Software Ecosystem Modeling: The Value Chains

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Software Ecosystem

• A unit
• A set of businesses
• The relationships
• A shared market
• The software and services
• A platform or a market
• Information, resources and artifacts
Software Ecosystem Classification

- Open Source
- Software Ecosystem Modeling
- Software Evolution
- Software Architecture
- Business
- Operating Systems
- Software Product Line
- Software Co-innovation
Software Ecosystem Modeling

• Describing
• Modeling
• Visualizing
Software Ecosystem Perspectives

- Intra-software ecosystem scope
- Software ecosystem scope
- Inter-software ecosystem scope
Software Ecosystem Perspectives (2)

Figure 1: The three perspectives of SECOs [15, 24]
Objective

• Enhance the diagram to increase the visibility of both health and visibility
• Re-model and re-design the approach and the graphical aspects
• Define a boundary of an ecosystem
Research Question

How can value chain models be identified in the software ecosystem modeling?
### Table 1: The most observed roles within the case studies

<table>
<thead>
<tr>
<th>Role</th>
<th>Activity</th>
<th>Case</th>
<th>Value chains</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Software vendors</td>
<td>Evolve software</td>
<td>42</td>
<td>4 38</td>
</tr>
<tr>
<td>1.1 Commercial-off-the-shelf vendors</td>
<td>Build &amp; sell</td>
<td>11</td>
<td>0 11</td>
</tr>
<tr>
<td>1.2 Original-design-manufactures</td>
<td>Design, develop &amp; sell</td>
<td>14</td>
<td>4 10</td>
</tr>
<tr>
<td>1.3 Platform\SaaS providers</td>
<td>Provide environment</td>
<td>17</td>
<td>0 17</td>
</tr>
<tr>
<td>1.4 SaaS vendors</td>
<td>Provide software as a service</td>
<td>17</td>
<td>0 17</td>
</tr>
<tr>
<td>2. Service providers</td>
<td>Contribute service</td>
<td>13</td>
<td>0 13</td>
</tr>
<tr>
<td>2.1 Product distributors</td>
<td>Deploy, implement &amp; resell</td>
<td>0</td>
<td>0 0</td>
</tr>
<tr>
<td>2.2 Software developers</td>
<td>Develop &amp; supply</td>
<td>1</td>
<td>0 1</td>
</tr>
<tr>
<td>2.3 Software designers</td>
<td>Supply design</td>
<td>0</td>
<td>0 0</td>
</tr>
<tr>
<td>2.4 Application service providers</td>
<td>Supply computer service</td>
<td>0</td>
<td>0 0</td>
</tr>
<tr>
<td>2.5 Requirements engineers</td>
<td>Supply requirement document</td>
<td>0</td>
<td>0 0</td>
</tr>
<tr>
<td>2.6 Integrators</td>
<td>Customize user</td>
<td>0</td>
<td>0 0</td>
</tr>
<tr>
<td>2.7 Content suppliers</td>
<td>Supply content</td>
<td>12</td>
<td>0 12</td>
</tr>
<tr>
<td>3. Infrastructure Providers</td>
<td>Provide infrastructure</td>
<td>1</td>
<td>0 1</td>
</tr>
<tr>
<td>4. Re-sellers</td>
<td>Buy &amp; resell</td>
<td>5</td>
<td>0 0</td>
</tr>
<tr>
<td>4.1 Value-added re-sellers</td>
<td>Buy, add &amp; resell</td>
<td>0</td>
<td>0 0</td>
</tr>
<tr>
<td>5. Customers\End users</td>
<td>Request service\product</td>
<td>0</td>
<td>0 0</td>
</tr>
</tbody>
</table>
Figure 4: The software supply network diagram of 42windmills
Figure 5: The diagram of 42windmills on the software ecosystem scope
Figure 6: The diagram of 42windmills on the intra-software ecosystem scope
Discussion

- Multiple roles
- Ambiguity
- Role variety
- Role strategy
- Value type
- Relationship intimacy
- Actor size
- Boundary
The value chain models
The enhanced-diagram is re-modeled and re-designed
Most, if not all software-producing organizations are hybrid companies
Further understanding of the elemental business models and value chain
An elementary step towards a software ecosystem modeling language
Further research

• The validations from academic experts
• The feedbacks of the new model
• A reference ontology
Questions