

# The Economics of Digital Business Models

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# Digital Business Models

- A General Framework
- Three « Coordination » Dimensions
- Matching:  
*Digital Networks as “Markets”*
- Assembling:  
*Digital Networks as “Production Capabilities”*
- Knowledge Management:  
*Digital Netwk. as Knowledge sharing tools*

# The Economics of Platforms

- No disintermediation with digital networks
- Standardized interfaces, but still coordination costs
  - Matching
  - Assembling (ensuring interoperability; ensuring adequation to needs)
  - Access to information and knowledge
- => Platforms to assemble components and adapt digital goods to user needs
- Beyond infomediaries, beyond sole Internet based models



# The Economics of Digital Business Models: A General Framework

A *business model* is a way of organizing exchanges and of allocating various costs and revenues streams such that the production and exchange of a good or service becomes viable, in the sense of being able to sustain itself on the basis of the income it generates

# Digital Activities as Modular Activities

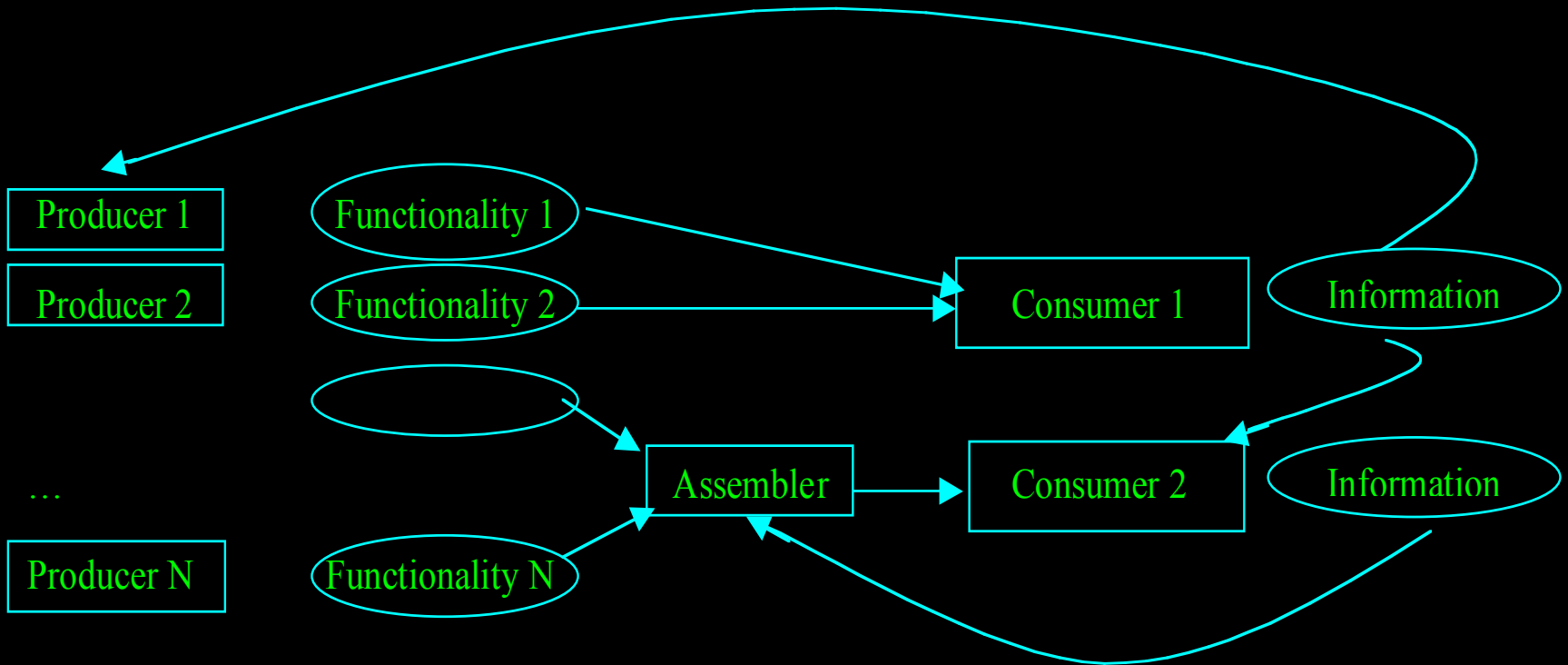
- *Digital goods and services are of a modular nature*  
(Lancaster, Economides)
- *Digital activities are characterized by three basic operations*
  - *Production of Functionalities*
  - *Assembling of Functionalities into Services*
  - *Consumption of Services*
- *Users (or consumers) are not neutral in the process of value creation*
  - *Consumption Generates Information*
  - *Consumers can self-assemble Services*

# A Framework to Analyze DBMs

*P*roduction

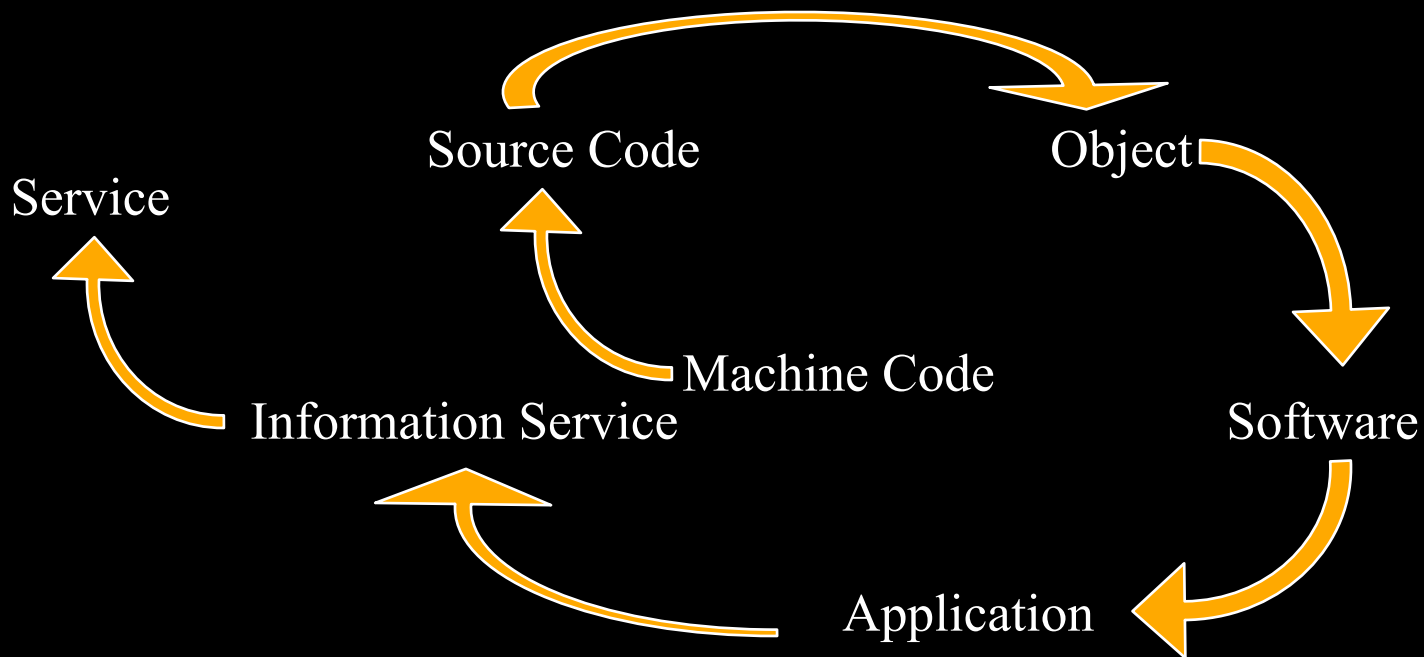
*A*ssembling

*C*onsumption



—▶ Transfer of Value

# A “Fractal” Approach to Digital Goods and BM



# Three « Coordination » Dimensions

- Matching: *Digital Networks as “Markets”*

Transaction Costs & Meeting Efficiency

- Assembling: *Digital Networks as “Production Capabilities”*

Assembling Costs, Adaptation to Users Needs and Value extraction strategy

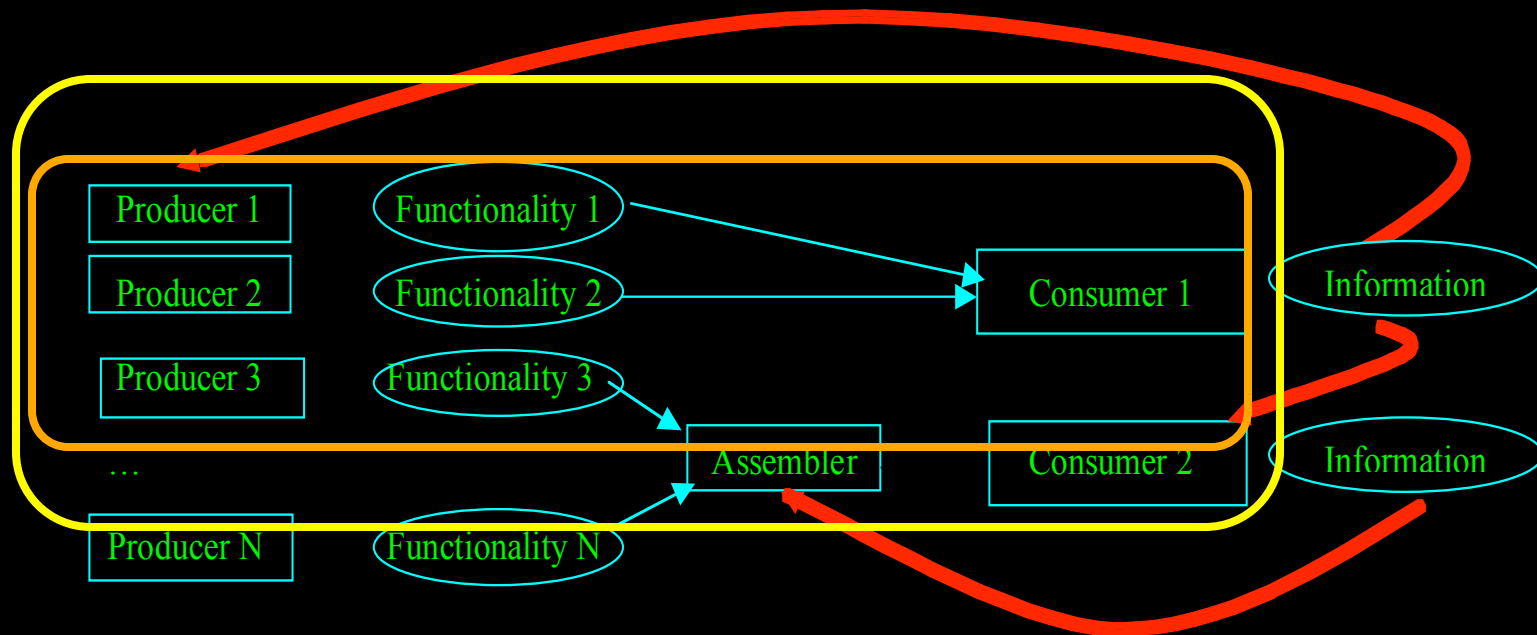
- Knowledge Management: *Digital Netwk. as Knowledge sharing tools*

Extraction & Accumulation of Info. and Knowledge

*P*roduction

*A*ssembling

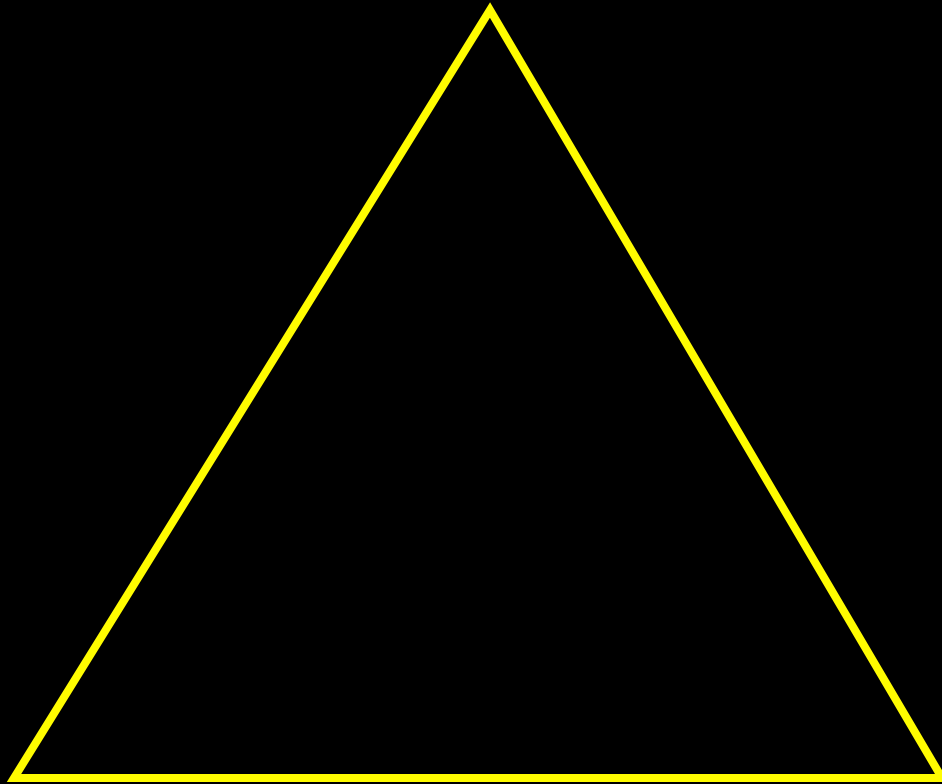
*C*onsumption





# 3 Dimensions to Contrast DBM

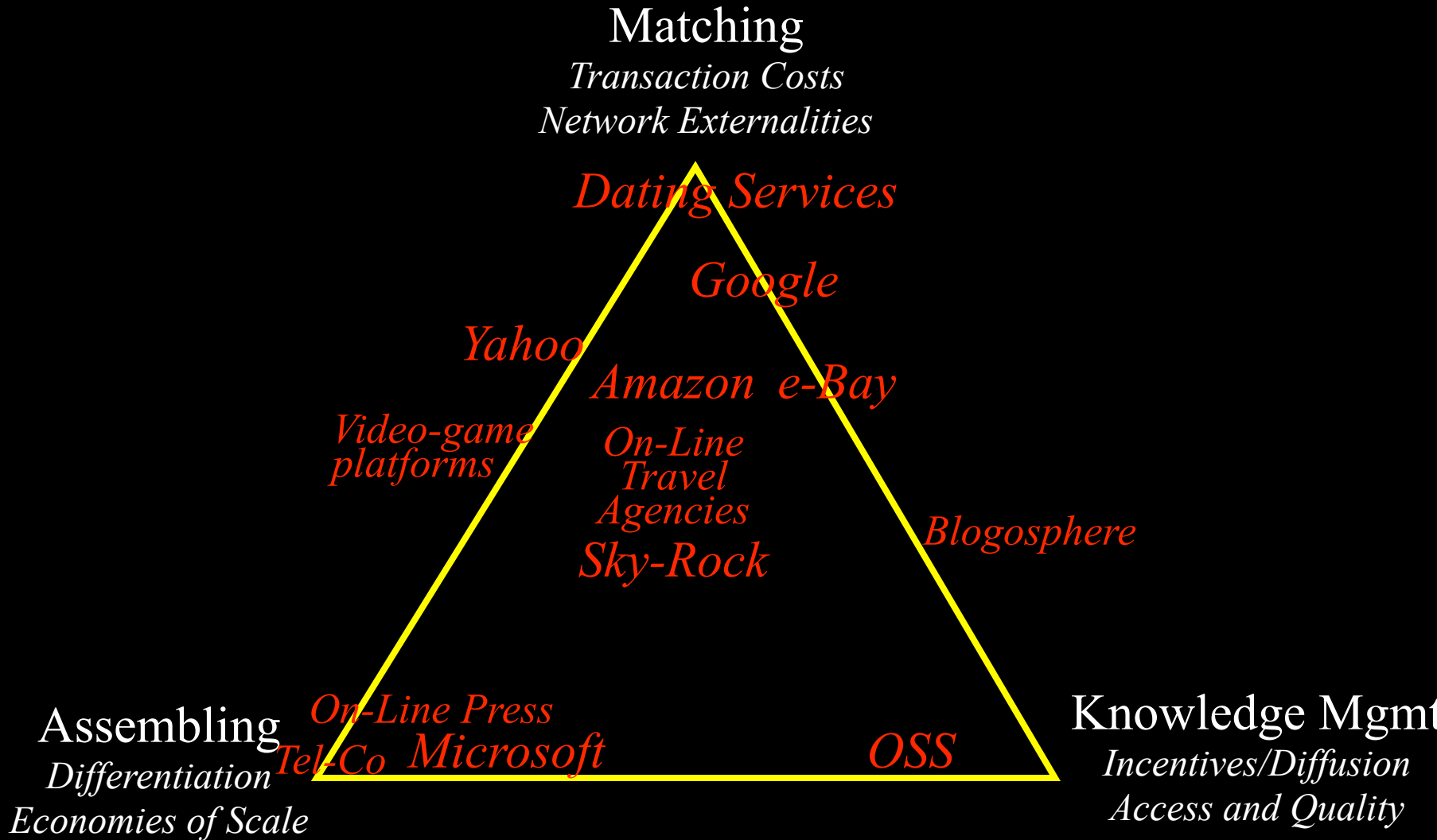
Matching  
*Transaction Costs*  
*Network Externalities*



Assembling  
*Differentiation*  
*Economies of Scale*

Knowledge Mgmt  
*Incentives/Diffusion*  
*Access and Quality*

# 3 Dimensions to Contrast DBM



# II. Three Related Literatures

Matching

*Market Micro-structure*

*-Intermediation (e.g. Spulber)*

*-Two-sided-Markets (e.g. Rochet-Tirole)*

Assembling

Knowledge Mgmt

*-Economics of Networks (e.g. Economides)*

*-Eco of Quality (Differentiation, Bundling, etc.)*

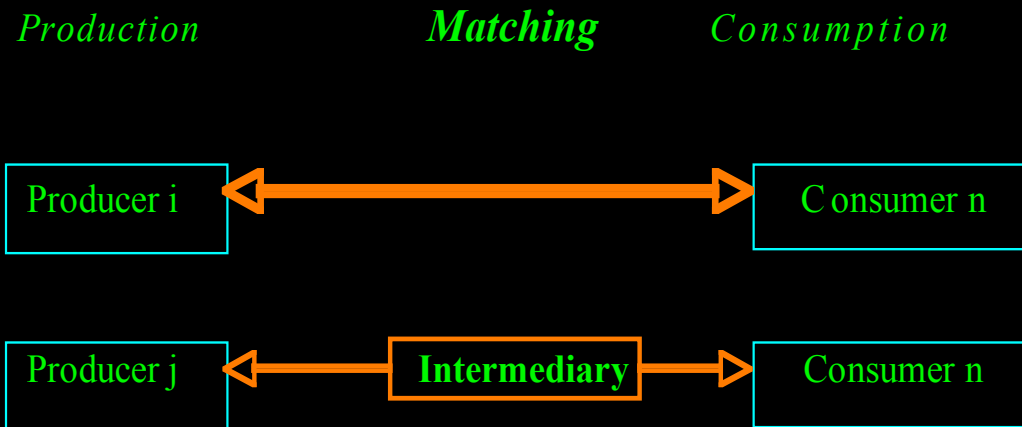
*-Organization & Strategy: Mass Customization, RBV*

*-Economics of Knowledge*

*-Intellectual Property Rights Eco.*

*-Eco of On-Line Communities (self-regulation, self-organization, information feedbacks, etc.)*

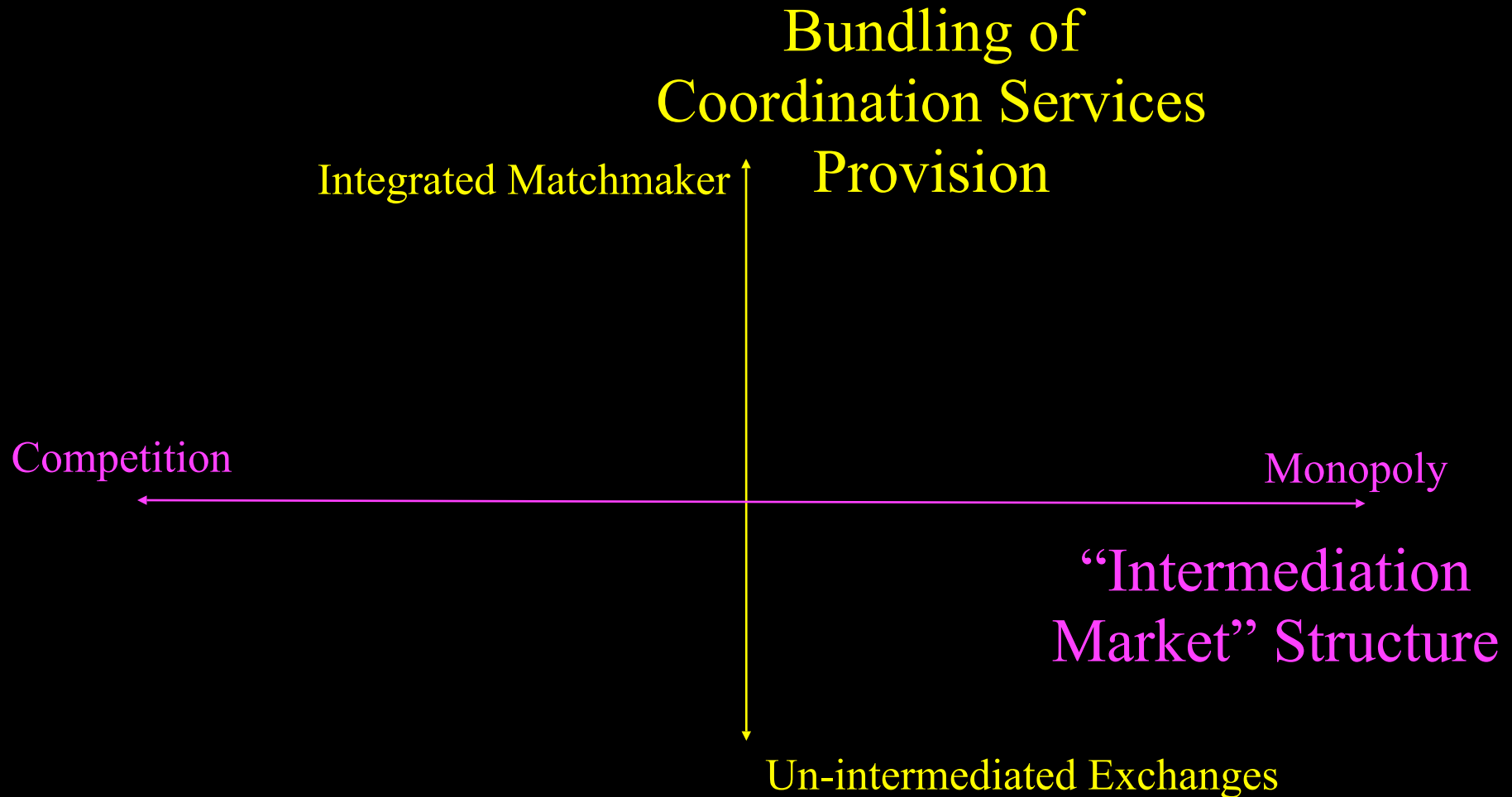
# The Economics of Intermediation: Transaction & Matching Efficiency (Market Microstructure)



1 The Economics of Commercial Intermediation: *Externalities among functions*

2 Two Sided Markets: *Externalities among agents*

# Two Transactional Dimensions to Contrast Matching DBMs



# Transactional Tradeoffs

Bundling of Coordination  
Services Provision

Integrated Intermediaries

Economies of Bundling  
(Cross-Subsidization + Lower  
Transaction Costs)

*Factor: Bilateral  
customization needs*

“Intermediation  
Market” Structure

Competition

Monopoly

Lower charges of intermediation  
Differentiation

Ability to “Organize” Exchange  
Rent Capture  
Economies of Scale  
Network Effects

Economies of Specialization  
(Outsourcing + Competition)

Un-intermediated Exchanges

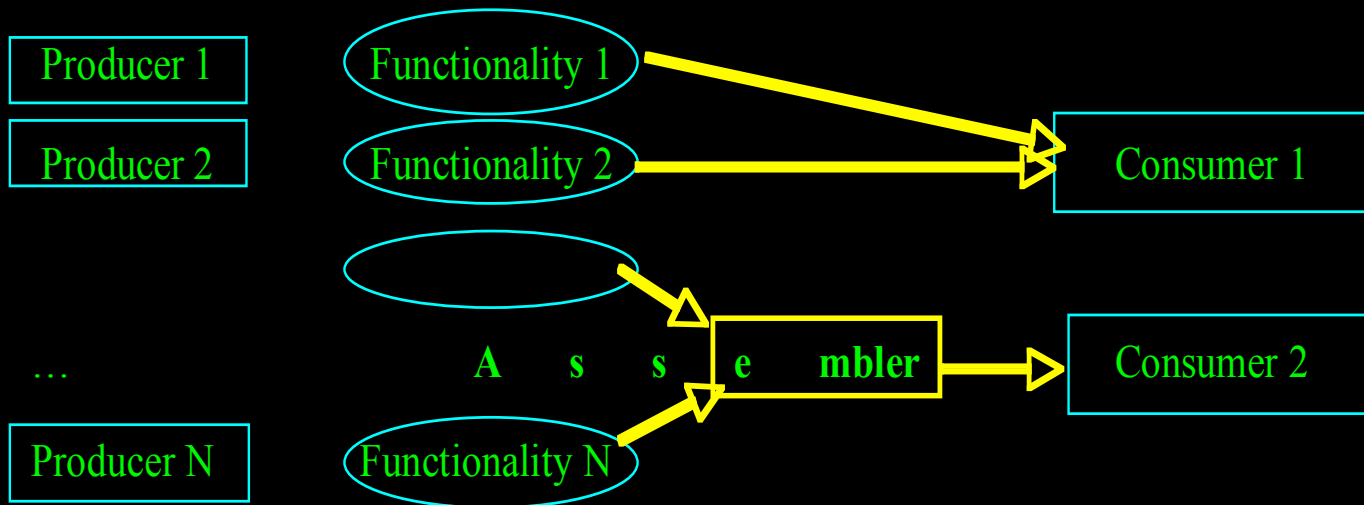
*Factors: Heterogeneity of  
Preferences (and competition in  
supply)*

# The Economics of Assembling: Qualitative Matching in a

*P*roduction

*A*ss<sub>s</sub>*e*mbling

*C*onsumption



# The economics of Assembling

- **Assumptions**

- Competition among packages with contrasted differentiation and pricing capabilities due to the nature of the core modules
- Quality dilemma:  
Diversity vs. Interoperability (user friendliness, reliability, etc.)

- **Choice of an assembling scheme**

- Non-Excludable Modules (i.e. high cost of exclusion, low incentives to exclude) => Free but “pollution”
- Excludable Resources
  - either free but pollution
  - or fee based (subscription)

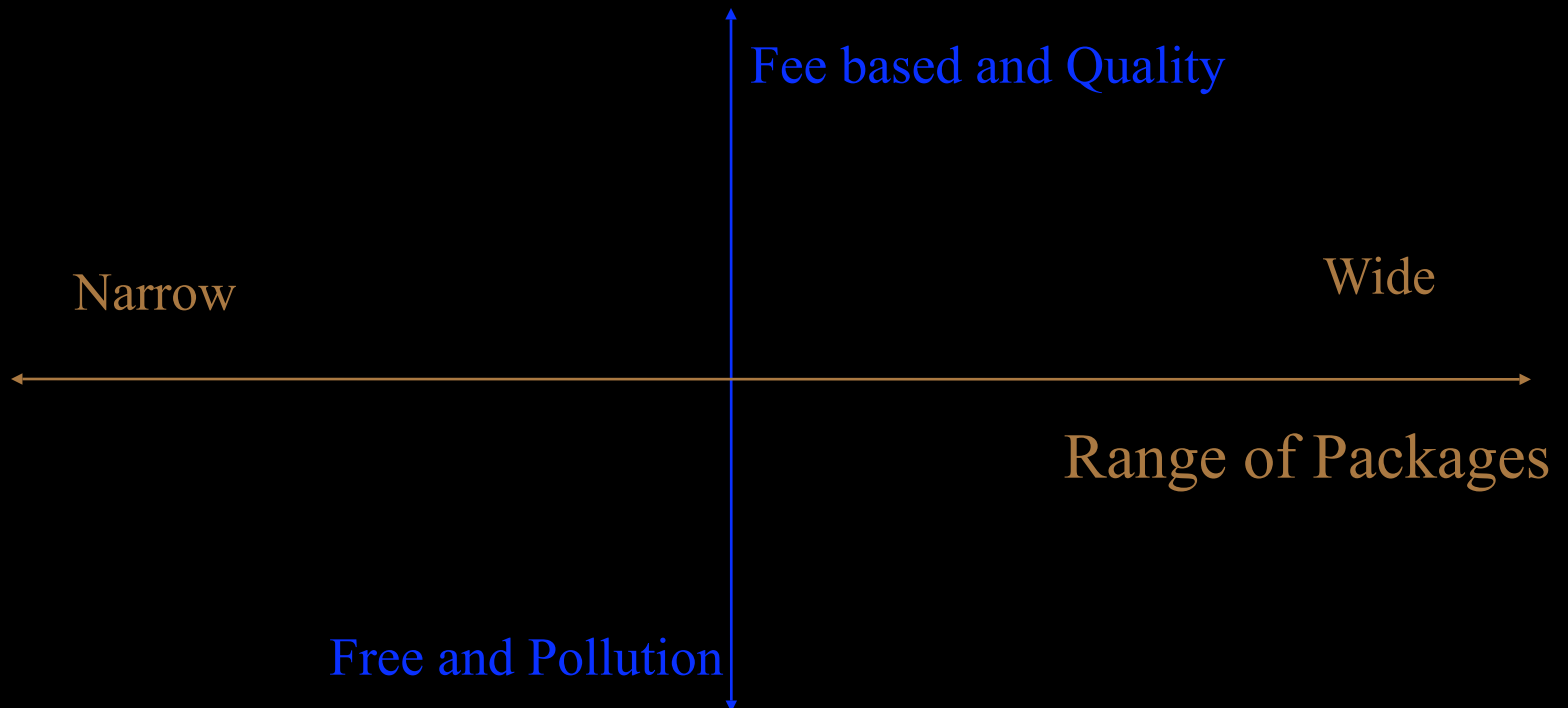


# Dynamic Competition in Assembling

- **First Step: Competition within models**  
(e.g. among “media” and among “access providers”)
  - **Free but “pollution”** based on side revenues => Incentives to enhance audience by combining an increasing number of functions => Low integration / No exclusivity (because of incentives to minimize costs of assembling, necessity to enlarge the audience)
  - **Fee based** => Subscription because of the nature of the economy (fixed costs) => Incentives to enhance the attractiveness by combining an increasing number of functions => High integration / High quality (because of the will to provide enhanced services)
- **Second Step: Competition between models**
  - Dominant player on each market: incentives to expand the market by penetrating the other’s market
    - Free low quality access for the “media” company
    - Contents for the “access provider”
  - Two scenarii
    - Same model for the two players (Mixed direct and indirect revenues)
    - Competition between high quality (professional) services and low-quality (mass-market) services

# Two Assembling Dimensions to Contrast DBMs

Marketing Method



# Assembling Tradeoffs: The Relationship to the Users

## Marketing Methods

Fee + Quality

Customization (but discrimination)  
High level of Integration

Higher Costs of Assembling and  
of Use

More competition

Less differentiation or  
Potential collusion

Narrow

Wide

Less competition

Potential market segmentation and  
customization

=> discrimination

Range of the  
Assembling

Difficulty to fund high quality  
Higher Costs of Use  
High pace of Innovation

*Factors: Costs of Assembling /  
Distribution and Range of  
Preferences of Users*

Free + Pollution

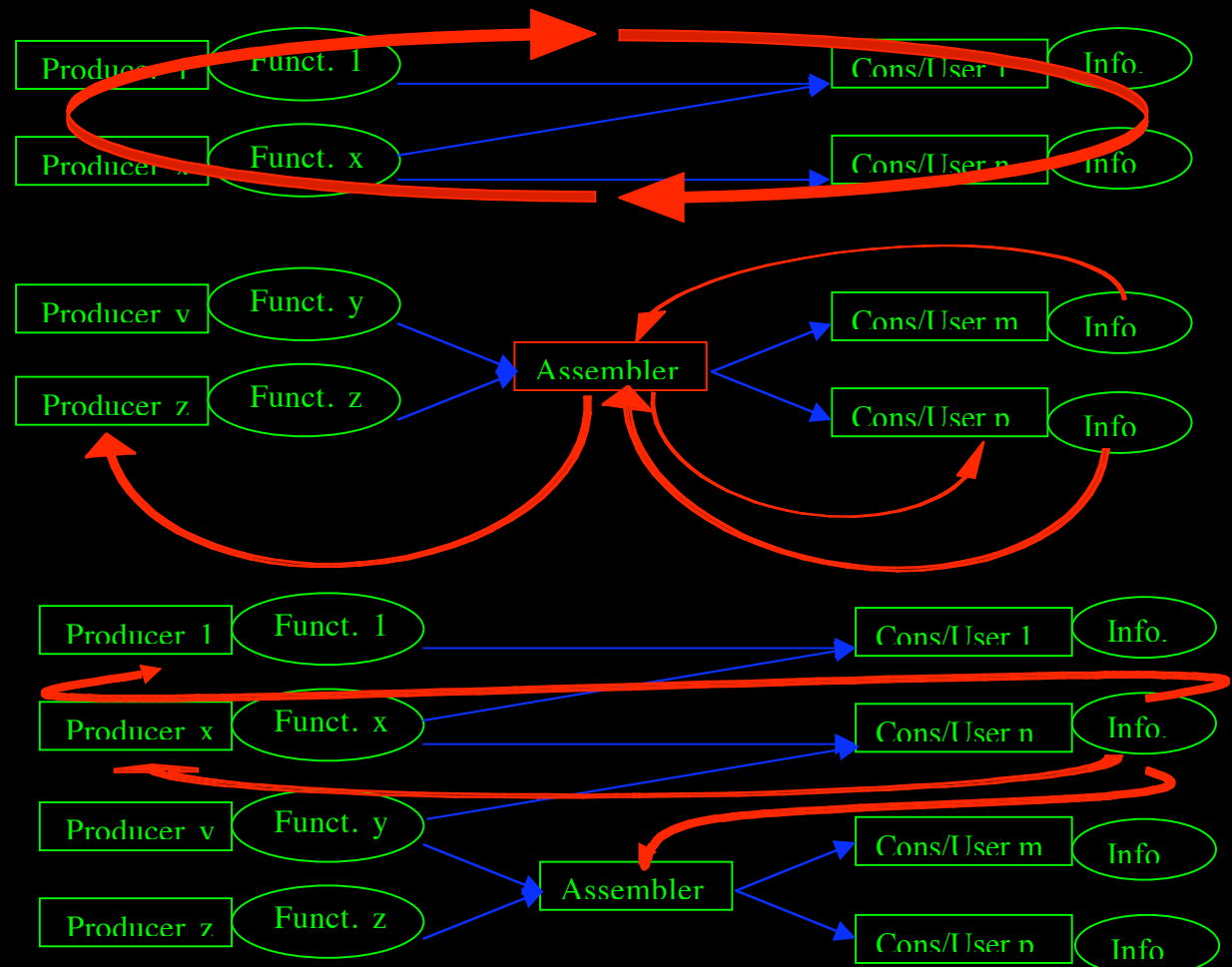
*Factors: Costs of exclusion*

# The Economics of Knowledge Management: Collective Production and Accumulation of Public Goods

*Production*

*Knowledge Mgmt*

*Consumption*



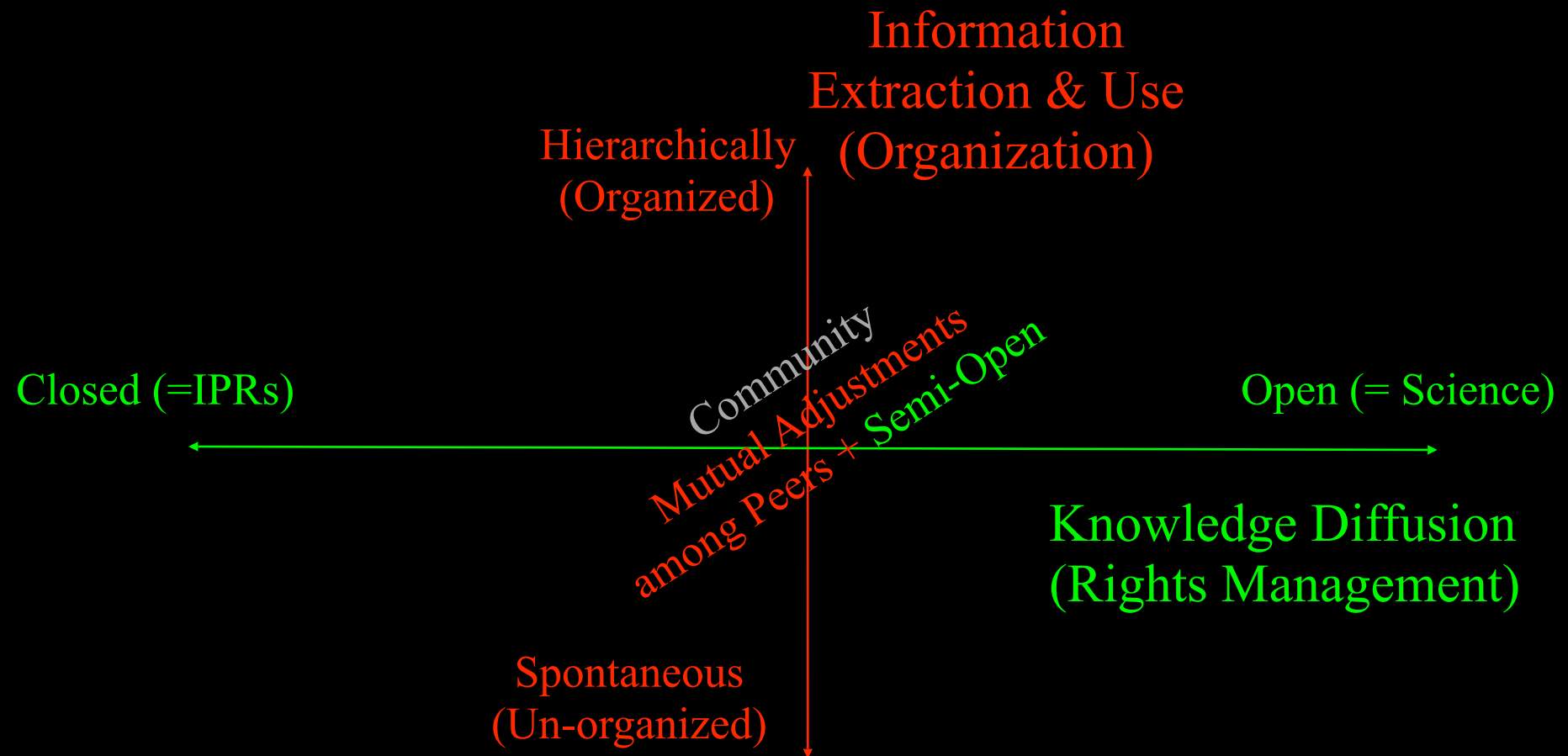
1. The Economics of Information Sharing

2. Managing Incentives to Sustain the Production of Public & Club Goods

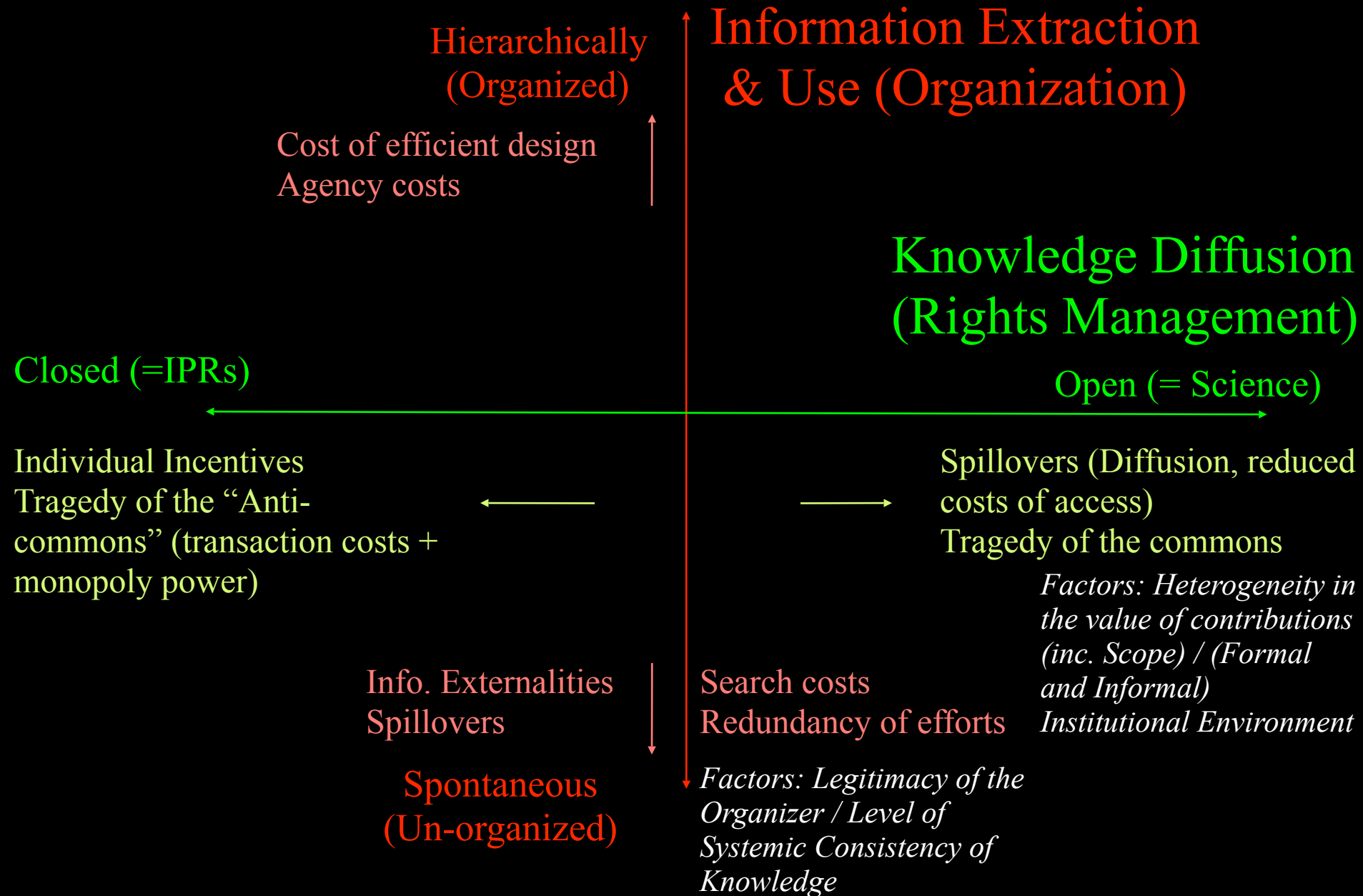
# Digital Networks as Tools to Accumulate & Generate Heterogeneous Types of Knowledge

Transaction	Trust	Tracking and Reputation Management	<i>E-Bay</i>
	Matching	Sharing of Knowledge about Capabilities and Needs	<i>Amazon</i> <i>C. Of Experience</i>
	Risk Reduction	Facilitating Use by Sharing Learning by Using	<i>FAQs</i> <i>Epistemic C. of Users</i>
Assembling	Products (Components) Enhancement	Gathering of Information about Satisfaction & Solution	<i>Hot-Lines &amp; Forum</i>
	Package Enhancement	Gathering of Information about Consumption Decision and Actual Use	<i>Fidelization + Tracking</i>
Cognition	Collective Accu. & Distrib. of K.	Sharing of Existing Stock of Knowledge and Info Goods	<i>P2P</i> <i>Open Archives</i> <i>Epistemic Cs.</i>
	Innovation	Collective Management of Innovation Processes	<i>OSS</i>

# Two Dimensions to contrast DBMs according to their ability to Use and

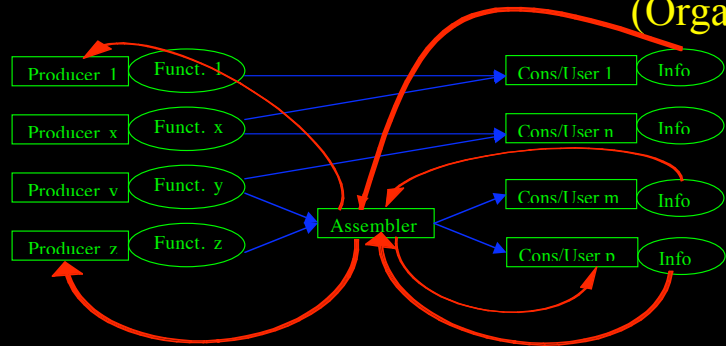


# The “Collective” Dimension



# Some Examples

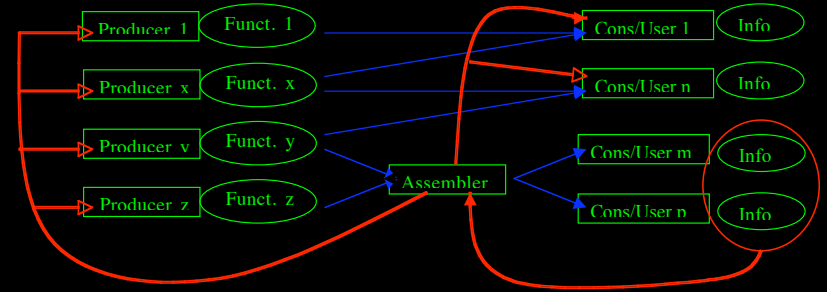
*Microsoft*



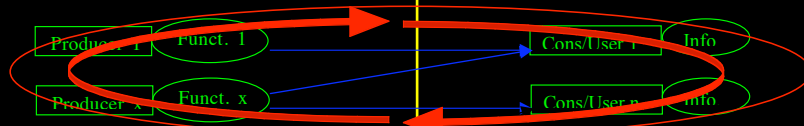
Hierarchically  
(Organized)

Information Extraction  
& Use (Organization)

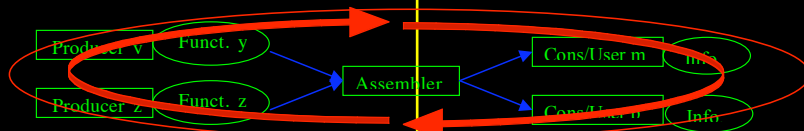
*Amazon  
Repec/SSRN*



Closed (=IPRs)

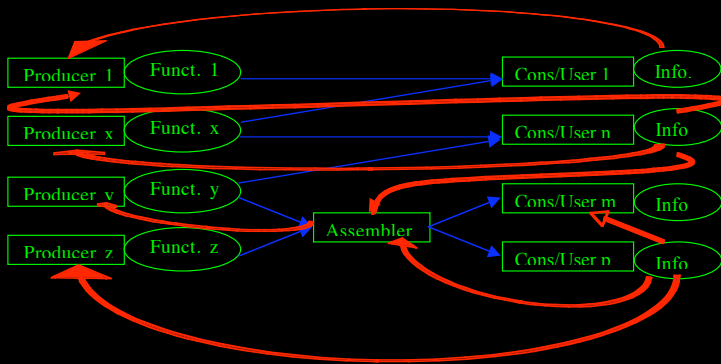


Open (= Science)



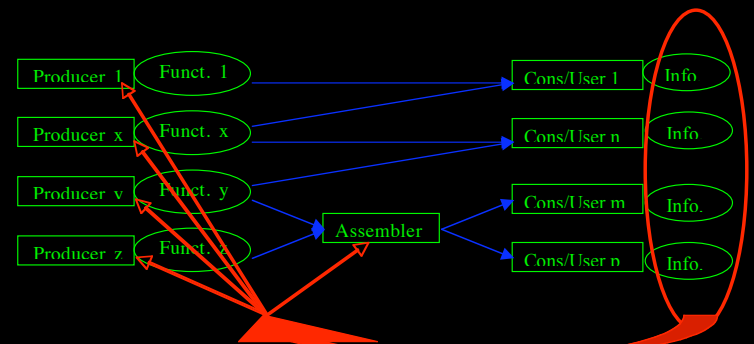
Knowledge Diffusion  
(Rights Management)

*OSS*



*Info Referral*

Spontaneous  
(Un-organized)

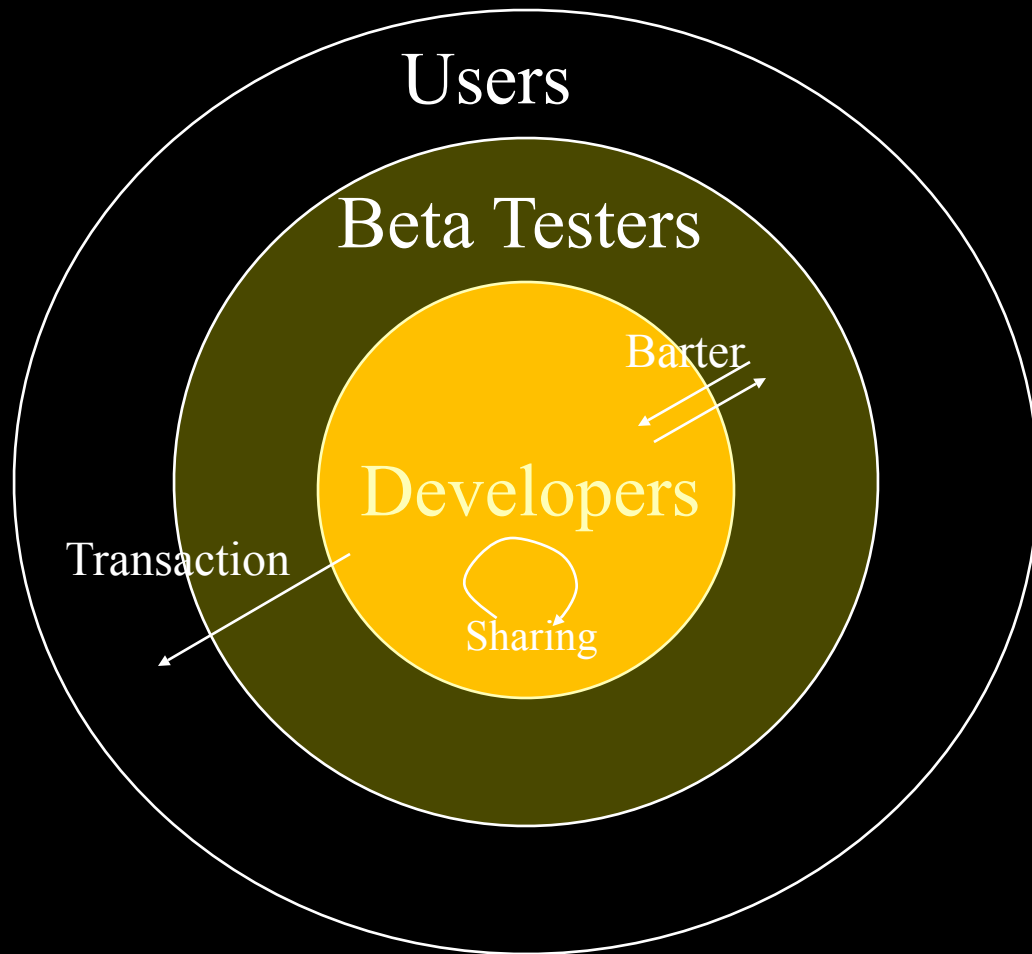


*Wikipedia*



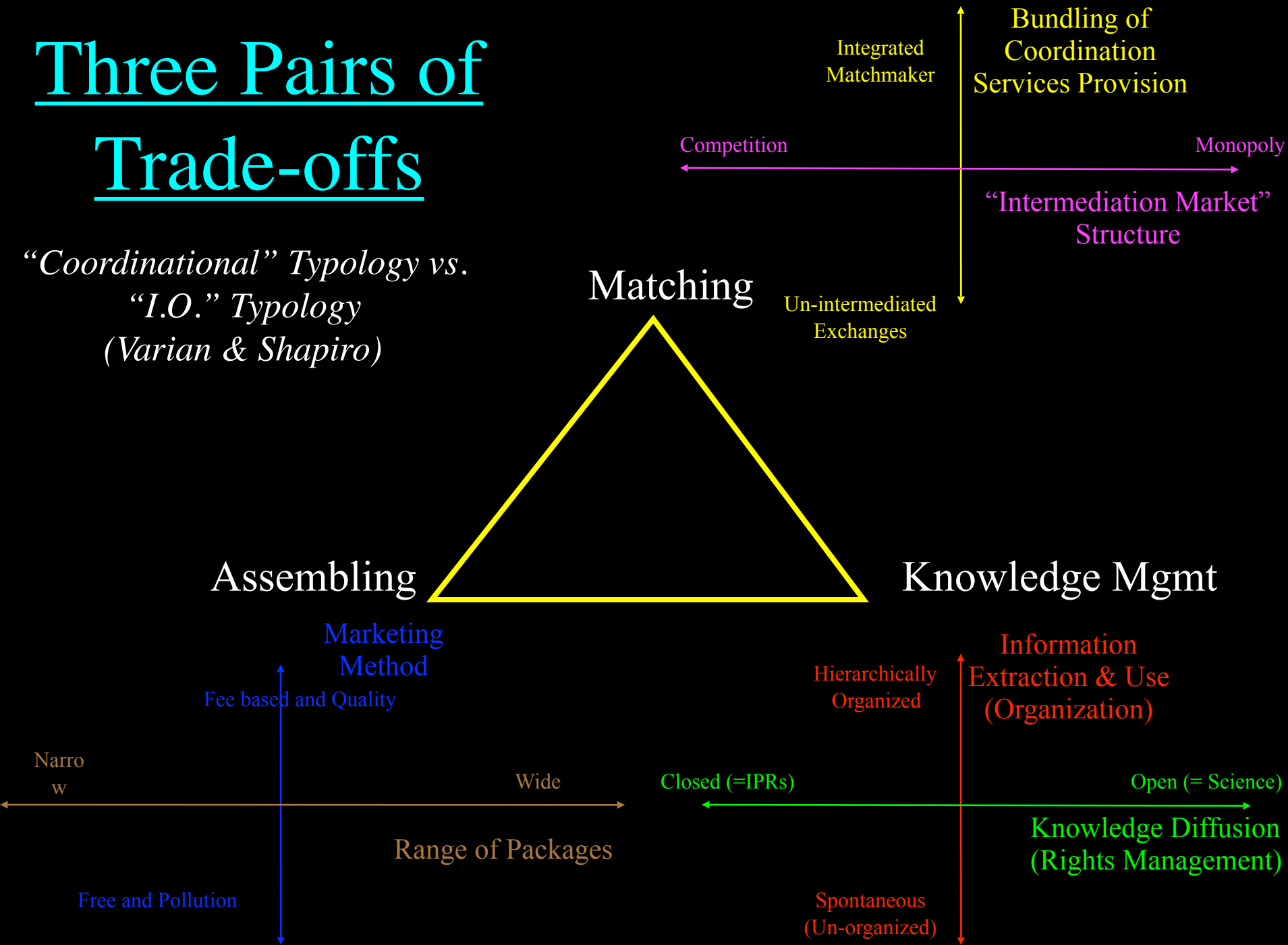
# Managing Incentives to Sustain the Production of Public & Club Goods: A multi-tier perspective

The Example of OSS



# Three Pairs of Trade-offs

*“Coordinational” Typology vs. “I.O.” Typology (Varian & Shapiro)*



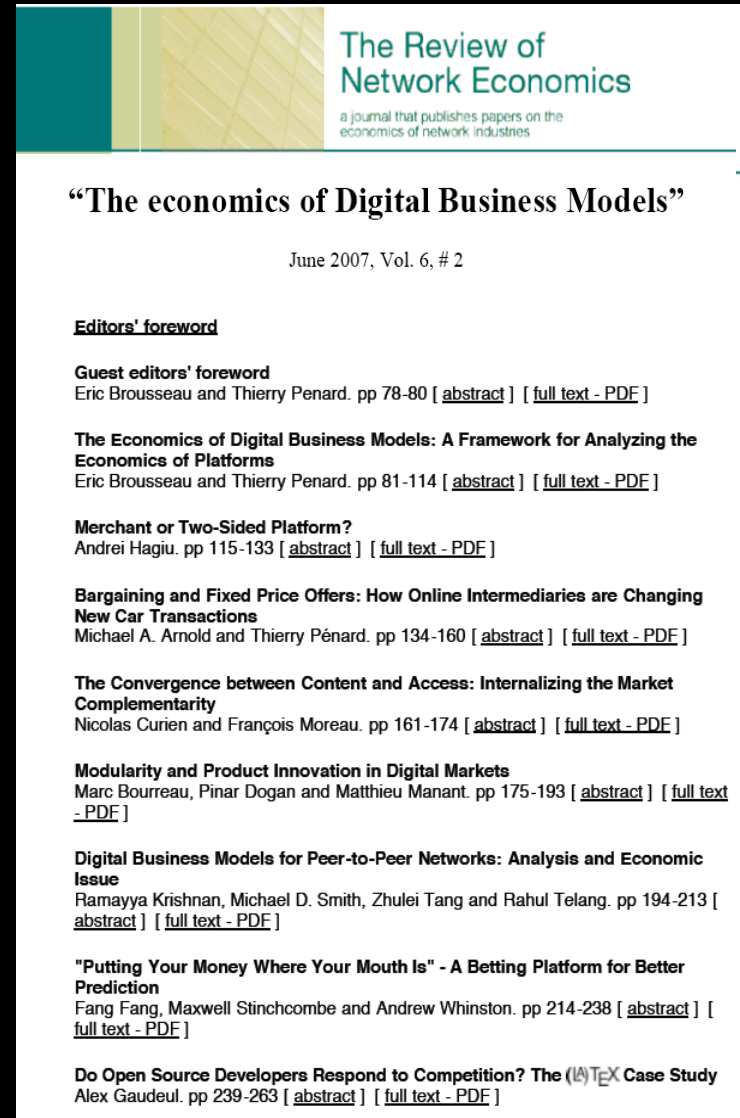
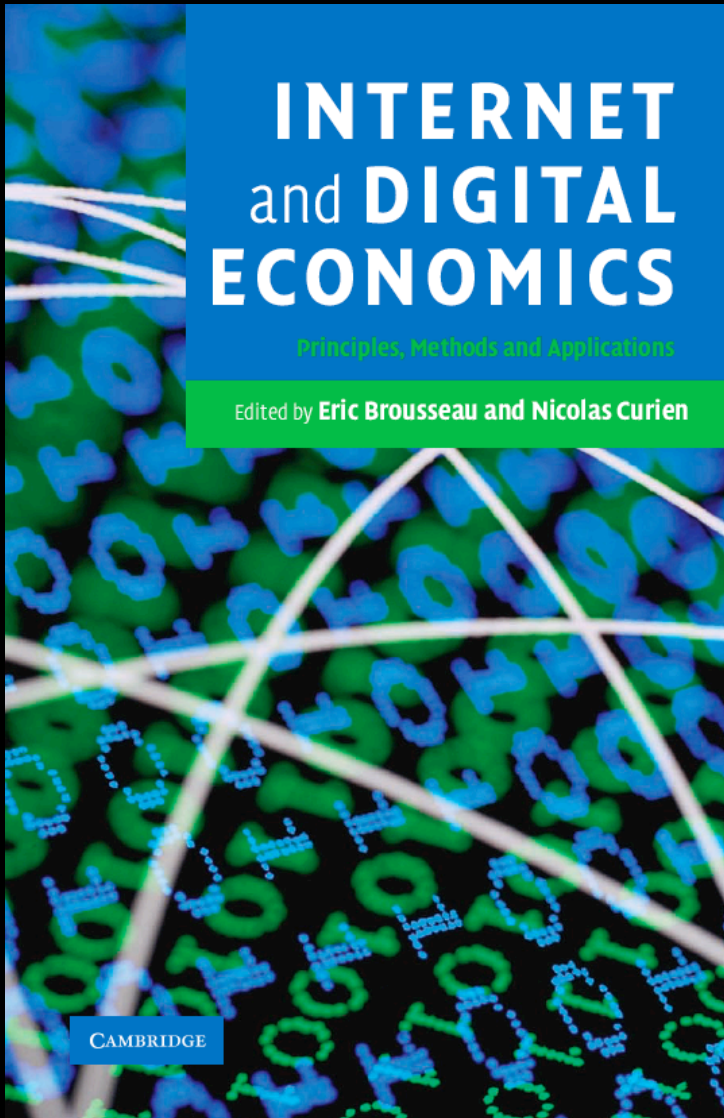
# Strategic Positioning

- Matching: f (dominant position)
    - first mover
    - dominance on other markets
  - Assembling: f (users preferences)
    - dominance on other markets  
(but free/loose assembling if dominance on information aggregation)
  - Knowledge Mgmt:
    - Knowledge: f (process of K generation\*)
    - Information: f (dominance on other markets)
- \* Dispersion and measurability of contributions

## Other Key resources

- Innovation capability... and agility
- Reputation

# Two recent publications



... and hopefully more to come