

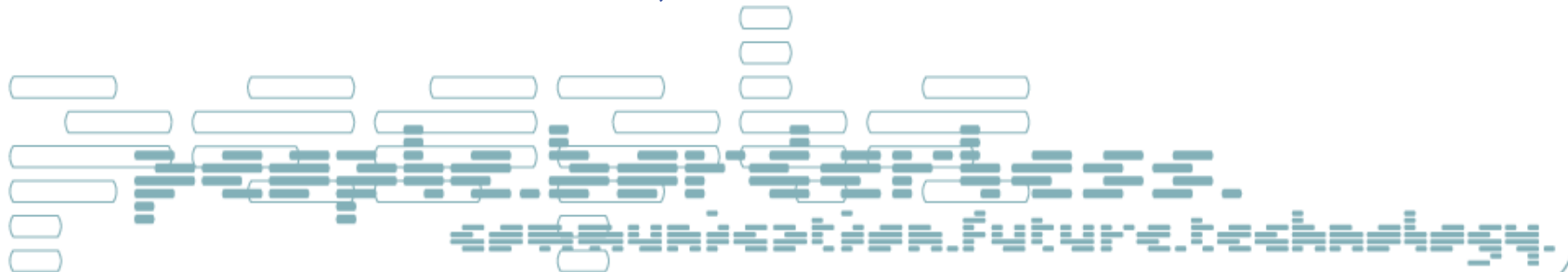


Services and Applications in Wireless Broadband Networks

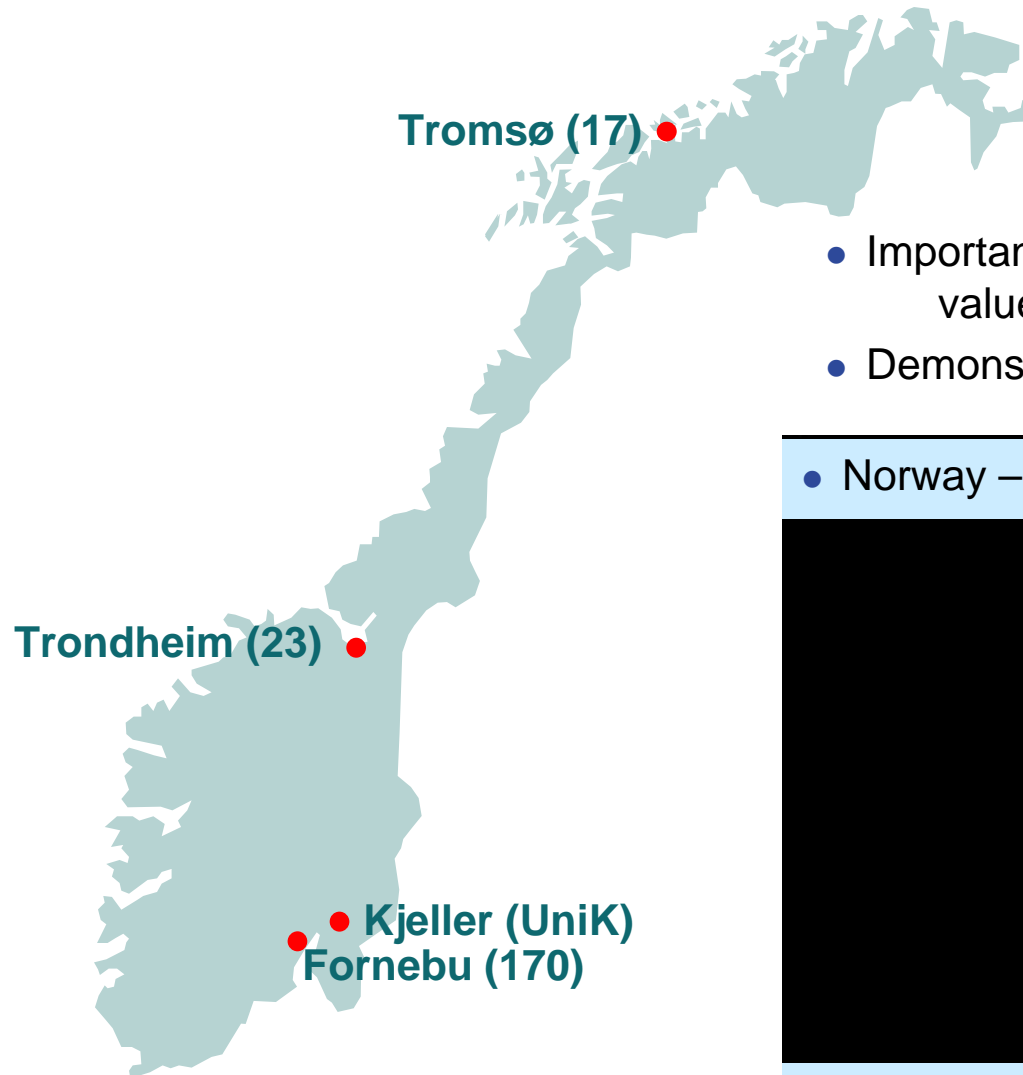
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Telenor R&D & UniK



- Important contributor to innovation and value creation in Telenor
- Demonstrating: “Ideas that simplify

- Norway – what happened?

- International: NO, SE, DK, Hungary, Austria, Montenegro, Malaysia, Ukraina, Bangladesh, Thailand, Russland

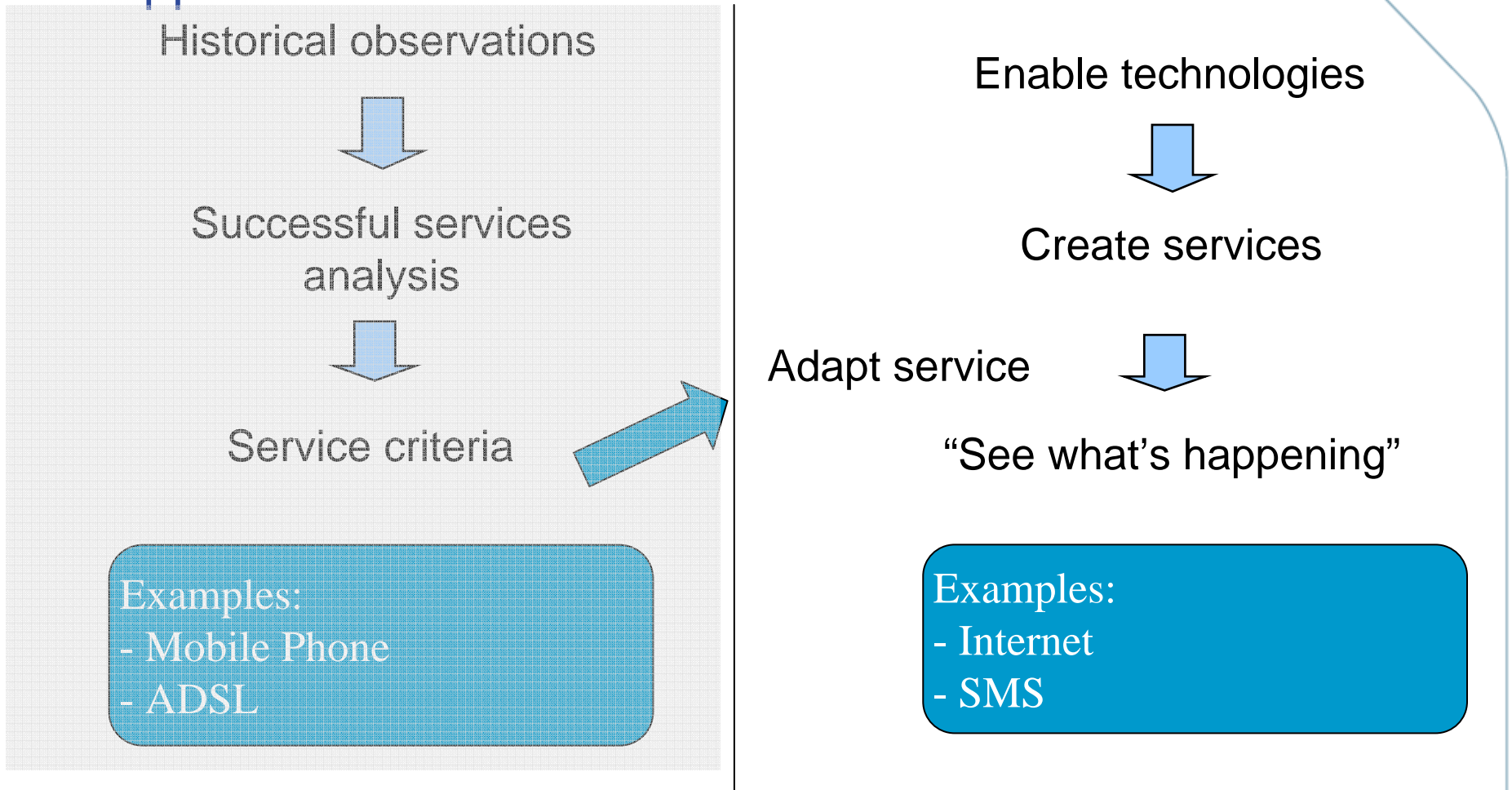
Outline



- “Historical view” on services
- Success criteria for services
- Service areas for broadband services
- What’s coming next?

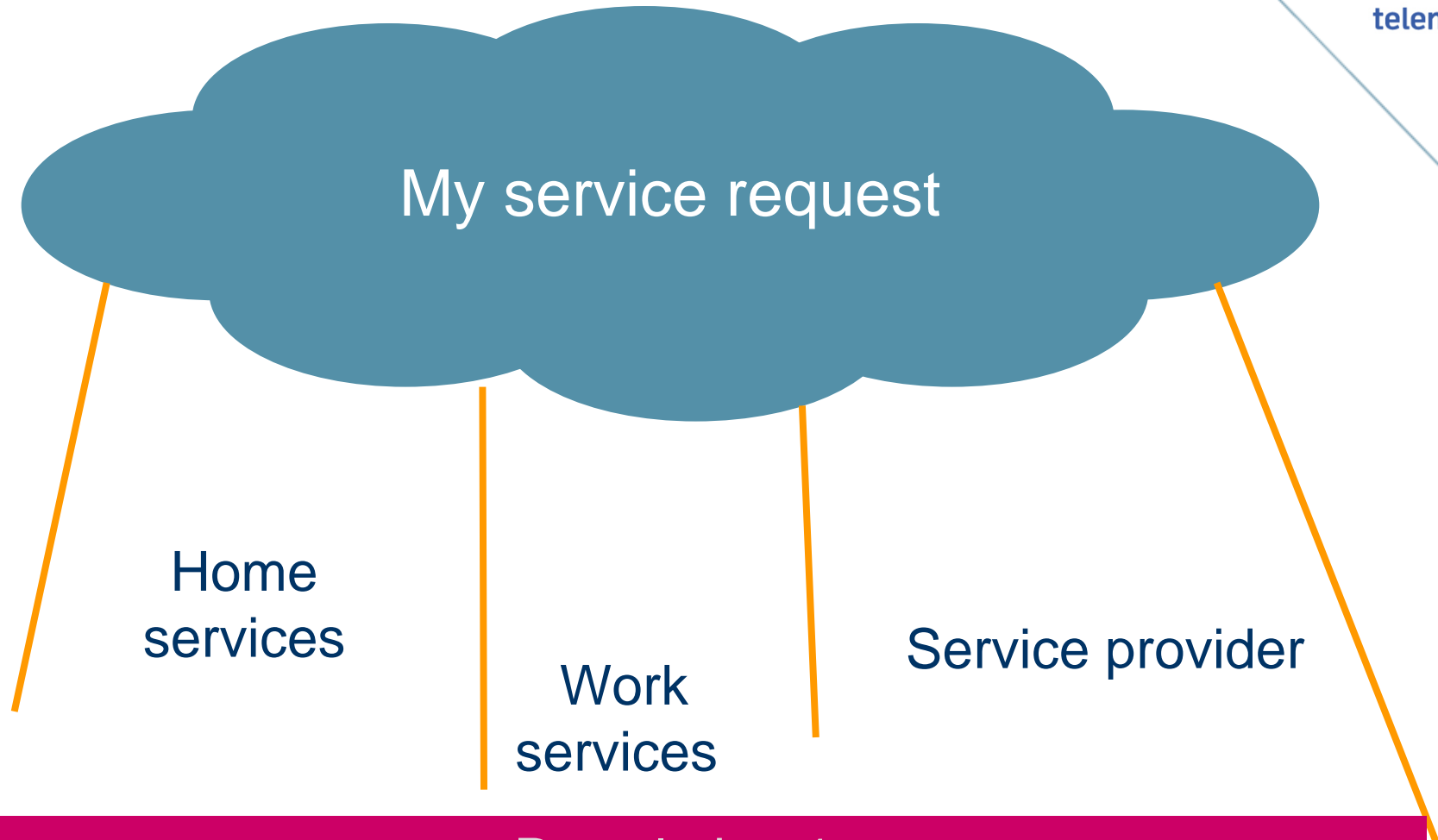
How to achieve successful services?

Approach



Key components of successful services:
Personalisation (Mobile Phone/SMS), Roaming agreement
(GSM/GPRS vs. WLAN), Seamless service access

Usage scenarios for wireless services

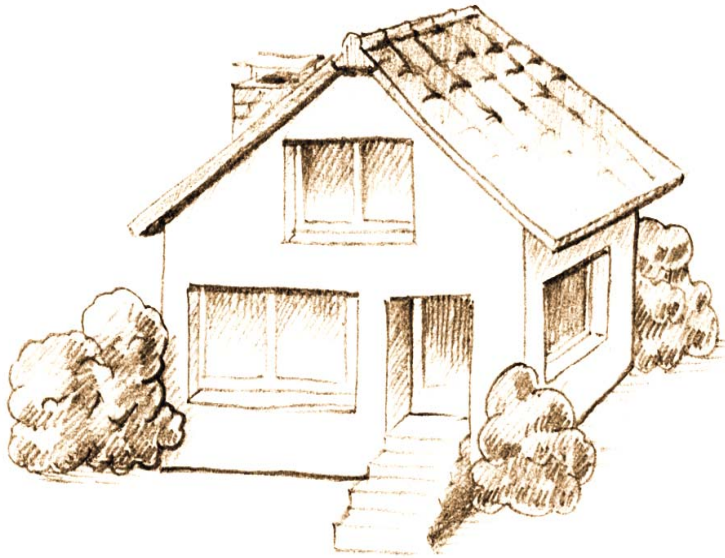


Postulation 1:

Nomadic services are 80 % "home services", 18 % service provider and 2 % work services

→ Forget all work/mobile applications on the wireless access

Public “home services”



- Home Automation, remote control
- Health - Care
- Security, Surveillance, Access control,
- Appliance management
- Energy savings
- Fast Internet Access,
- My content distribution

- My “virtual” home/”elsewhere”
 - at home
 - at a friends place
 - in a hotel
 - at a leisure place
- The push for broadband and MM
 - service creation from communities
 - for communities
 - from grandchildren to grandma

- Service provider services (18 %):
 - Games-on-line, e-learning
 - VoD, News on Demand, Music On Demand
- Work services (2 %):
 - Videoconferencing, videotelephony
 - Email, Intranet access

Mobile Services Beyond Voice

copyright: Erik Larsen, Ericsson [Telekomdagene 1998]



The UMTS hype

- Sports
- Address book
- News
- Media conversion
- Unified messaging
 - E-mail
- Voice mail
- Time tables
 - Workgroup coordination
- Payments
 - Banking
 - Account inquiries



- Traffic reports
- Stock quotes
 - Positioning
 - Dispatch
 - Fax
 - Gambling
- Tickets
- Calendar
- Notification
- File transfer
- Internet access
- Weather reports

Most of anticipated UMTS services are Home Services



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- Address book
- News
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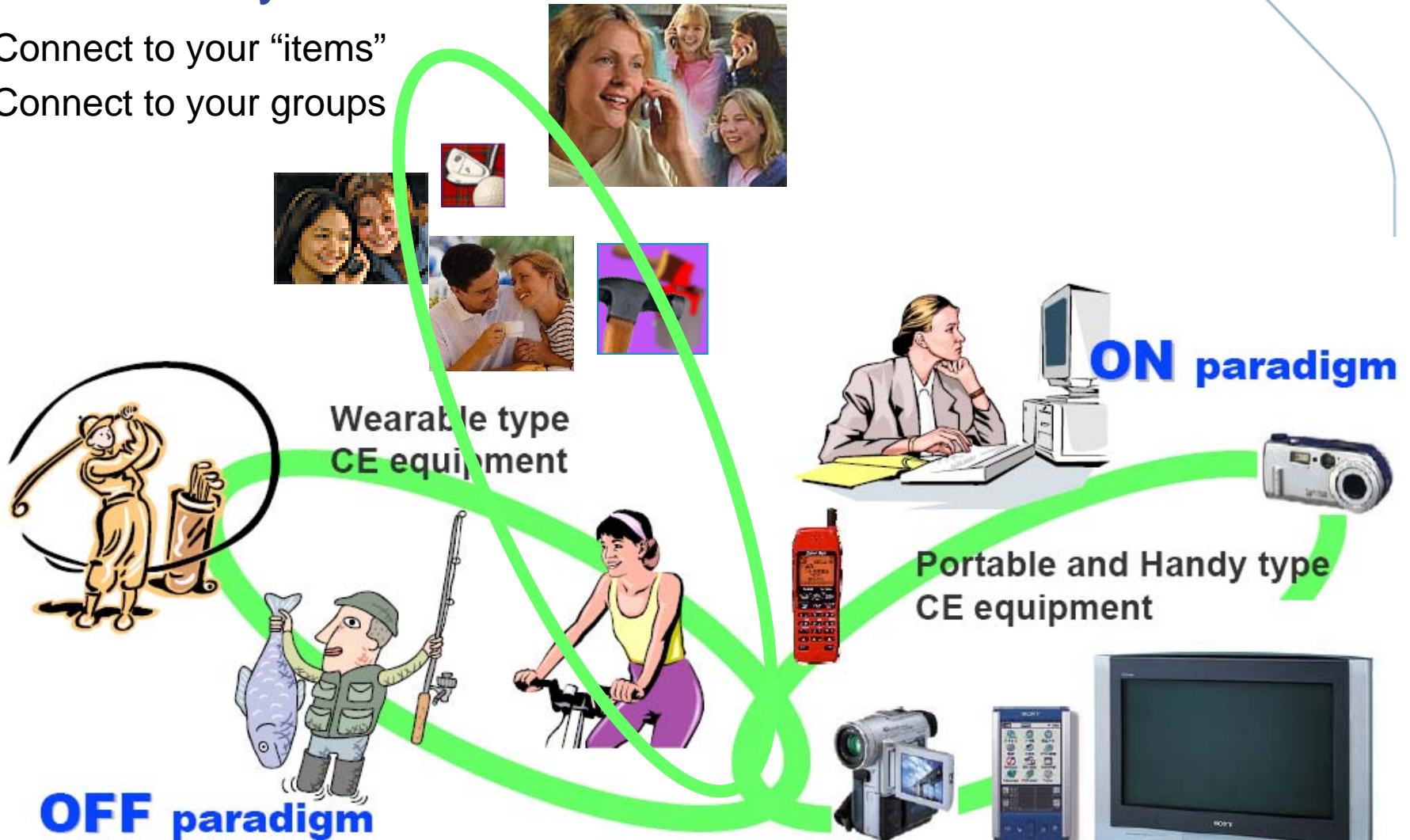
Postulation 2:
Mobile and Wireless have (mainly) complementary services

“Home” wireless services – social drivers

- On-demand: Video, Audio, Games
- Always online – social connectivity
- Social Inclusion: Network opens for enriched communication
- Personal Enrichment: Virtual interest groups
- My home portal - centre for communication & home control
- User are aware of potential services (or should be made aware)
 - “How to?” limits service adoption

Social trends: Relate yourself to your community

- Connect to your “items”
- Connect to your groups



Postulate 3:

The operators are natural partners to provide communication to items and groups.

Customer expectations & Operator constraints



Customer expectations

- Works first time and for ever
 - Like a phone
 - Unlike a PC
- Easy
 - ~~Plug & Play~~
- Competitive pricing

Operator guidelines

- Help the customer to the very end (it shall work)
- It shall make money
 - Limit support to selected configurations
 - As little help from customer service as necessary

“Are our assumptions true?”

P1401 early adaptor questionnaire

- P1401 home network survey gathered 134 responses
- Target group: 7 European countries, typically: Telcos' employees and their families (DINK, professional family)
- Infrastructure & services:
 - 78 % have two or more PCs, 58 % have two or more TVs
 - 63 % have data network (80 % of them wireless)
 - 79 % use net-banking
- Identified challenges,
 - 78 % would like to move contents among PC, TV, stereo
 - **39 % like to experiment**
 - 10 % identified connectivity problems
 - 45 % not sure what to select and how to set-up a home network

ePerSpace Specific Objectives

- Ease of use on-line services
 - Network centric future has to support **everybody**
- Transparency of the network towards service access
 - Variety of access, simple service access through existing networks
- Enabling tools for communities and self content creation
 - Communities of interest, independent of area
- Dynamic adaptation of services towards different devices
 - Multimedia creation and usage on my devices
- Networking the personal devices (local, remote, pervasive computing)
 - Distributed terminal, multimodal input/output

Home Services Areas (P1401)

Entertainment On-Demand

VoD, News, Music
Fast Internet

Social Inclusion Health - Care

“Take part” in life
Positive monitoring
Heart rate, EKG

Personal Enrichment

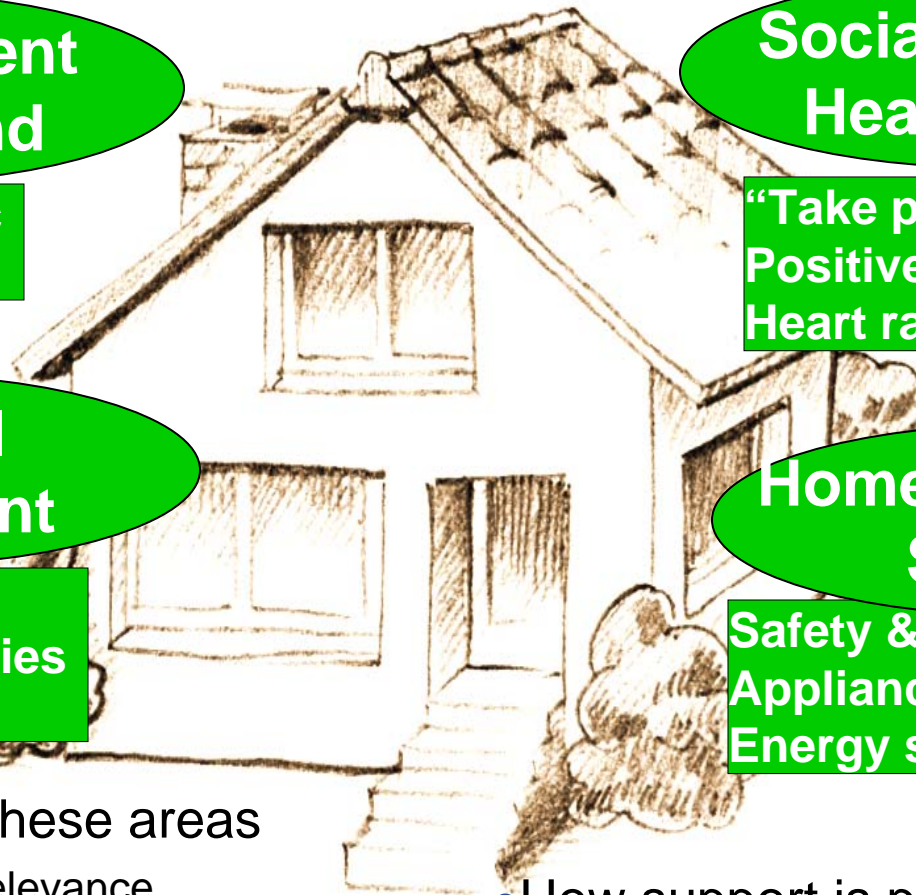
eLearning
Virtual communities
eGaming

Home Automation Security

Safety & Security
Appliance management
Energy savings

- User needs in these areas
 - Mass market relevance
“It shall make money”
 - Help customer up to the very end ‘it will work’

- How support is provided?
 - Telecom: “Works first time and forever”
 - Connectivity support
 - Service support



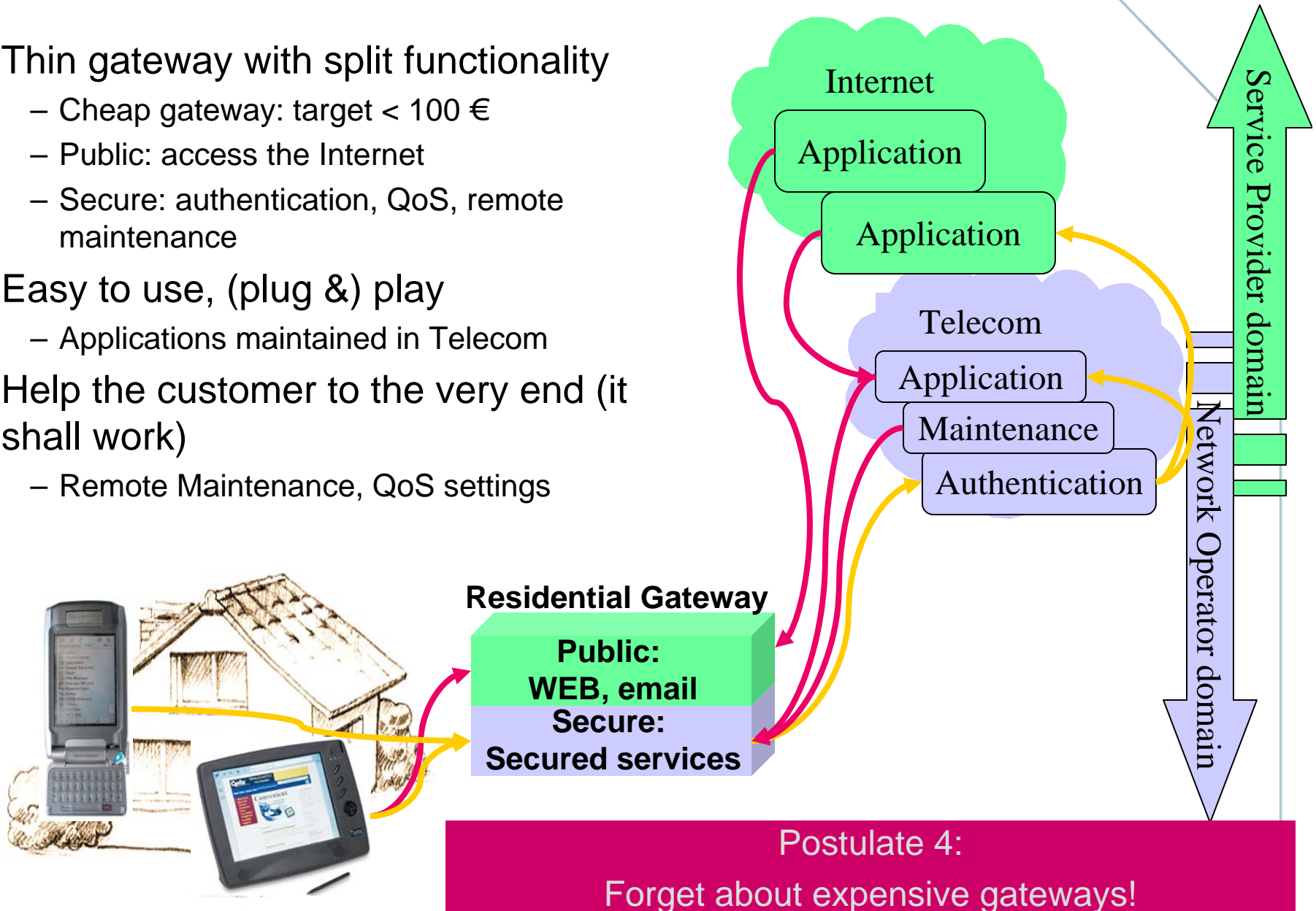
Potential Market Strategy

Summary

- Identify most promising services in the selected areas:
 - Social Inclusion/eCare
 - Entertainment
 - Personal Enrichment/eLearning
 - Home Automation
- Identify customer needs
 - Where to help
 - How to help
- Identify infrastructure, focus on
 - Provide service to customer
 - Common infrastructure (as much as possible)
 - Open for new services
 - Remote maintenance

Infrastructure for home services

- Thin gateway with split functionality
 - Cheap gateway: target < 100 €
 - Public: access the Internet
 - Secure: authentication, QoS, remote maintenance
- Easy to use, (plug &) play
 - Applications maintained in Telecom
- Help the customer to the very end (it shall work)
 - Remote Maintenance, QoS settings



Service Identification in Entertainment

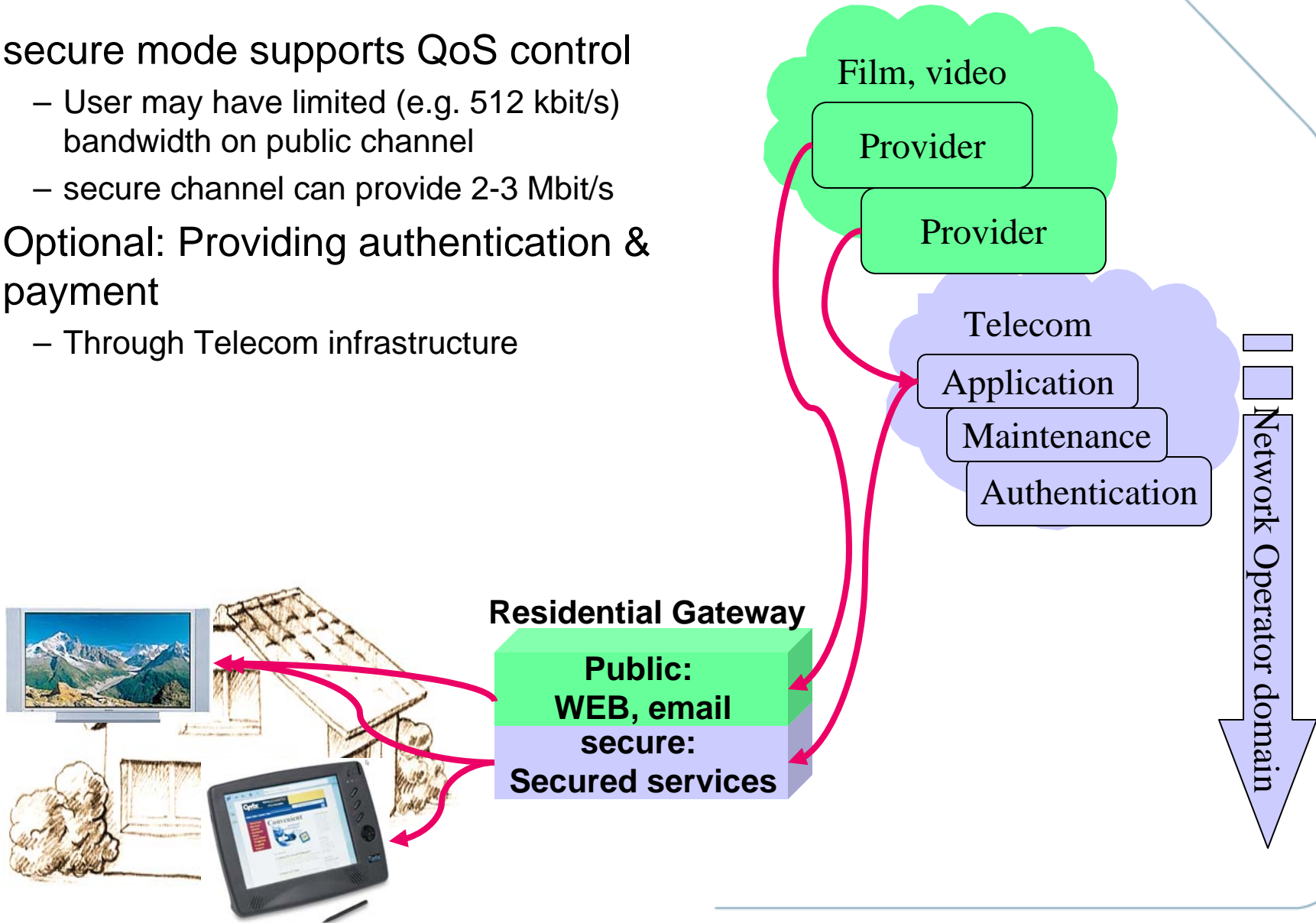


Service Scenarios:

- Video on Demand (VoD), music/games on demand
 - “Killer application on TV is TV”
 - Ensure that video can be enjoyed on the TV
 - A) Set-top box to stream VoD to TV
 - B) PC and mediacenter for streaming from PC to TV
- Access to home content
 - “My pictures/music/video stays at home”
 - “I want to access my content wherever I am”
 - Need to have one storage place from all home devices
 - Network storage unit attached to gateway/home network

Infrastructure “Video on Demand”

- secure mode supports QoS control
 - User may have limited (e.g. 512 kbit/s) bandwidth on public channel
 - secure channel can provide 2-3 Mbit/s
- Optional: Providing authentication & payment
 - Through Telecom infrastructure

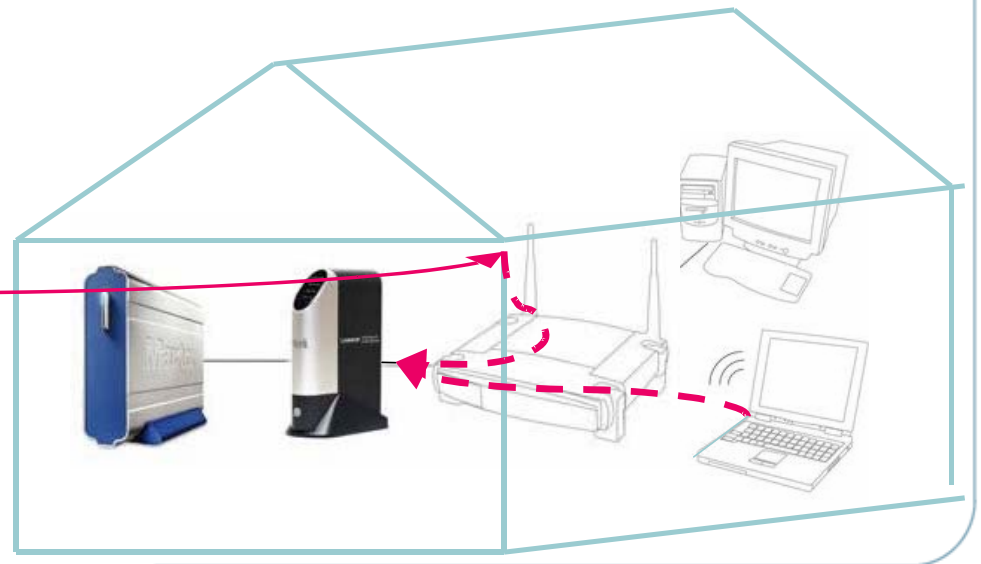


Example: Network Storage Device

Linksys NSLU2

Small (size of smartpone) Linux PC

- 2 W standby power
- Connections to USB disks
- Reasonable price (100 €)
- Supports access from outside
 - Access from outside into the home: email, web, iTunes, pictures
 - Dedicated users
- External storage for all my PCs
 - Link in as network disks
 - Dedicated disk space for each user
 - Connection speed: typical 700 kbit/s



Service Identification in Social Inclusion/eCare



Service Scenarios:

- Sending pictures/video from mobile to home TV
 - Grandchildren includes grandparents in their life by sending mobile phone messages to dedicated channel “on home TV”
 - Video streaming from events (soccer, church) to home
- Support at home after hospital visit
 - Patient comes home after hospital visit
 - Wireless surveillance equipment collects data and sends to parents & hospital
- Elderly e-Care
 - Old people stays home with remote professional assistance, instead going to a Day Centre.
 - Video-telephony service to the Service Centre or to other client, associated to diary routine medical measurements, remembers to take the medical drugs, an wireless emergency alarm (optional).

Service Identification in Personal Enrichment



Service Scenarios:

- Dancing lessons at home
 - Most people want to learn something new
 - Prefer first steps in an anonymous environment (don't want to get blamed)
 - Searching for friends with similar interest
- Hardware store, enhancing the business
 - Selling “do it yourself” articles is one thing, providing support more complicate
 - Example: Hardware store to supply goods and online support



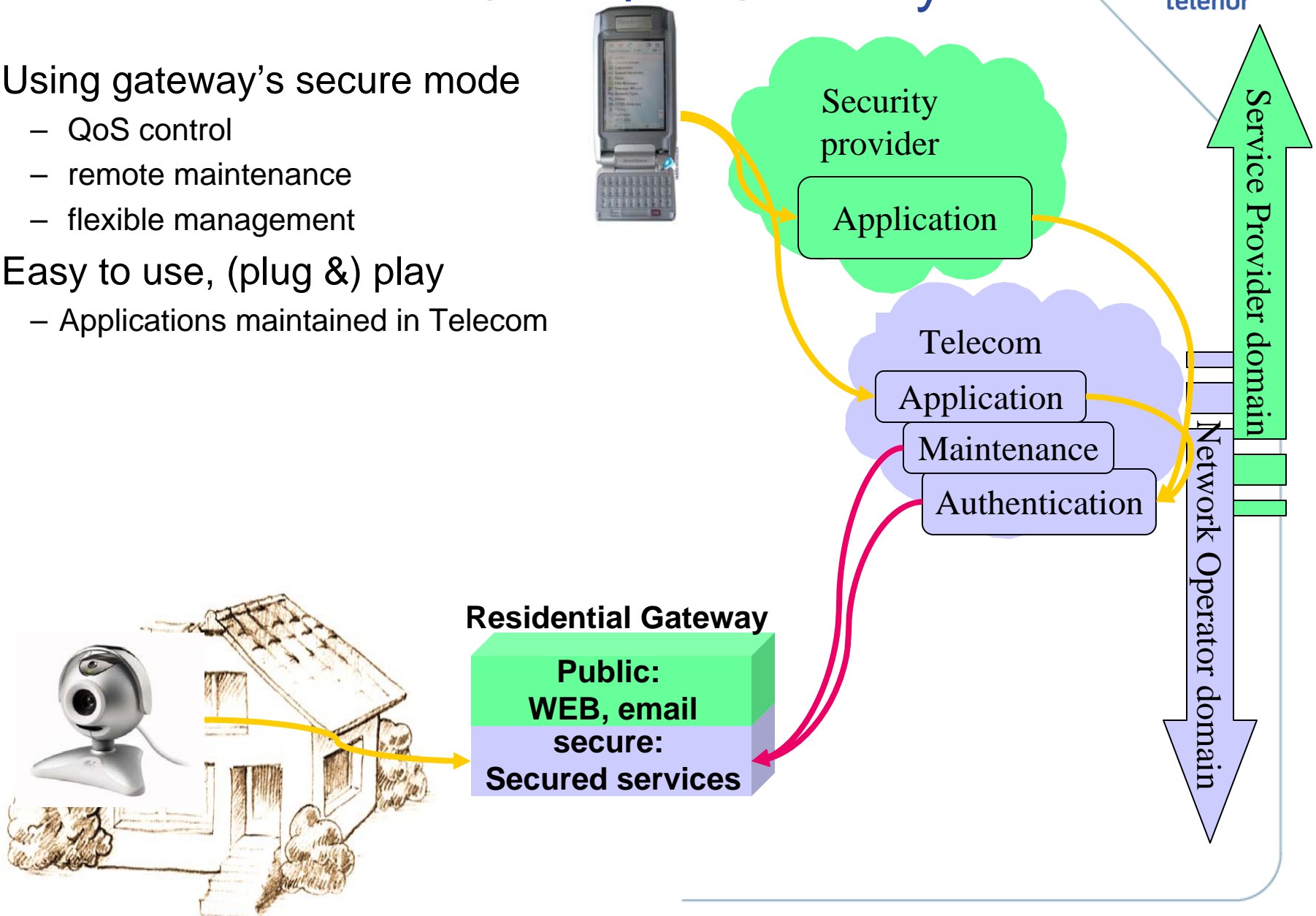
Service Identification in Home Automation/Security

Service Scenarios:

- Security surveillance of the home
 - Closed systems existing already today. Function with little customer interaction.
 - Customer wants to see “what is going on”. First interaction to mobile phone
 - Includes “baby watch” functionality
- Home automation
 - might become interesting in the social context: “What is my mother doing” and energy saving. Currently market for early adapters.
- Remote Access to home content
 - “My pictures at home” – already handled in (E) scenario

Infrastructure for Safety & Security

- Using gateway's secure mode
 - QoS control
 - remote maintenance
 - flexible management
- Easy to use, (plug &) play
 - Applications maintained in Telecom



Conclusion

- Successful home services are achieved when we address the mass-market in terms of:
 - Works first time and forever
 - Easy, (Plug &) Play
 - Cost/benefit
- Operator:
 - Help the customer to the very end (it shall work)
 - It shall make money: selected configurations, “no” customer support necessary
 - Clear business strategy

Users services



- Sending picture & support at home
- VoD & remote access to “my content”
- Personal enrichment, examples: DIY shop with support, dancing
- Safety & Security

- Thin gateway with split functionality

- Cheap gateway: target < 100 €
- Public: access the Internet
- secure: authentication, QoS, remote maintenance

Residential Gateway



Welcome to discuss

Conclusions and Postulates

- Service conclusions in S,E,P,H areas
- Key parameters: Personalisation, Roaming agreement, Seamless service access
- Postulate 1:
Forget all work/mobile applications on the wireless access
- Postulate 2:
Mobile and Wireless have (mainly) complementary services
- Postulate 3:
The operators are natural partners to provide communication to items and groups.
- Postulate 4:
Forget about expensive gateways!
(Functionality in the network, not in the RG)
- What's next: Seamless access of all terminals; Personalisation; Adaptation of services and content.