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Governance challenges of inter-organizational systems and platforms

April 10th 2018
Plan for the lecture

• Governance of inter-organisational systems
  – Example: BankID
  – *Orchestration*, not *control*

• Platforms as an architectural form
  – Within organizations (Enterprise systems)
  – Example: Apple’s iOS

• Governance of platforms
  – (Core reading, Tiwana 2013)
Readings

• CORE READING

• ADDITIONAL READINGS
From organizational to inter-organizational systems

• Several, independent decision-makers → certain governance challenges:
  – Who will make decisions on:
    • IT principles (strategy), architecture, infrastructure, applications, and investments?
    • Independent decisions within organizations vs. decisions affecting the shared system/platform/infrastructure
  – How to establish governance mechanisms?
    • Decision-making structures
    • Alignment processes
    • Formal communications
Governance of inter-organisational systems


  – Three types of governance structure:
    a) Participant-governed (shared governance, internal, dense collaborative relations)
    b) “Lead organization” or “Hub firm” (based on power, legitimacy etc.)
    c) Network administrative organization: a separate, external entity, not one of the participants (with governance as the purpose)
A Public Key Infrastructure (PKI) used for bank service, ID-porten etc.

A central Infrastructure (NETS) + client versions

Services: electronic identification (eID), authentication and electronic signing

<table>
<thead>
<tr>
<th>2000 - 2004</th>
<th>2007</th>
<th>2018</th>
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<tr>
<td>Developed through collaboration between the Norwegian banks</td>
<td>DNB, Nordea</td>
<td>3,7 mill Norwegians have BankID (&gt; 1 mill BankID mobile)</td>
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<tr>
<td>(BBS – Bankenes Betalingssentral)</td>
<td>1,7 mill users</td>
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</table>
Fixed set-up fee: 10,000 NOK
Monthly fee: 1,000 NOK
Transaction fee per electronic signature: 7 NOK
Transaction fee per BankID authentication: 3 NOK
2003: DIFI – RFI on secure eID
2004: specifications for national solution (costly for BankID to comply)

(8 years of indecision: develop a standalone solution or adopt a commercial solution?)

Nov 2012: Govt signed contract with BankID (+ two other providers)
How was BankID governed?

a) Participant-governed

b) Lead organization

c) Network administrative organization
Discussion

How would you modify the Governance Matrix so that it deals with inter-organizational IT governance?

• (Exam question Spring 2017)
CO-OPETITION = cooperative competition
• Governance of inter-organisational systems
  – Example: BankID

• Platforms as an architectural form
  – What is it? (core + interfaces + modules)
  – Why platforms? (benefits)
  – Types: internal, supply-chain, industry-wide
  – Examples: Enterprise Systems + iOS

• Governance of platforms
  – Governance challenges and dilemmas
  – Decision rights, control mechanisms, and pricing
The platform architecture

- A particular architectural form, which has:
  - A stable base: the platform core, owned by a platform owner (*keystone firm*)
  - Interfaces (standardised, stable) – usually defined by platform owner, e.g.
    - SDK – Software Development Kits
    - API – Application Programming Interface
  - Modules: specific functionality, developed by independent actors
Benefits of a platform architecture

• Different stakeholders
  – Platform owners:
    • Costs and risk of innovation is ‘outsourced’
    • Can concentrate on platform
    • Distributed reach - larger markets
  – Developers:
    • Concentrate on service development, not ‘infrastructure’
    • Easier access to markets/customers
  – Users:
    • Easier access/availability of wide range of products/services,
    • Customization
    • Also niche markets/needs now economically viable
Platform vs. ecosystem

Figure 1 from Tiwana et al., 2010
- Moving from a traditional 'pipeline' model to a platform involves three key shifts:

1. The main activity moves from the control of limited resources (raw materials, equipments...) to an orchestration of intellectual property and interactions of the community of users and partners.

2. Efficiency does not come from optimization of internal processes (e.g. production yield) but through the ability to increase (external) network effects via the ecosystem.

3. Value is contained by the whole ecosystem rather than individual products.
Reading: Gawer (2014)

- Joins two discourses:
  - platforms as types of markets
  - platforms as technological architectures
- Three categories of platforms
  - Internal
  - Across supply-chains
  - Across industries
Paper: ECM as platform (Rolland and Aanestad, 2014)

Papers:
Apple iOS as platform (Ghazawneh and Henfridsson 2012) (Eaton et al., 2015)
Governance of platforms

• Trade-off:
  – Modularization leads to reduction of complexity
  – But introduces new challenges for attempts to control/govern

• Examples:
  – Internal platform: Sharepoint
  – «Ecosystem»: Apple iOS and app developers
ECM as platform?

• 2009: Implement an ECM (Enterprise Content Management)
  – document management + social collaboration tools
• «Out-of-the-box» strategy (minimal customization)
  – Plus third-party component (e.g. replaced the search module)
• Migrated to 2010 version
  – Used standard search module
  – Left/lost 2 other customized modules
  – Continued customization by in-house developers and super-users (e.g. tracking of operations), in-house/third-party apps
• Migration to 2013 version
Apple iOS ecosystem

- Jan ‘07: only apps in HTML5 and Safari browser
- June ‘07: launch of iPhone
  - incl. DRM module (prevents installation/execution of native code)
  - «Jailbreaking» (modifying firmware, Cydia installer + appstore)
  - iOS updates with patches – more hacks – etc
- October 2007: SDK announced (for April 2008)
- Spring 2008: Apple launched AppStore, SDK, App Approval Process, Developer Program License Agreement
- Jailbreaking continues, worries about monopoly, court case decides jailbreaking is not illegal… ongoing tussles…

Eaton et al. (2015), Ghazawneh and Henfridsson (2012)
Figure A2. Timeline of episode I.

Figure A2 from Ghazawneh and Henfridsson (2012)
Jan 2010: The iPad launched, could build on «installed base» of developers and apps

March – June:
- 25k to 50k apps
- 50k to 100k developers

«Diversification» strategy
Expand ecosystem
Platforms and Governance

• Gawer (2014) analyses the platform as organization (meta-organization)
  – Organization as «a system of coordinating activities of two or more persons»
  – Platforms allow federation and coordination
  – Allow value creation through economy of scope

Federation: alliance/cooperation where parties retain internal control
(e.g. a union of self-governing states)
“While within firms, and to some extent within supply-chains, the commonality of objectives among constitutive agents could perhaps be taken for granted, the federation of innovative and autonomous agents can certainly not be taken for granted within innovative ecosystems. Absent managerial hierarchy or supply-chain authority, an important role for platforms within industry ecosystems is precisely to ensure federation so that coordination amongst agents can happen. Federation cannot be taken for granted, and, without federation and without contracts, there is no basis for coordination. Hence, the importance of ecosystem governance for building and sustaining legitimacy of the platform leader as well as for fostering a collective identity for ecosystem members”.

(Gawer, 2014, p. 1245)
Core reading: Tiwana (2013)

• Book: «Platform Ecosystems: Aligning Architecture, Governance, and Strategy”
  – Platform strategy: software architecture + business strategy
  – Takes the platform owner’s perspective
  – Commercial platforms
  – Platforms + app development
• Chapter 6: Platform Governance
Governance strategies

“Therefore, platform businesses must be managed differently from product and service businesses, with architecture rather than authority and contracts providing coordination, orchestration foreshadowing conventional notions of management, and platform owners walking the tightrope between granting sufficient autonomy to app developers and ensuring integration of the outputs of diverse ecosystem participants.”

- Tiwana, chapter 3
«…architecture rather than authority and contracts»

- Chapter 5 discusses platform architecture
  - e.g. the functional partitioning between app and platform (called micro-architectures)

- An app need to have:
  - presentation logic, application logic, data access logic and data storage

- Possible architectural patterns:
  - Stand-alone micro-architecture (all in app)
  - Cloud micro-architecture (all on host)
  - Client-based micro-architecture (data storage (+) on host)
  - Peer-to-peer micro-architecture (servlets, double role)
Chapter 6: platform governance

- Platform governance in terms of decisions rights, control mechanisms and pricing:
  - Decision rights: authority/responsibility for decisions are divvied up among app developers and a platform owner
  - Control mechanisms: mechanisms to ensure goal convergence and coordination
  - Pricing policies

- “… blueprint for ecosystem orchestration”
Decision rights

- Centralised/decentralized $\rightarrow$ how shared?
  - Not binary, but a continuum
- Decision rights over what?
  - App decision rights
  - Platform decision rights
- Decision horizon?
  - Strategic (i.e., future-oriented, goals/objectives)
  - Implementation (how to accomplish objectives)
- App developers who target different platforms should expect different decision right structures
A decision right can be placed anywhere on the decentralization continuum.

Platform and app decision rights can be assigned to platform owners or app developers.
Control mechanisms

• Gatekeeping:
  – The platform owner decides who are allowed into the platform’s ecosystem (input control)

• Metrics
  – Reward/penalty based on achieve performance targets (e.g. performance, memory utilization or downloads, sales, ratings etc)

• Process control
  – Reward/penalty based on adherence to prescribed process

• Relational control
  – Shared norms and values, a “clan culture” (ref OSS)
<table>
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<tr>
<th>Control Mechanism</th>
<th>Definition</th>
<th>Prerequisites</th>
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| Gatekeeping       | The degree to which the platform owner uses predefined criteria for what apps are allowed into the platform’s ecosystem | • Platform owner must be competent to judge  
• Platform owner must be fair and speedy  
• App developers must be willing to accept such gatekeeping |
| Process           | The degree to which a platform owner rewards or penalizes app developers based on the degree to which they follow prescribed development methods and procedures that it believes will lead to desirable outcomes | • Platform owner must have the knowledge to mandate methods to app developers  
• Platform owner should be able to monitor app developers’ behaviors or verify compliance |
| Metrics           | The degree to which the platform owner rewards or penalizes app developers based on the degree to which the outcomes of their work achieve performance targets predefined by the platform owner | • Metrics must be set by the platform owner, predefined, and objectively measurable |
| Relational        | The degree to which the platform owner relies on norms and values that it shares with app developers to shape their behaviors | • Existence of shared norms and values between app developers and platform owner  
• Low app developer churn |
An illustration of the control portfolios used by three platforms.
Pricing mechanisms

• Aim: create incentives for app developers to invest
• Choices:
  – Symmetric or assymmetric (developers & users)
  – Whom to subsidize, for how long?
  – Pricing for access or for usage?
  – Pie-splitting or a fixed/sliding scale?
  – App licensing decisions
• (Section 6.3: Aligning governance)
Section 6.3 Aligning Governance

Table 6.2 Considerations in Aligning Governance Choices

<table>
<thead>
<tr>
<th>Governance Dimension</th>
<th>Architecture</th>
<th>Lifecycle</th>
<th>Business Model</th>
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<tbody>
<tr>
<td>Decision rights</td>
<td>●</td>
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<td>●</td>
</tr>
<tr>
<td>Control</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Pricing</td>
<td>●</td>
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FIGURE 6.15
Modular ecosystems organized around modular architectures still require monolithic integration processes.
Additional readings