



Aalto University
School of Electrical
Engineering

Value Network Design for Internet

Case: Future Internet / Scenario Planning

Course E7830
Aalto University

Research Question of Scenario Planning

Case: Future Internet

- Which are the alternative (technological) scenarios for Internet over 10 years and what are the key trends and uncertainties that produce these scenarios?



Supporting Strategic Question

- IETF standards: What should be the IETF strategy of TEKES/Future Internet Programme to cope with each scenario?

Scenario Planning Process

1. Setting the scene and scope

- Define *time frame*, *scope* and *decision variables*. Identify major *stakeholders*.

2. Identifying key trends and uncertainties

- *Key trends* = important forces which experts consider predictable.
- *Key uncertainties* = important forces whose outcomes are not very predictable.

3. Scenario construction

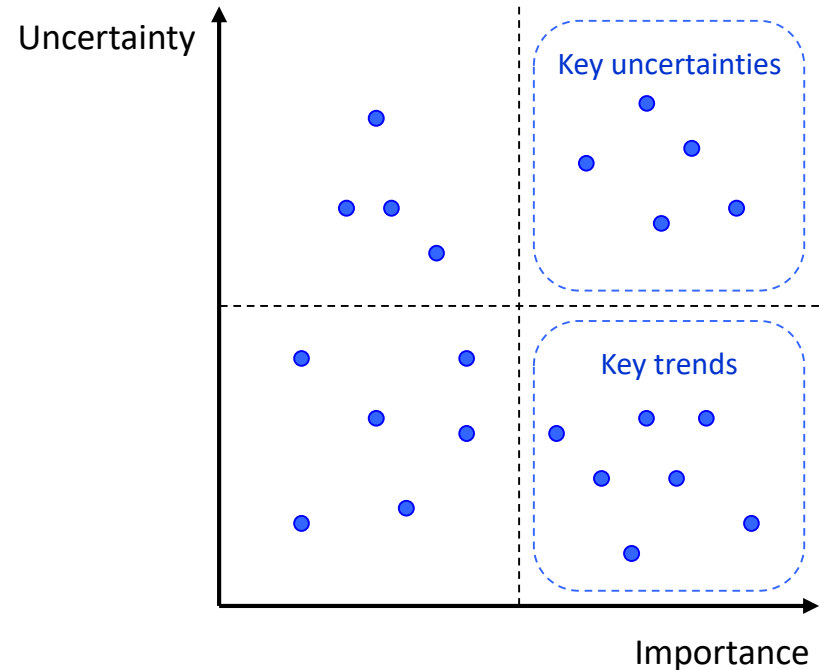
- *Select two most important key uncertainties* → scenario matrix.
- Add impact of other key uncertainties and trends.
- Assess *internal consistency* and plausibility, revise.
- Assess *stakeholder behaviour*.

4. Quantitative modelling

Identifying Key Trends and Uncertainties

► Brainstorming

- To identify key trends and uncertainties
- 3 sessions with academics and industry experts
- Divided to 4 x 45 min
 - **P**olitical / regulatory forces
 - **E**conomic / industry forces
 - **S**ocial forces
 - **T**echnological forces



► Expert interviews

- To deepen the understanding of key uncertainties and scenario drafts
- 11 interviewees representing different stakeholders

Key Uncertainties (=what we don't know about future)

► Most important key uncertainties

- Network structure?
- Openness of content, applications, and hosts?



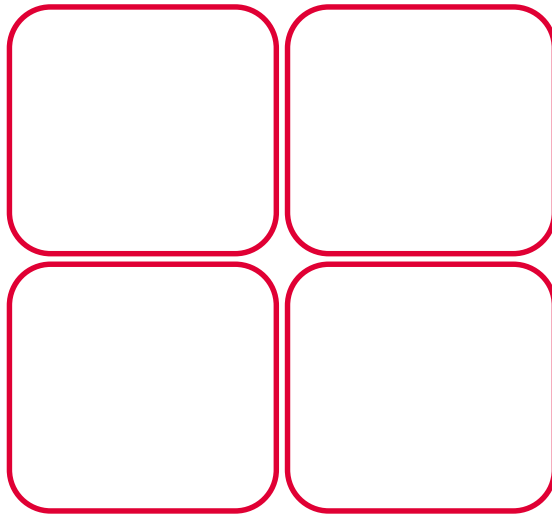
Network structure

One
network

Fragmented
network

Open

Closed



► Other key uncertainties

- Will Internet face a larger collapse?
- Where will the intelligence be located?
- What will be the dominating business model in Internet economy?
- Where will the standardization happen?
- What is the level of trust / security / authentication in the Internet?
- Will the traffic be treated neutral?
- Standards vs. proprietary solutions?

Internet Architecture Scenarios

Network structure

One network

Fragmented network

Open

Wild & Free

- Free connectivity/programmability
- Extreme competition/innovation
- Access networks open for all
- Ad & credit card revenues
- Consumer rules

Content-driven Overlays

- Many separate overlays
- Separation invisible to users
- Access operators as gatekeepers
- Ad revenues
- Content provider rules

Closed

Device-Content Bundles

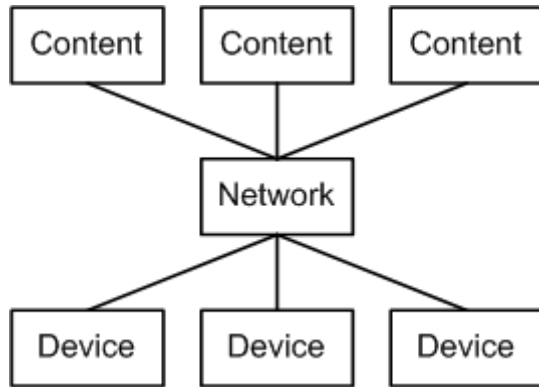
- Dedicated packaged devices
- Device-driven bundling
- Vertical separation
- Subscription revenues
- Device vendor rules

Isolated Walled Gardens

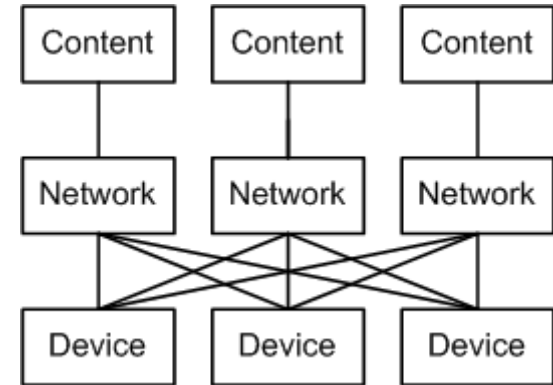
- Complete vertical bundle
- One-stop shopping
- IMS takes off
- Transaction revenues
- Mobile operator rules

Tech+Industry Architecture in Scenarios

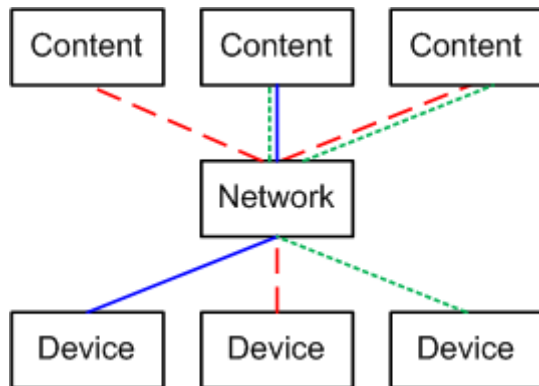
Wild & Free



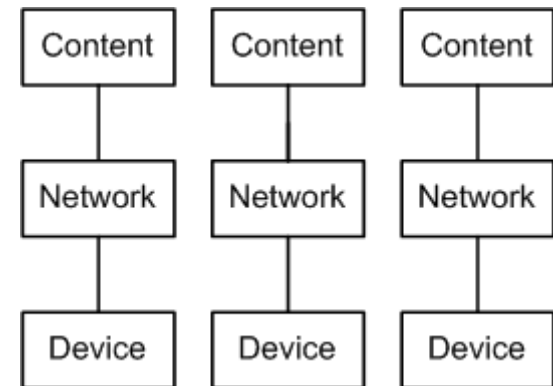
Content-driven Overlays



Device-Content Bundles

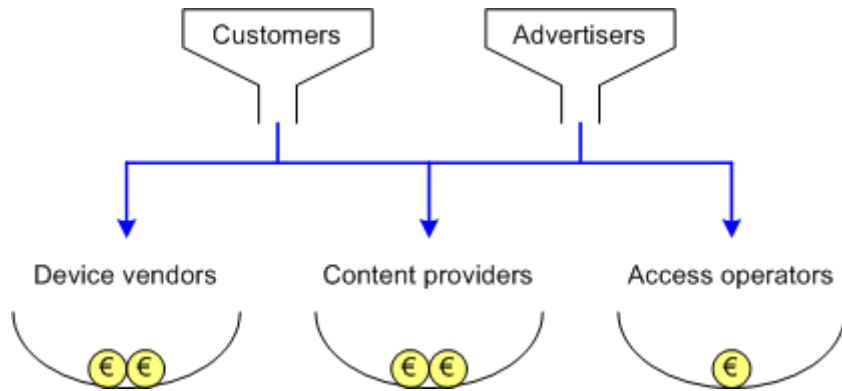


Isolated Walled Gardens

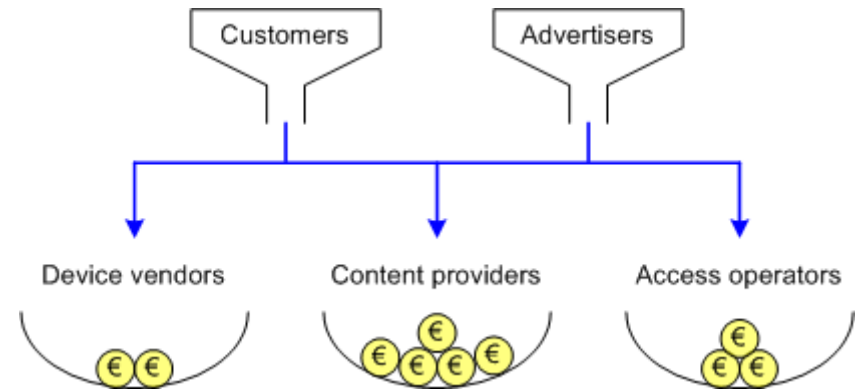


Value Distribution in Scenarios

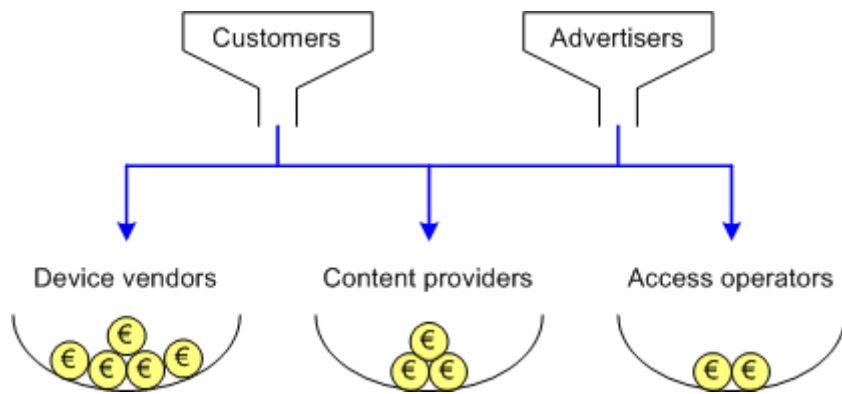
Wild & Free



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