Lecture 08.2 - Digital Transformation of Industries

Digital Transformation of Industries

Ole Hanseth – Digital Innovation & Ecosystems

🧭 From IS to Ecosystems

Traditional Approach:

- Focus on **individual systems**
- Design → Implementation → Use → Organizational change

Today's Reality:

- Focus on **ecosystems and infrastructures**
- Involves **multiple systems and actors** (e.g., HSØ: 5,700 solutions)
- **Continuous change**: tech + organization
- Shift from **organizational level** to **industry level**
- **Twin Transition**: Technology and organizational change shape each other

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🧬 Variety Across Industries

Depends on:

- Material vs. Information (atoms vs. Bits)
- Production complexity
- Nature of products/services

Examples:

Industry Type	Characteristics
Bits (media, finance)	High info, fast-changing
Info-intensive (aviation, health)	Complex services + tech
Low-complexity (e.g., restaurants)	Less integration, simpler processes

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🎯 Case: Programmatic Advertising

- Massive growth in **AdTech** companies
- Platforms like Ad Exchanges, DSPs, social media, etc.
- Complex, **asymmetric production networks**

🗞️ Media Industry Transformation

Phases:

1. **Independent production**: Journalists, typewriters, press
2. **Digitization of editing/printing**
3. **Online publishing**: Multimedia, shared services, cloud

Consequences:

- Centralization and consolidation

- Emergence of **asymmetric networks**
- New **gatekeepers**: Social media, Google

🏦 Banking and Finance

Digitalization Success:

- Shared infrastructure (SWIFT, BankAxept, Vipps)
- High standardization and homogeneity
- Innovation: Derivatives, structured finance, Bitcoin?

Observations:

- **Joint IT ownership** enabled success
- Finance as **digital-native sector**

✈️ Aviation: A Digital Ecosystem Pioneer

Key Milestones:

- 1963/64: **SABER system** (American Airlines + IBM)
- 1975: Failed JIRS project → open GDS systems
- 1980 s-90 s: Growth, globalization, new services (yield management, alliances)
- 2000 s: GDSs = **architectural control points**
- 2010 s: Bypass attempts via internet + direct booking

Analysis:

- Booking = **information-intensive**
- Emerged as **platform ecosystems**
- Transformation driven by **network effects**
- Cycles of **stabilization ↔ destabilization**

🏥 Health Care Industry Transformation

Evolution:

- From “car repair shop” → **chronic care** + complex services
- Tech: **More devices**, data, and digital tools
- Structure: **Hospitals as enterprises**, tighter **primary-secondary care** links
- National digital coordination: ex. **Akson**

Major Projects:

1. **Digital Renewal (2013–2018)**: NOK 7 B for infrastructure consolidation
2. **Digital Home Monitoring**: GP and hospital integration
3. **Specialized Services**: Velferdsteknologisk Knutepunkt, surgical technologies

Example: TAVI Surgery

- TAVR introduced 2002, CE-marked in 2007
- Highly tech-dependent process with:
  - Digital imaging
  - PACS, EPR, advanced instruments
  - Multinational coordination

🧠 Digital Innovation & Industry Transformation

Core Concepts:

- **Mutual shaping**: Tech ↔ Org structures
- Role of **dominant actors** (Google, Facebook, Alibaba)
- Emergence of **architectural control points**
- Risks: Bottlenecks, **reverse salients**
- **Governance, regulation**, and systemic design critical

🧩 Summary

Aspect	Description
Focus shift	From individual systems → ecosystems
Co-evolution	Technology + organizational structure
Industry scope	Banking, aviation, media, health care
Platform logic	GDSs, AdTech, Vipps, Akson as platforms
Innovation	Driven by new tools + organizational models
Control points	Key for shaping and regulating transformation