Platform Innovation:

Apple’s iOS

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How does the case fit into the course?

A Theories of Information Infrastructures (Evolution & Design)

Process Strategies  Architecture  Governance

Assemblage Theory

Complexity Science  Actor Network Theory  Reflexive Modernisation
1. Digital Platforms and **Installed Base**
2. Platforms as Modular **Architectures**
3. The Research Problem for this Case
4. Part 1: Describing Contested Platform Innovation
5. Part 2: Explaining Contested Platform Innovation
   – As an issue of **governance**
6. Conclusion
Digital Platforms

Platform

Hardware
OS
SDKs
APIs
App
Stores

(Platform)
Complements
Information Infrastructure: Special Case

• ENABLING
  – a range of different activities

• SHARED
  – an infrastructure is shared by multiple parties who use, develop and manage it at the same time

• HETEROGENEOUS
  – they are social technical networks consisting of technical, human, organisational, institutional components

• INSTALLED BASE
  – consisting of existing users, who may be tied to older versions of the infrastructure

With one crucial exception

– THEY AREN’T ALWAYS OPEN
  • limit to the number of users, stakeholders, vendors, nodes, components etc
Control #1: Apple limits distribution of apps to its App Store = Monopoly

In its unmodified state, iOS limits users to the official Apple App Store for selection, download and installation of applications.
Control #2: It Curates Content on the App Store using the Apps Approval Process

- Only the best content gets on
- Apple iOS & its App Store
- Apple’s App Approval Process:

"bouncer's rights" (Strahilevitz 2006)
Curation as part of process strategy

Further adoption

- Larger installed base
- More complements produced
- Greater credibility of standard
- Reinforce value to users
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As Modular Architectures

Complements

Apps

Cocoa Touch

Media

Core Service

Core OS

Apple’s iOS Platform

Relationship between modular components determined by:

Design Rules
(Baldwin & Clark 1997)

• Architectures
• Interfaces
• Standards
Modularity in Platforms

Peripheral Modules:
- High Variety
- Low Reusability
- Dependent on Platform Modules for Function

Core Modules:
- Low Variety
- High Reusability
- Stable Set of Design Rules

Baldwin & Woodard 2009
Platform Innovation

Complements

Apps

Cocoa Touch

Media

Core Service

Core OS

Apple’s iOS Platform

A New Complement (App)

⇒ New Complement Modules

⇒ Approved use of interfaces

INITIAL FOCUS OF STUDY HERE

OR

A New Architectural Arrangement of the Platform

⇒ e.g. new platform module and/or new interface

⇒ Change in the design rules

c.f. Henderson & Clarke (1990)
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The Tale of Google Voice

- July 2009: Google release Google Voice on Android and Blackberry
- 3rd party apps (e.g. GV Mobile), based on Google Voice, appear on Apple's App Store for iPhone
- Late July: Google attempts to have Google Voice admitted into the App Store
- Apple refuses its request, claiming that the app duplicates functionality already on the device.
- At the same time Apple removes all other apps based on Google Voice from the App Store.
- End of July 2009: US Federal Communications Commission (FCC) opens an investigation
- January 2010: In spite of the FCC's investigation, Apple's block of Google Voice remains in place.
- January 2010: Google release an HTML5 version of Google Voice which bypasses Apple's App Store
- September 2010: Apple reversed its decision and finally allows Google Voice into the App Store

And we thought the platform owner was in control?
Contested Platform Innovation

• What is the nature of control in digital platform innovation?
  – How can it be described?
    • How do the dynamics change over time?
  – How can it be explained?
    • How is the control of innovation asserted and lost on a digital platform?
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45 Similar Stories of Contested Platform Innovation On iOS

1) 3G Skype
2) Admob
3) Adobe Flash
4) Adobe developer tools
5) Ari David
6) Baby Shaker
7) Big Brother Security
8) Bobble Rep
9) Box Office
10) C64 Emulator
11) CastCatcher
12) Convertbot
13) EFF Updates App
14) Eucalyptus
15) EyeTV
16) Financial Times
17) Google Books
18) Google Voice
19) GV Mobile
20) Hottest Girls
21) I Am Rich
22) Jailbreakme
23) Mark Fiore
24) Me So Holy
25) Nescalinem
26) Netshare
27) NinjaWords
28) Opera
29) Podcaster
30) Pull My Finger
31) Pulse News Reader
32) Readability
33) Routesy
34) Sekai Camera
35) Simply Beach
36) Someecards
37) Stanza
38) Tawkon
39) TrapCall
40) Trillian
41) Tweetie
42) VoiceCentral
43) Wallpaper Gallery
44) Wallpaper Universe
45) Wi-Fi Sync

Found across 4664 blogs written between 09/01/2007 & 31/12/2011
Broke them down into Narrative Fragments

- July 2009: Google released Google Voice on Android and Blackberry.
- In July 2009: 3rd party apps (e.g., GV Mobile), based on Google Voice, appeared on Apple's App Store for iPhone.
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*Just like the tale of Google Voice*
Common Repertoire of Actions

**Developer**  
(Innovative Actions)

1. Positive Term: Requesting  
   Conceptual Code: *Requesting*

2. Negative Term: Forcing  
   Conceptual Code: *Bypassing*

3. Contradictory Term: ¬Requesting  
   Conceptual Code: *Regrouping*

4. Contradictory Term: ¬Forcing  
   Conceptual Code: *Influencing*

**Platform Owner**  
(Control Actions)

1. Positive Term: Allowing  
   Conceptual Code: *Allowing*

2. Negative Term: Blocking  
   Conceptual Code: *Blocking*

3. Contradictory Term: ¬Allowing  
   Conceptual Code: *Ignoring*

4. Contradictory Term: ¬Blocking  
   Conceptual Code: *Refining*
Expressed as a Narrative Network

Illustrative narrative network of Google Voice

Narrative Network based on the work by Pentland & Feldman (2007)
Stories expressed as common actions

<table>
<thead>
<tr>
<th>Story</th>
<th>3G Skype</th>
<th>Admob</th>
<th>Adobe Flash</th>
<th>Adobe Developer Tools</th>
<th>Ari David</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developer (D)</td>
<td>Skype</td>
<td>Google</td>
<td>Adobe</td>
<td>Adobe Developer Tools</td>
<td>Ari David</td>
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<tr>
<td>Action#1</td>
<td>D Requests P</td>
<td>D Request P</td>
<td>D Request P</td>
<td>D Requests P</td>
<td>D Requests P</td>
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<tr>
<td>Action#2</td>
<td>P Blocks D</td>
<td>P Allows D</td>
<td>P Blocks D</td>
<td>P Allows D</td>
<td>P Blocks D</td>
</tr>
<tr>
<td>Action#3</td>
<td>D Influences P</td>
<td>P Blocks D</td>
<td>D Influences P</td>
<td>P Blocks D</td>
<td>D Influences P</td>
</tr>
<tr>
<td>Action#4</td>
<td>P Refines D</td>
<td>D Influences P</td>
<td>D Bypasses P</td>
<td>D Influences P</td>
<td>P Refines D</td>
</tr>
<tr>
<td>Action#5</td>
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<td>P Refines D</td>
<td>D Regroups</td>
<td>P Refines D</td>
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</tbody>
</table>
Each Story Expressed as a Narrative Network

Illustrative narrative network of Google Voice

Narrative Network based on the work by Pentland & Feldman (2007)
Superimposed Narrative Networks for 45 Stories

Developer *Requests* Platform Owner

Developer *Influences* Platform Owner

Developer *Regroups* Platform Owner

Developer *Bypasses* Platform Owner

Platform Owner *Allows* Developer

Platform Owner *Blocks* Developer

Platform Owner *Refines* Developer

Platform Owner *Ignores* Developer
Developer **Requests**
Platform Owner

Platform Owner **Allows** Developer

Developer **Influences**
Platform Owner

Platform Owner **Blocks** Developer

Developer **Regroups**
Platform Owner

Platform Owner **Refines** Developer

Developer **Bypasses**
Platform Owner

Platform Owner **Ignores** Developer

Simplified Version
3 Stages of Contested Innovation

Stage 1:
Platform Owner Applies Control by Blocking
3 Stages of Contested Innovation

Stage 2:
Developer responds by attempting to influence Platform Owner

Developer *Requests* Platform Owner

Platform Owner *Allows* Developer

Developer *Influences* Platform Owner

Platform Owner *Blocks* Developer

Developer *Regroups* Platform Owner

Platform Owner *Refines* Developer

Developer *Bypasses* Platform Owner

Platform Owner *Ignores* Developer
3 Stages of Contested Innovation

Stage 3: The Tussle is resolved through one of three outcomes

a) Platform owner is persuaded
b) Developer gives in
c) Developer bypasses
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a) Explaining Apple’s Mechanism of Control

Stage 1: Platform Owner Applies Control by Blocking
a) Explaining Apple’s Mechanism of Control (Governance applied)

- Apple’s binding specifications for control
  - OS Developer Program License Agreements
  - App Store Review Guidelines

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<th>Motivation</th>
<th>Criteria</th>
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<td>Competing Platforms</td>
<td>Executable Code from other Platforms</td>
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<td>Cross-Compilers</td>
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<td>Platform Emulators</td>
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<td>Jailbreaking</td>
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<td>Alternative Advertising Platforms</td>
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<td>Alternative Payment Platforms</td>
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<td>Legal Action</td>
<td>Data Collection and Privacy Abuse</td>
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<td>Threat to Apple's Legal Position</td>
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<td>Brand Image</td>
<td>Dubious Value</td>
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<td>Duplication of Functionality</td>
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<td>Appropriate Look and Feel</td>
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<td>Objectionable Content</td>
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<td>Use of Private APIs</td>
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<td>Network Partners</td>
<td>Excessive Cellular Data Usage</td>
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<td>Enabling VoIP over 3G</td>
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<td>Unknown</td>
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But Apple’s control wasn’t always effective

- It pays to resist Apple’s control.

- Of 45 instances of contested innovation
  - 31 eventually ended up in Apple’s App Store
How did the 31 get in?

- **Regrouping**
  - Giving in to platform owners demands
  - Giving up / correcting and resubmitting
  - 9 got in

- **Influencing**
  - Successful persuasion of platform owner
  - Using blogs and online news fora to go public
  - 19 got in

- **Bypassing**
  - Finding an alternative means to AppStore to distribute app
  - Jailbroken AppStores / HTML5 based Web Apps
  - 10 cases in total & 3 eventually got in to App Store
How did this influence Apple’s Governance

• Apple admitted a mistake and made a “one off” exception to its rules 15 times

• Apple was persuaded to change its rule 7 times
How the digital technology “dissolved” Apple’s governance through weak points in its architecture

In its unmodified state, iOS limits users to the official Apple App Store for selection, download and installation of applications.
How the digital technology “dissolved” Apple’s governance through weak points in its architecture

When the logical capability of the device is modified with additional code, such that iOS is “jailbroken”, it becomes possible for the user to access a variety of App Store for the downloading and installation of apps. The user is no longer constrained to Apple’s curated choice of apps.
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Conclusion

• Curated Platforms like iOS allow for an interplay between:
  – Process Strategies
  – Architecture
  – Governance

• But the digital nature of platforms can produce unintended consequences for platform governance