

# A Vision of Communications for the Next Billion

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# A Vision of Communications for the Next Billion

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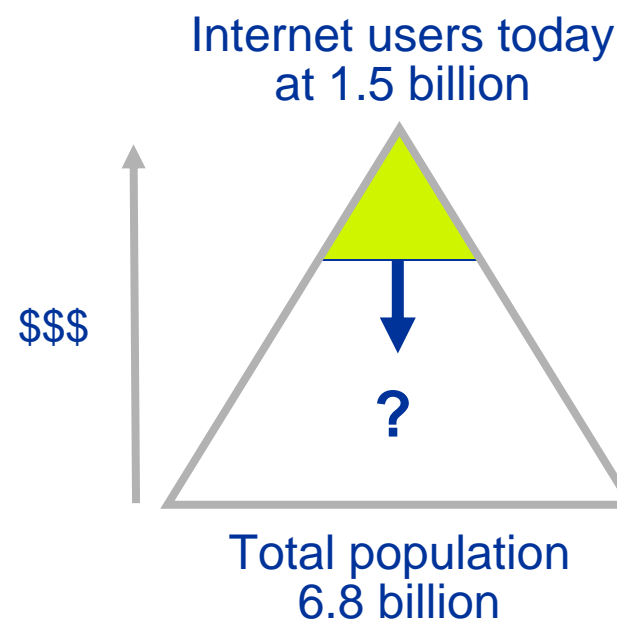
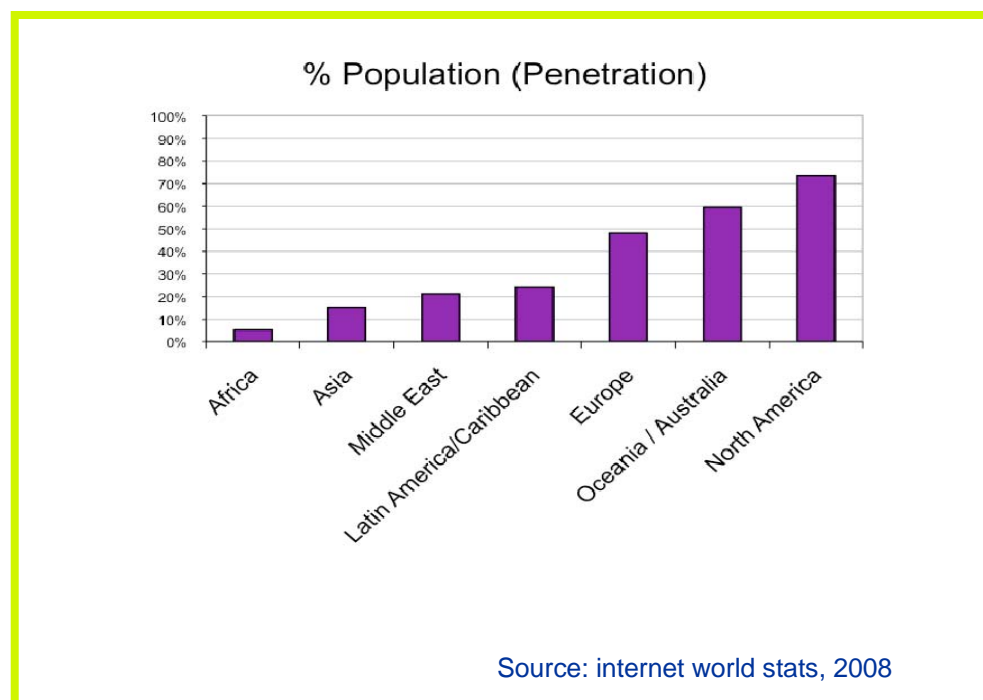
### Network Provider Perspective

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# 01 Introduction - The Challenge of Universal Service

- There are **1.5 billion internet users** in the world today, mostly from the **high income segment**
- **Digital Inclusion** means to include **mid** and **low income segment**
- Internet holds great potential, but **affordability barrier** is **limiting the business case** for the communication service providers



# 01 Introduction - Digital Inclusion



## Challenges:

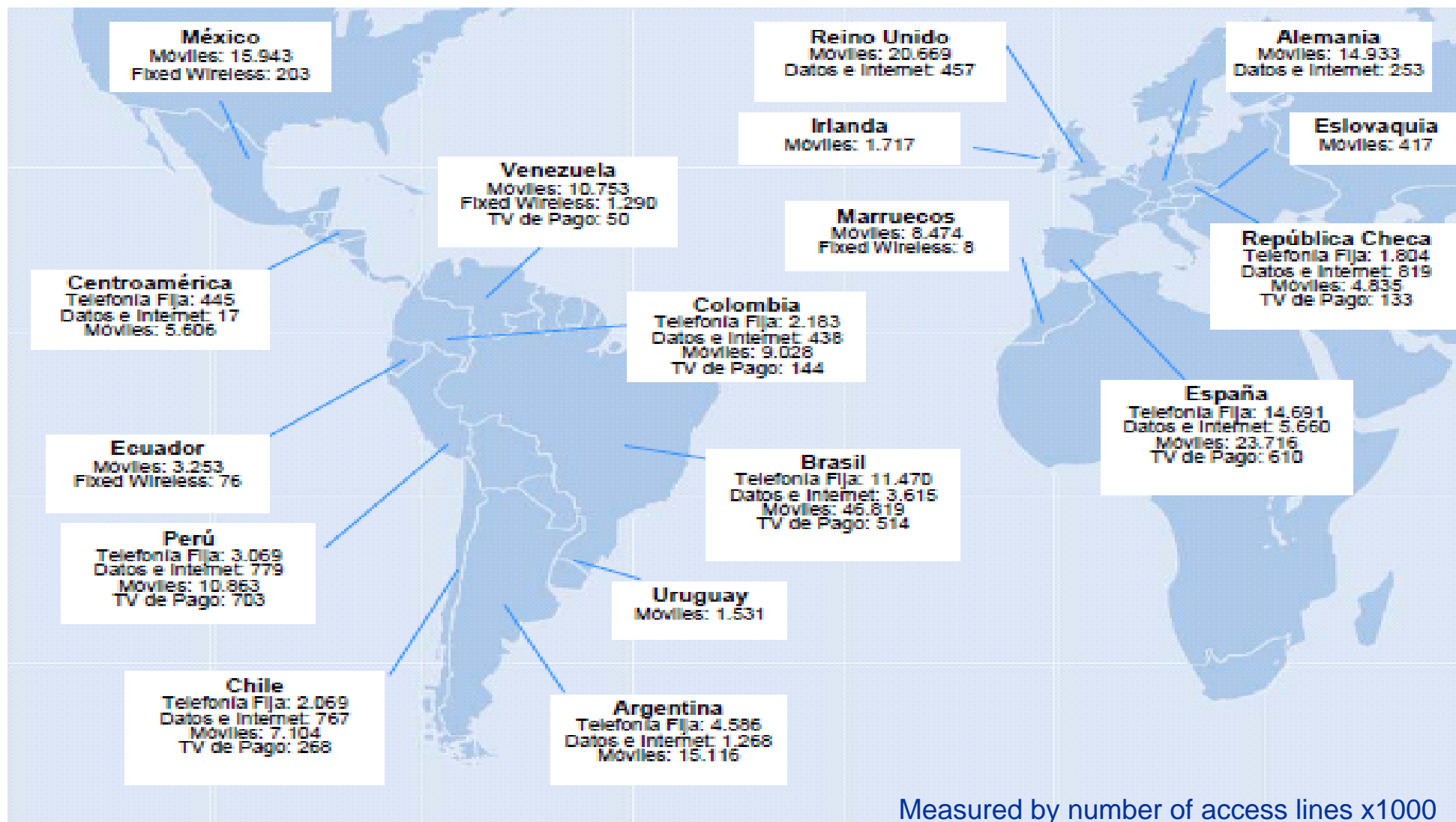
- How to provide ICT's tools to all Latin America
- How to improve the life of people without access to the ICT's tools
- How to create a sustainable business model



## Issues for a successful Digital Inclusion Program:

- Connectivity Services
- IT Services
- Training and knowledge empowerment
- Customer Care Services and IT Application Support
- Provisioning and maintenance of the access points
- Integrated Management of the Program

## 02 Telefonica Group Markets...



## 02 ...being the leading Operator in Latin America



*Telefonica*

- 24 millions of fixed lines
- 1,7 millions Pay TV subscribers

*Speedy*

- 7 millions of data and internet accesses

- 126 millions of mobiles

 **MOVISTAR**

terra 

- 60 millions of visitors/month
- 66 millions of streamings/month

*ATENTO:* • 40.000 agent desktops

 | **telefe**











# 02 Digital Inclusion – Customer Needs


Only the Internet Access is not enough.  
The user needs much more.

- ICT Services
- Security E-mail
- Chat and blogs
- Office Tools (Text editor, etc)
- Site hosting
- Data Storage
- Telecommunication Services
- Support Service
- Maintenance (Access, PCs, Printers, LANs, etc.)
- Courses, Training
- Applications and Systems User Support
- Communication channels like portals and blogs



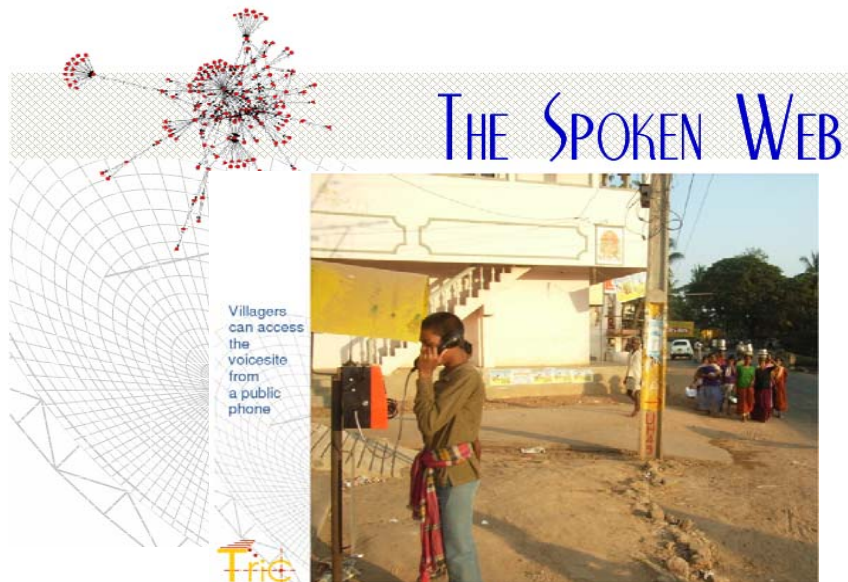
**IT Services**

 <b>Mail</b>	 <b>Storage</b>
 <b>Discussion Fora</b>	 <b>Office</b>
 <b>Web</b>	 <b>Hosting</b>
 <b>Information</b>	 <b>Inquiry</b>
 <b>Video Streaming</b>	 <b>VoIP</b>





## 03 Trial example: Digital Inclusion by the Phone



The **Spoken WEB** is a service that creates a voice interface between low income public and the voice site in Internet.

The platform allows the user to **publish and receive data from the WEB** through the public telephony. The user pays only the services offered by a telephone.

It is possible to offer an **unlimited number of services** like push advertisement from the voice site administrator or from the ISP.

It allows people to **upload** their **advertisement** on the Voice Site.





## 03 Deployment Examples in Latin America



**Peru Satellite Broadband Project (BAS)** developed by the Government and assigned to Telefonica allows remote area coverage making use of brand new technologies like green energy and wireless broadband.

Telefonica through its Foundation are working together with the governments and technology partners to provide the **Digital Inclusion in Latin-American Schools.**



# 03 Conclusion: What does Broadband mean today?

- Is it a relative or an absolute concept?
  - FTTx / Cable / xDSL vs. Dial up
  - LTE / Wimax / 3G Vs GPRS / EDGE
  - Vehicle for voice, internet and Video ( Triple play )
- Is our understanding changing as the time goes by?
- The mobility changes expectations of capacity and coverage
- Broadband evolution is changing with new services

Spectrum is a key resource:  
160 MHz will be needed for  
wireless broadband

#### Assumptions:

Number of users per cell: 1000

Average data capacity / user: 0,2Mb/s

Spectral efficiency 1.2 bit / Hz

#### Wireless Broadband “a vision to change”



# 03 Conclusion: Final Messages

## ■ Operators can

- orchestrate Digital Inclusion Programs
- together with **governments, technology partners** and **education organisations**, and
- provide **broadband access**
- along with **innovative** and **sustainable business models** allowing mass penetration of the service.

## ■ Governments should

- **speed up** the digital inclusion programs
- through the provision of **funds** and/or **tax benefits** for universal services, and
- **ensuring** a favourable **regulatory environment**, in particularly on
  - the **spectrum** questions (digital dividend, Ka band)
  - **conditions** for a **sustainable investment** with **adequate returns**.

## ■ The Industry needs to

- provide **affordable devices** and **infrastructure**, leveraging
  - economies of **scale**
  - **innovative technologies**
- ensure **useability** of **devices** and **applications**
  - **simplicity**
  - **ease of use**
- enable **rural coverage**.



# A Vision of Communications for the Next Billion

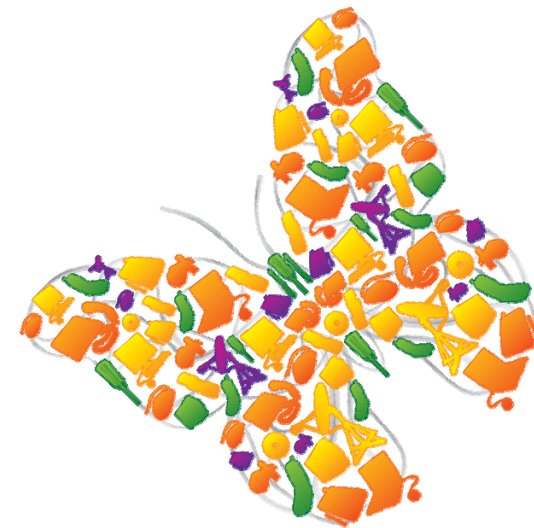
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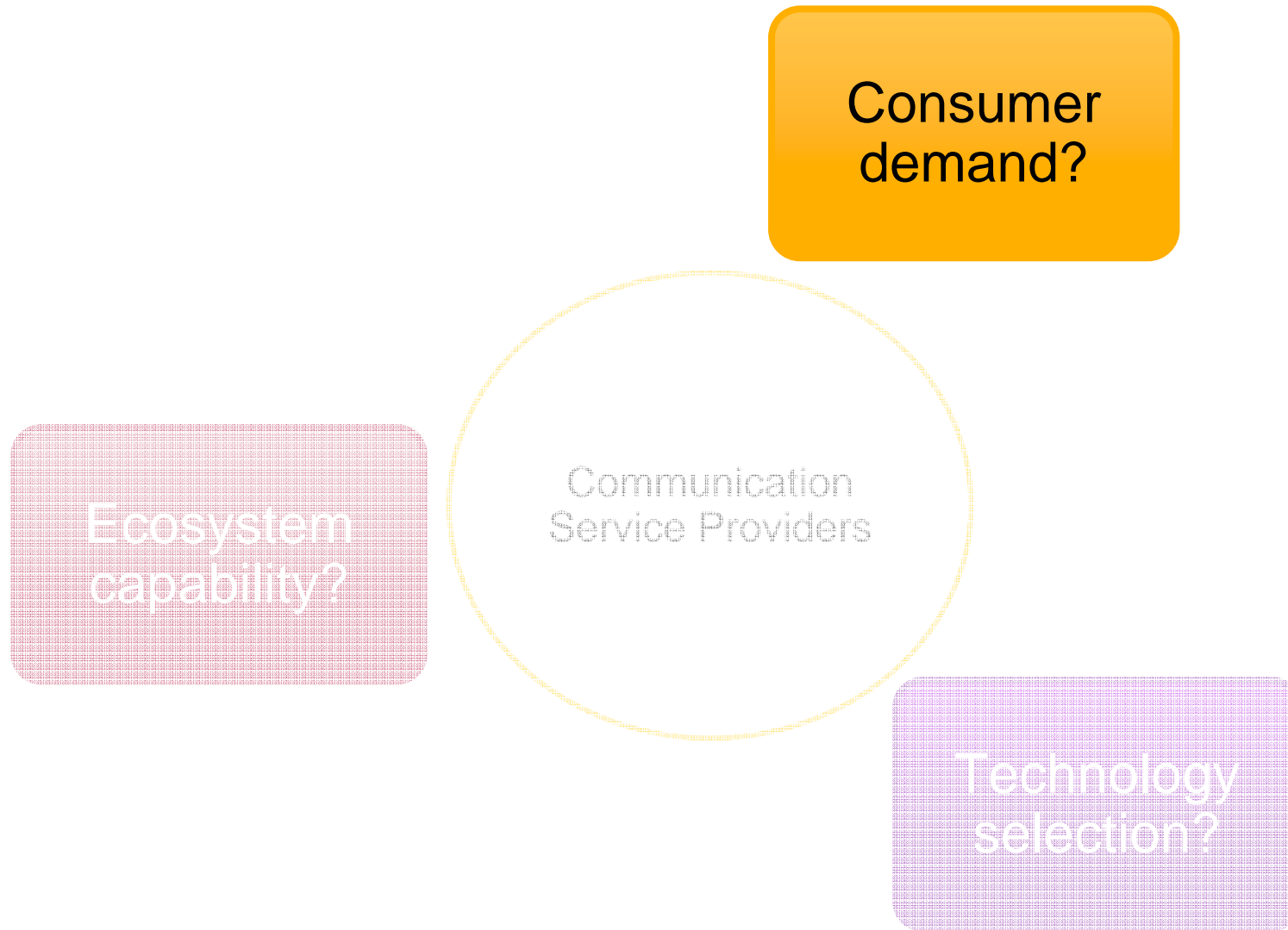
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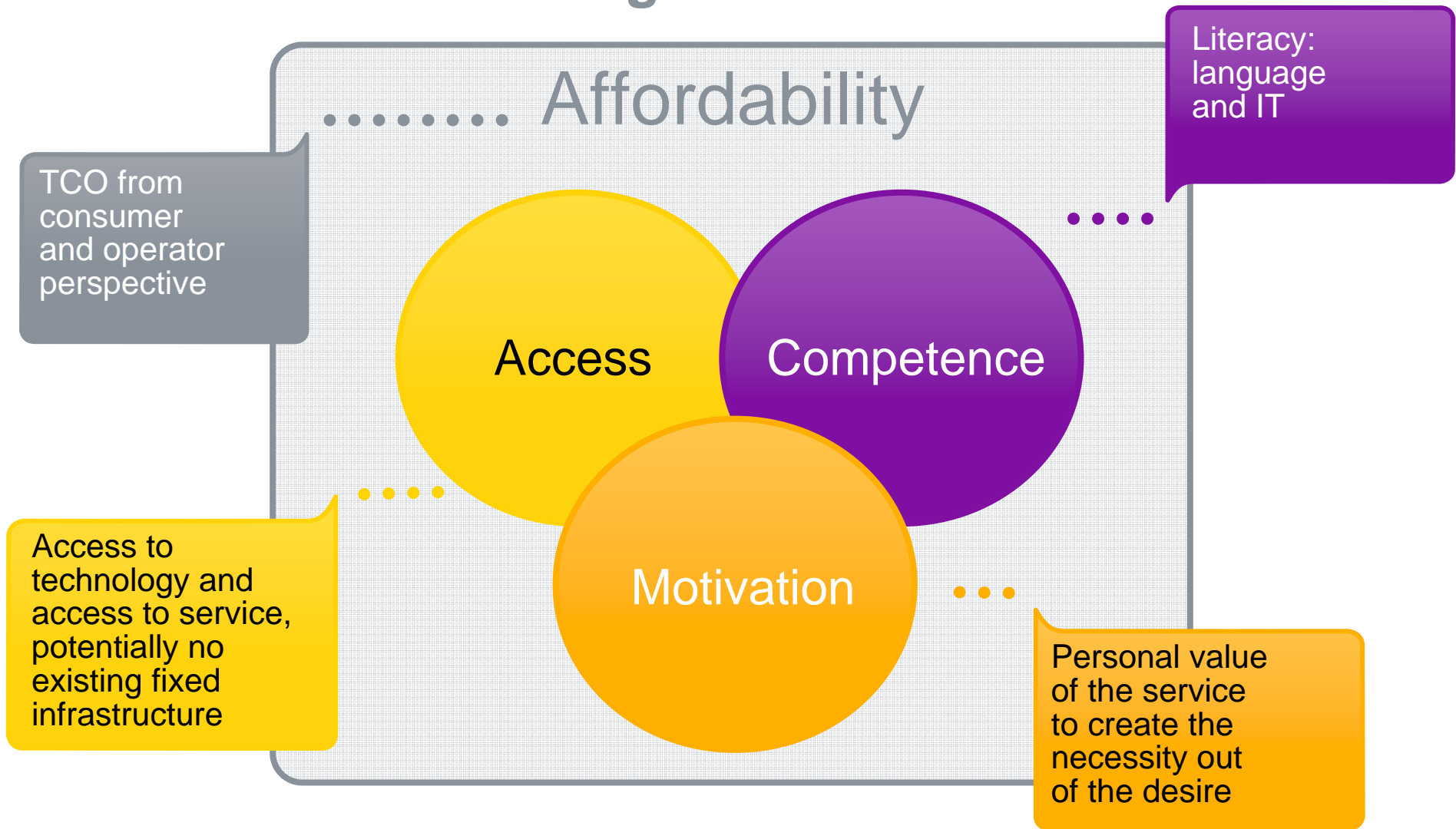


# Key challenges to include the un-connected



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# Internet for the next billion requires consumer understanding

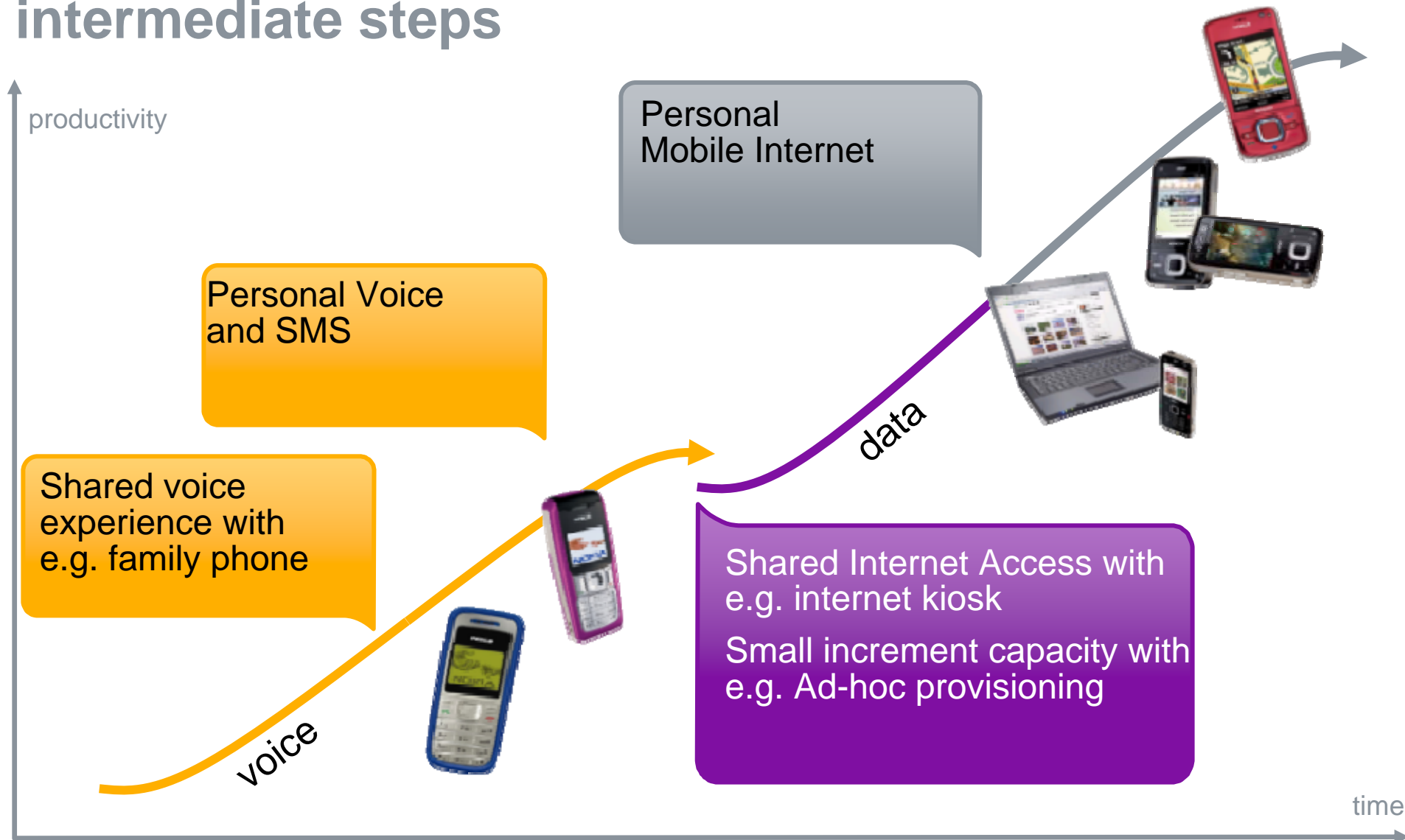


Source: Marja-Liisa Viherä 1999 (adapted)

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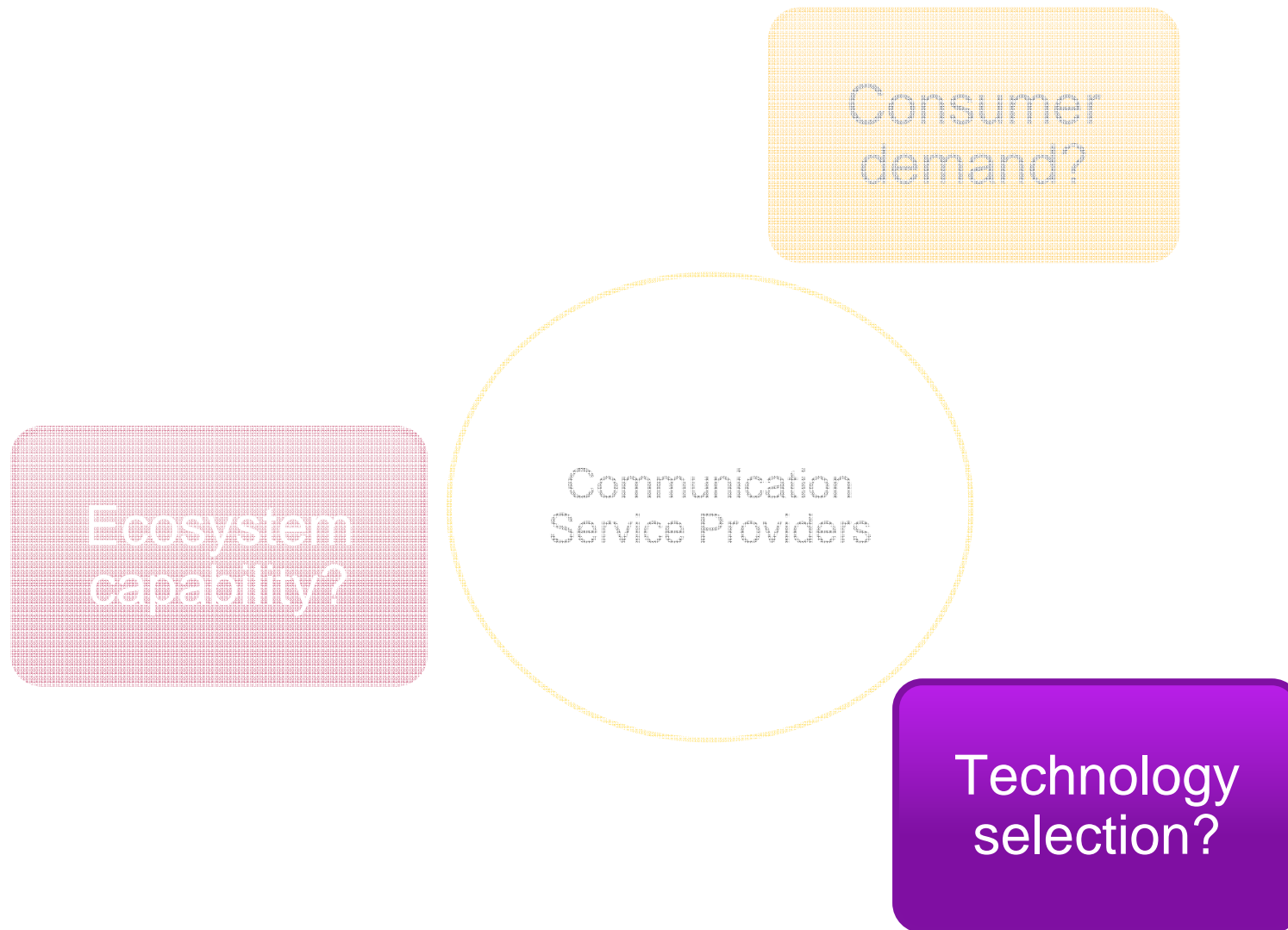


# Migration from personal voice to data with intermediate steps

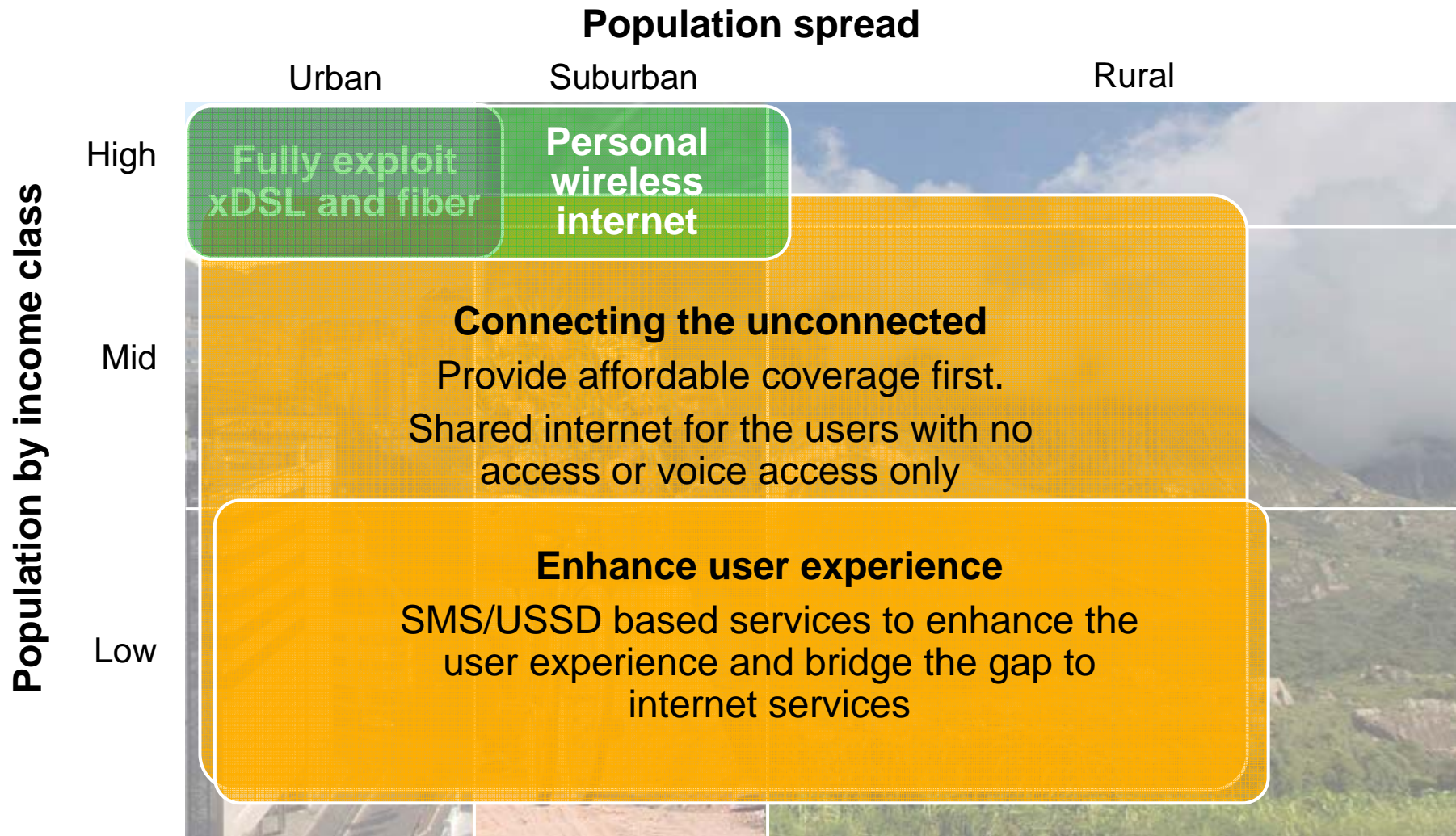


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# Key challenges to include the un-connected



# 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



# Address the key rural challenges

Tower

Smart sites, site sharing

SW defined radio, centralised Network Operations

Power

Base Stations with leading energy efficiency

Autonomous sites with renewable energy supply

Backhaul

Suitable backhaul (IP/Ethernet, packet radio, satellite)

Cash

Prepaid, eRefill, Cost Tracker

Charging

Converged Charging

Distribution

Innovative business models w/ local entrepreneurs

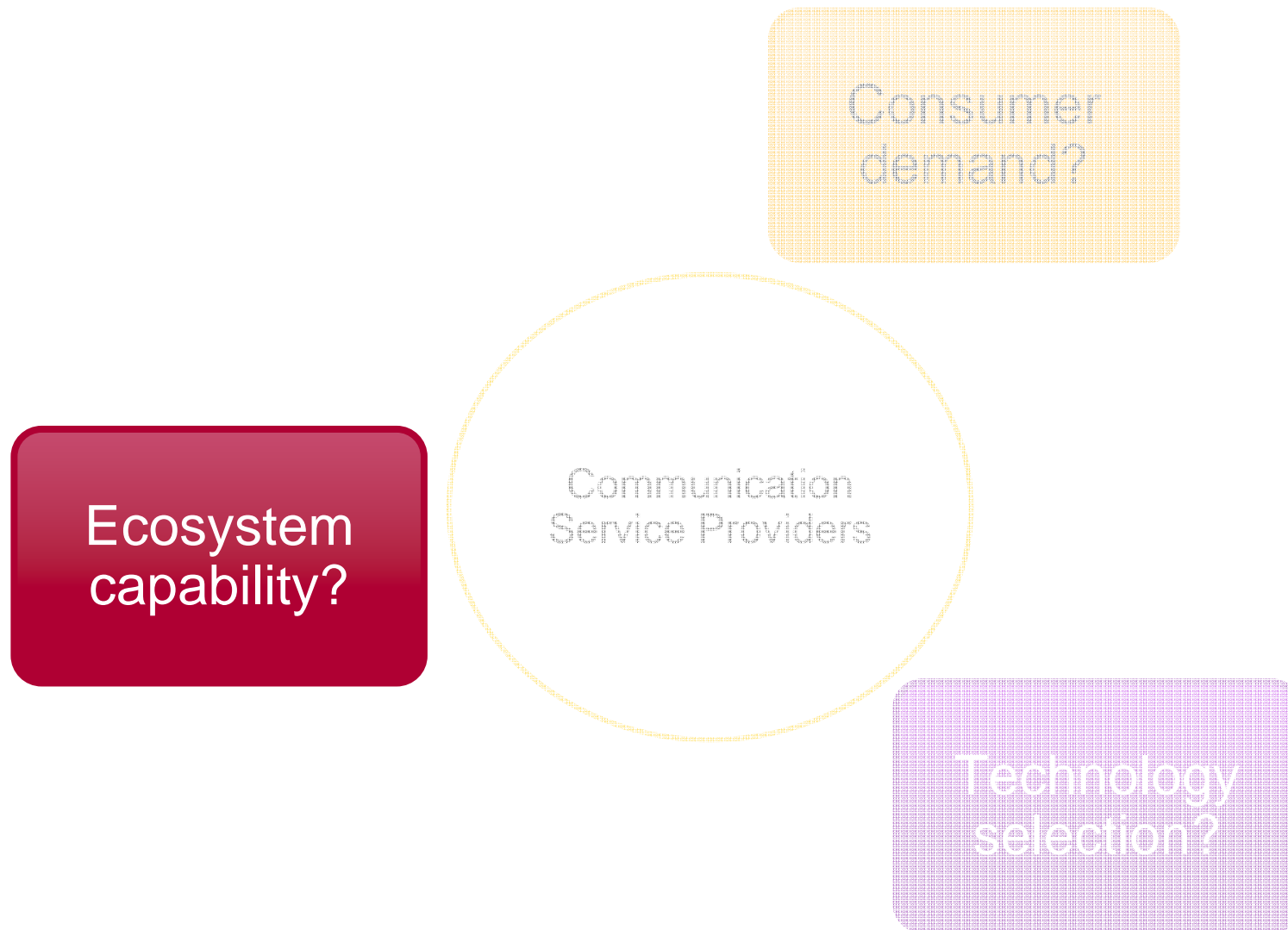
Competence

Internet kiosk for first time discovery of services

Intuitive useability

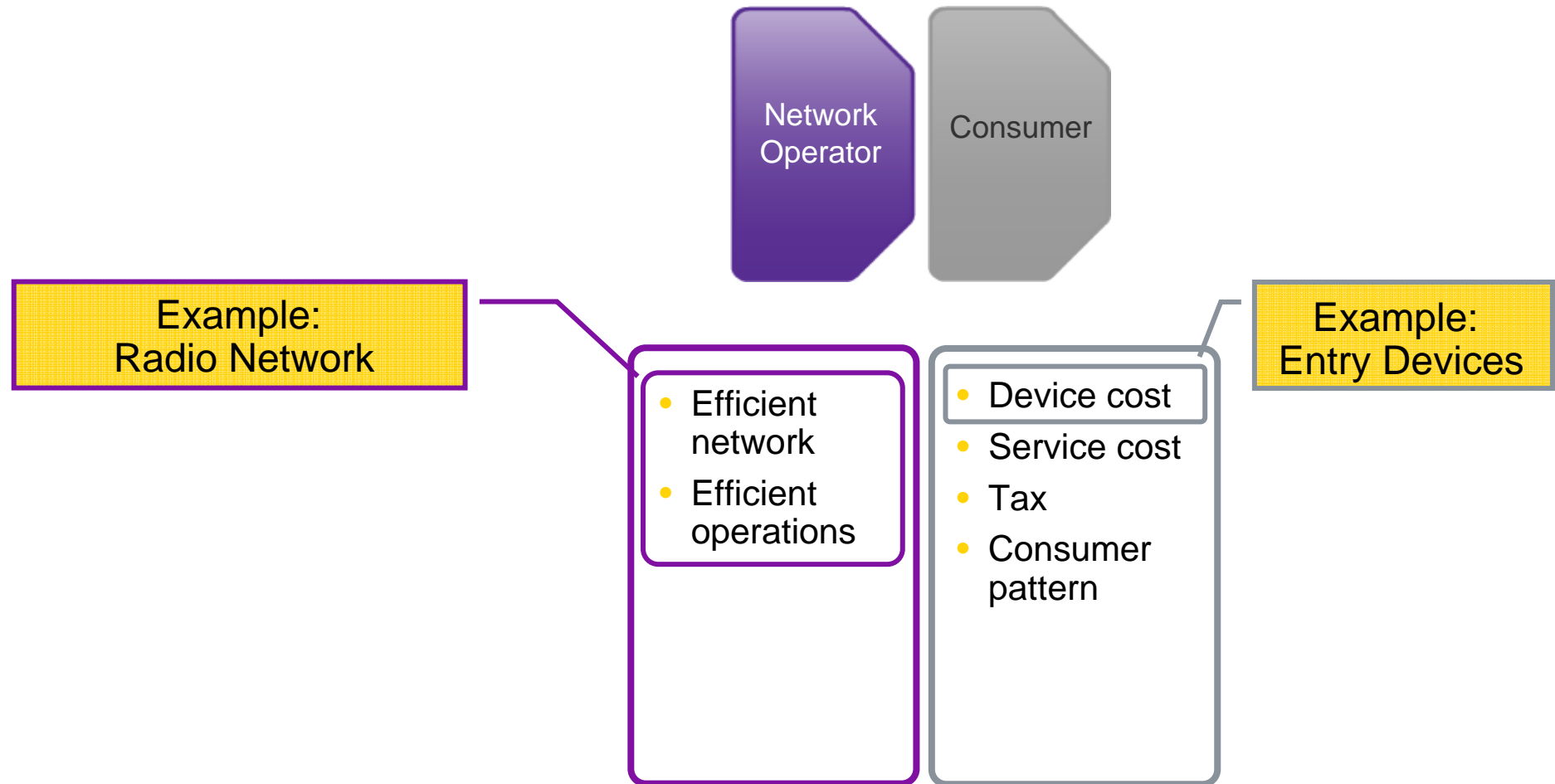
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# Key challenges to include the un-connected

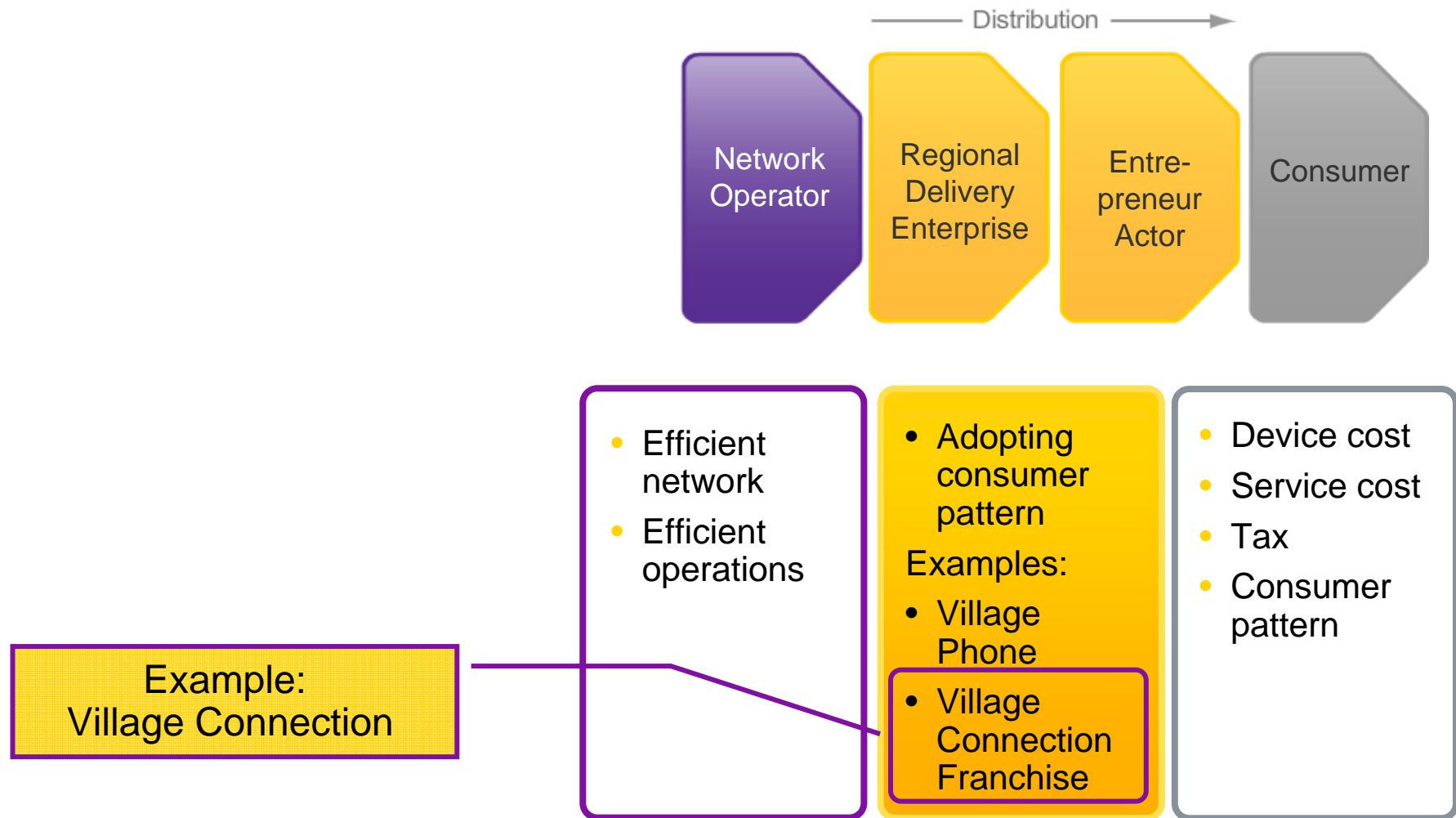




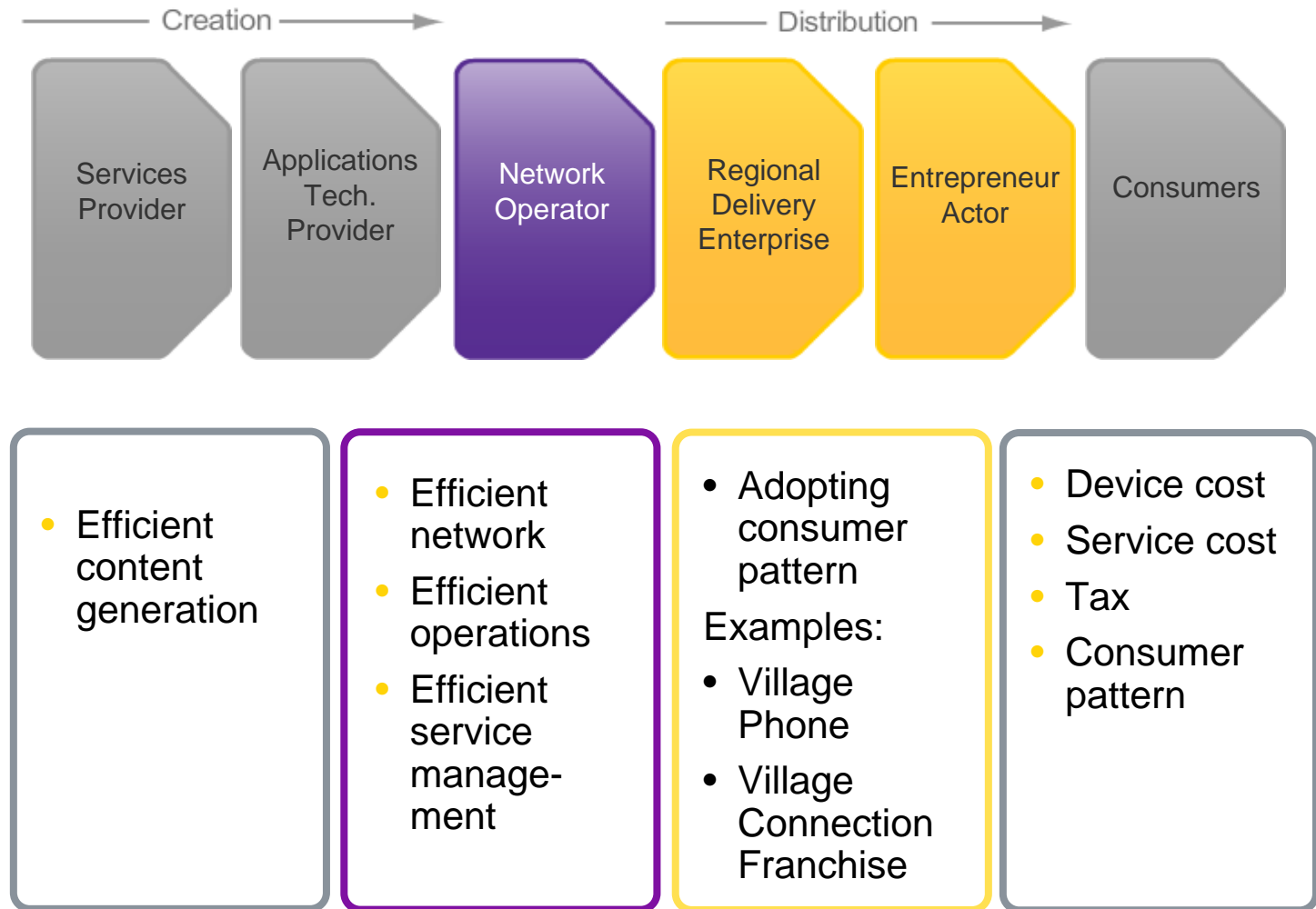
# Voice affordability is impacted mainly by the network and device



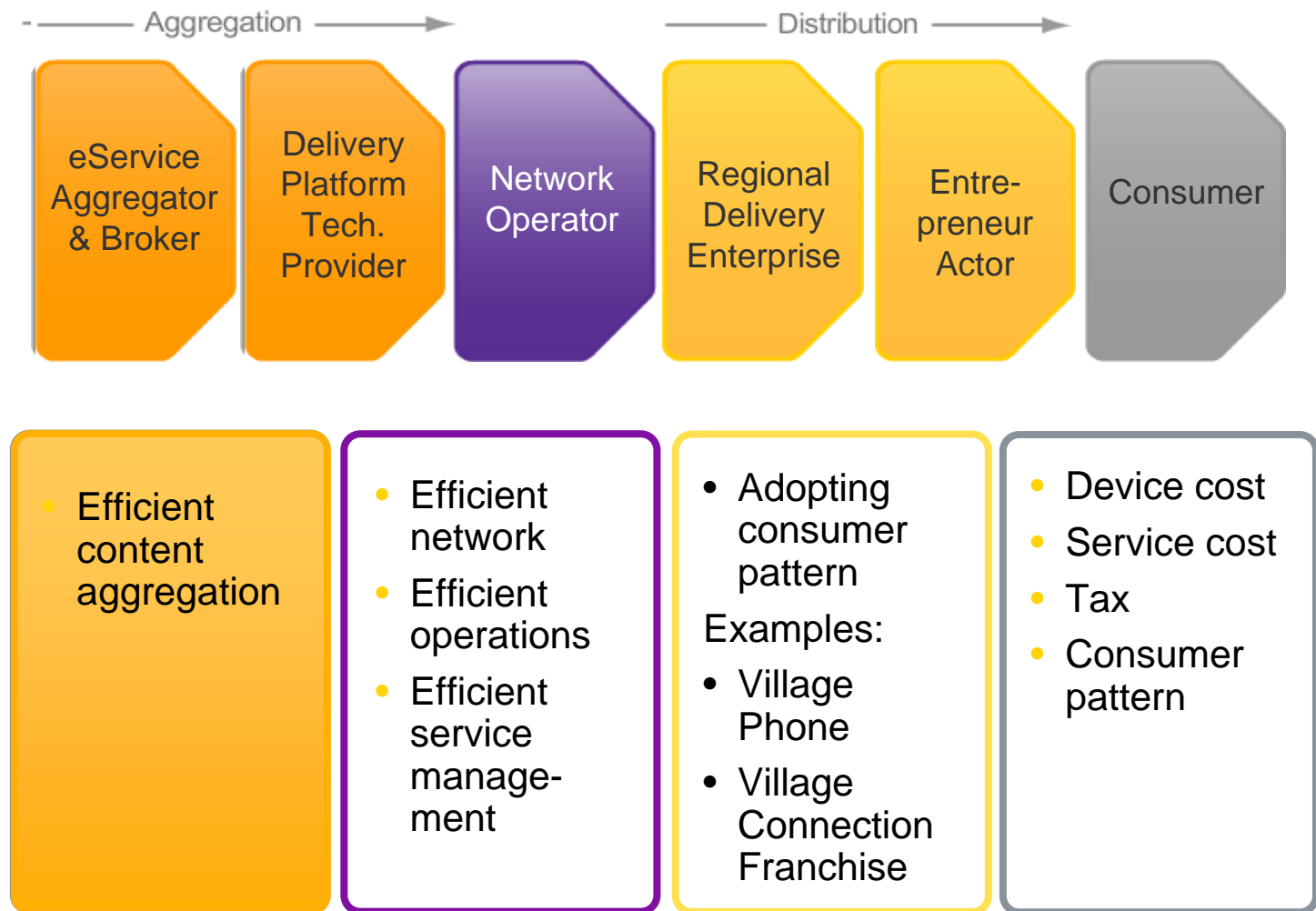
# Shared access of voice opens a distribution component in emerging markets



# Data services require dedicated content



# Complexity in content framework opens an aggregation opportunity



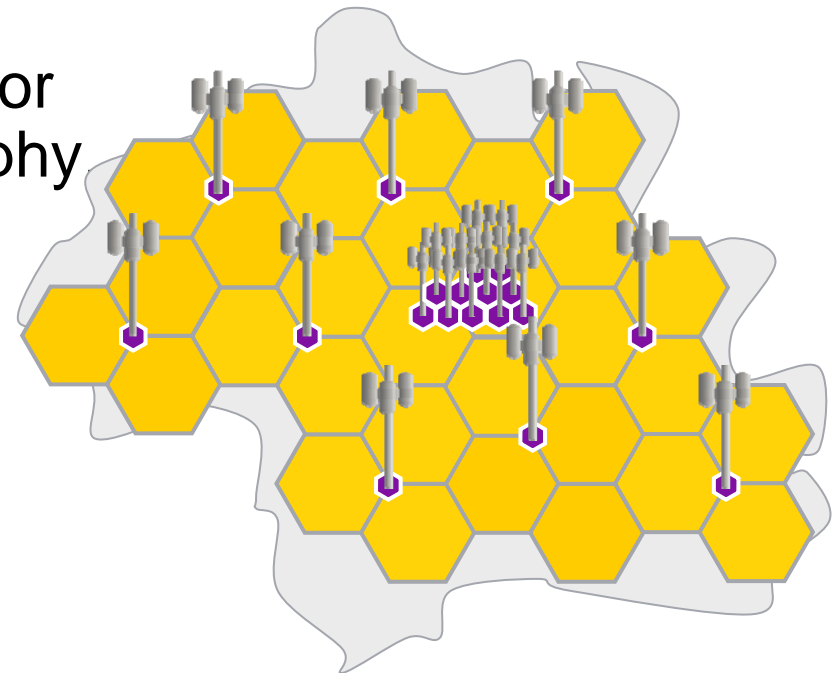
# Example: Radio Network



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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

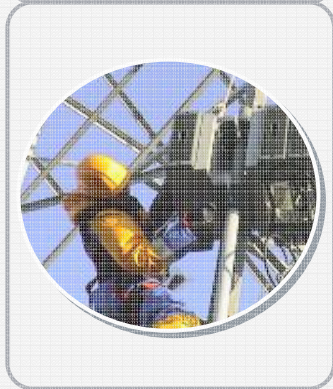
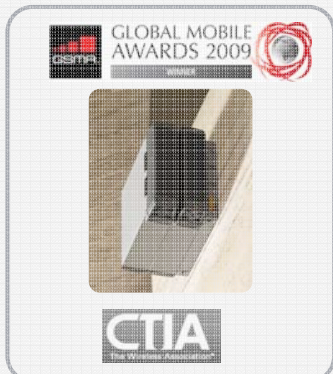


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# “Smart Sites” keep CAPEX, IMPEX and OPEX low

Award winning Flexi BTS energy efficiency



Optimized design for flexible site installation / Services

Current market standard

Outdoor power cabinet (aircon)

900W @ +35C°

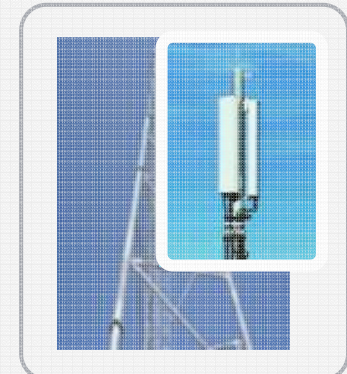
Nokia Siemens Networks SiteStar battery cooling



40W @ +35 C°

Unique battery cooling cuts Opex and CO2 footprint by 50%

Optimized Passive equipment range

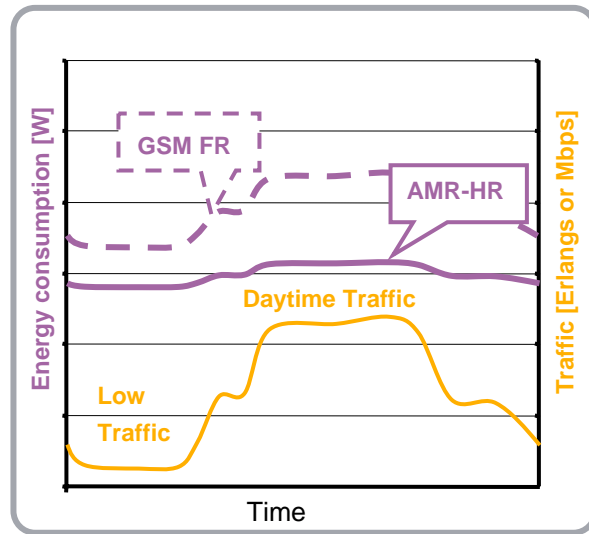


BTS Integrated Transmission

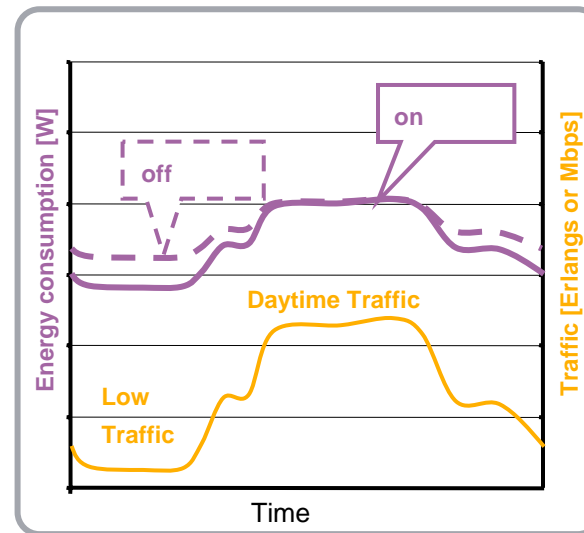
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# Features for lowest power consumption (examples)

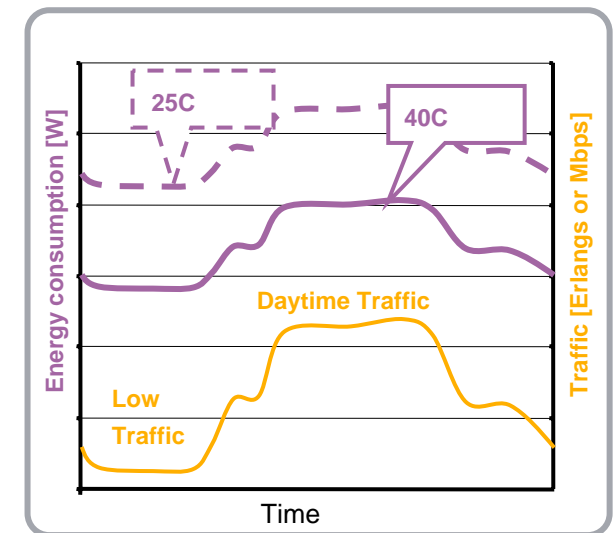
## AMR half rate



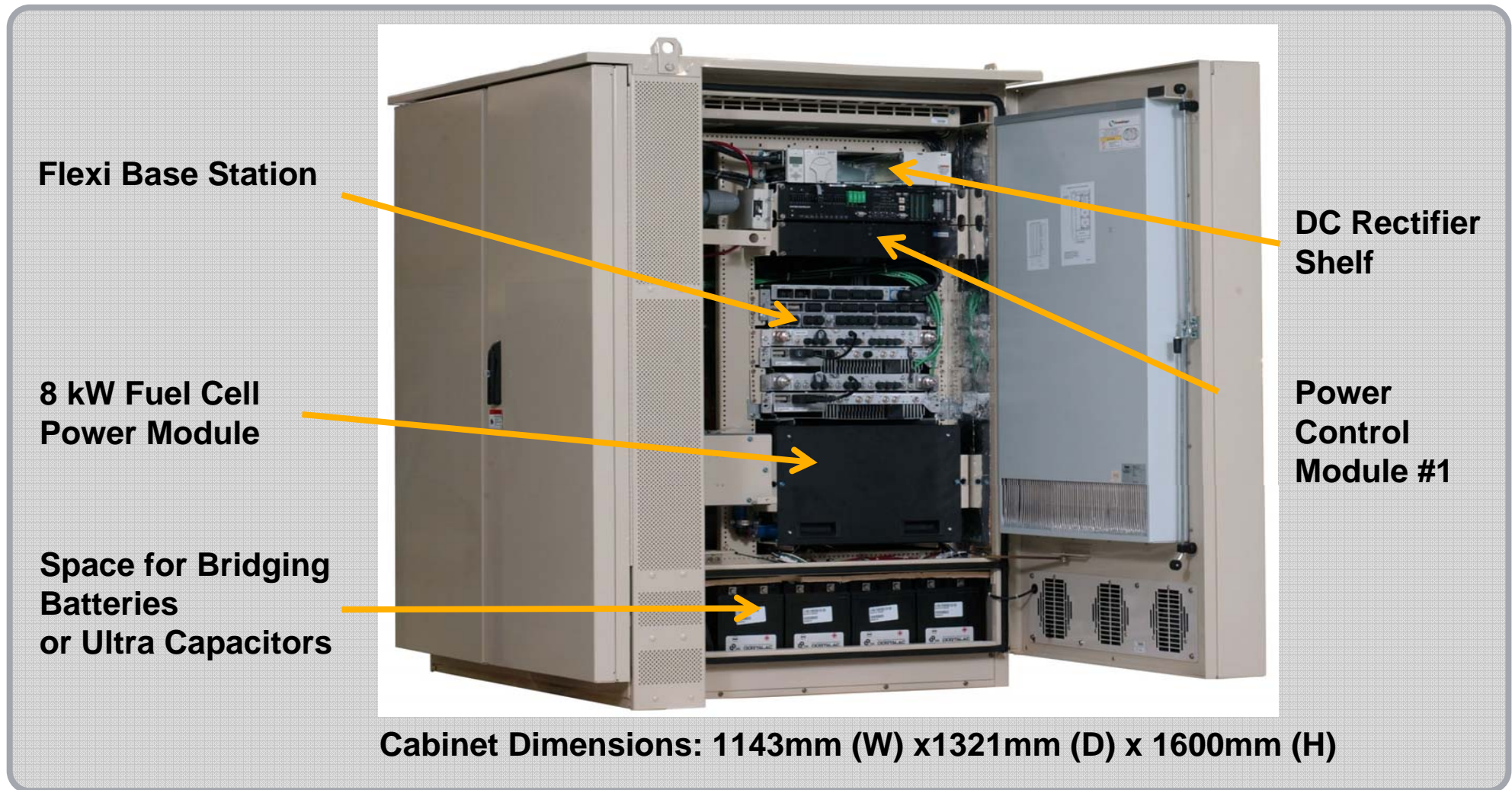
## TRX power down in low traffic



## Equipment temperature up to 40C°



# Autonomous site: Base station within fuel cell cabinet



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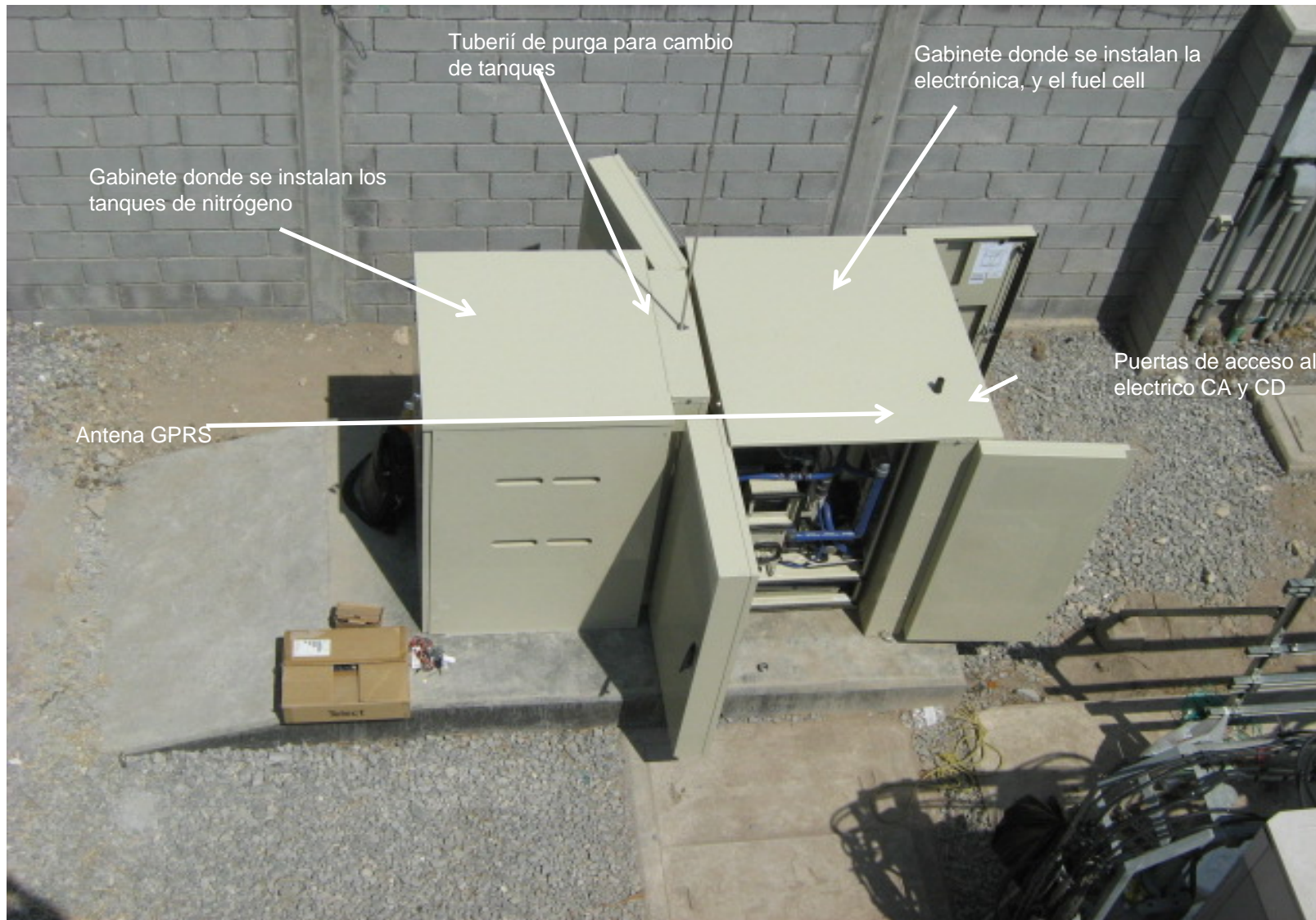
# Hydrogen tanks



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# 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

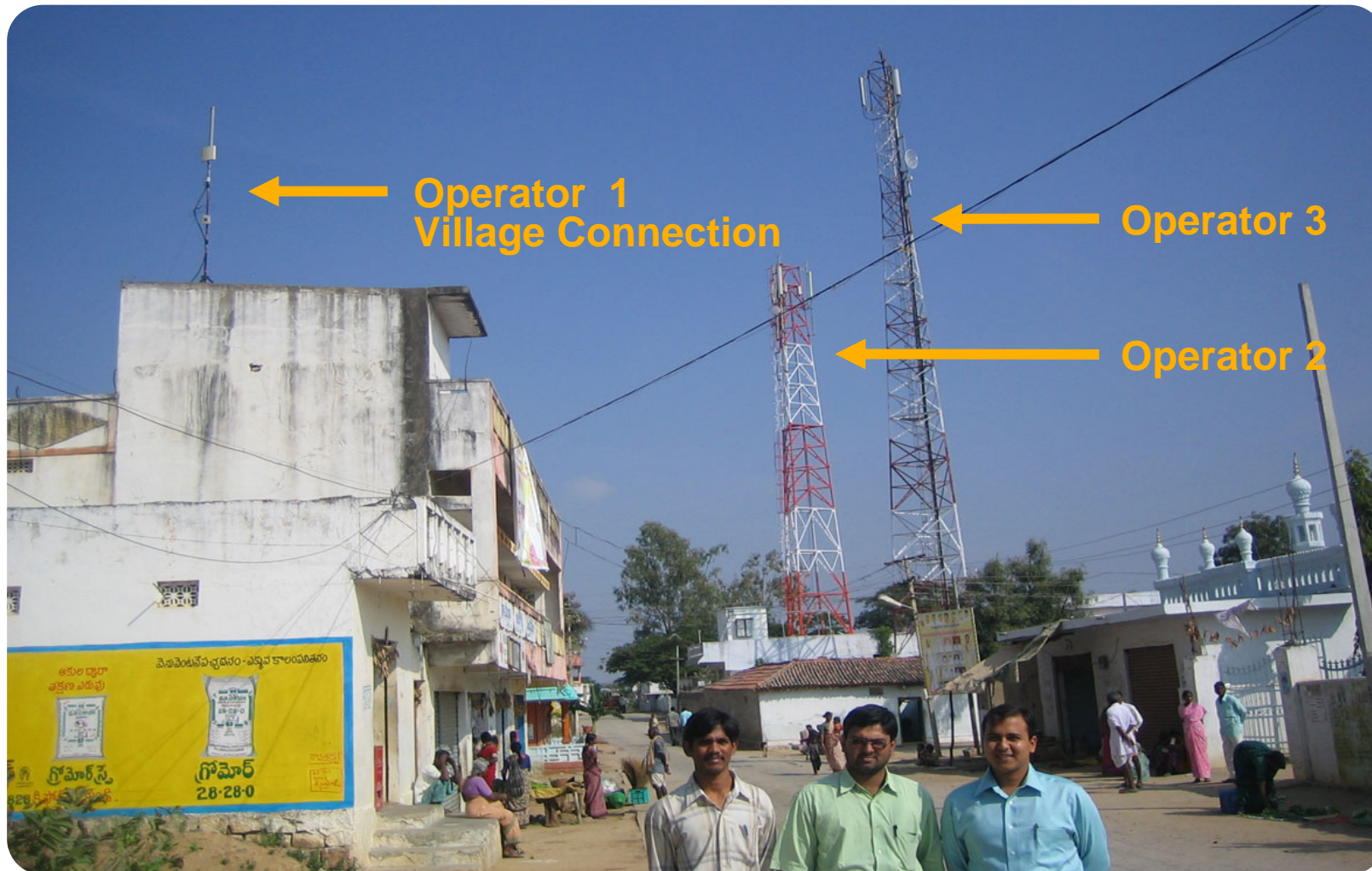


NOKIA 2730  
3G capable

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# Example: Village Connection



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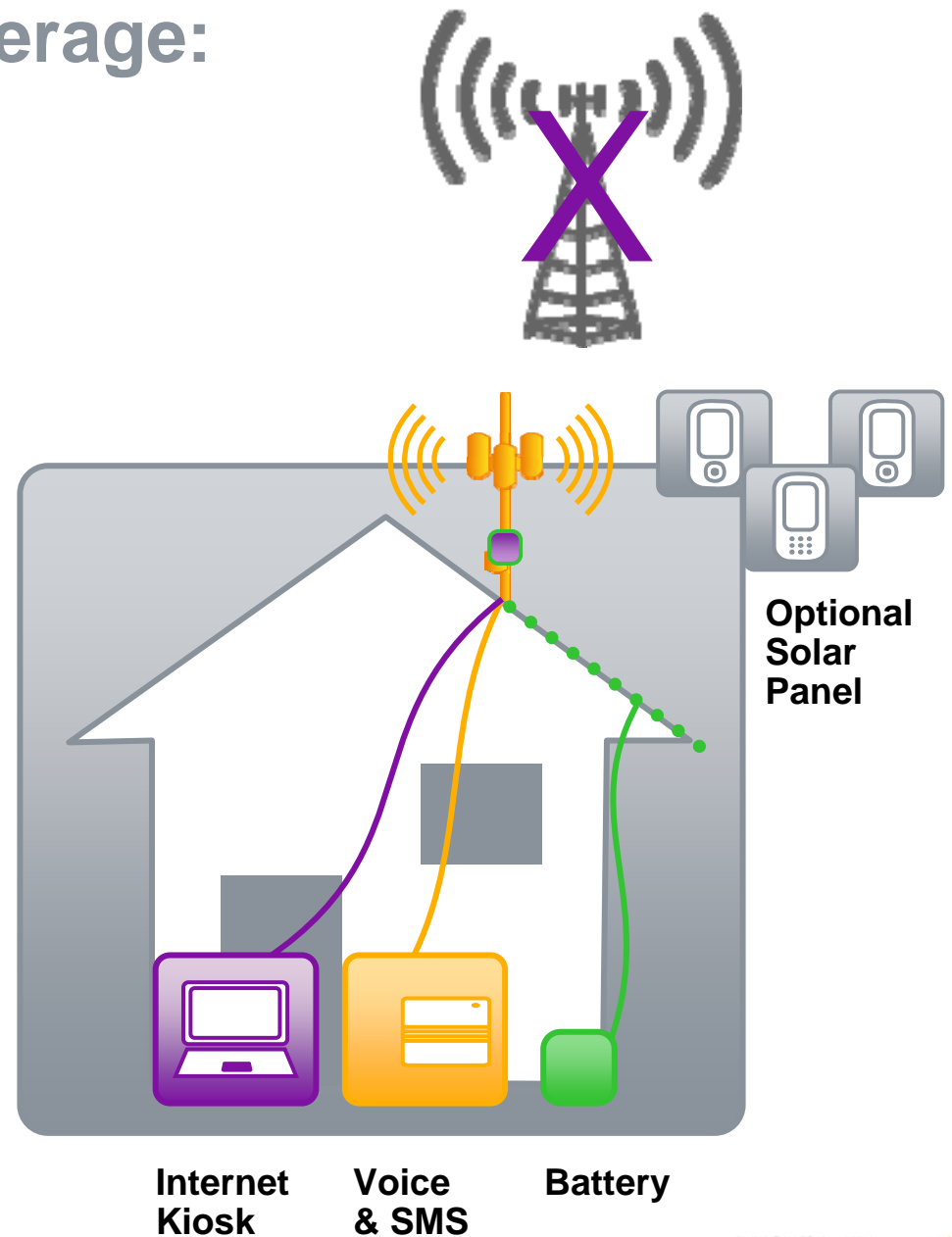


# Lean approach for rural coverage: Village Connection

## GSM Access Point in a village

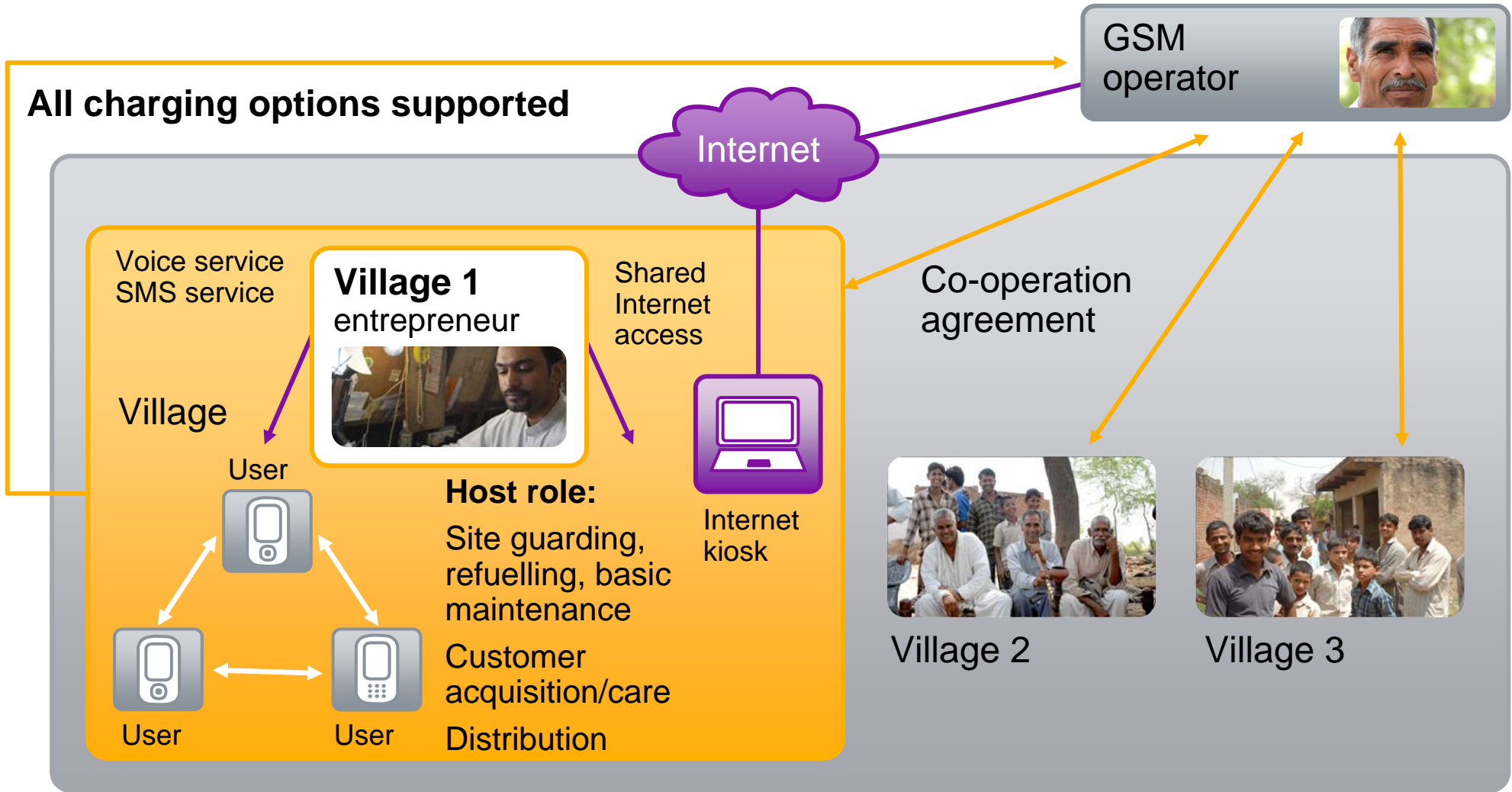
- Wide area coverage with minimal site cost
- “Mini” network: calls in village connected locally
- Cost-effective IP connectivity for long-distance calls
- Core network maintains control: regular charging and services
- Option of Internet Kiosk: shared Internet access for villagers

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 understanding

- 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

# 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.

