Using System Dynamics to Understand Disruption:

Part 1: Sports over IP – a practical case

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Outline

Two uses of System Dynamics as a tool to capture the dynamic complexity of the environment:

1. **Sports over IP – a practical case** (Emmanuel Blain)
   - Rationale for use of System Dynamics in the SpoIP framework
   - Model: Block representation and Design choices
   - Results and prospective

2. **A general model for Technology and Industry Disruption**
   (Chintan Vaishnav)
The SD standard method

1. Problem articulation
2. Reference modes ("triggers" in the toolkit)
3. Formulation of Dynamic Hypotheses and Causal loop diagrams
4. Formulation of the stock & flow model
5. Testing
6. Policy design and evaluation

From Sternman (2000)
Quick recap of the SpoIP issue

League
MLB

Producer
ESPN

Carrier
Comcast

Customer

MLB.TV

Versus, TV everywhere

Justin.tv

And a lot more complexity added by regulation, historical bonds, etc...
A trans-disciplinary problem

Dealing with the question requires to look more closely at:

• The historical roots of the existing business models

• The existing mechanics in the Sports broadcasting industry

• The technical requirements for “Sports over IP”

• The regulation in vigor (and the trends for the future)
Methodology: System Dynamics

System Dynamics is a tool of choice:

• Multi-disciplinary problem

• Dynamic problem, lots of “What if?” questions

• Behavioral factors are inherently part of the problem

• We do not try to forecast, but study interplays between stakeholders

Aim: study the technological and regulatory conditions under which the market will tip toward a predominance of broadcasters or content owners
Dynamics of supply and demand in the sports broadcasting market

AND

Competitive model between:

Cable TV
• Operated by legacy carriers.
• Revenues depend on # of viewers, from subscription and ads.
• Incumbent – customer base is large, price is low, quality is high

MLB.TV
• Operated by league itself.
• Revenues come from a flat subscription fee
• Entrant – customer base is small, price is rather high, but potential for quality and variety is higher than for cable.
Block view of the model

Fan base generation

Broadcasting rights, player salary & ticket price escalation

Broadcasting & advertising agreements

Demand for broadcasted sports generation

Dynamics of product adoption
- Web TV
- Cable TV

Piracy control loop

Also included: Fan budget generation, pressure for piracy control...

Exogenous: Fan base growth, customer reservation prices...

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Example: Dynamics of product adoption
Dynamics of product adoption

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What makes a sports viewing package attractive?

Already implemented:
• Price
• Quality of content
• Variety of content

All the implemented factors have the same weight on attractiveness, and are normalized on a scale from 0 to 1.

Not implemented:
• Service uptime (may be an issue for Web TV)
• Blackouts
• Ease of use
• Network effects
Dynamics of product adoption

Hypotheses for Cable TV:

• Cable is a MATURE technology
  Quality is fixed at 0.5 (quality for Web TV varies from 0 to 1)

• Variety of content only slowly varies as long as the market share is above a threshold (incumbent “rigidity”)

• Price depends on the installed base – to a certain extent
Attractiveness = Quality * Variety * Normalized price
Table function for variety:
Dynamics of product adoption

Hypotheses for Web TV:

• Cable is a fast growing technology
  Quality driven by “Internet-based innovation”

• Variety of content varies quickly as capacity allows it

• Price for now is fixed, and above the current price of cable TV
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Dynamics of product adoption
Results as of today: compared qualities
Results as of today: compared varieties
Results as of today: compared prices
Results as of today: compared attractivenesses
Results as of today: market shares

Selected Variables

![Graph showing market share trends over time](chart.png)