World Summit Geneva 2003 Tunis 2005
on the Information Society
Turning targets into action

Broadband Applications for Tomorrow: A Network Supplier's Perspective

Peter H Hellmonds
Nokia Siemens Networks

WSIS Forum 2010, Geneva, 11 May 2010

One World
Connected

Broadband everywhere

Everyone and everything connected

Multitude of services and business models

Internet is the heartbeat of the modern society

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Put the customer in the center – evolve to the Network of One

One Unified
management & charging

One Business-optimized
operation

One Simplified
network

One View
of customer data

One Convergent
service control

One Flexible
service enablement & creation

Our holistic approach to boost
efficiency and experience

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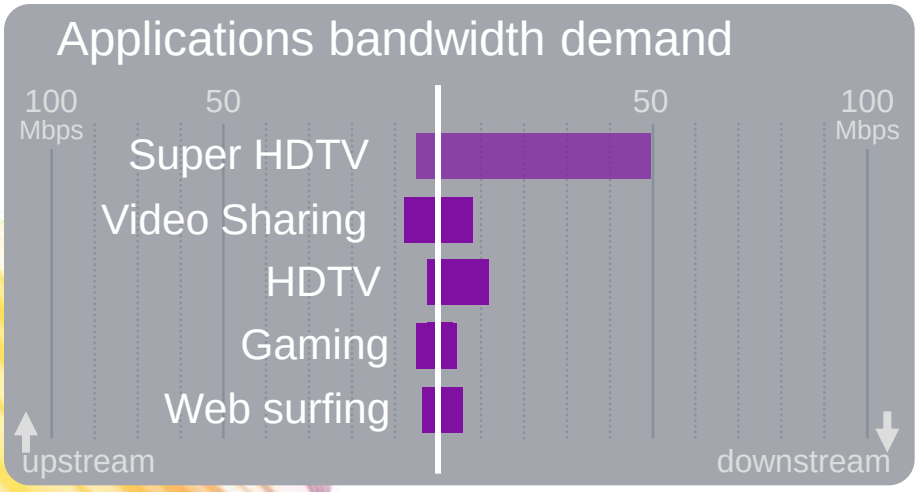
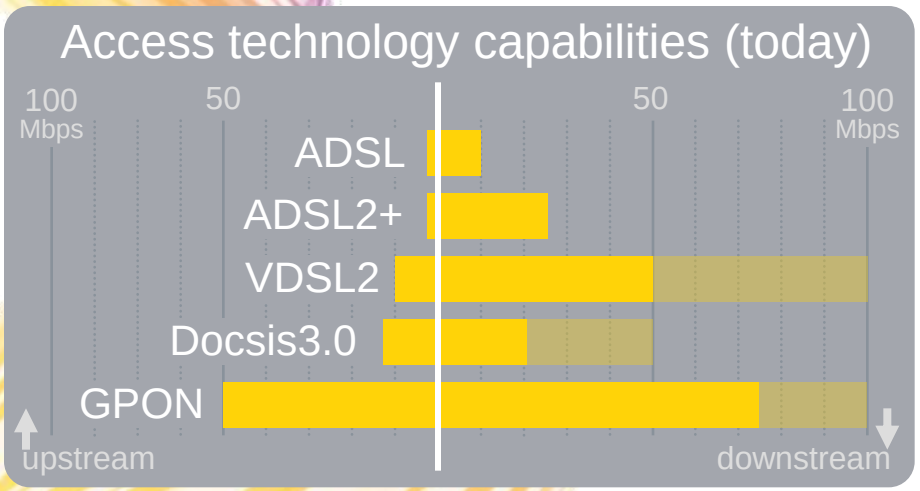
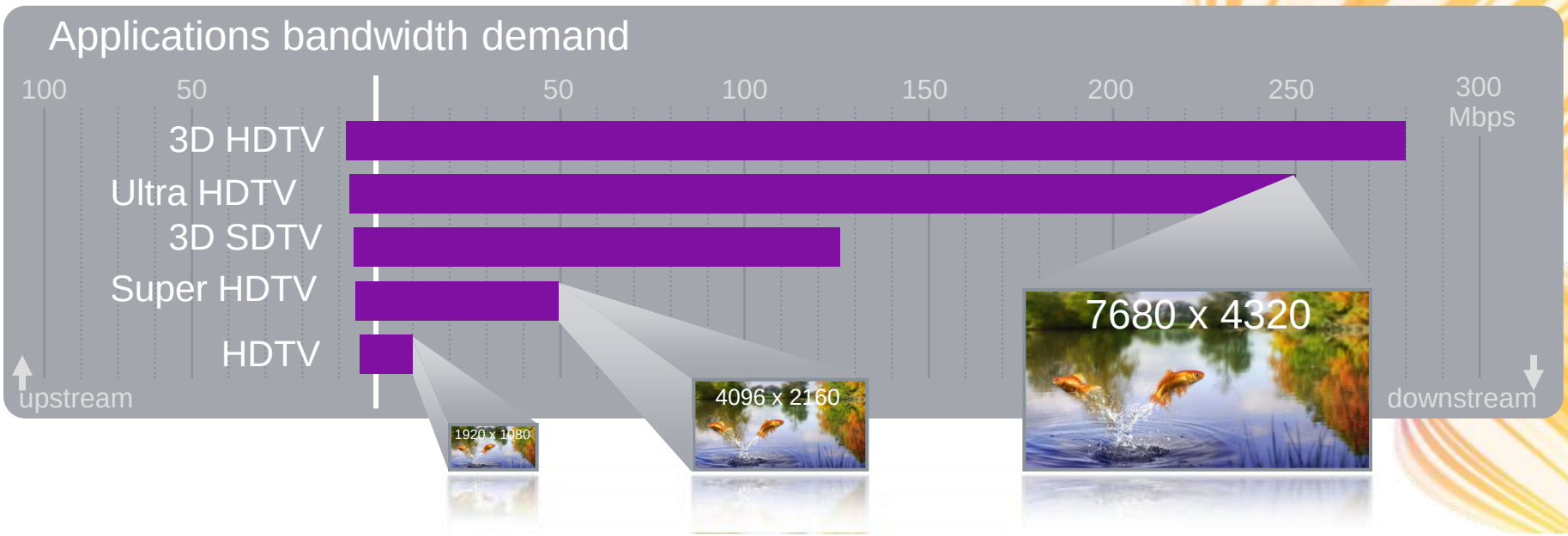
It becomes difficult to satisfy bandwidth hunger with today's access technologies

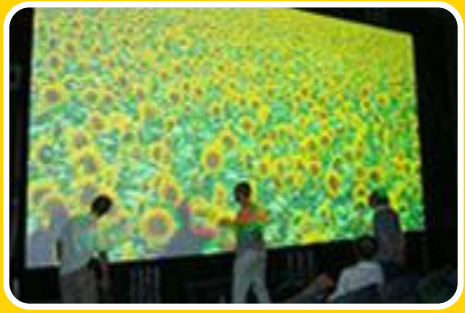




TV streams, Web surfing, sharing and gaming will easily fill the pipe

Bandwidth hunger is ever increasing
Video & TV drive needs





NHK will start experimental test transmissions of its **Ultra-HD** system in 2011-12

May, 2008

DirectTV will launch **3D HDTV** channel in US next year

December, 2009

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Application optimised networks are in demand for mobile broadband now

Smartphone models increasing

+

Fast application cycles, a lot of developers

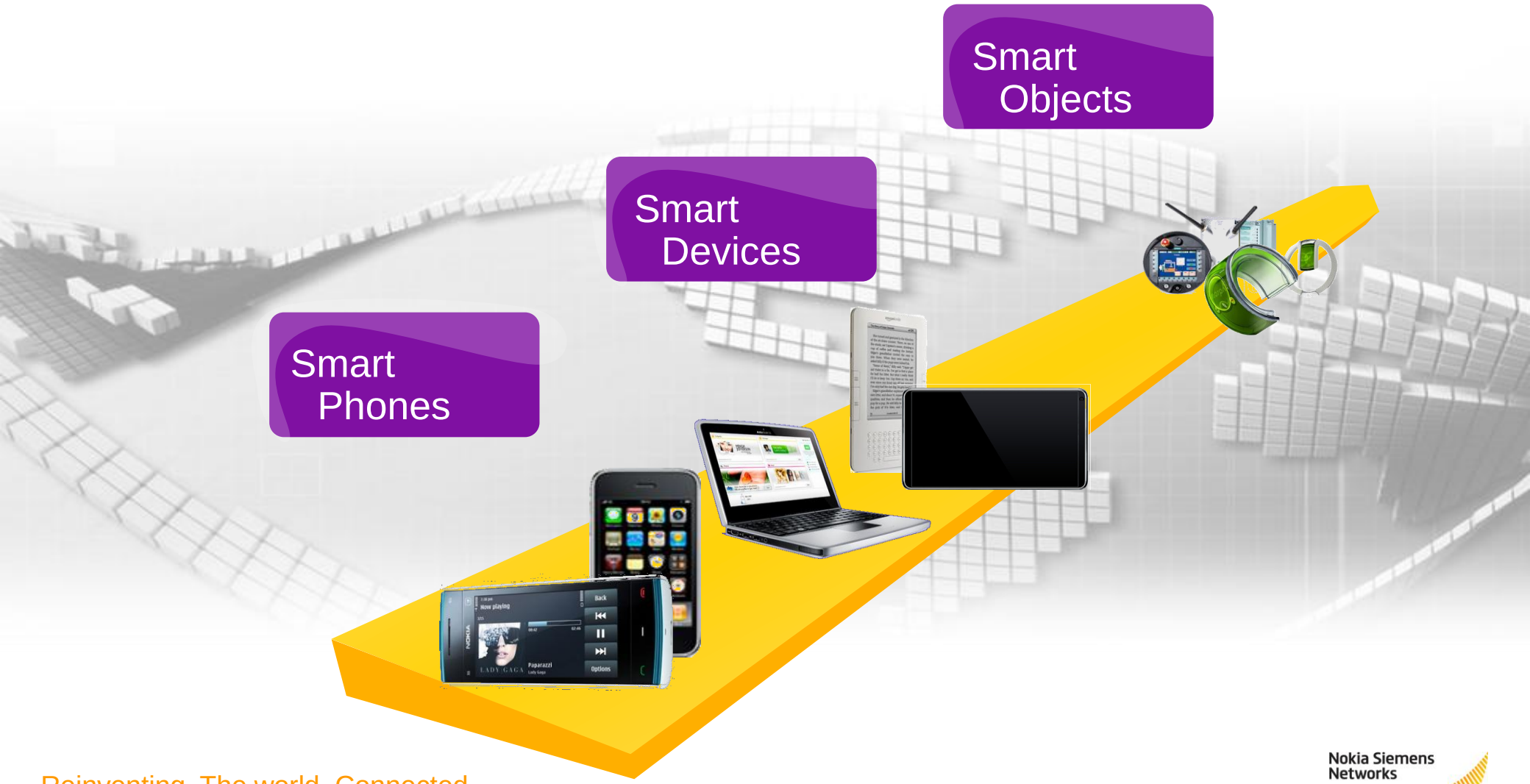
+

Customers hungry for the online experience

Minimize the signalling load – maximize the always-on user experience with Nokia Siemens Networks TODAY

A market on the move

Development of smart ‘things’



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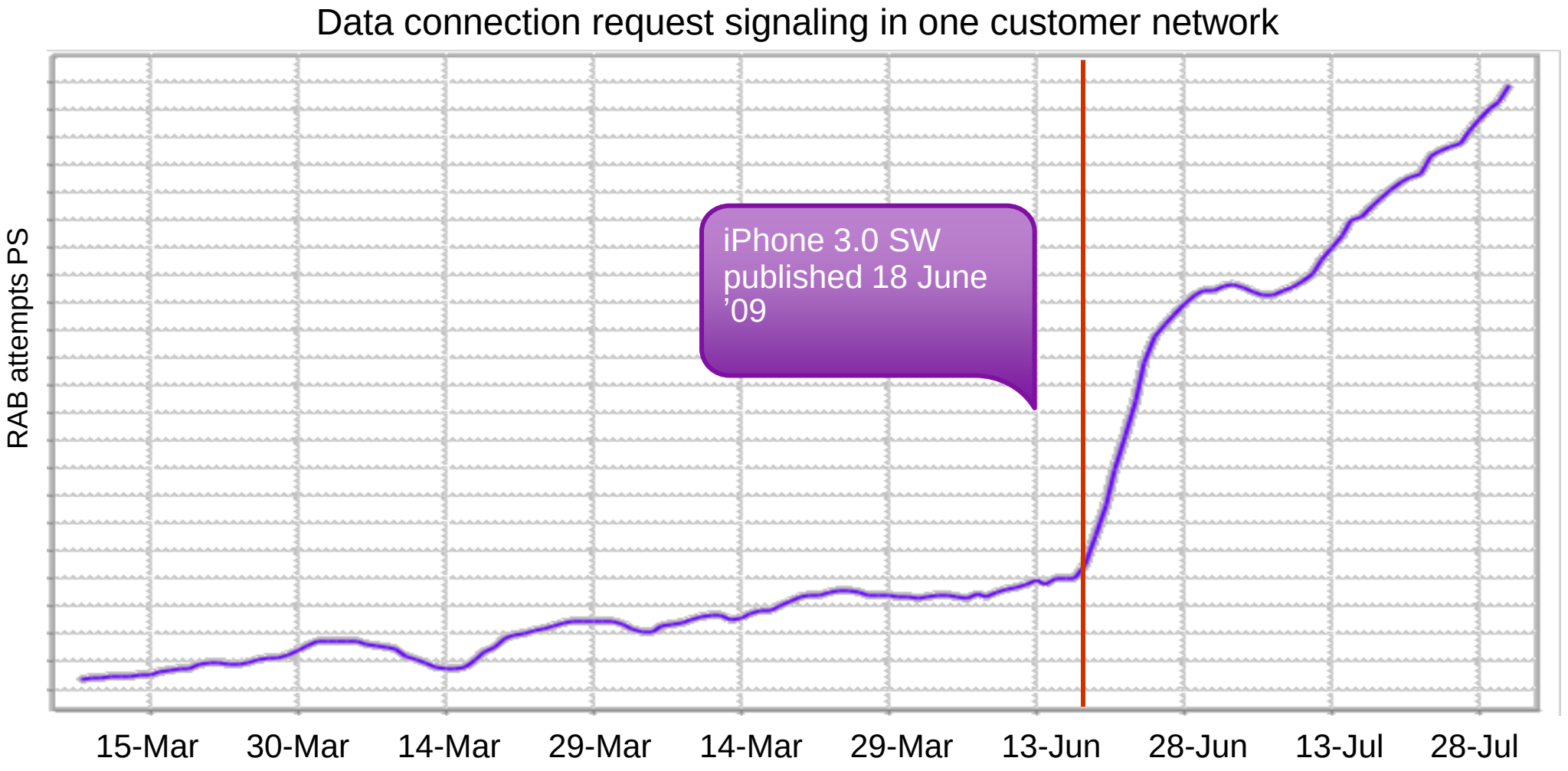
Impact of smart phones to HSPA networks
High signaling load from iPhone



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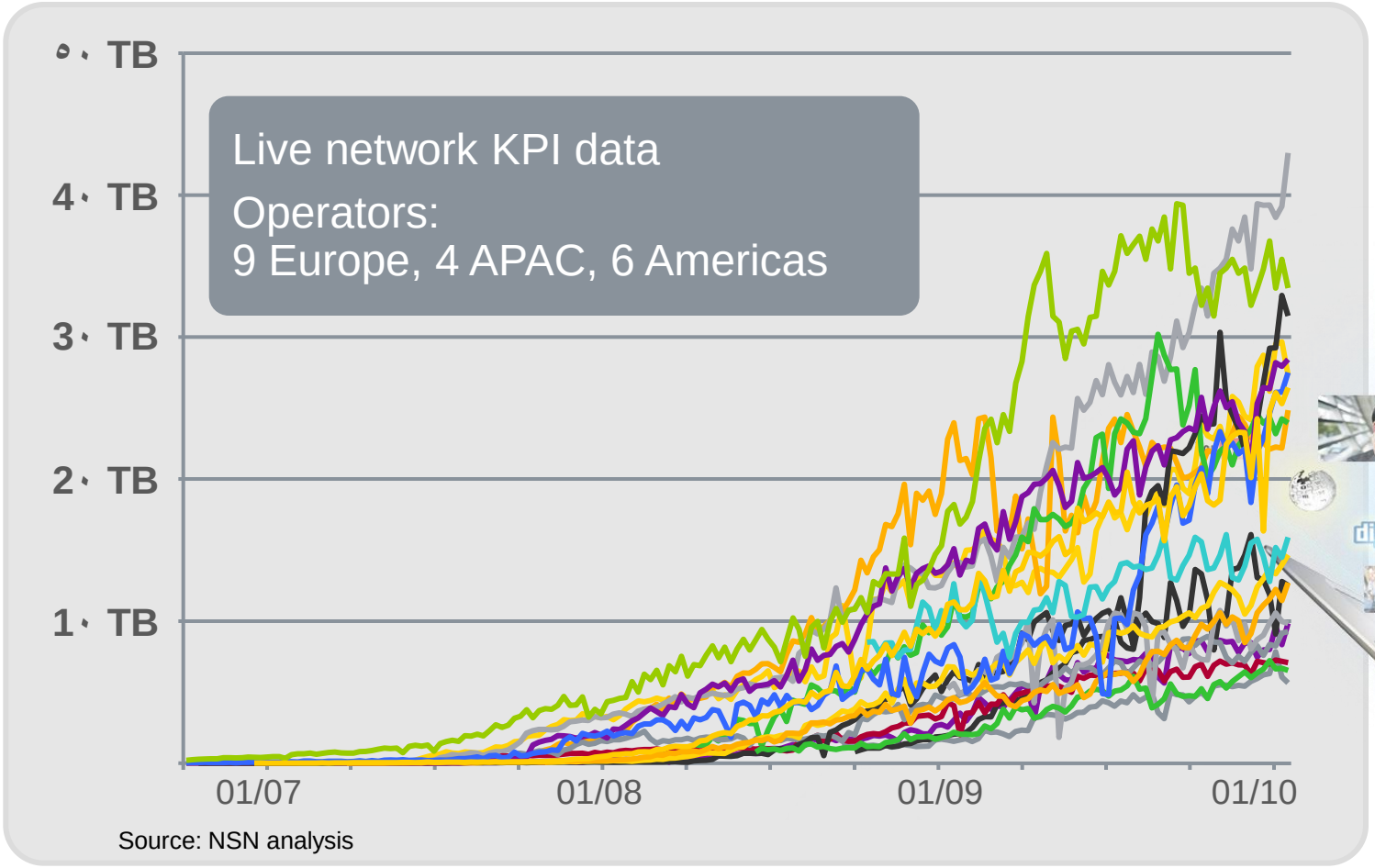
Mobile broadband is taking off today:
Actual figures of HSDPA traffic per day



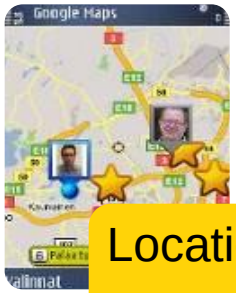
Source: NSN analysis

The future of mobile communications
is all about applications and experience

Mobility, broadband, device technology change the way people connect and communicate

News, information anywhere

Communities, sharing



Location

Augmented reality

Navigation

Business on the move, email

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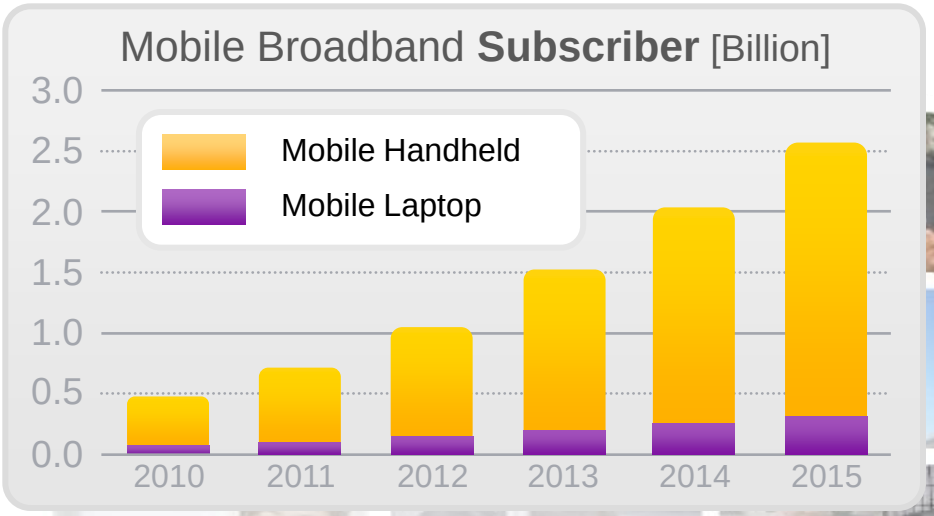
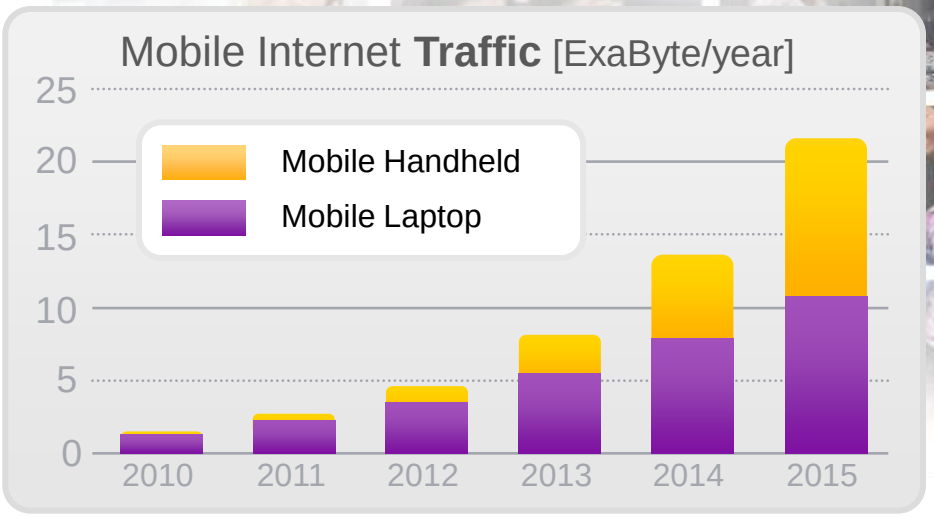
Challenges as well as huge opportunities of the mobile broadband market

Two use cases with different impact on signaling load and user traffic load





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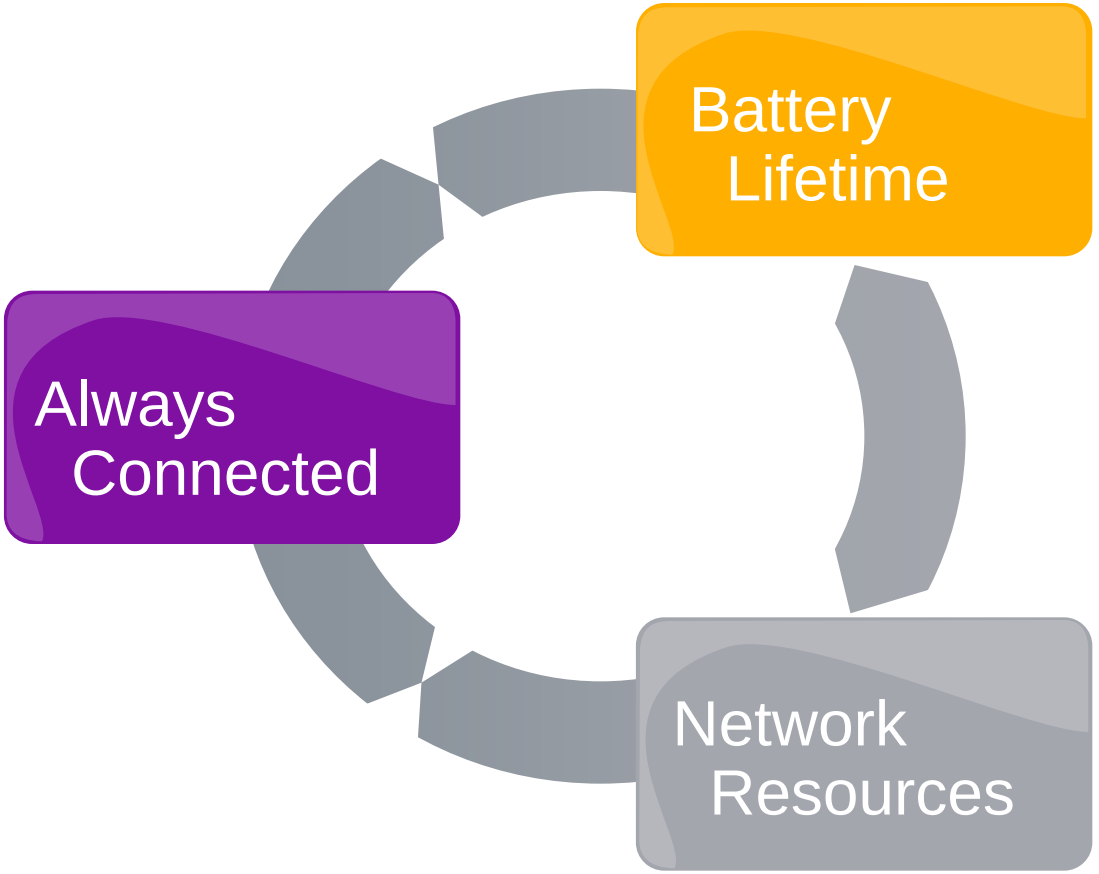
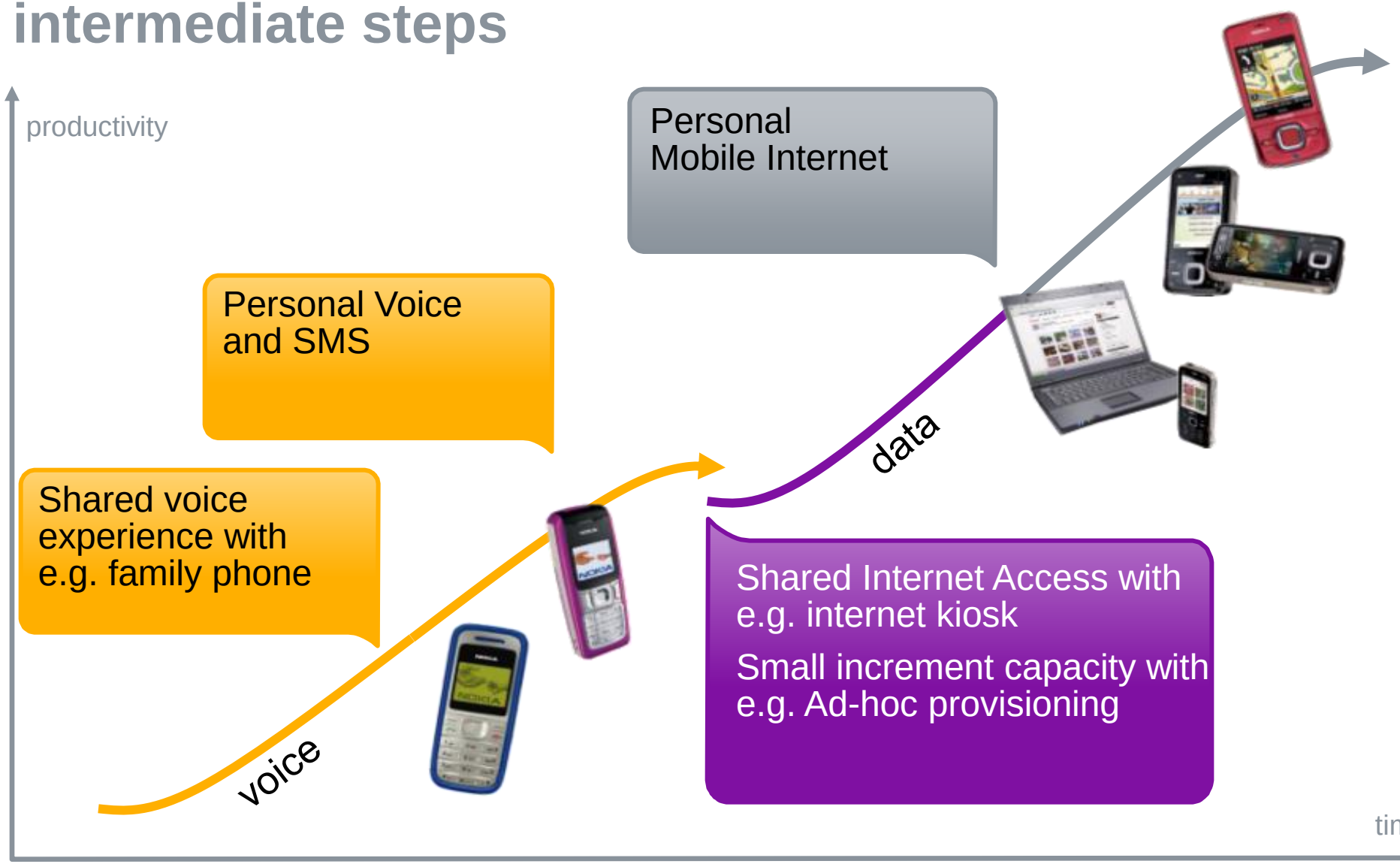
There are some limitations in delivering the always connected experience



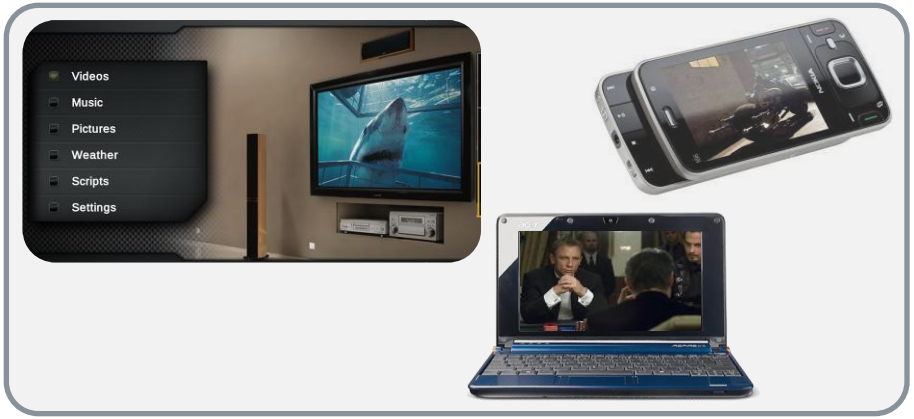
Migration from personal voice to data with intermediate steps



The changing TV landscape offers new business opportunities

Key trends in customer behavior

- Traditional linear TV usage is stagnating or even decreasing
- Consumers use multiple devices simultaneously whilst watching TV
- Consumers watch more and more TV on PCs or mobile devices
- Limited willingness to pay in today's for-free internet culture



Challenges and opportunities

- Integrate TV services into multiple platforms and devices
- Mash-up linear TV, on-demand content, and interactive services
- Develop new business models with innovative forms of advertising
- Leverage user and usage data

Source: Arthur D. Little "Future of Television", Nov. 2009

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The right technology mix for most efficient Mobile TV coverage

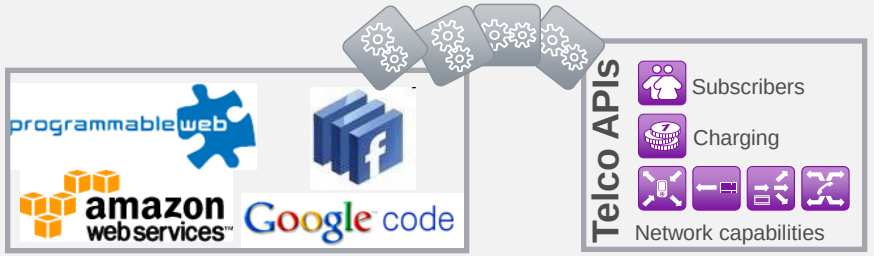
	Unicast	DVB-H
Urban areas	Many concurrent streams lead to traffic explosion -> 3G optimized for personalized channels	Mobile TV Broadcast for cost-efficient mass distribution
Rural areas	Use free capacity of existing 3G network for Mobile TV	No return of investment for rural area coverage

The challenge to CSPs is to make the network relevant in an OTT environment

Key trends in telco services market

- Services realm is getting hijacked by “over-the-top (OTT)” providers
- Transformation to a next-generation, all-IP world of communications is ongoing
- IT leaders and managers have become receptive to the concept of managed services
- Mashups and Cloud Computing allow new forms of cooperation
- CSPs start acknowledging the business value of Platform as a Service (PaaS)

3rd party Communication-Enabled Applications

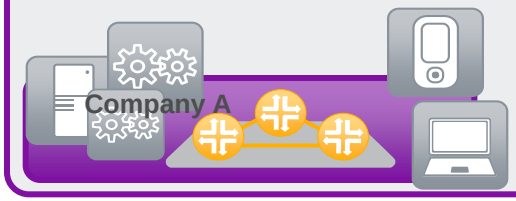


Challenges and opportunities

- Identify and explore new Business Models including innovative forms of **Advertising**
- Become a Content and Application Service Provider by introducing **IPTV**, **mobile TV** and **IP communication apps and services** (consumer and enterprise services)
- Become a PaaS Provider by leveraging your network intelligence using **SDF** for secure capability exposure

Excellent business opportunities for CSPs

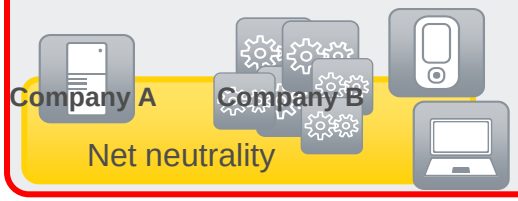
Walled Garden



Traditional Telco Business Model

"Best profit for a limited number of applications"

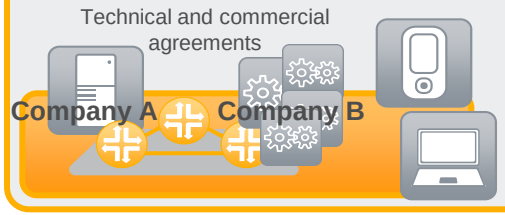
Over the top



Business Model of the Internet

"Widest choice of apps, but no or very limited possibility to participate from application business"

Open Platform



Telco2Web Business Model

"Potentially large number of applications and best suited to maximize profit from multi-sided business model"

Introduce Applications with reduced TCO
- **IPTV / Mobile TV**
- **Rich Comm Suite**
- **VAS in a box**

Introduce **SDF** for flexible and rapid creation of Consumer and Enterprise Applications and Services

Future growth is more likely to come from increasing share of value rather than volume – just offering more bandwidth will advance commoditization.

→ **drive Revenue Growth higher in the value chain**

Leverage enablers and network intelligence and turn them into (web) services

SDF is a key element to enter and sustain a position in the fast-growing Platform as a Service (PaaS) market

Communication & Entertainment Solutions

Custom Solutions

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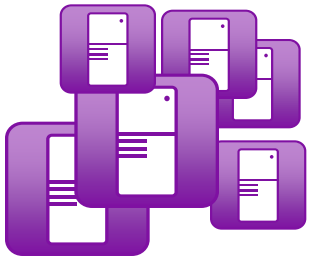
One. flexible service enablement

Evolution towards a service enabled world

today → future

BUSINESS TRANSFORMATION



SMS

IPTV

Mobile TV

MMS

RCS

Capability Exposure

NG IN

SDF

Video Streaming

MultiMedia Apps

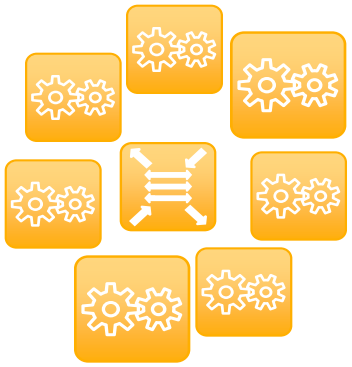
Location Services

Multi-Screen TV

Multi-channel delivery

Advertising

Social Network Integration



CaaS

PaaS

Virtualization

Everything As a Service

Cloudware

Enterprise Services as a Service

Multi-tenant architecture

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DVB-H business model builds on cooperation between BNO and MNOs

Delivery

Broadcast Network Operator

- TV Program 1 (All)
- TV Program MNO 1
- TV Program MNO 1a
- …up to 30 programs

B2B

B2C

Mobile Network Operator 1

- TV Program 1
- TV Program 2
- TV Program MNO 1

5€/mth

- TV Program 1
- TV Program 2
- TV Program MNO 1
- TV Program MNO 1a

10€/mth

B2C

Mobile Network Operator 2

- TV Program 1 (All)
- TV Program MNO 1
- TV Program MNO 2
- …

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Broadband Applications for Tomorrow

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Network Provider Perspective

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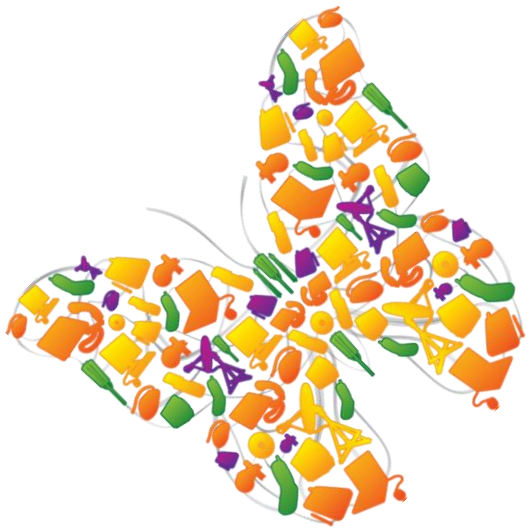
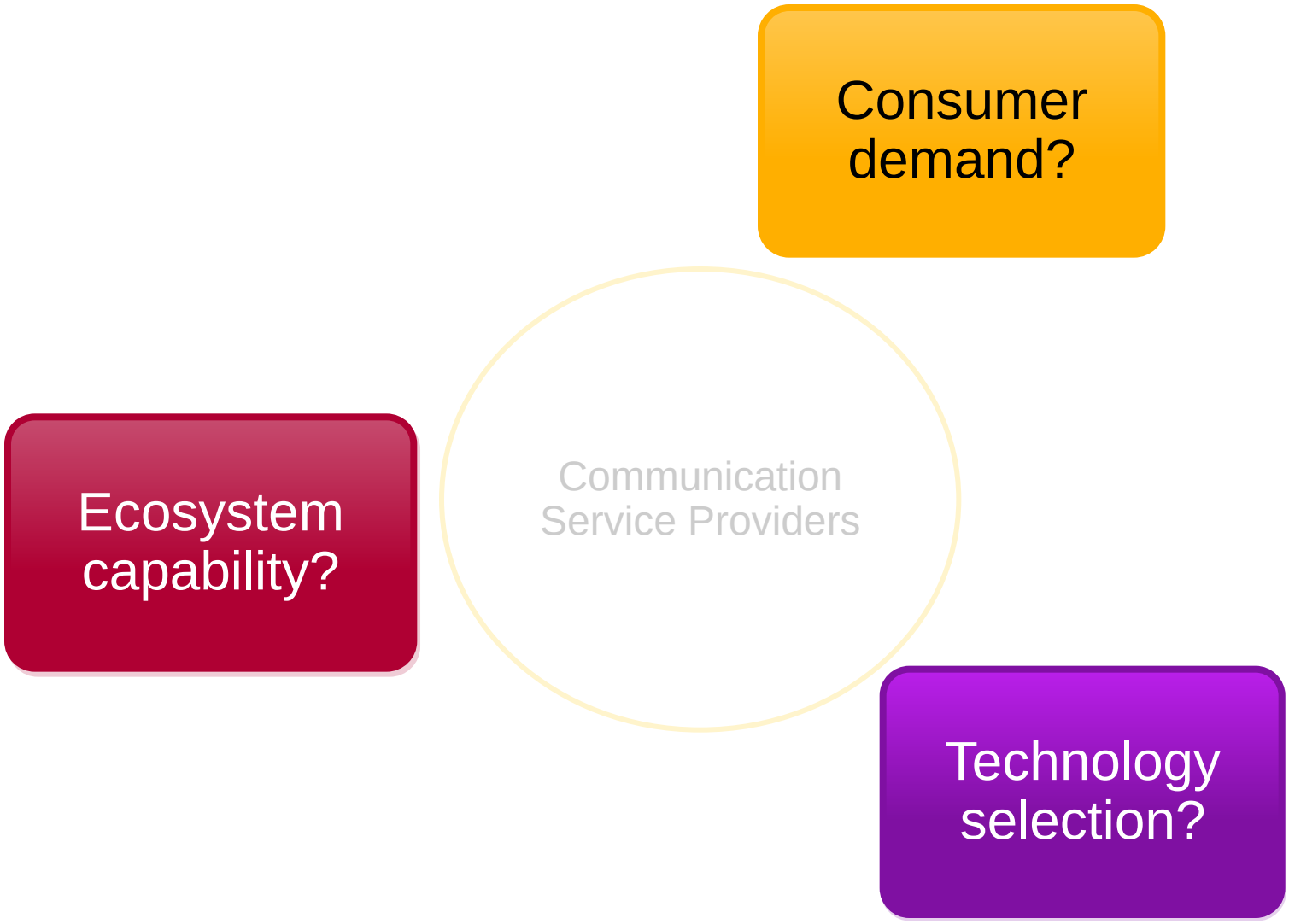
02 Technology selection

03 Ecosystem capability

04 Examples and Conclusion



Key challenges to include the un-connected



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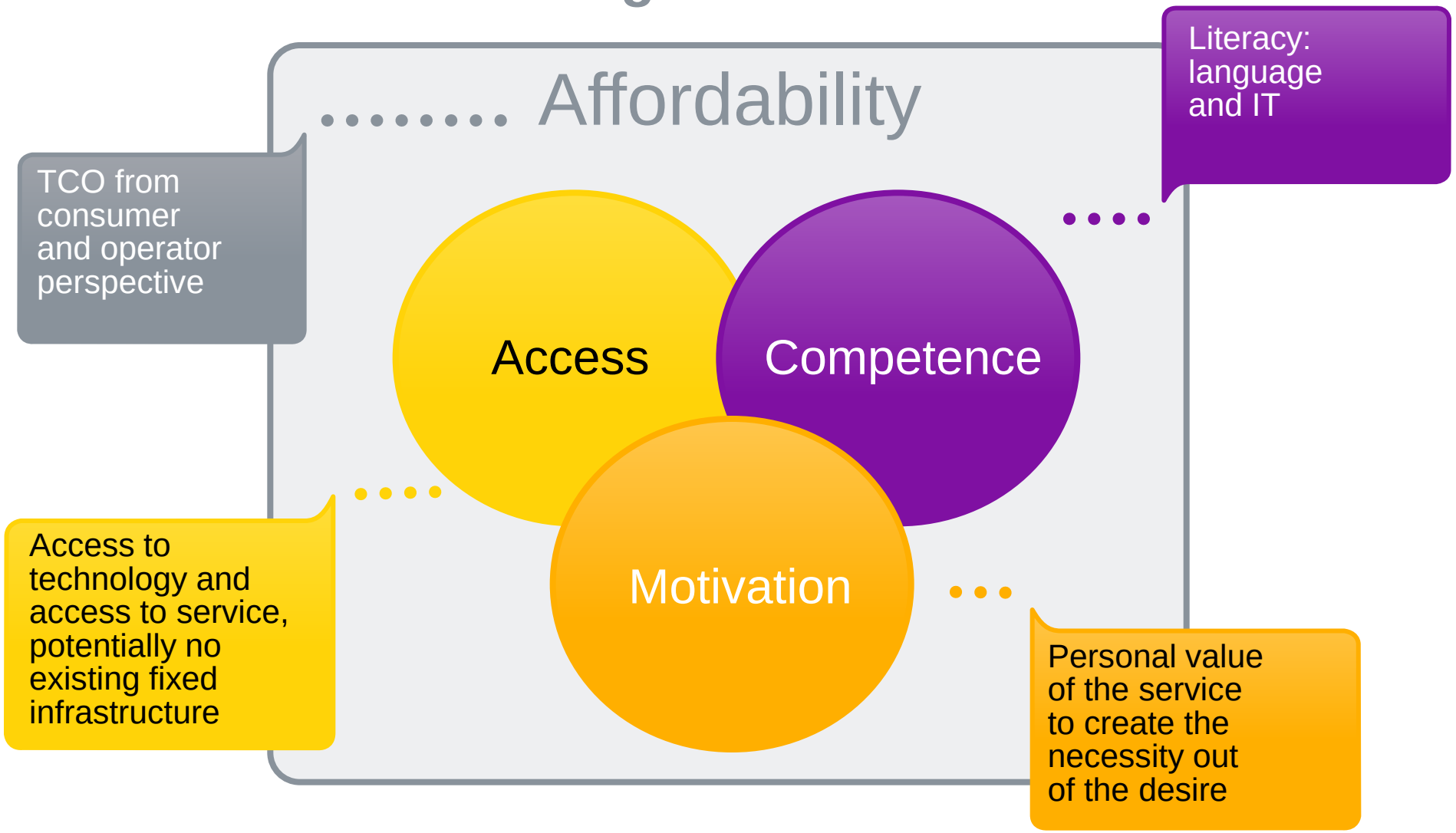
Internet for the next billion requires consumer understanding



Source: Marja-Liisa Viherä 1999 (adapted)

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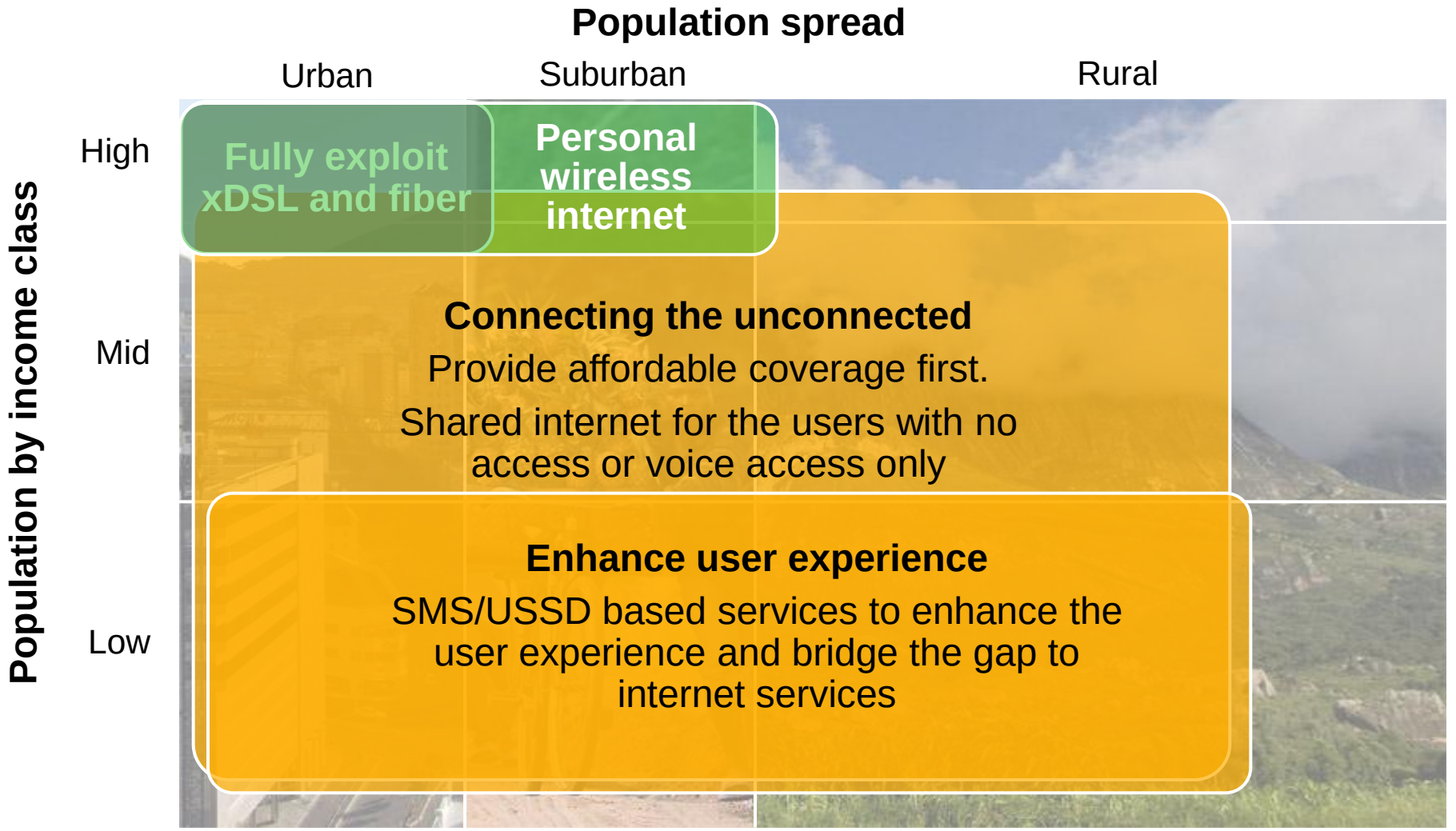
Diversity in emerging economies requires segmented Internet access strategies...



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… with cost effective technology

Urban areas

- xDSL and fiber
- Increase 2G network efficiency to absorb more voice traffic
- 3G/HSPA capacity to 2G avoid congestion

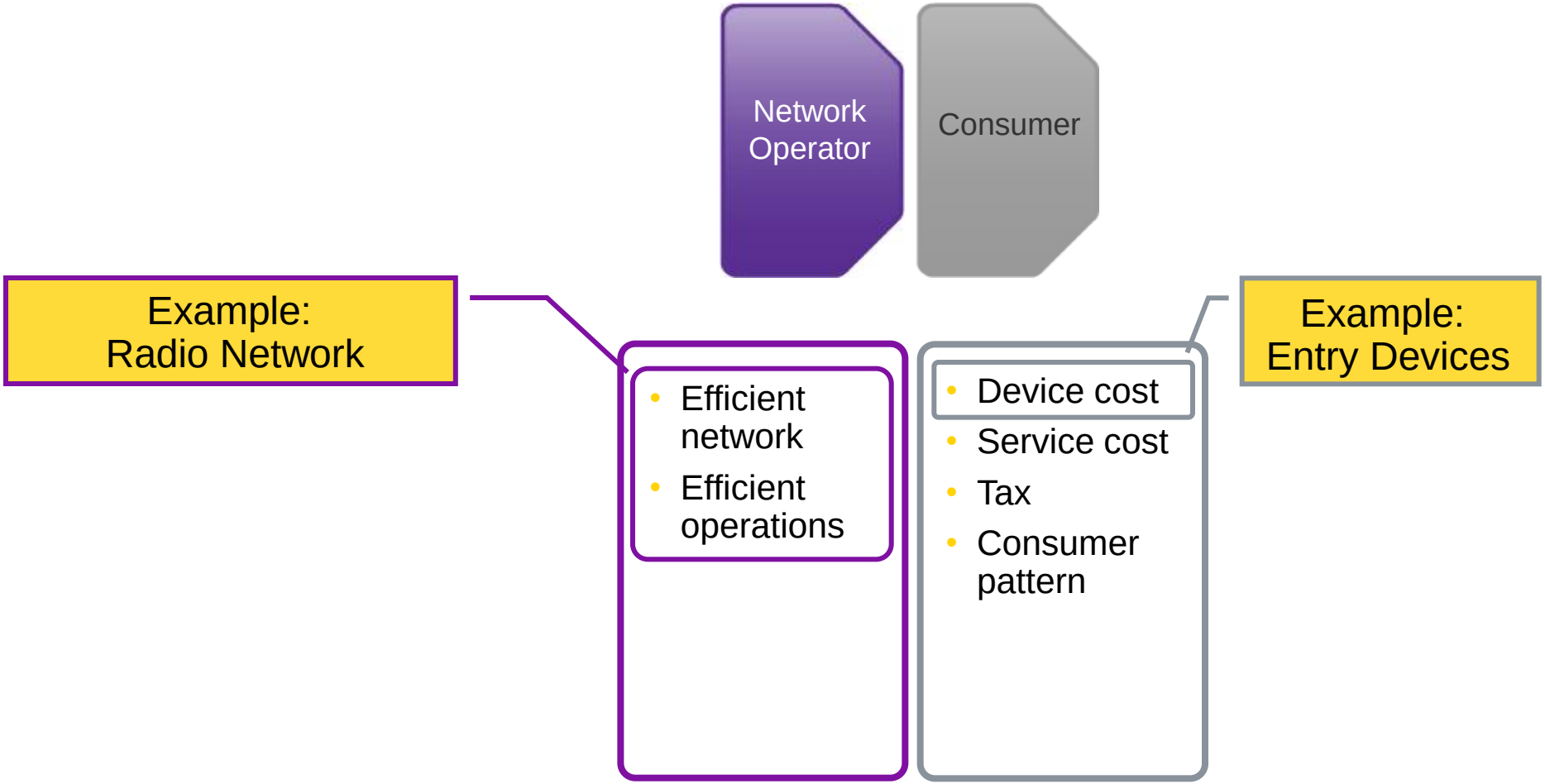
Medium size towns

- Optimize 2G voice to fit more data
- Mast-top sites
- Shared towers with other operators

Rural areas

- Cost effective voice and data coverage
- Shared internet access points with assistance

Voice affordability is impacted mainly by the network and device



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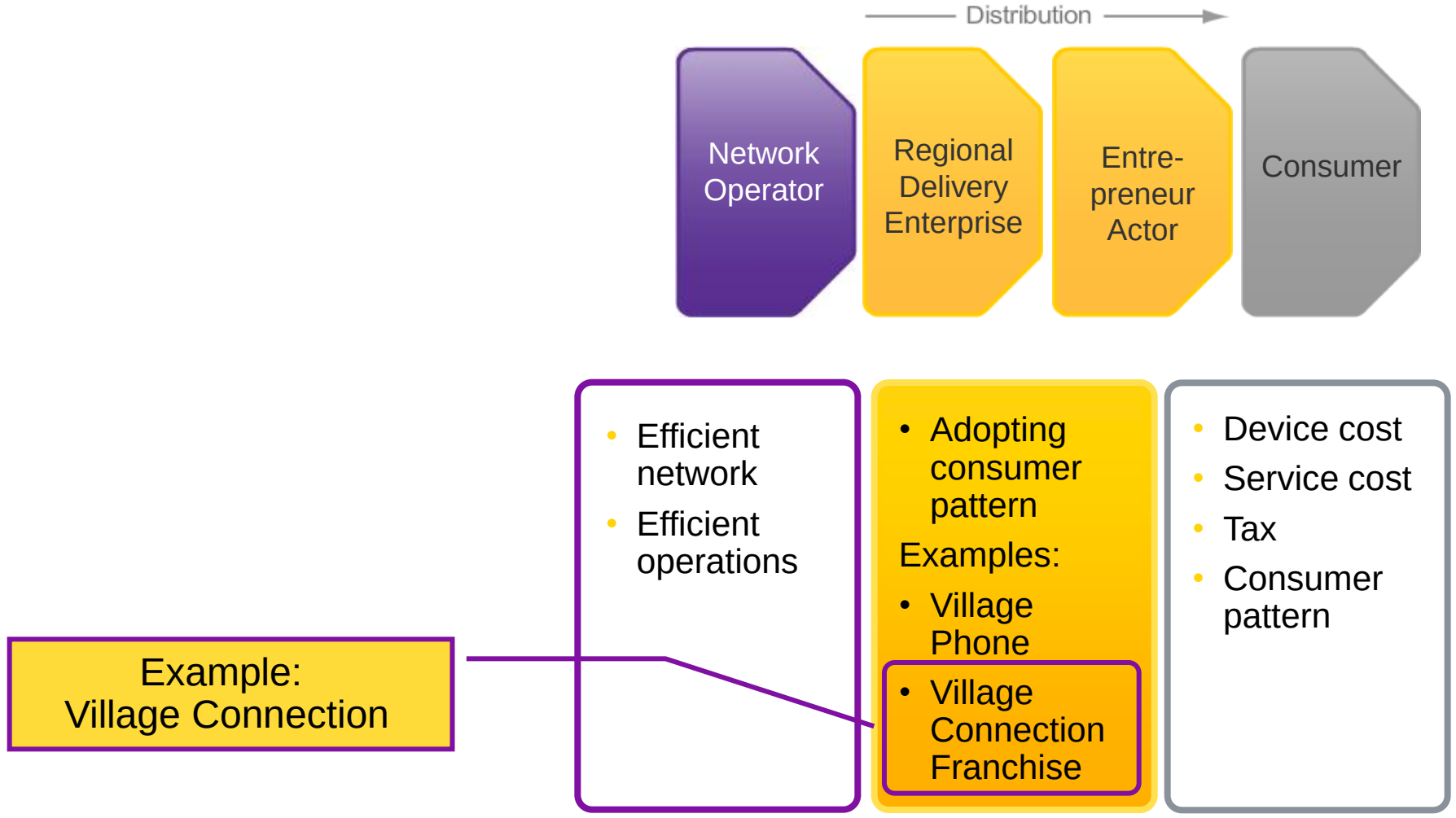
Shared access of voice opens a distribution component in emerging markets



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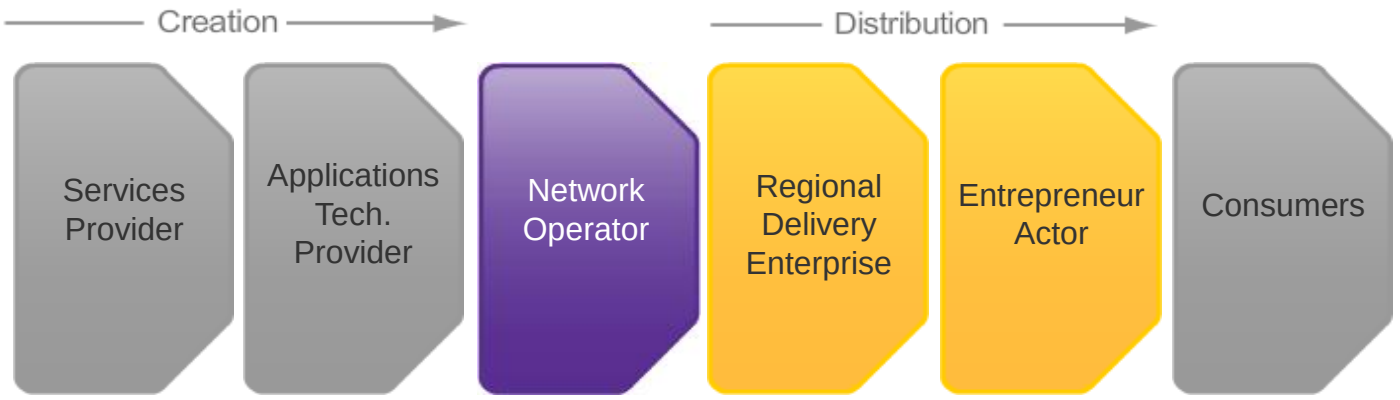
Data services require dedicated content



- Efficient content generation

- Efficient network
- Efficient operations
- Efficient service manage-ment

- Adopting consumer pattern

Examples:

- Village Phone
- Village Connection Franchise

- Device cost
- Service cost
- Tax
- Consumer pattern

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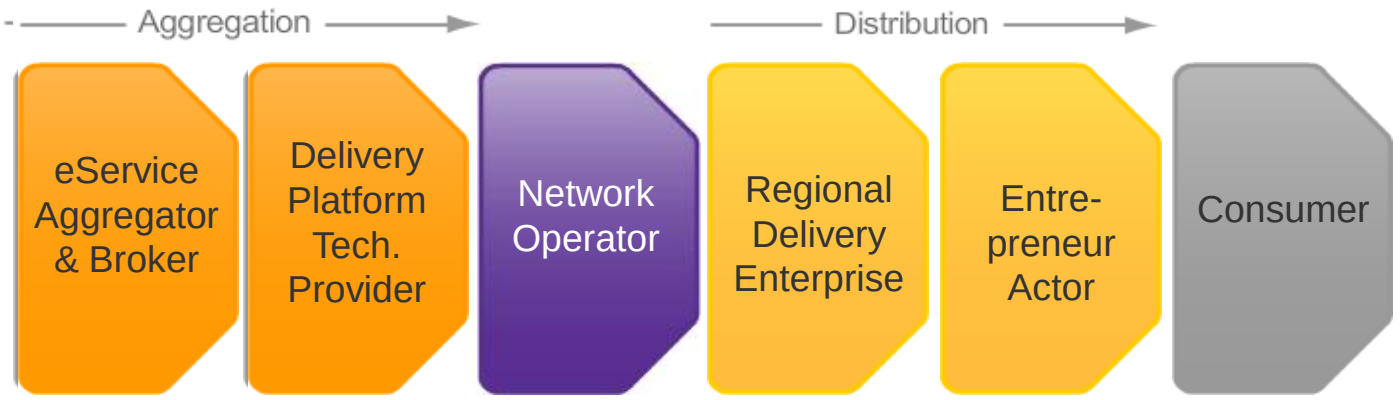
Complexity in content framework opens an aggregation opportunity



- Efficient content aggregation

- Efficient network
- Efficient operations
- Efficient service manage-ment

- Adopting consumer pattern

Examples:

- Village Phone
- Village Connection Franchise

- Device cost
- Service cost
- Tax
- Consumer pattern

Example: Radio Network

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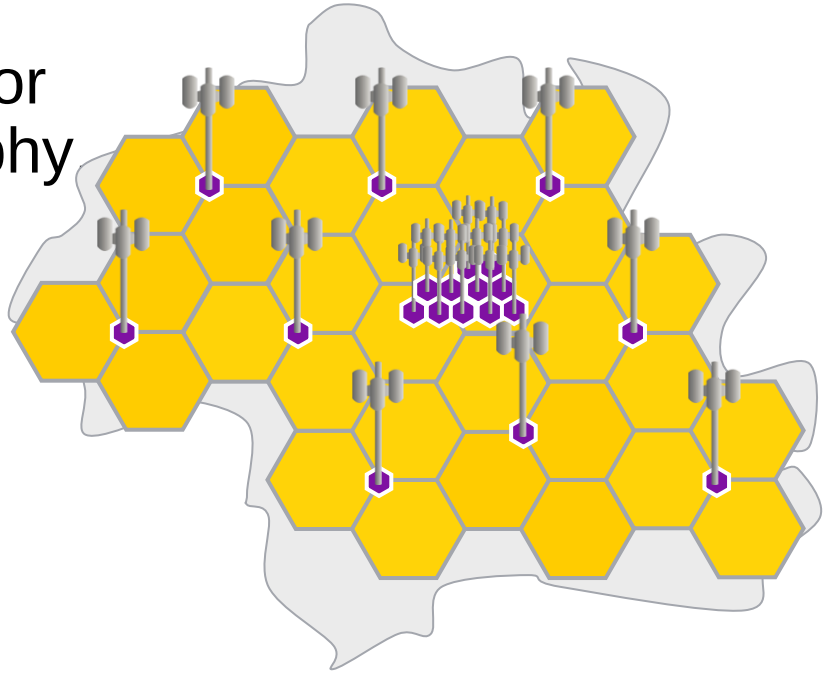
Lowest possible number of radio sites – lowest possible energy consumption

- Requires network planning and possibly site relocation
- Usable features dependent on operator starting point, available sites, geography customers etc.
  - Lower frequency: 50%-65% less sites
  - Feederless sites: 25% less sites
  - 4-way diversity: 35% less sites
  - AMR-FR: 30%-40% less sites
  - Extended cell
- Can reduce energy consumption up to 85 %
  - Depending on the combination of the above



“Smart Sites” keep CAPEX, IMPEX and OPEX low

Award winning Flexi BTS energy efficiency

GLOBAL MOBILE AWARDS 2009 WINNER

CTIA The Wireless Association®

Current market standard

Outdoor power cabinet (aircon)

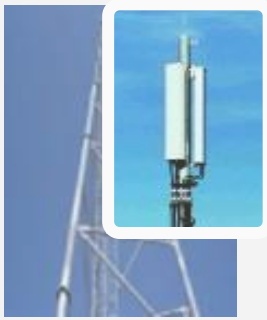
900W @ +35C˚

Nokia Siemens Networks SiteStar battery cooling

40W @ +35 C˚

Unique battery cooling cuts Opex and CO2 footprint by 50%

Optimized Passive equipment range



Optimized design for flexible site installation / Services

BTS Integrated Transmission

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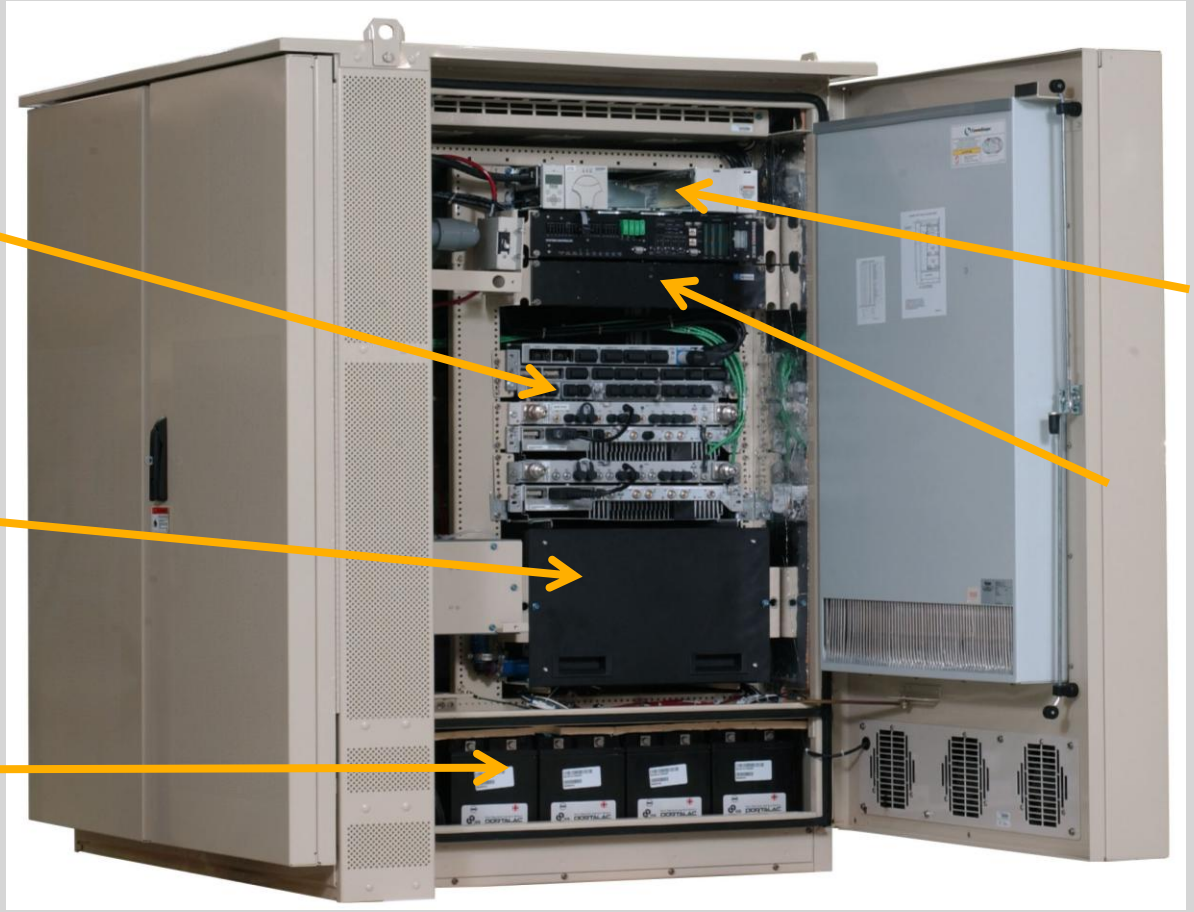
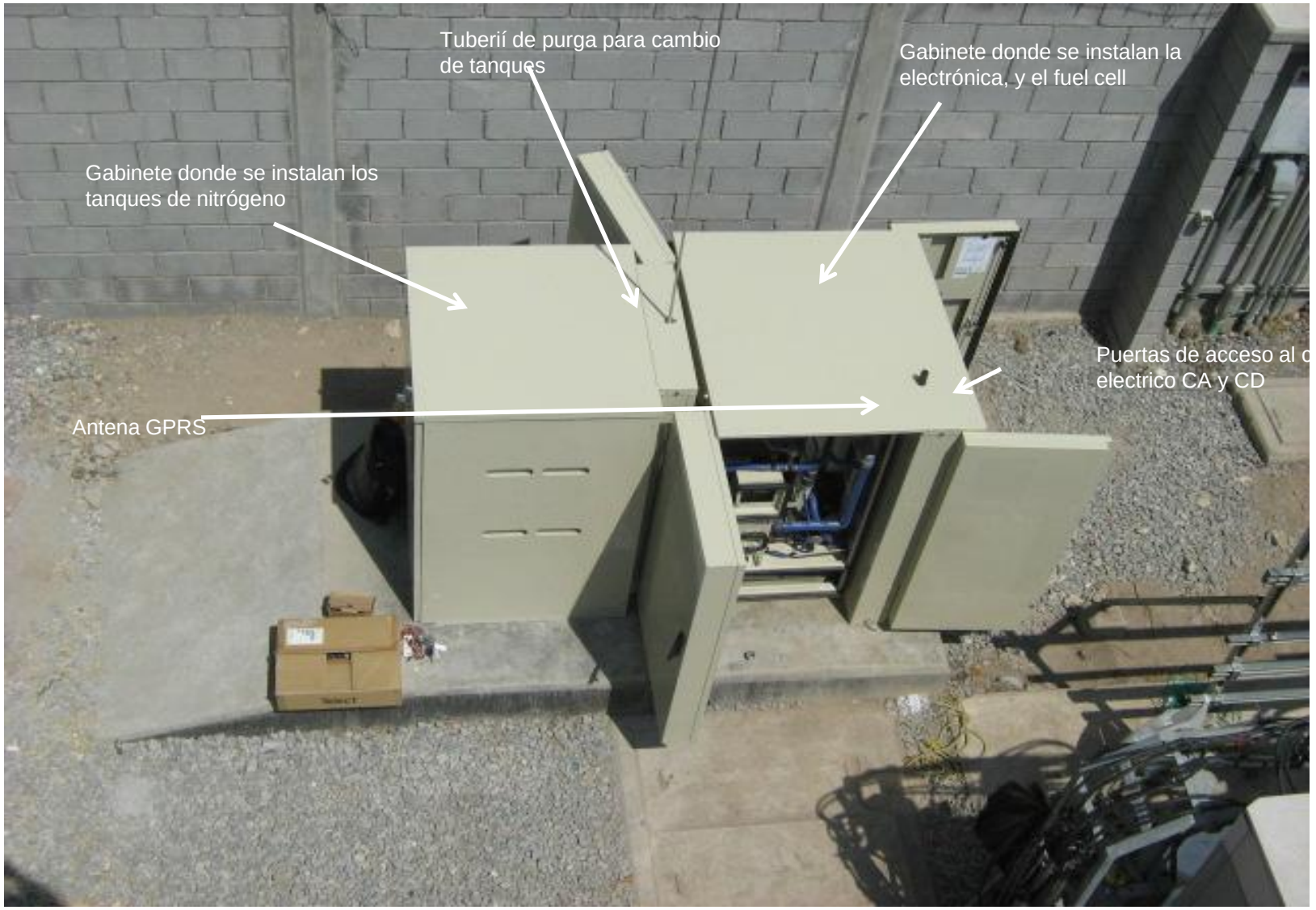
Autonomous site: Base station within fuel cell cabinet



Cabinet Dimensions: 1143mm (W) x1321mm (D) x 1600mm (H)

Hydrogen tanks

Complete site example



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Example: Devices
Phone models suited for emerging markets

NOKIA 1202
Voice / SMS

NOKIA 2323
EGSM 900/1800
GPRS-internet connection

NOKIA 2730
3G capable

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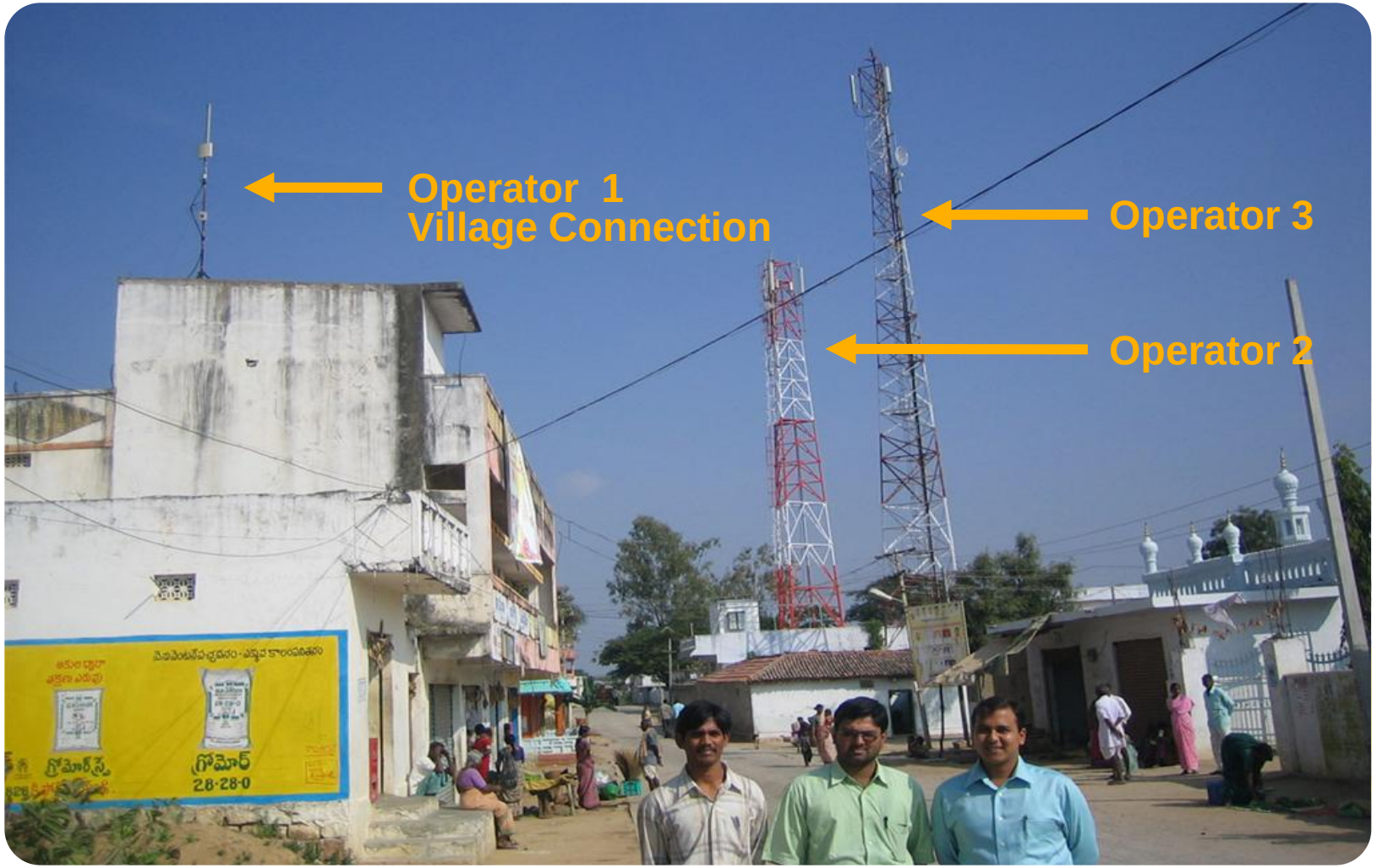
Example: Village Connection

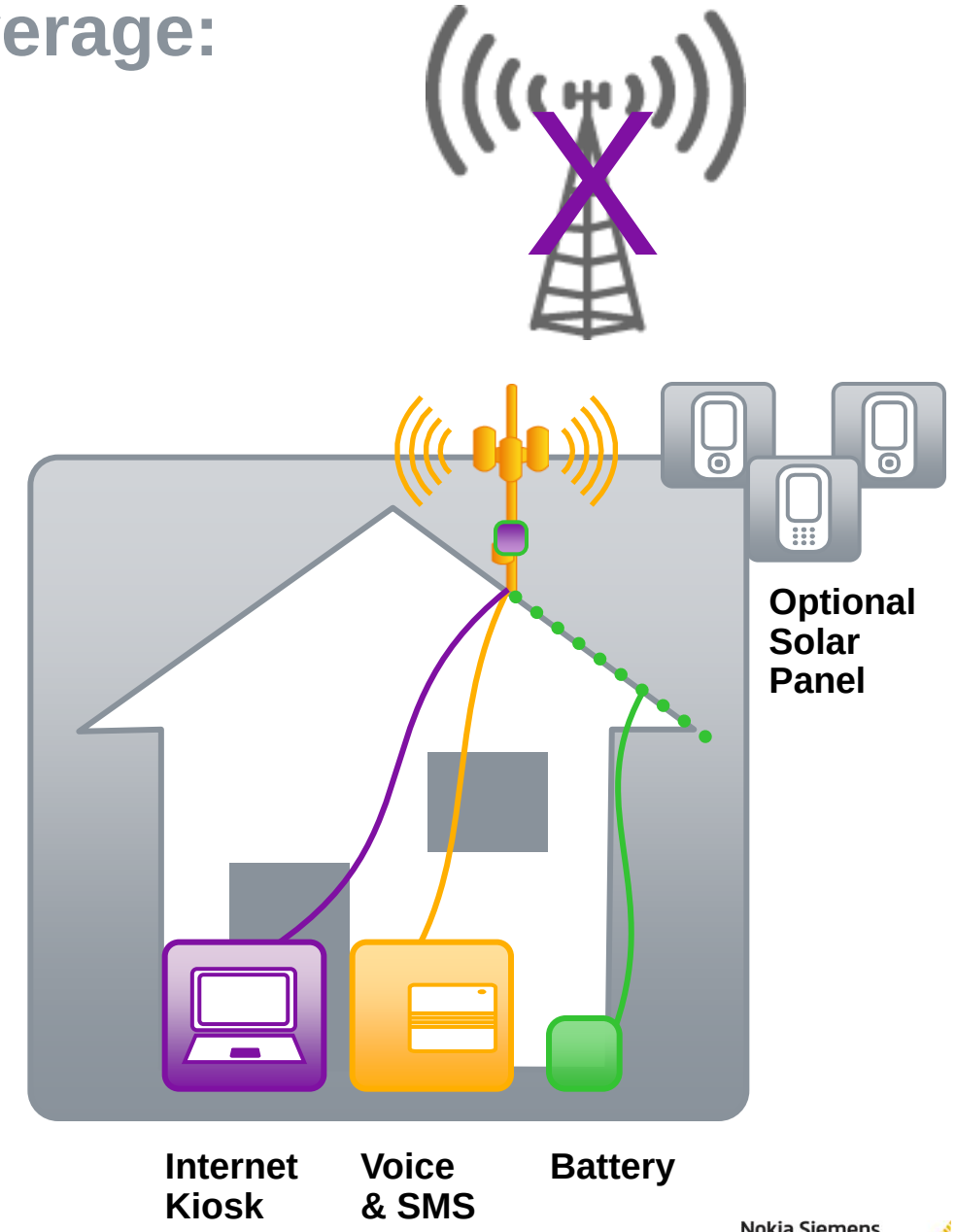


Lean approach for rural coverage: Village Connection

GSM Access Point in a village

- Wide area coverage with minimal site cost
- “Mini” network: calls in village connected locally
- Cost-effective IP connectivity for long-distance calls
- Core network maintains control: regular charging and services
- Option of Internet Kiosk: shared Internet access for villagers

Up to 80% less site CAPEX
Minimal OPEX



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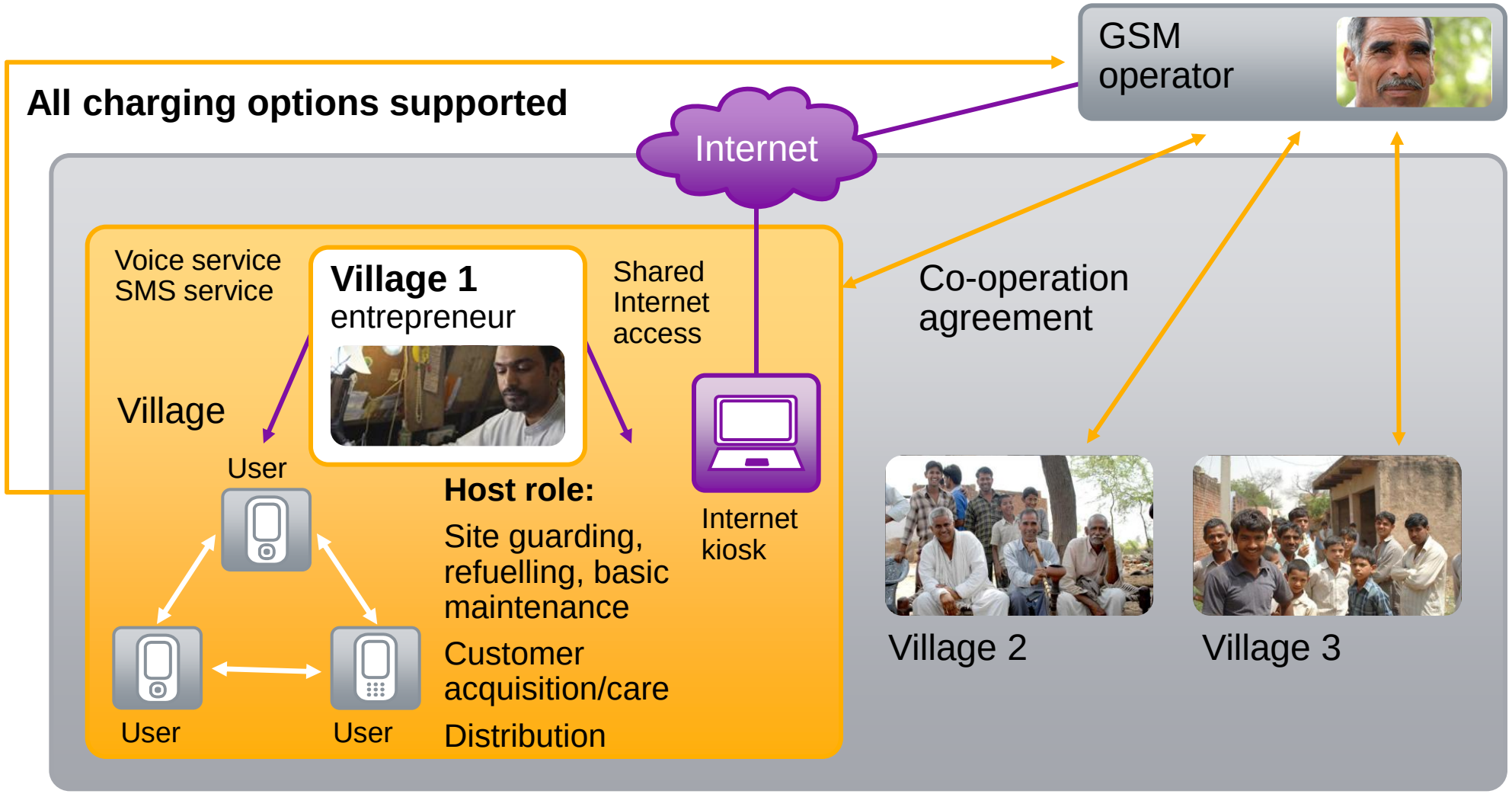
Optional host business model makes operating village networks easier



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Conclusion: Multiple Enablers for Digital Inclusion

Consumer under-standing

- Affordable communications in emerging markets goes far beyond technology
- Consumer understanding is key, demand is there! Build solutions that satisfy demand patterns

Technology selection

- Provide coverage at lowest possible cost
- Consumers can gain from basic voice connectivity and add data usage incrementally
- Prepaid & Convergent Charging support innovative and data driven business models

Ecosystem stimulation

- Tremendous gaps in ecosystems demand stakeholders to take actions. Multiple stakeholder partnerships are required stimulate growth
- Standardization and regulation need to provide a fertile environment

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A Vision of Communications for the Next Billion

Let us work
to make it happen.

The internet.
The next billion.
Connected.

They are waiting for us.

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