SOFTWARE ECOSYSTEMS: A NEW RESEARCH AGENDA

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Agenda

- A speculative sketch for a new research agenda

- Comprising:
  - Motivation
  - Context
  - Progress
  - Questions
  - Analyses [*]
  - Outcomes [*]
Motivating Example 1

- European Commission Decision of 24th March 2004:
  - Microsoft Corporation shall [...] make the Interoperability Information available to any undertaking having an interest in developing and distributing work group server operating system products and shall [...] allow the use of the Interoperability Information by such undertakings for the purpose of developing and distributing work group server operating system products.
Motivating Example 1

- Interoperability Information means the complete and accurate specifications for all the Protocols implemented in Windows Work Group Server Operating Systems […]

- Protocol means a set of rules of interconnection and interaction between various instances of Windows Work Group Server Operating Systems and Windows Client PC Operating Systems running on different computers in a Windows Work Group Network
Motivating Example II

- Customers
- Partners
- Developers
- [Architecture]
Motivating Example III

- Logispring / Ad Eundem
  - ‘The Platform Gamble’

- ERP spheres of influence
Context

- ‘Monolithic’ systems
- Component reuse
- Component market places
- Service broking
  - Fine-grain, lots of research, limited use
Context

- ‘Built for purpose’ systems
- Package acquisition (+ ‘glueware’)
- Supply chains
- **Ecosystems**
  - Coarse grain, very little research, lots of use
A slight digression

- On the boundaries between software engineering research and ‘business’ research …
Acquisition

- Distinguishing offerings (default based specification)
- Balancing mutability
- Aligning ontologies
Supply Chains

- Introducing the supply chain viewpoint
  - The ‘laptop example’
- Managing across supply chains
  - Control of evolution
  - Risk
Ecosystems

- ‘a biological community of interacting organisms and their physical environment’
- cf ecology – the study of the interactions among organisms and with their environment
- cf symbiosis – interaction between two different organisms living in close physical association, typically to the advantage of both.
Partnership
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<th>Plugins</th>
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<td><strong>3D Invigorator</strong>&lt;br&gt;by Digital Anarchy&lt;br&gt;Artists can easily create complex 3D logos, text, and objects using vector artwork. Turn flat 2D art into dynamic 3D objects!</td>
<td>★★★★★ 5.0 10 ratings</td>
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<td><strong>ContrastMaster</strong>&lt;br&gt;by The Plugin Site&lt;br&gt;ContrastMaster is a plug-in for effective contrast enhancement, creating dramatic contrast looks and HDR-like effects.</td>
<td>★★★★★ 3.0 6 ratings</td>
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<td><strong>Bleach Bypass Action</strong>&lt;br&gt;by Curvenedia&lt;br&gt;This action quickly transforms your images giving them the look of the traditional cross process.</td>
<td>★★★★★ 4.7 3 ratings</td>
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<td><strong>Retina</strong>&lt;br&gt;by Xtras Ltd.&lt;br&gt;Retina maximizes the perceived contrast, brightness, sharpness, depth and resolution using a proprietary model of human vision.</td>
<td>★★★★★ 4.6 18 ratings</td>
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<td><strong>PhotoTools 2 lite</strong>&lt;br&gt;by onOne Software&lt;br&gt;Free Photographic Effects Plug-in for Photoshop</td>
<td>★★★★★ 3.0 1 ratings</td>
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<td><strong>Eye Candy 6</strong>&lt;br&gt;by Alien Skin Software&lt;br&gt;Eye Candy 6 is a set of Photoshop filters that handle a wide range of design tasks, from Web interfaces to logos to titles.</td>
<td>★★★★★ 4.9 7 ratings</td>
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<td><strong>PhotoPresets for Photoshop</strong>&lt;br&gt;by onOne Software&lt;br&gt;Over 140 FREE presets for Photoshop Lightroom!</td>
<td>★★★★★ 4.0 4 ratings</td>
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<td><strong>B/W Styler</strong>&lt;br&gt;by The Plugin Site&lt;br&gt;B/W Styler is a plug-in for B&amp;W conversion, creating traditional B&amp;W effects and styling B&amp;W photos.</td>
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<td><strong>FREE - 3DVIA plug-in - Search &amp; Import 3D models</strong>&lt;br&gt;by 3DVIA&lt;br&gt;A plug-in to search over 20,000 premium and user-generated 3D models and import them directly inside of Photoshop.</td>
<td>★★★★★ 5.0 2 ratings</td>
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<td><strong>3D Bridge for Photoshop</strong>&lt;br&gt;by DAZ 3D&lt;br&gt;The 3D Bridge is a plug-in designed to connect the power of Photoshop with the unlimited content possibilities of DAZ Studio.</td>
<td>★★★★★ 0.0 0 ratings</td>
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APIs

Microsoft DirectX

opensocial

OpenMP
Research Challenges

- How to enable an ecosystem around your offering?
- Complementarity vs Substitutability
- How to leverage an ecosystem?
- How to identify viable niches within ecosystems?
Research Challenges

- What makes a ‘community’ live?
- How do we look at ‘trajectories’
  - Interface options
- Open standards – norms vs skeletons
Possible Approaches

- API usage
- Plugin – architectures & markets
- Social network analyses
  - StakeSource
- Sentiment analyses
  - MeaningMine
- Ethnographic analyses
Outcomes

- Ability to engineer ecosystems
- Ability to manage ecosystems
- A new synthesis of research on business models and software engineering