resources to support change; consider endowment-building activities; evaluate/adjust HR infrastructure
 Engagement	foster relationships between community members; establish subgroups & regular meeting schedules; document who is engaged; host event(s)	give credit/awards to community members for engagement; formalize committee rules & processes; engage strategic affiliates, begin regular reporting to community; host event(s)	broadcast services & products through members & affiliates; engage new members & affiliates; evaluate committees; exercise the community's voice; host event(s)	maintain transparency about changes; identify & pursue key relationships in support of the transition(s); survey/interview members & affiliates to help identify new directions; host event(s)
 Governance	establish & grow community leadership; develop prioritization plan for formation activities; document governance procedures; establish member MOUs/contracts	formalize leadership group, name subcommittees & create descriptions of roles/responsibilities; refine & formalize governance procedures; establish Privacy Policy	spin up/spin down leadership subcommittees; document governance functions; cultivate next-gen leaders; plan recalibration and/or spin downs if needed	evaluate & revise governance procedures; consider leadership changes (board, officers); maintain openness & transparency wherever possible with members & affiliates

- To succeed, community must be sustained over time
 - Strengthen vision & engagement, expand governance, consider infrastructure & finances
 - May need multiple tries & changes to initial ideas
 - It's a full time technical, social, cultural job
- Coming work on this project: more analysis, test, paper
- Please contact me with more data/ideas/examples