The Core-Edge Dynamics Toolkit
Core-Edge Dynamics Toolkit

Objective:

- Turn methodology into step-by-step tools for sponsors to apply to their own case studies

Approach:

- Use current taxonomy and methodology
- Apply methods and lessons learned from case studies
- Create worksheets to produce the “outcomes”
- Update throughout the research program (e.g., adding System Dynamics)
Brief review of the steps
**Taxonomy & Control Point Constellations**

**OBJECTIVE**

1. Enumerate possible control points for a given service

2. Enumerate varying business models

**METHOD**

Apply taxonomy to a given case study

Create control point constellations

**OUTCOME**

<table>
<thead>
<tr>
<th></th>
<th>Offering A</th>
<th>Offering B</th>
<th>Offering C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service transactions</td>
<td>...</td>
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<td>...</td>
</tr>
<tr>
<td>Control points</td>
<td>...</td>
<td>...</td>
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<tr>
<td>Delivery infrastructure</td>
<td>...</td>
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<tr>
<td>Service infrastructure</td>
<td>...</td>
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<tr>
<td>Management infrastructure</td>
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</tbody>
</table>
**Objective**

3. Identify triggers causing change of business

   - List triggers

4. Identify Trigger Dynamics

   - Apply gear teeth model

5. Capture cause-and-effect of triggers

   - Create transitions of control point constellations

**Outcome**

<table>
<thead>
<tr>
<th>Method</th>
<th>Technological</th>
<th>Regulatory</th>
<th>Social</th>
<th>Business</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

**Trigger Dynamics**

- Trigger A
- Trigger B
- Trigger C
**Value Annotation & Coreness Path**

**OBJECTIVE**

6. Annotate Control Points with Value

7. Coreness Evaluation

**METHOD**

Create value networks

Create Coreness Path

**OUTCOME**

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Worksheet examples
## Step 1: Apply taxonomy to a chosen product

### Example: Location Based Services

<table>
<thead>
<tr>
<th>Garmin Street Pilot</th>
<th>Pharos Pocket GPS Navigator</th>
<th>Avis Assist</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FUNCTIONALITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Service transactions</strong></td>
<td>• Receive WAAS/GPS signal</td>
<td>• Receive GPS signal</td>
</tr>
<tr>
<td></td>
<td>• Lookup position on maps</td>
<td>• Transfer location via Bluetooth to other device with software</td>
</tr>
<tr>
<td></td>
<td>• Trace signals on map</td>
<td>• Lookup position on maps</td>
</tr>
<tr>
<td></td>
<td>• Store routes</td>
<td>• Trace signals on map</td>
</tr>
<tr>
<td></td>
<td>• Purchase device from retailer</td>
<td>• Purchase device from retailer</td>
</tr>
<tr>
<td></td>
<td>• Software updates</td>
<td></td>
</tr>
</tbody>
</table>

| **Control points** |                     |             |             |
|---------------------|---------------------|-------------|
| • Software creation  | • Software distribution |             |
| • Device manufacture | • Device distribution |             |
| • Device distribution | • Location collection |             |
| • Location collection | • Location management |             |
| • Map creation       | • Map distribution   |             |
### Step 1: Apply taxonomy to a chosen product

**Example: Location Based Services (con’t)**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>INFRASTRUCTURE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Delivery infrastructure</strong></td>
<td>• GPS Network</td>
<td>• WAAS (Wide Area Augmentation System) Network</td>
<td>• Public Internet</td>
</tr>
<tr>
<td></td>
<td>• GPS Network</td>
<td>• Public Internet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• WAAS Network</td>
<td>• Rent-a-Car Network</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Call Center</td>
<td>• Call Center</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Retail Network</td>
<td>• Retail Network</td>
<td></td>
</tr>
</tbody>
</table>

| **Service infrastructure**  |                      |                            |             |
| (How the delivery infrastructure resources are arranged.) | | | |
| GPS Network               | Centralized          | Centralized                | Centralized |
| WAAS Network              | Centralized          | n/a                        | n/a         |
| Public Internet           | Decentralized        | n/a                        | n/a         |
| Rent-a-Car Network        | n/a                  | n/a                        | Centralized |
| Call Center               | n/a                  | n/a                        | Centralized |
| Mobile Phone Network      | n/a                  | n/a - PDA                  | Centralized |
| Retail Network            | Decentralized        | Decentralized              | n/a         |

**Etc….**
Step 2: Create Control Point Constellations

Example: Digital Music Services – iTunes Music Store

- Content creation
- iTMS music
  - FairPlay DRM
- Internet Connectivity
- iTMS Storefront interface
  - FairPlay DRM
  - iTunes player for Mac or Windows distribution
- Windows Creation
- Windows distribution
  - PC creation
  - PC distribution
- Online product
  - USB Connectivity
- iPod distribution
  - FairPlay DRM
  - iTunes for iPod
  - iPod OS creation
  - iPod creation
- Mac OS Creation/distribution
- Mac distribution
- Mac/creation
- Portable product

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Step 3: List triggers

Example: Digital Music Services

Technology
- P2P networks enable unauthorized file-sharing
- DRM enables authorized services
- Mobile phone networks enable mobile procurement and/or portable listening
- Portable digital players extend the digital user experience
- Procurement, storage, playback, transfer capabilities of devices
- Devices capabilities for procurement, storage, playback (fixed and mobile)

Business
- Free music limits competitiveness of authorized services
- Subscription models reduce the appeal of owning music
  - Harder to justify storage costs
  - Play list/index replaces tracks as the object of ownership
- Labels sign with digital services
  - client/server models attract majors only so far
  - P2P networks attract indies only so far
- DRM used as a product-tying strategy by service providers (Apple iTunes)
  - Sabotaged by other service providers (RealNetworks)

Regulatory
- Copyright law
- Legality of P2P networks
- Economic (anti-trust law)

Social behaviors
- Users
  - create unauthorized P2P networks (started stealing)
  - hack/circumvent DRM (keep on stealing)
  - respond to RIAA legal action (stop stealing)
  - respond to legal alternatives (start buying)
  - demand mobile listening (service built around the portable player, e.g., iTunes + iPod)
  - demand mobile procurement (cell-phone shopping for music)
  - demand device convergence/seamlessness
  - rent (streaming) and/or own (downloading) music
    - Sharing playlists rather than music files – rise of personal radio
- Artists
  - Choose cheap/free distribution and promotion via P2P networks
  - Choose alternative license/compensation systems
  - Cultures/markets segment along architectural lines
    - P2P vs client/server becomes analogous to Sundance vs Hollywood in the film industry
    - Potential conflict re Apple anti-establishment culture tied to iPod
### Step 4: Apply Gear Teeth Model

Let us take the following Gear Teeth Dynamics (from C. H. Fine Presentation)

<table>
<thead>
<tr>
<th></th>
<th>Business Cycles</th>
<th>Industry/Organization Structure</th>
<th>Regulatory Policy</th>
<th>Technology</th>
<th>Consumer Preferences</th>
<th>Corporate Strategy</th>
<th>Clockspeed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Cycles</td>
<td>Downturns trigger disintegration</td>
<td>Integration buffers downturns</td>
<td>Integration/Disintegration</td>
<td>Downturns stifled R&amp;D investment</td>
<td>Wrap services around commodities</td>
<td>Downturn triggers outsourcing; Search for smoothness</td>
<td>Integration slows clockspeed</td>
</tr>
<tr>
<td>Industry/Organization Structure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulatory Policy</td>
<td>Innovation attacks incumbents &amp; supports integration</td>
<td></td>
<td>regulation slows incumbent innovation</td>
<td></td>
<td></td>
<td>deregulation speeds innovation</td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td>Innovation can obsolete regulations</td>
<td></td>
<td>Integration/Disintegration</td>
<td>Innovation slowdowns drive brand investment</td>
<td></td>
<td>technology innov drives slowdowns</td>
<td></td>
</tr>
<tr>
<td>Consumer Preferences</td>
<td>branding slows disintegration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>branding slows disintegration</td>
<td></td>
</tr>
<tr>
<td>Corporate Strategy</td>
<td>faster innovation moderates downturns</td>
<td></td>
<td>customer power drives clockspeed</td>
<td></td>
<td></td>
<td>disintegration project frequency</td>
<td></td>
</tr>
<tr>
<td>Clockspeed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Capability life drives project frequency</td>
<td></td>
</tr>
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</table>

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Step 6: Create Value Networks

Example: Digital Music Services – iTunes Music Store

iTMS is a loss leader to sell iPods. In 2004, iTunes had 70% market share. Project >80% by end of 2005.

0-4¢
(high volume, low margin)

$0

The iPod is the centerpiece of the iTMS strategy. In 2004, the iPod had 92% of the high-capacity device market.

$25-45 per iPod
52% of revenue
low volume, high margin
Step 7: Create Coreness Path

Example: VoIP

Evolving Coreness of Call Signaling

- Circuit-Switched PSTN
- Scarcity – ILEC and IXCs
- Demand – High Price, Low demand (Number of Connections)

- H.323 (VoIP in the backbone); some P2P (FWD); early SIP
- Scarcity – ILEC, CLEC and IXCs, Calling Cards
- Demand – Long-distance charges drop, No. of Calls increase

- Facility-based, over BB and P2P VoIP
- Scarcity – Higher Adoption of SIP
- Demand – Flat rate pricing, Free PC2PC

Server-less SIP
SIP-Service Interoperation

1995
2000
2005
Future
Commoditization
Future
VoIP-inside
Recent
Events

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