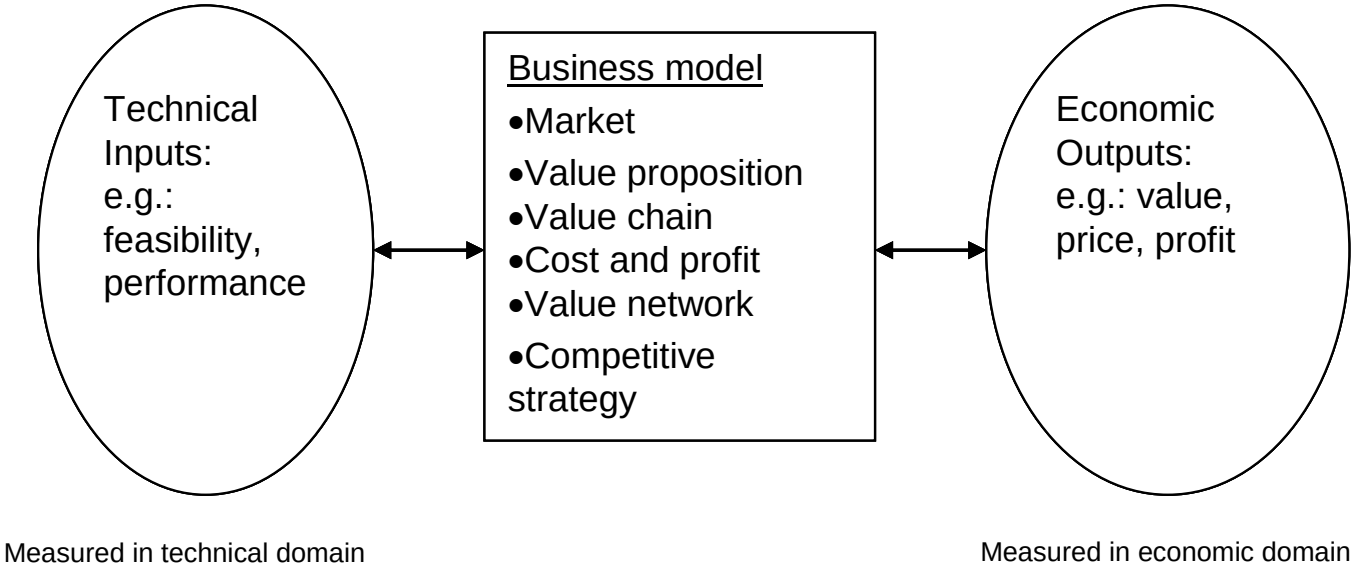
Service and Network Operators

Lecture Outline

1. Operator business environment (3-6)
2. Structural change in the telecom industry (7-11)
3. Basics of operator business (12-20)
4. Mobile operators (21-24)
5. Case: Mobile VoIP (25-29)

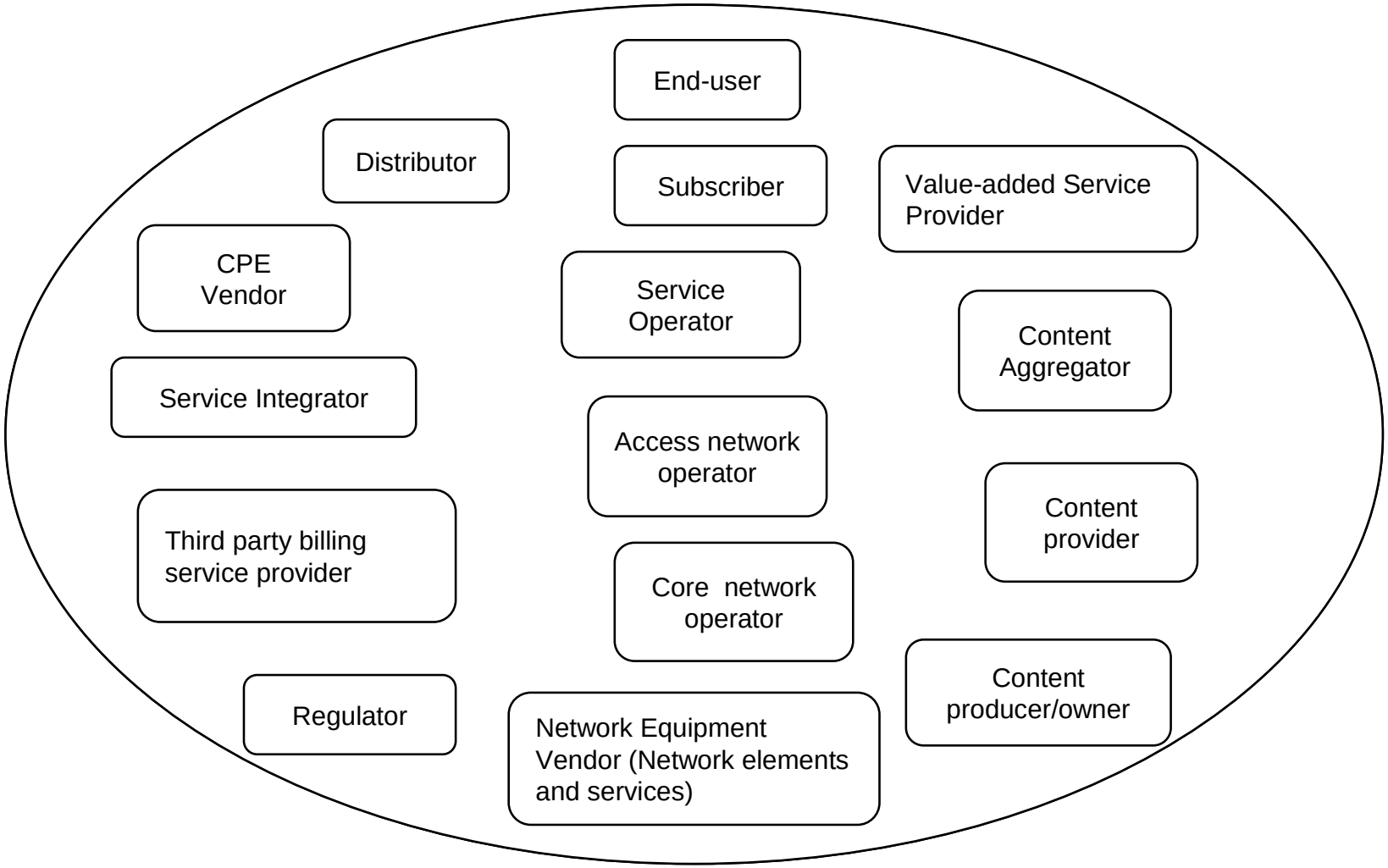
What is a business model?



- Articulate the value proposition
- Identify the market segment
- Define the internal value chain
- Identify the cost structure and the profit potential
- Position within the value network
- Formulate strategy for competition

Source: ECOSYS, 2004

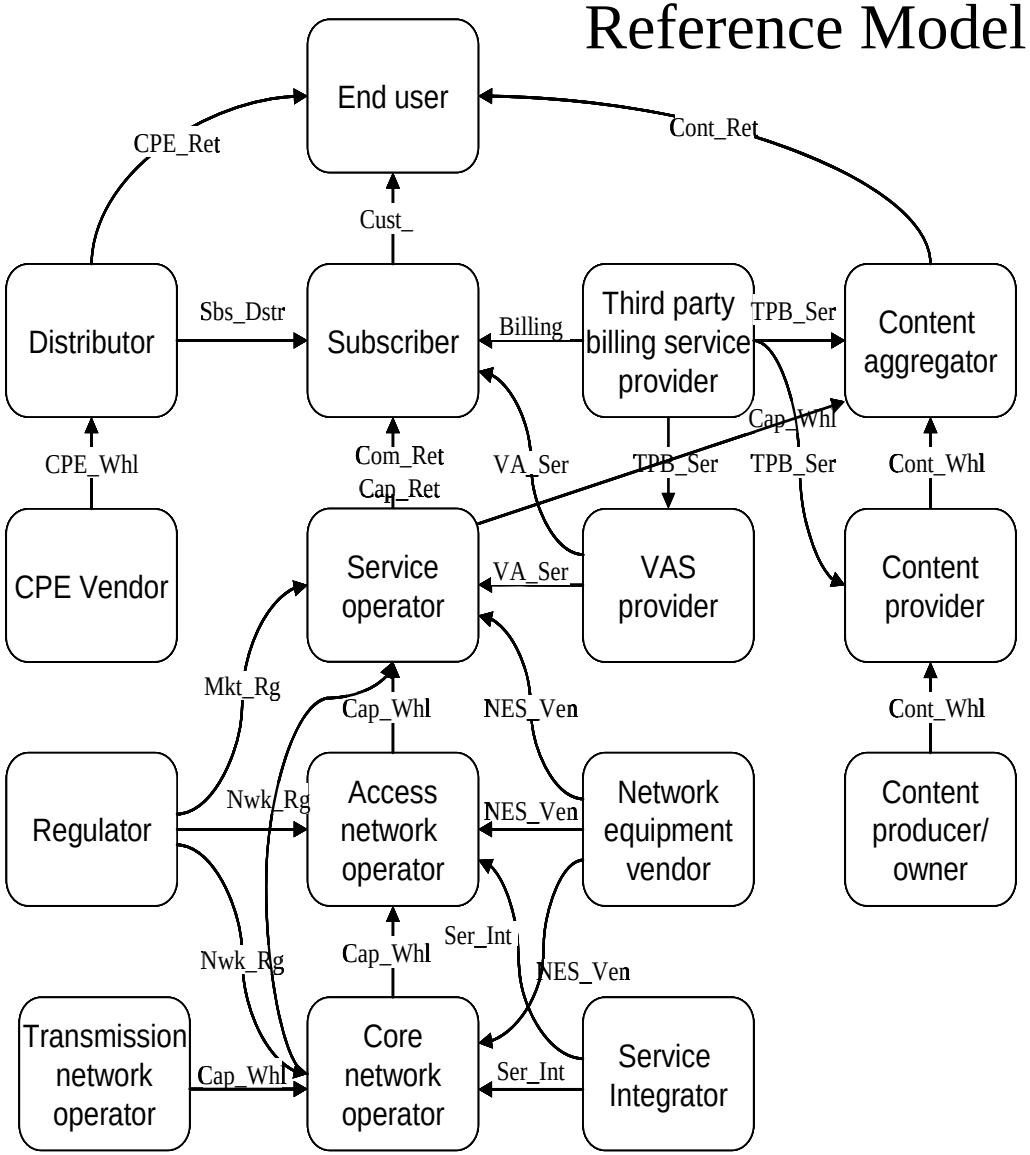
Roles in the Operator Ecosystem



Source: ECOSYS, 2004

Roles and Relationships

Reference Model

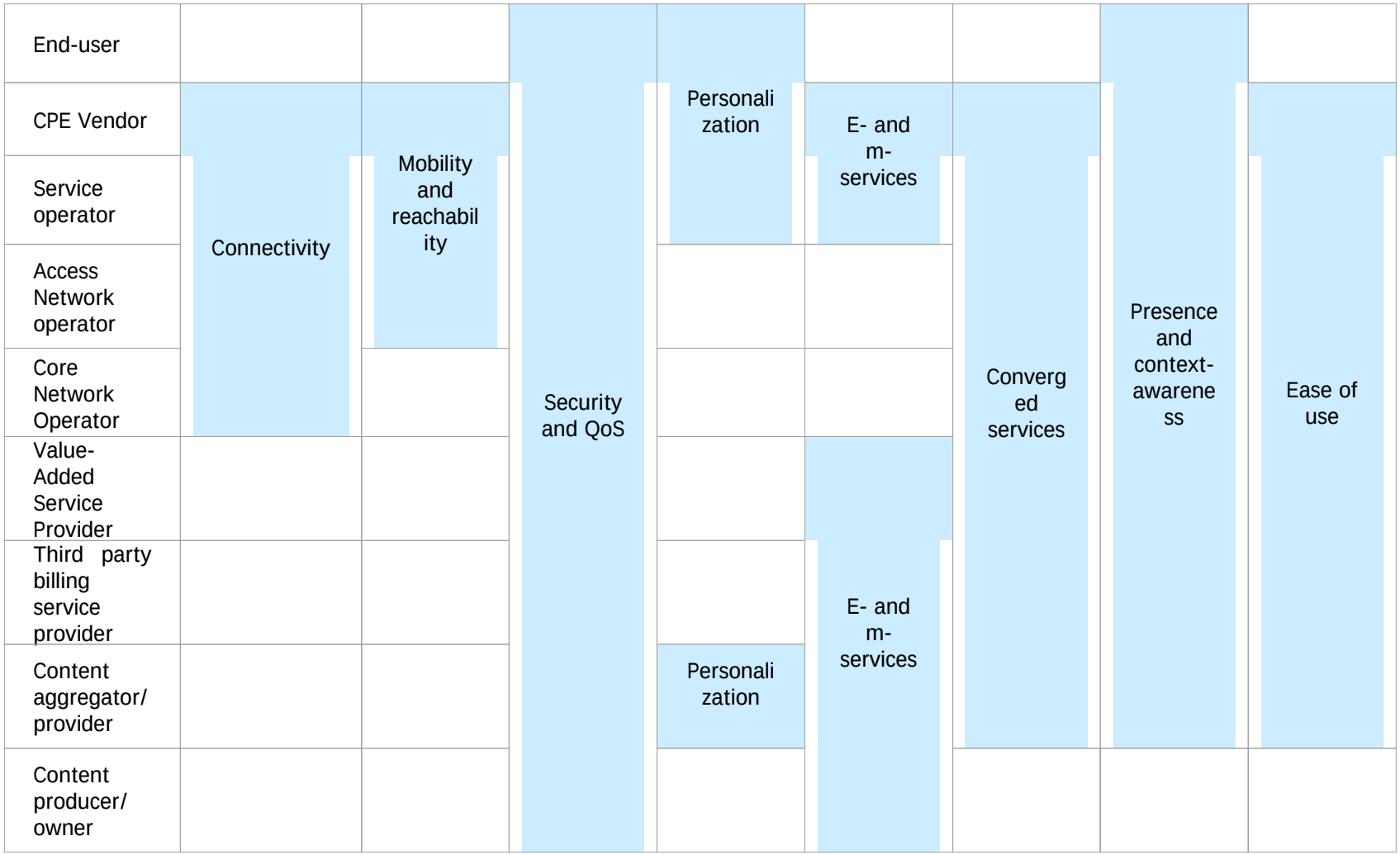


Legend

- Cap = capacity
- CPE = customer equipment
- Mkt = market
- Nwk = network
- Ret = retail
- TPB = 3rd party billing
- VA = value-added
- Whl = wholesale

Source: ECOSYS, 2004

Value Providers



Source: ECOSYS, 2004

Operator Business Changing (1/2)

Driven by Government Intentions

PAST →	FUTURE
Government ownership	Private ownership
Monopolies	Competing oligopolies
Local operators	Global operators
Real operators	Virtual operators
Value chains	Value nets
Long-term focus	Quarterly focus
Static budgets	Rolling budgets

Operator Business Changing (2/2)

Driven by Technology Evolution

PAST →	FUTURE
Dedicated networks	All IP
Dedicated operators	Full-service operators
High margins	Low margins
Wireline	Wireless
Incremental investments	Large investments
Subscriptions	Subscribers
Interconnect agreements	+ Roaming agreements

Market Consolidation

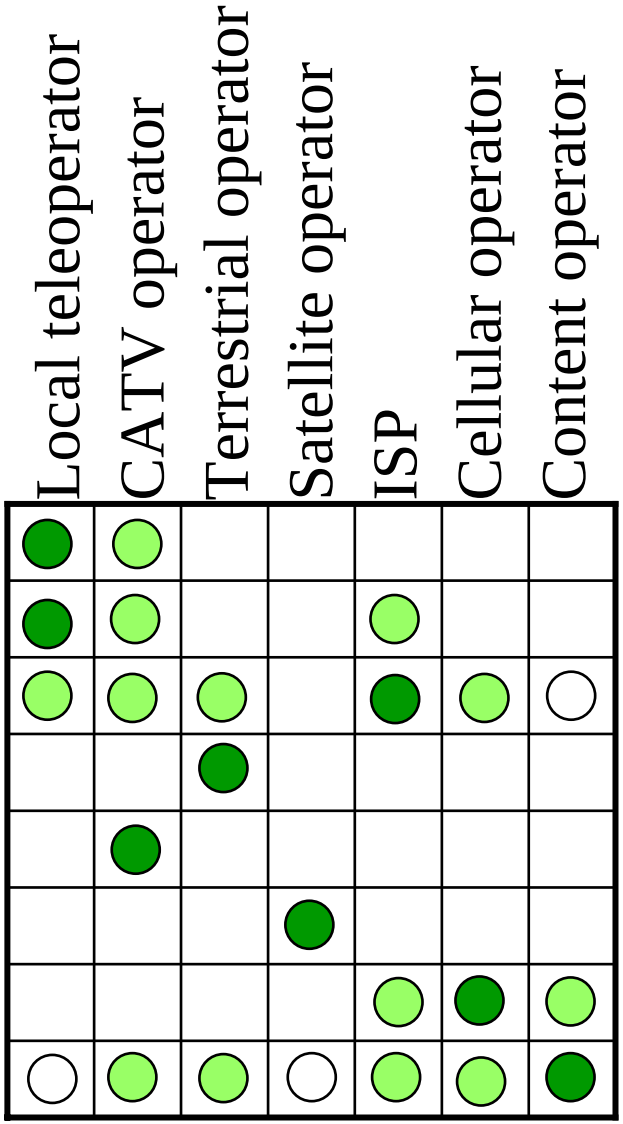
Due to reducing market uncertainty

- Number of network operators likely to reduce globally from thousands to hundreds. Oligopoly likely within each segment: global, regional, national

- Number of network infrastructure system vendors likely to reduce globally creating another set of oligopolies

- Number of consumer device platform providers (desktop and mobile) reducing toward an oligopoly

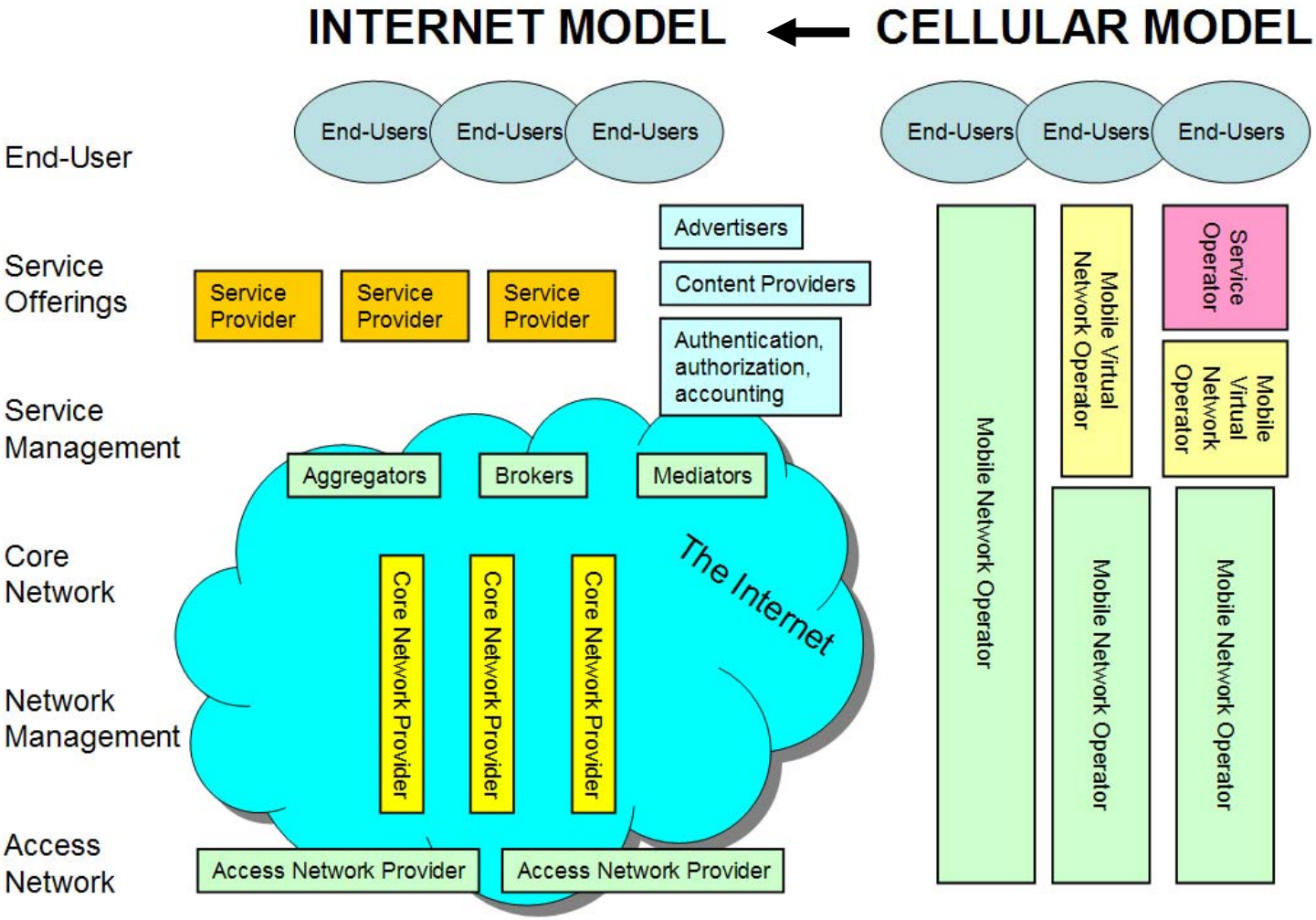
Service Provider Portfolio - Confusion



Legend
- Core business
- Likely expansion
- Possible expansion

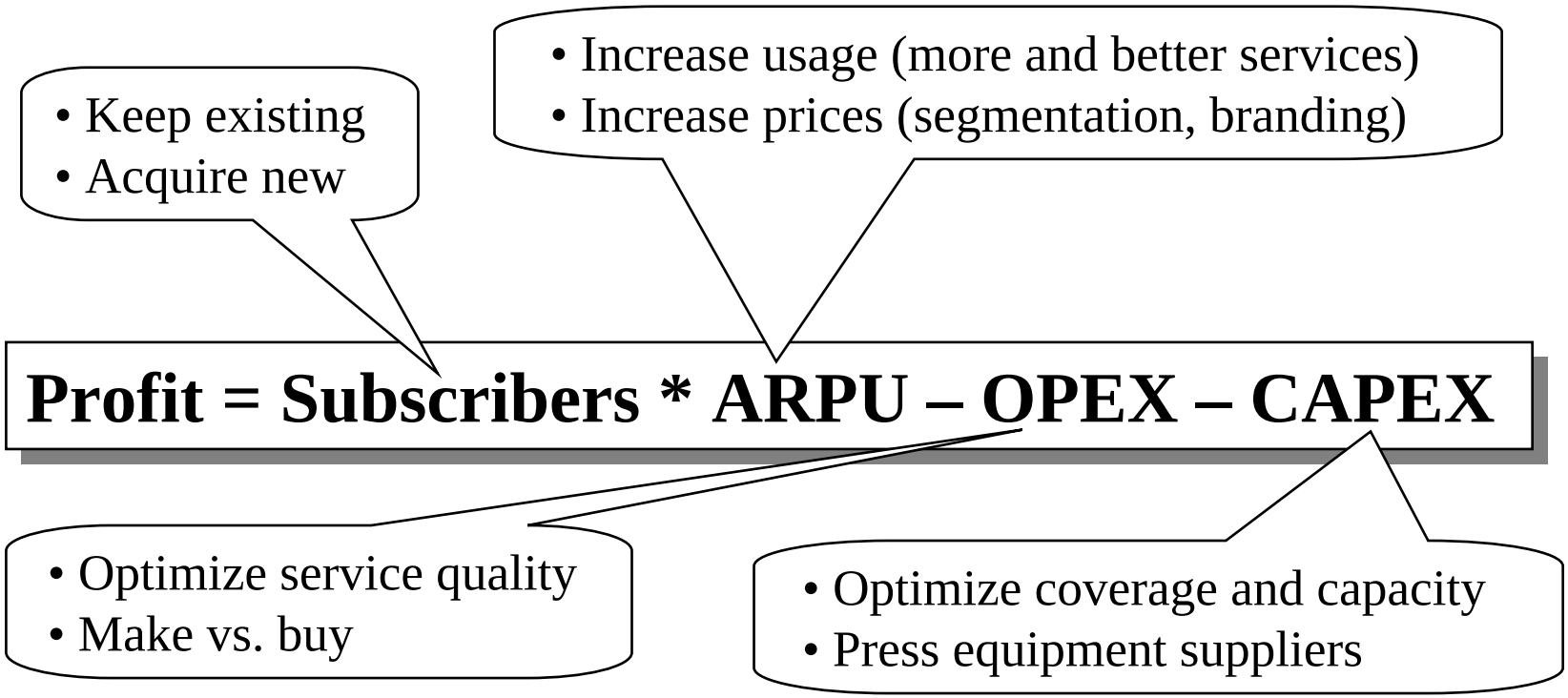
Home telephone service
Broadband Internet access
Value-added Internet services
Terrestrial TV broadcast
Cable TV broadcast
Satellite TV broadcast
Cellular service
Multimedia content

Change in Ecosystem Structure



Source: Verkasalo 2007

Operator's Operational Objective



ARPU = average revenue per user
OPEX = operational expenditure (personnel, marketing, etc)
CAPEX = capital expenditure (equipment, licences, etc)

Financial Figures in Mobile

Case: Elisa Mobile

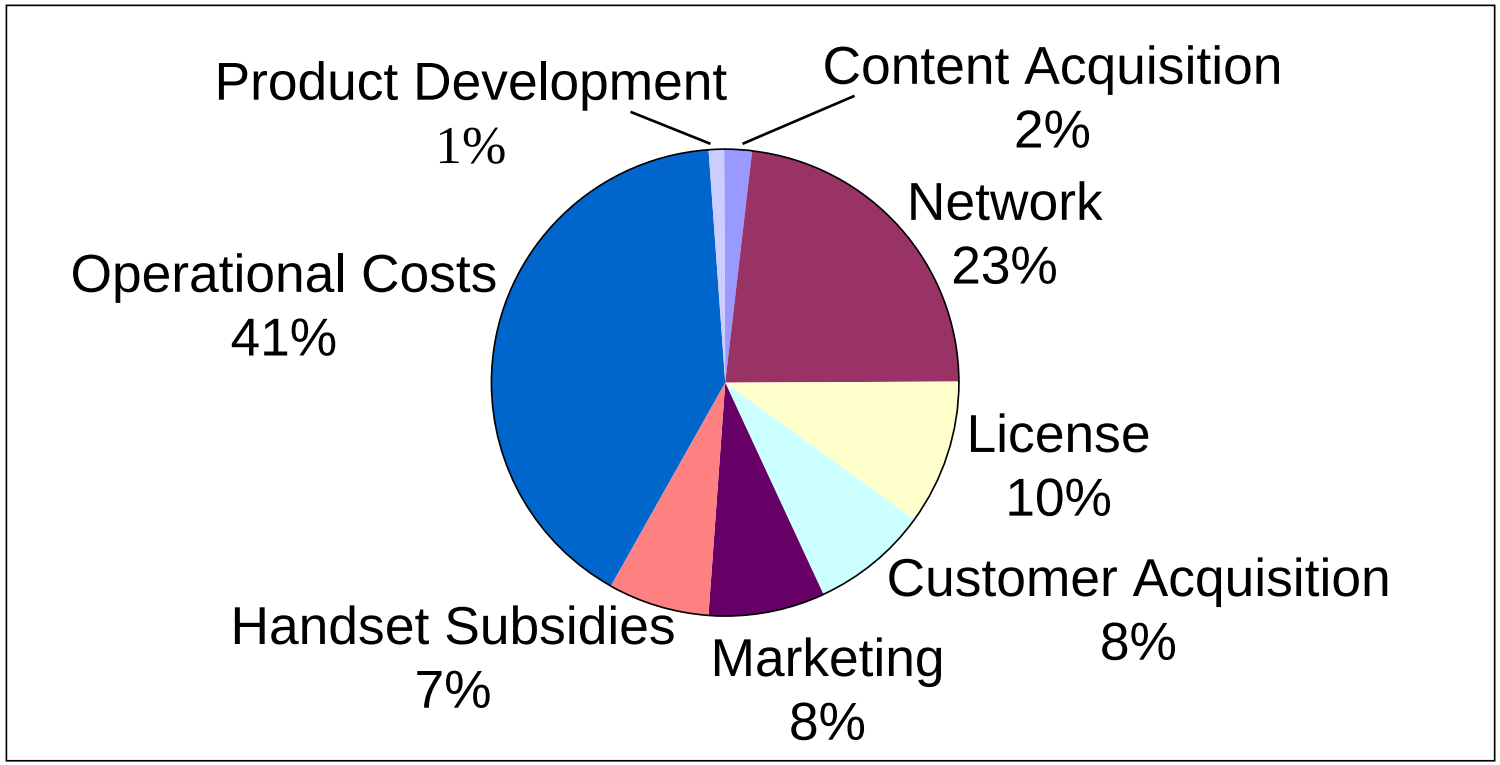
Elisa Mobile's Key Figures

Elisa Mobile's key figures, EURm	Q3/03	Q3/02	%	2002
Revenue	195	188	3 %	739
Clean EBITDA	58	50	-17 %	194
Clean EBITDA-%	30 %	27 %		26 %
Leasing adj. EBITDA	64	57	12 %	229
Leasing adj. EBITDA-%	33 %	31 %		31 %
CAPEX	22	16	42 %	145
CAPEX excl. network buy-backs	19	10	87 %	96
Oper CAPEX / sales	10 %	6 %		13 %
No. of Subscriptions in Finland *	1 374 847	1 301 621	6 %	1 342 417
ARPU, EUR **	42,5	43,0	-1 %	42,2
Churn **	24,2 %	14,0 %		15,7 %
Minutes of use, million *	598	521	15 %	2 087
Minutes of use / subs / month **	151	139	9 %	136
No. of SMS, million *	111	100	11 %	422
No. of SMS / subs / month **	28	27	5 %	27
Value added services / revenue	12 %	13 %		12 %

* Network operator
** Service operator

Mobile Operator Cost Breakdown

Case: 3G in Holland



Source: Delft University of Technology, 2001

General ISP Cost Structure

Examples

	US ISP	Non-US ISP	Non-US Transit ISP
Customer support and marketing	50%	20%	10%
Access infrastructure	20%	10%	5%
Backbone network	30%	10%	23%
Upstream ISP		60%	2%
International circuit leases			60%

- Cost structure depends on the location and strategy of ISP
- Special position of US ISPs is gradually disappearing

Source: Huston G, 1999 (mod)

Cost Structure for ISP Traffic

Case: European ISP

Traffic Type	Unit cost (c/MB)	Traffic (%)	Cost component
Upstream international ISP	5c	60%	3c
International peers	2c	8%	0.16c
Domestic trunks	0.3c	5%	0.015c
Cached	0.8c	20%	0.16c
Local traffic	0.05c	7%	0.003c

- Assuming peak load at 90% of capacity implies an average load of 35-55%
- Traffic distribution between traffic types is highly ISP-specific
- Price erosion on unit cost (c/MB) is fast

Source: Huston G, 1999 (mod)

Market Value per Service

Case: US service providers' annual revenues, 2003

Total telecom	$300B
Cellular	80
Internet	35
dedicated access	15
residential dial	10
residential broadband	10

Value is still in voice!

Service Value per Sub & Megabyte

Case: US in 2003

Service	Typical monthly bill	Revenue per MB
Cable	$40	$0.00012
Broadband Internet	50	0.025
Phone	70	0.08
Dial Internet	20	0.33
Cell phone	50	3.50
SMS		3000.00

Volume and value only weakly related !

There are still unexploited opportunities in voice, especially in 3G (with differentiated voice quality levels, etc.). The success of Nextel's push-to-talk should not have been a surprise (nor SMS).

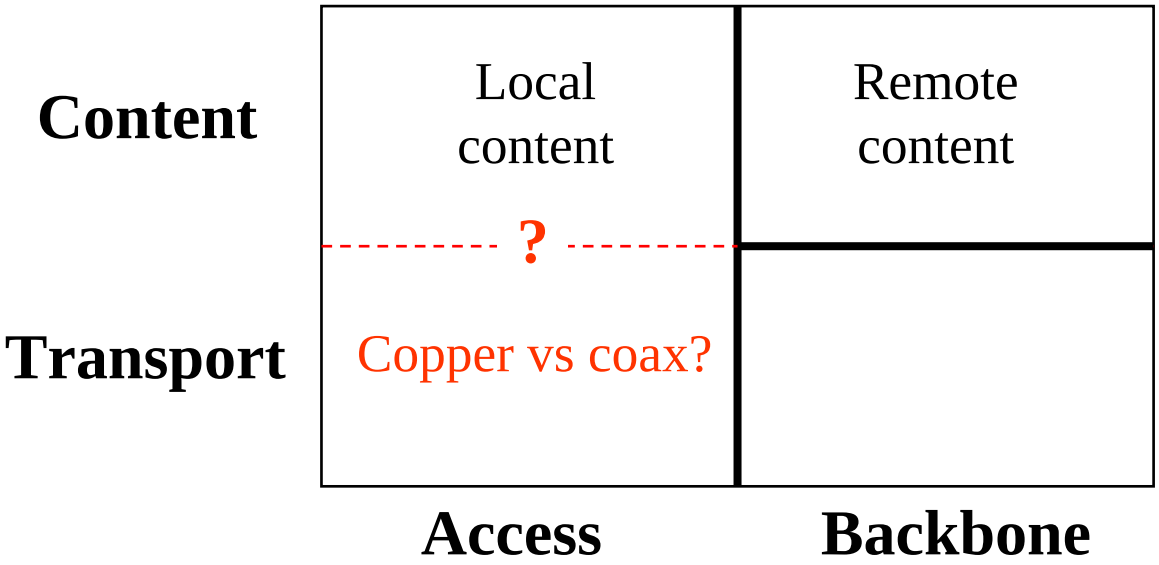
How do New Service Businesses Evolve?

”Maslow hierarchy” of needs for mobile services

1. Coverage
2. Capacity
3. Quality
4. Features

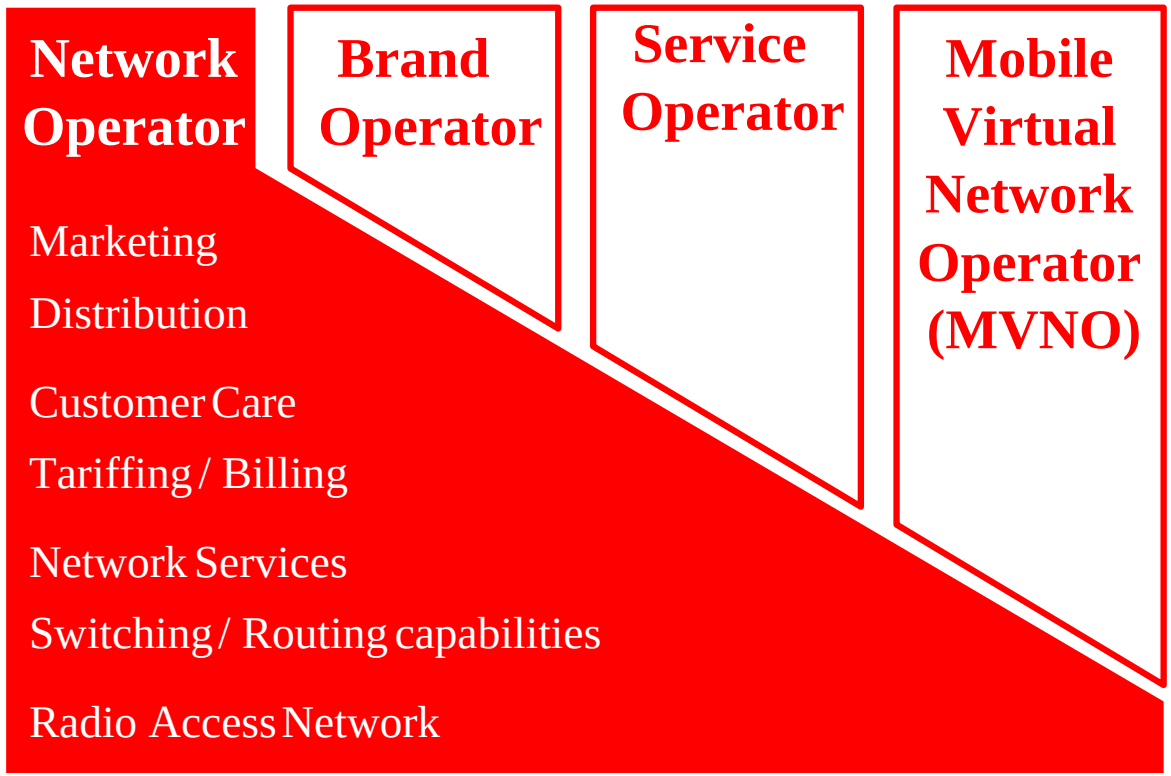
This guideline characterizes the evolution of both Internet and cellular services

Basic Market Segments



- Access (=retail) and backbone (=wholesale) operators getting separated
- Access operators keep converging, but regulator fights monopolies
- Remote content is a separate market, but needs micropayment mechanisms
- Mobile access operators still bundle and charge for local content

Types of Mobile Operators



- Regulation and competition generate derivatives in the mobile markets
- Virtual market is likely to exceed the fundaments/MNO market !

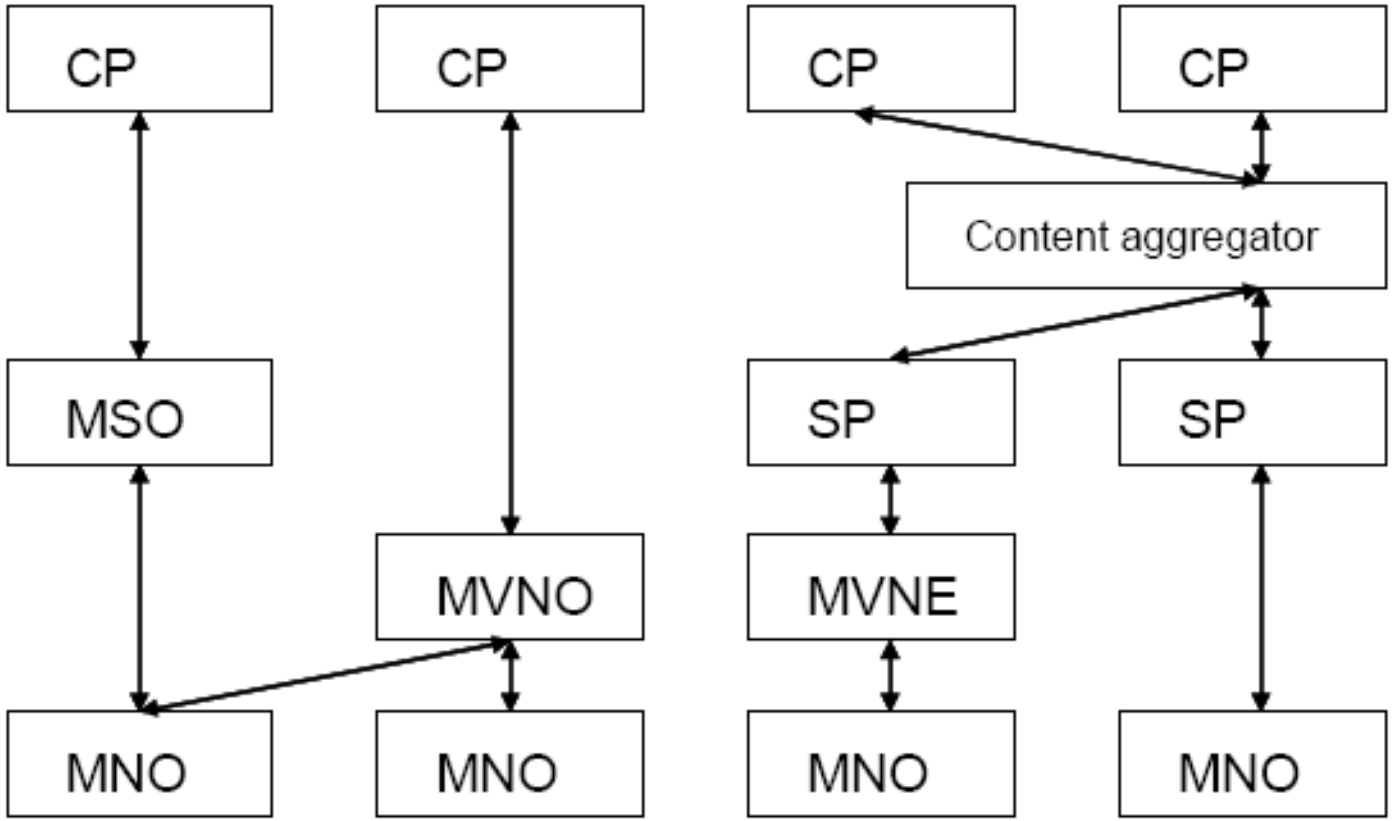
Source: Smura/Marjalaakso, 2003 (modified)

Finland October 2006

MNO	MSO	MVNO	SP	Brand operator
Sonera Mobile Networks	TeliaSonera		Tele Finland Globetel CDF Mobile Aina	
Elisa	Elisa	Saunalahti[10]	Cubio Kolumbus TDC Song Fujitsu Services	Hesburger
Dna Verkot	DNA Finland	Aina	Fujitsu Services GoMobile Wireless Maingate Setera	

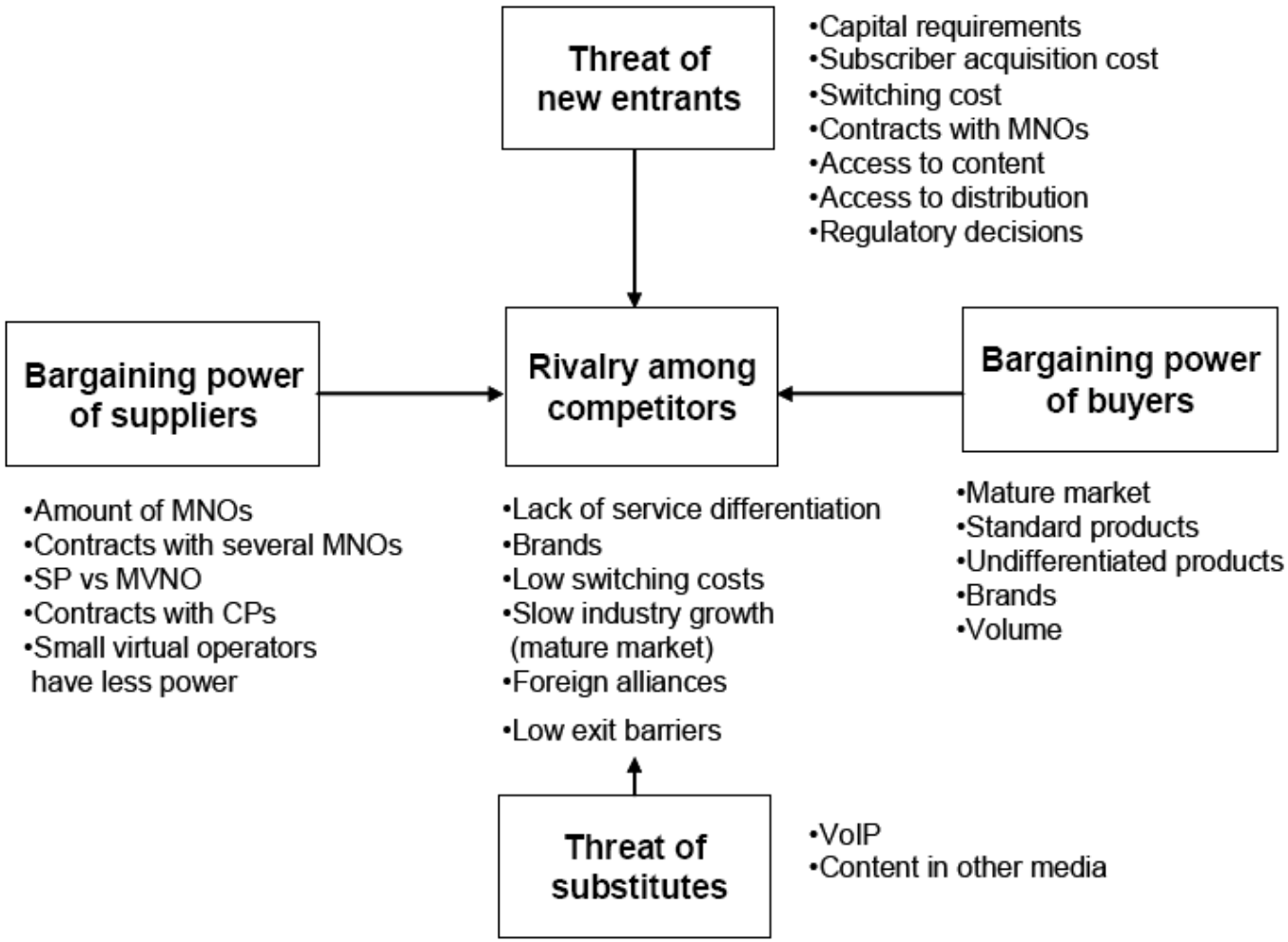
Source: Kiiski 2007

Operating Logic of Operators



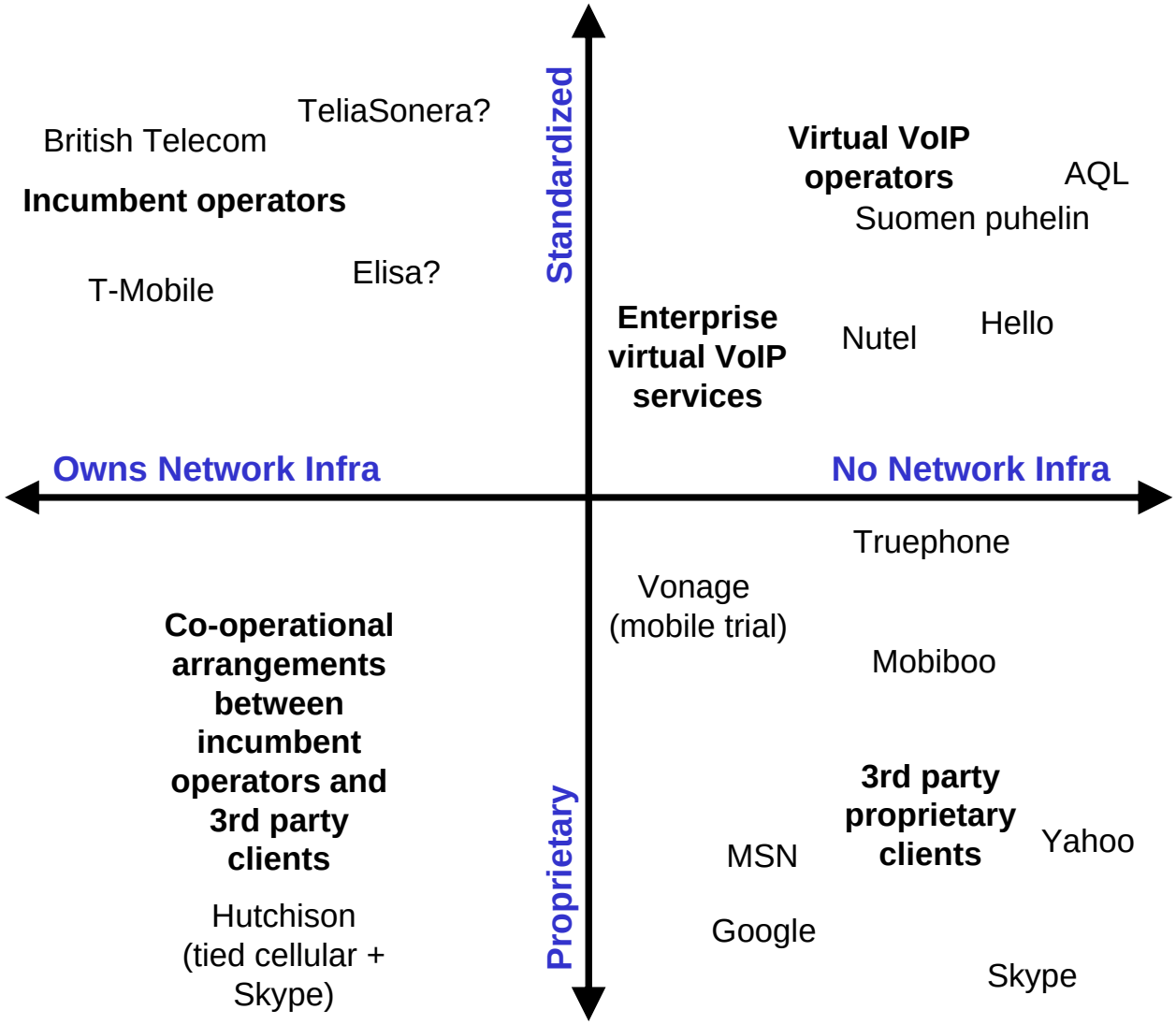
Source: Kiiski 2007

Market Analysis



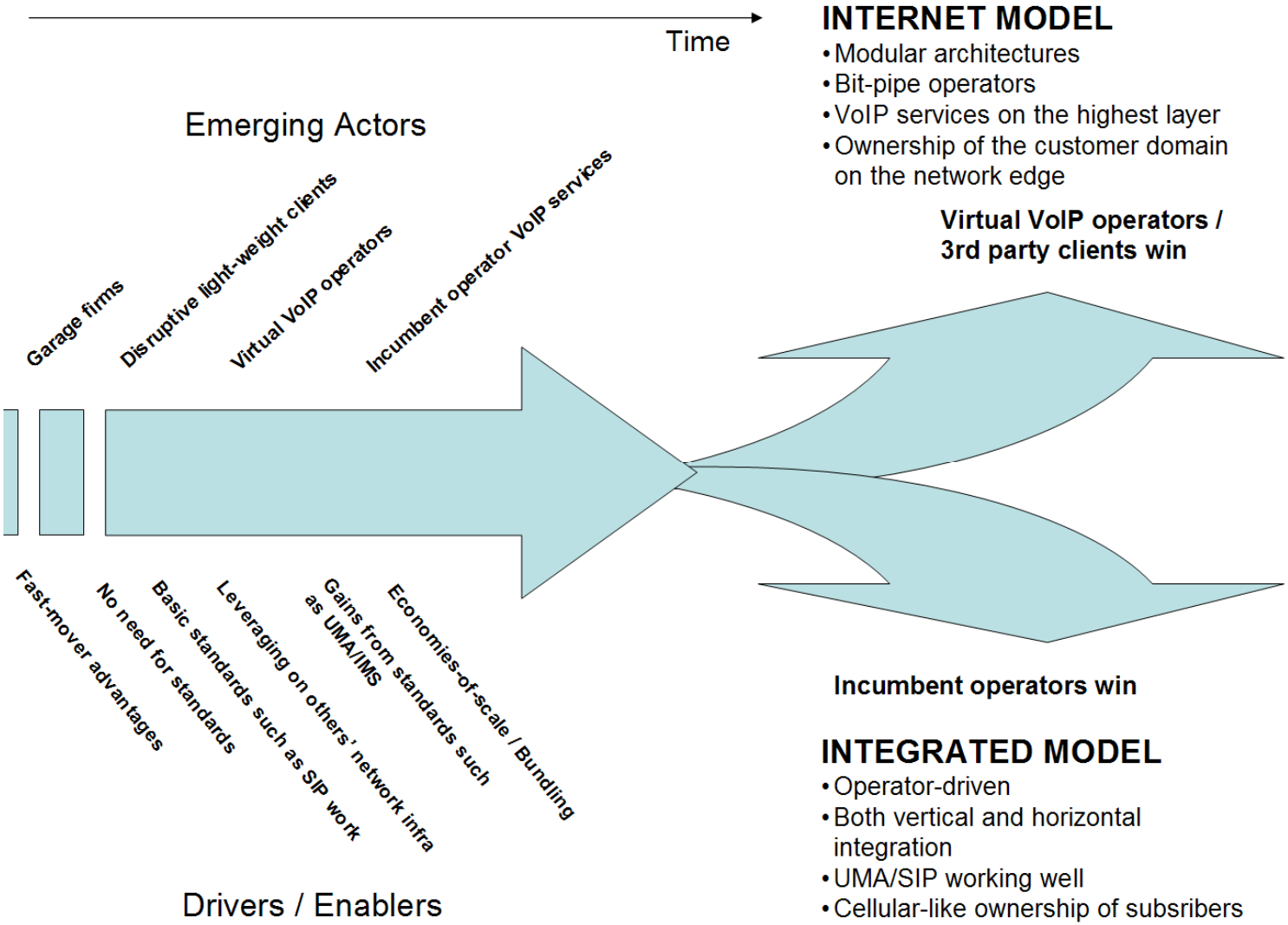
Source: Kiiski 2007

Case: Classification of MobileVoIP Actors



Source: Verkasalo 2007

Mobile VoIP Evolution in the Future?



INTERNET MODEL

- Modular architectures
- Bit-pipe operators
- VoIP services on the highest layer
- Ownership of the customer domain on the network edge

Virtual VoIP operators / 3rd party clients win

Incumbent operators win

INTEGRATED MODEL

- Operator-driven
- Both vertical and horizontal integration
- UMA/SIP working well
- Cellular-like ownership of subsribers

Source: Verkasalo 2007

Mobile VoIP SWOT Analysis

INCUMBENT OPERATORS

Strengths	Weaknesses
- Ownership of network infrastructure - Experience in the roaming etc. interoperability arrangements	- Time lag due to standardization and evolution of IMS kind of platforms - Size, slowness
Opportunities	**Threats**
- Bundling of cellular and fixed - Seamless interoperability and combination of cellular and WLAN	- Emergence of an Internet model - Challenger actors (virtual operators and 3rd party client providers)

Source: Verkasalo 2007

Mobile VoIP SWOT Analysis

VIRTUAL VoIP OPERATORS

Strengths	Weaknesses
- Fast ramp-up based on (open/closed) IP networks - Focus on VoIP services	- Lack of vertical integration - Small size and negotiation power
Opportunities	**Threats**
- Innovative business logic - Leveraging on the Internet model and established standards such as SIP and available hardware (e.g. Nokia E-series) - Acquisition by bigger operators?	- Emergence of a strongly operator-centric model - Bigger operators and hostile strategies - Large Internet companies and 3rd party light-weight VoIP clients

Source: Verkasalo 2007

Mobile VoIP SWOT Analysis

3RD PARTY PROPRIETARY CLIENTS

Strengths	Weaknesses
- Fast ramp-up - Proprietary solution - Existing user domain in the Internet - Levers on the Internet model	- No network infra - Interoperability issues to other Internet services and PSTN/cellular networks - No vertical integration
Opportunities	**Threats**
- Integration of various other value-added services on the application layer - Innovative potential / challenger benefits	- Emergence of a vertically integrated business model - Value-destroying competition

Source: Verkasalo 2007