Understanding Software Community Formation

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- 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

<table>
<thead>
<tr>
<th>Formation</th>
<th>Validation</th>
<th>Acceleration</th>
<th>Transition</th>
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<tr>
<td>Vision</td>
<td>document the core problem/challenges/opportunities the community identifies; address initial software products, build alignment map</td>
<td>establish mission/vision/future statements, and articulate how to externalize &amp; externalize to stakeholders, content providers &amp; end strategies</td>
<td>build strong plan &amp; evaluation measures; show ROI &amp; impact; monitor impact, build solid infrastructure, stabilize community behaviors &amp; identities; reclarify as needed</td>
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<td>Infrastructure</td>
<td>establish communications &amp; administrative structures, create online communities, create &amp; implement communications plans, explore relationships management (CRM &amp; digital presentation tools)</td>
<td>implement communications plan; administrative member engagement protocols, &amp; relationships management &amp; digital presentation fields &amp; strategies</td>
<td>maintain mission, vision, evaluate results of projects &amp; programs’ viability, identify service/rental gaps &amp; needs; establish new communications &amp; administrative support in measures for execution, test proving new platforms and tools</td>
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<td>Finances &amp; Goals</td>
<td>establish administrative costs, evaluate needs, create financial plan, document financial strategy, establish initial plan for services/products</td>
<td>refine communications &amp; marketing exercise, CRM &amp; digital presentation</td>
<td>ペンシルバニア大学で学んだ PhD や、MIT の院内機関でのソフトウェア開発への積極的な貢献者</td>
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<td>Engagement</td>
<td>foster relationships between community members; establish leadership &amp; support; maintain community momentum; communicate value; coordinate network resources; engage, host events</td>
<td>create closer to community for engagement; formalize communication tools &amp; processes, engage proposal writers &amp; reviewers; engage new members &amp; affiliates; engage &amp; maintain current member engagement; engage with community’s voice; test new ideas</td>
<td>maintain transparency about changes; identify &amp; voucher key relationships in support of the framework; define community values; establish new directions; host events</td>
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<td>Governance</td>
<td>establish a core community leadership, develop a prioritization plan for formation activities; align new members with governance processes; establish mentorship/contacts</td>
<td>formalize leadership group, core leadership roles, &amp; create structure of responsibilities; refine governance processes, establish Privacy Policy</td>
<td>evaluate &amp; refine governance processes; consider leadership changes (board, staff); maintain transparency during strategic changes with members &amp; affiliates</td>
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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

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