HELSINKI UNIVERSITY OF TECHNOLOGY
Networking Laboratory

Scenarios and Operator Business Models for Management of Digital Homes

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Outline

- Background
- Objectives and methods
- Management of digital homes
- Results
  - Scenarios
  - Business models
- Conclusions

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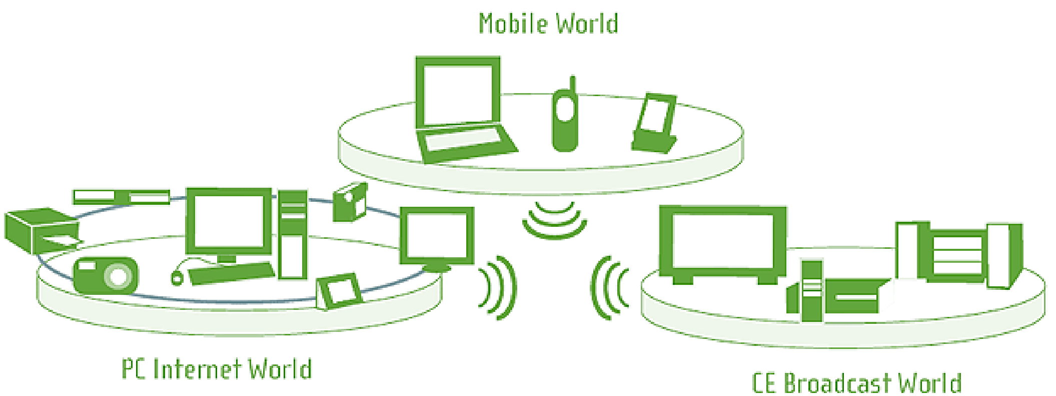
What is a Digital Home?

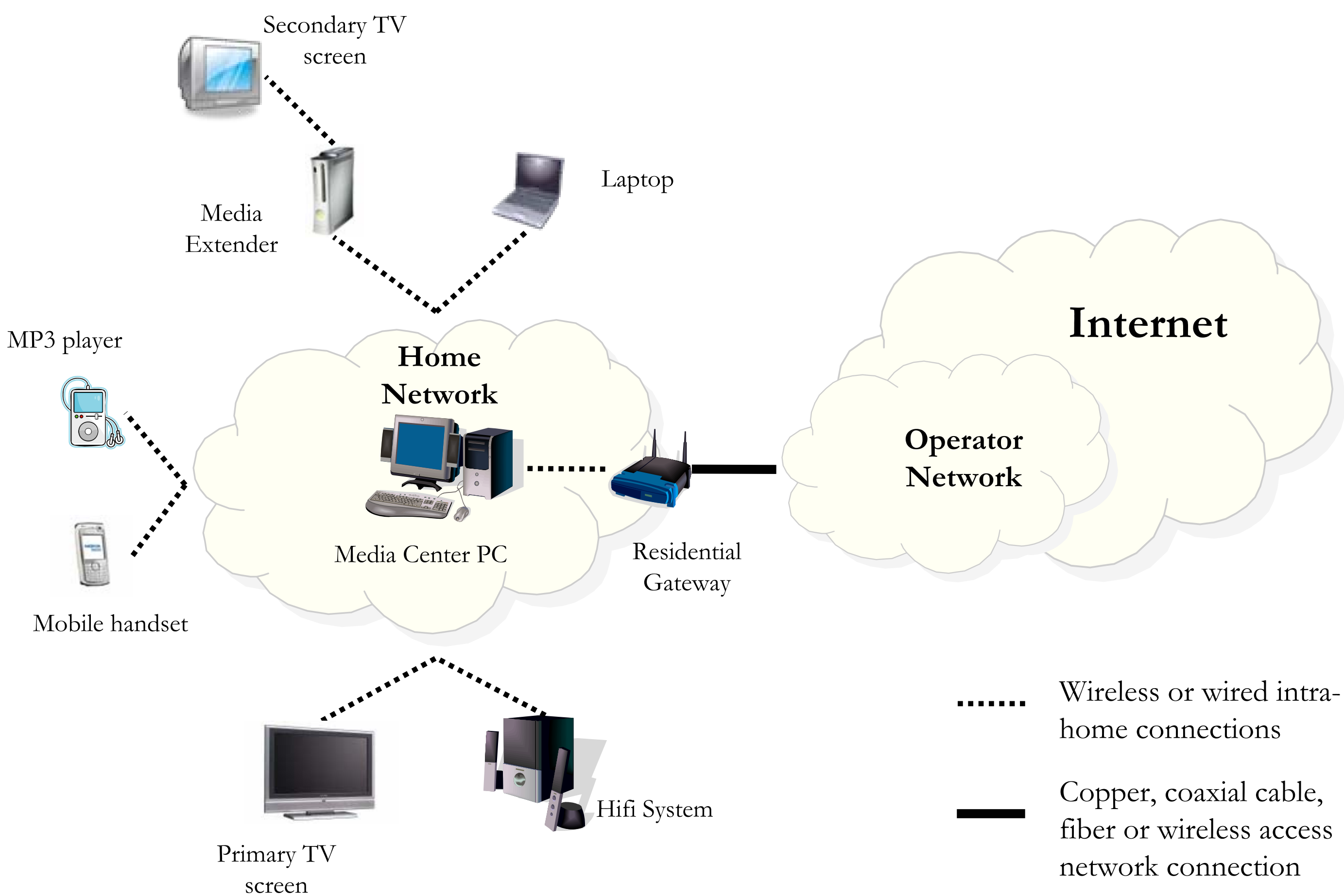
- A Digital home comprises **devices** and **network connections**
  - E.g. PCs, set-top boxes, mobile devices, and cameras are connected to a home network
- Changes the provision of services
  - New service categories, e.g. home automation
  - New ways to provide existing services, e.g. content, communication

Technology islands are converging at the digital home



Source: DLNA (2006)

Example: Media Center-Based Digital Home



Users Need Help with Managing their Digital Homes

- Digital homes are growing complex
  - More devices, content, applications, security issues, subscriptions
  - Too much for the average user
- Someone is needed to handle the management tasks
  - Operators are potential management service providers

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Objectives and Methods

- Research question
  - What business opportunities does management of digital homes offer for operators?
- Objectives
  - Study the role of an operator in relation to other service providers
  - Construct management scenarios
  - Identify possible operator business models
- Research methods
  - Literature study
  - Expert interviews
  - Analysis based on theoretical frameworks

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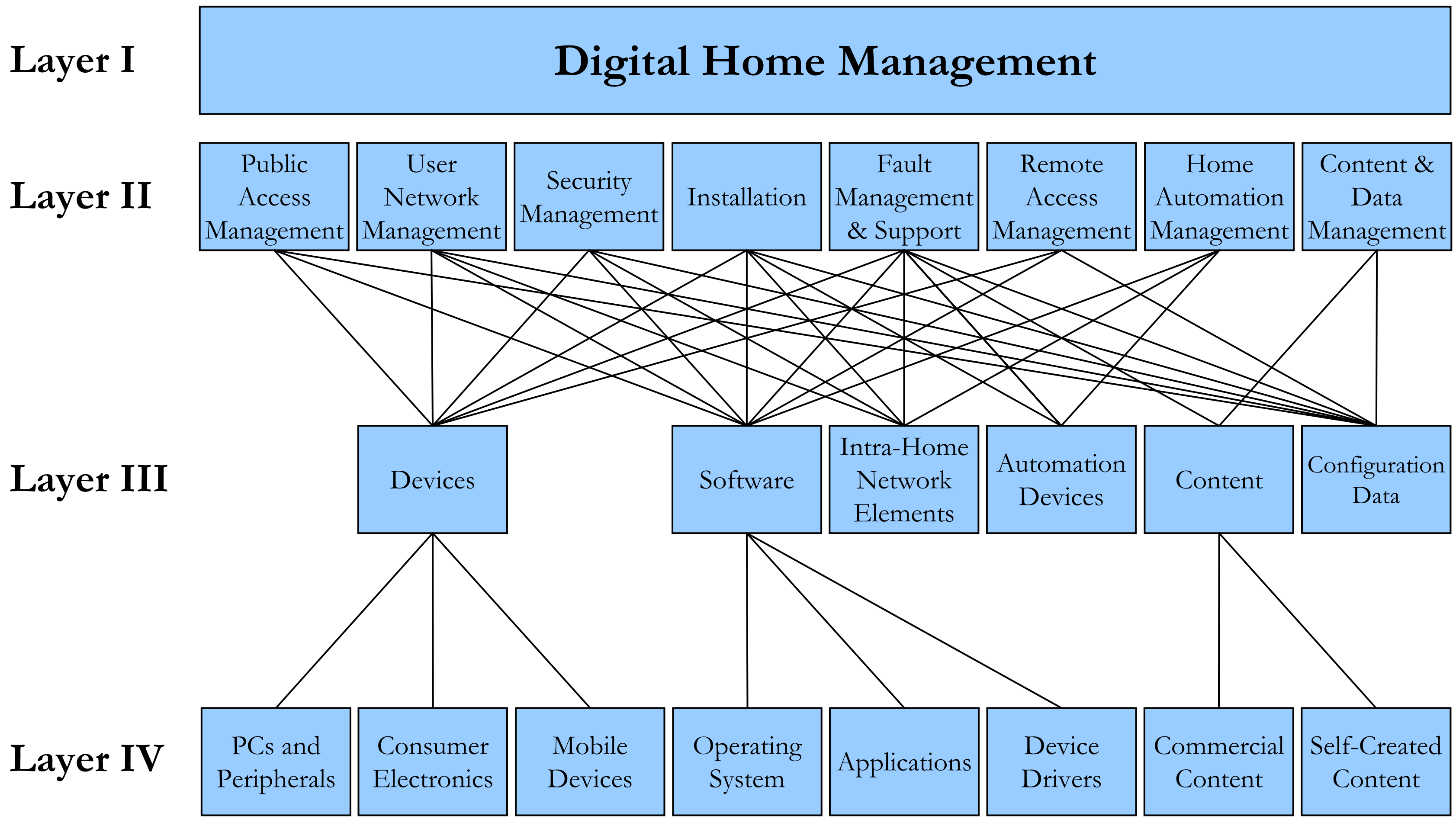
Complex Management Hierarchy



Several Potential Managers

- Operators
  - E.g. Elisa, TeliaSonera, Welho
- Software platform companies
  - E.g. Microsoft, Apple
- Security providers
  - E.g. F-Secure, Norton
- Other software application providers
  - E.g. Adobe
- "IT Janitors"
  - E.g. House managing firms, one-man companies
- Media companies
- Friends/relatives
- End-users

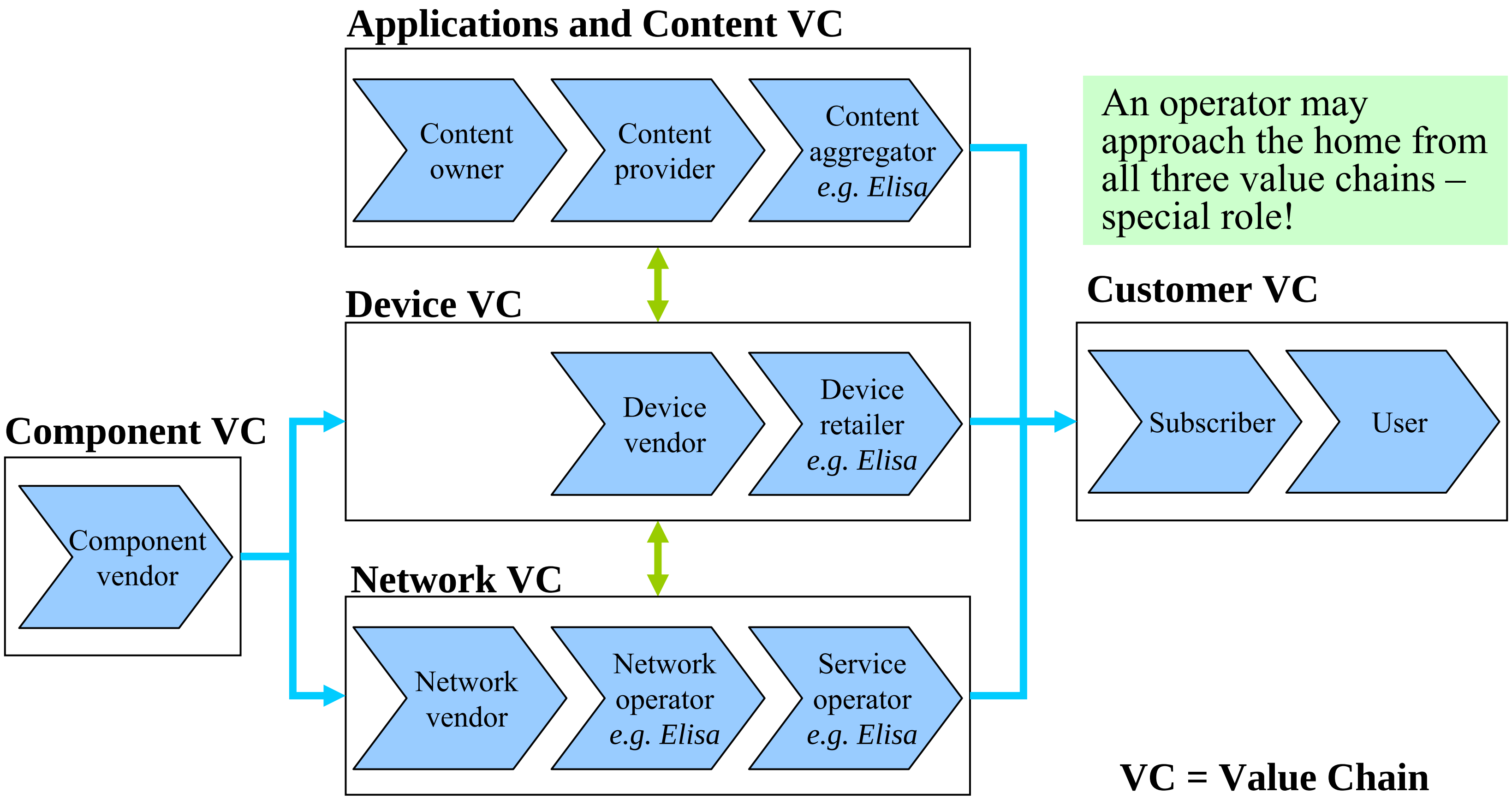
•Already send people to homes (e.g. ADSL technicians)

•Have existing charging&billing mechanisms

•Provide security services

•Distribute hardware

Operator Resides Close to End-Users



Source: Smura (2006), modified

An operator may approach the home from all three value chains – special role!

VC = Value Chain

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Trends Shaping the Scenarios

Example figure:
Trend weightings in Scenario I

Direction and impact are uncertain

Outsourcing digital home management tasks will become more common						
More self-management	○	○	○	○	●	More outsourced management
Digital home management will be offered in a centralized manner						
Distributed management	○	○	●	○	○	Centralized management
Fight for digital home services will intensify						
Operators weak	○	○	○	○	●	Operators strong
Software platform firms weak	○	●	○	○	○	Software platform firms strong
Other service providers weak	○	●	○	○	○	Other service providers strong
Users' trust over firms will change						
Low level of trust	○	○	●	○	○	High level of trust
Market concentration in the digital home industry will change						
Many actors	○	●	○	○	○	Few large actors
Consumption habits will change						
More purchased equipment	○	○	○	○	●	More leased equipment
Service aggregation will become more common						
Less bundles	○	○	○	○	●	More bundles
Regulatory intervention will increase						
Unfavorable for operators	○	○	○	○	●	Favorable for operators

Scenario I: Locally Centralized

- Large, well-developed management business
- Operators dominate
  - "Best case scenario" for operators
- All-inclusive management offerings
  - Connectivity, devices, security, remote configuration, automatic backups, etc.
  - Little or no self-management

Scenario II: Globally Centralized

- Large, well-developed management business
- Software platform firms dominate
  - "Microsoft homes" vs. "Apple homes" vs. "Open source homes"
- Nearly all-inclusive management offerings
  - Some self-management required
  - E.g. extended Microsoft Update

Scenario III: Global Specialists & Local Janitors

- Separate management services offered by different service providers
- No integrated solution available
  - Self-management required
- Various players with equal power
  - Specialized in security, on-site installation, backups, application updates, etc.

Scenario IV: Do-It-Yourself

- Resembles the current situation
  - Management business not developed
  - Users not willing to pay for management
- Only technologically capable people have home networks
  - Limited overall growth in digital services
  - Substantial device sales, though
- Most self-management required

Possible Operator Business Models

- Bit-pipe
  - Only Internet connectivity
- CPE distribution
  - Equipment bundled with Internet access
  - Retail or leasing
- Service intermediary
  - Broker between 3rd party SPs and consumers
  - No own management offerings
  - Re-branding (e.g. F-Secure software > "Elisa Data Security")
- Update aggregator
  - Gathering 3rd party updates and distributing to homes
- Total management
  - All-inclusive

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Conclusions

- Operators have an exceptional role
- Service aggregation will be a important success factor
  - Management services are needed but consumers are not willing to pay
  - Cost of management must be hidden within service bundles
- Equipment provision is tied with management
  - "Owner is the manager"
- Trade-off between ease of use and retaining control
- Topics for future research
  - Remote connectivity and related business models
  - Interconnecting home networks with each other

Questions