Lecture 04 - Ecosystem Governance and Architecture

Ecosystem Governance and Architecture

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👤 Lecturer Bio

- PhD Research Fellow (2020–2024), UiO (IFI) – Digital Innovation
- Research: Ecosystem emergence, development, governance strategy
- Focus: SaaS firms and heavy-asset Norwegian industries
- Involved in teaching and supervision

🗂️ Agenda

1. What is an ecosystem?
2. What is governance and what does it mean in an ecosystem?
3. Connection between governance and architecture
4. Platform ecosystems as complex systems

🌱 What is an Ecosystem?

> "An economic system consisting of non-hierarchical complementarities on the production side and non-generic complementarities on the consumption side."
> — *Jacobides et al., 2018*

Key Terms:

- **Economic system**: Value-producing market system (product/service)
- **Complementarity**: Components add more value **together** than separately

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🧪 Complementarities

Production Side:

- Heterogeneous resources, processes, and activities
- **Non-hierarchical** and **cospecialized** (Teece, 1986)
- Cross-organizational value creation

Consumption Side:

- Offerings are **composable** and integrated by the **end user**
- Requires coordination among producers for value creation

🧭 What is Governance?

- **Governance**: How authority and control are structured
- Includes both formal and informal **rules and procedures**

Governance = "Blueprint" for Management Structures

📚 Definitions

Governance Structures (Klein et al., 2019)

- Rules for:
  - Who gets in/out
  - Resource allocation and development
  - Distribution and conflict resolution

IT Governance (De Haes & Van Grembergen, 2004)

- Board-level responsibility
- Ensures IT supports strategic goals

Management

- The act of organizing people/resources to achieve goals
- Encompasses planning, organizing, staffing, directing, and controlling

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🏢 Organizational vs. Network Governance

Aspect	Organizational Governance	Network Governance
Structure	Explicit hierarchy	Implicit relationships
Boundaries	Inside formal orgs	Across org boundaries
Legal Framework	Formal & regulated	Informal, relational
Example	Corporate departments	Digital ecosystems

> Ecosystems = **networked organizations** → require **network governance**

🏺 Ecosystem Architecture

Platforms as Complex Systems (Tiwana, 2013)

> A system of interdependent components that form a greater whole.

Artifacts

- **Tangible**: Cars, planes, phones
- **Intangible**: Laws, strategies, orgs
- **Technology** = Knowledge used to make artifacts

🧩 Complex Artifacts = Formal Organizations

1. **Division of Knowledge**: Many people needed to understand the system
2. **Division of Labour**: Many people needed to build it

🏗️ Two Designs of Complex Systems

Type	Description
Organizational Structure	Who does the tasks (social structure)
Technical Architecture	What the tasks are and how they connect (product structure)

> Organizational structure **mirrors** technical architecture

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🎛️ Architecture & Governance

Technical Architecture

- Tasks, components, interfaces
- Driven by technology and problem-solving needs

Organizational Structure

- People, roles, communication
- Realizes the technical blueprint
- Governance = how structure is managed

🧭 Span of Control

- Which parts of the technical architecture are **controlled internally**?
- Strategic decision:
  - What to build in-house?
  - What to outsource?
- Affects governance strategy

🧩 Governance Strategies

Type	Focus
Organizational Governance Strategy	Internal control over components
Network Governance Strategy	Influence over **external** contributors

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⚙️ Modularity vs. Monolithic Systems

Modular Architecture

- Independent sub-systems (e.g., car parts)
- Interfaces for interaction
- Benefits:
  - Flexibility, innovation, agility
  - Specialization and recombination

Monolithic Architecture

- One tightly integrated system
- Central control
- Benefits:
  - Less complexity
  - Faster decisions
  - High oversight

📈 Growth Logics

System	Growth Mechanism	Span of Control	Logic
Modular	External, via networks	Less control	Network effects
Monolithic	Internal, via scaling	More internal control	Mass production

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🧩 Platform Ecosystems

1. Are **modular** systems
2. Are governed by **network governance**
3. Are **designed systems** producing complex artifacts

> In practice, ecosystems exist on a **spectrum** between modular and monolithic.

🙏 Thank You

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