

Affordable connectivity for rural villages: Nokia Siemens Village Connection

ITU-D Lusaka, Zambia
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Neo Phukubje



Market trends and operator challenges



Market Trend

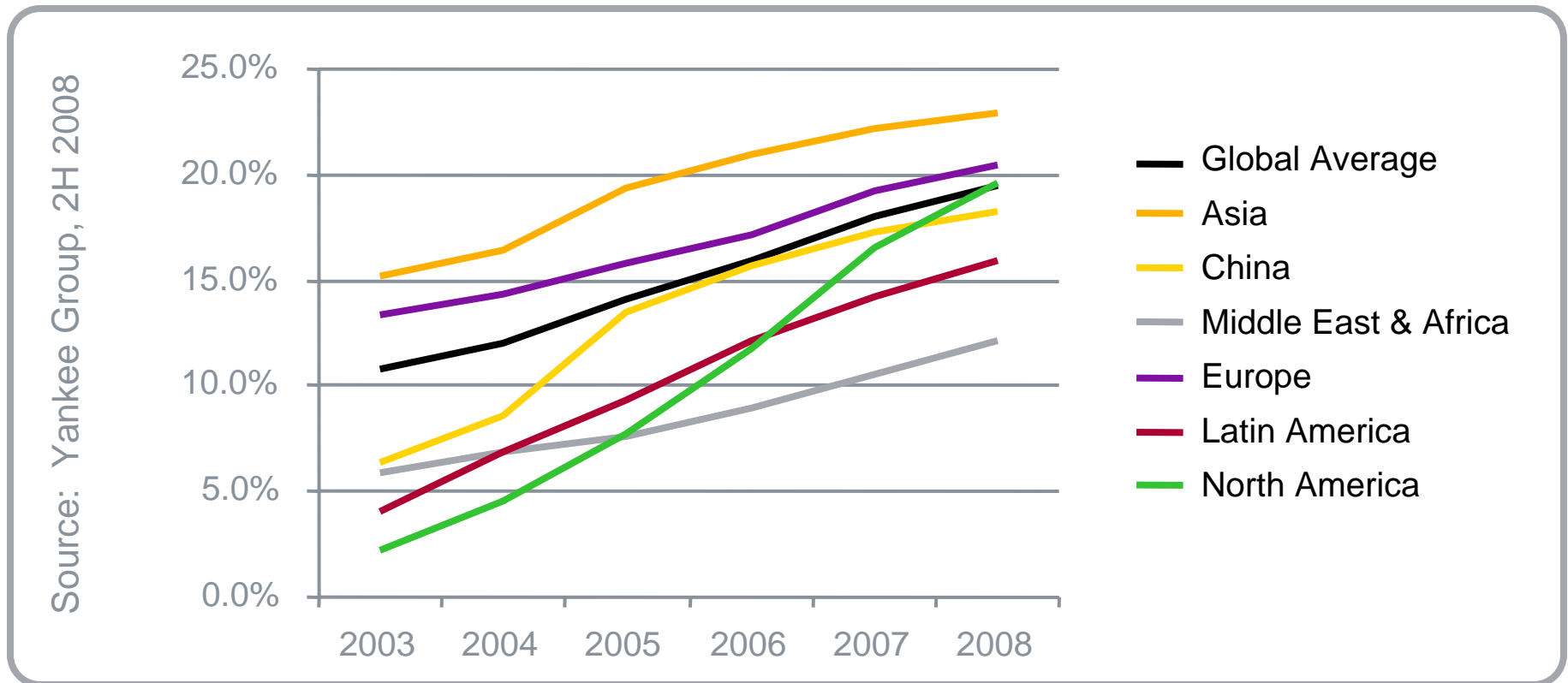
- Regulators in many new growth markets require rural coverage
- Many potential subscribers can spend only 3 USD/month on communications
- New coverage is mainly built in rural areas with little existing infrastructure

Operator challenges

- How to bring connectivity to rural areas profitably?
- Expanding to rural villages with traditional solutions and business models may be too costly
- How to ensure cost-effective back-haul?
- How to ensure power availability and maintenance in rural areas?

Source: Nokia Siemens Networks, UN data

Data ARPU as percentage of total ARPU is increasing



Non-SMS Mobile Data Revenue grew 37.82% globally from 2007 to 2008

Source: Informa, 2H2008

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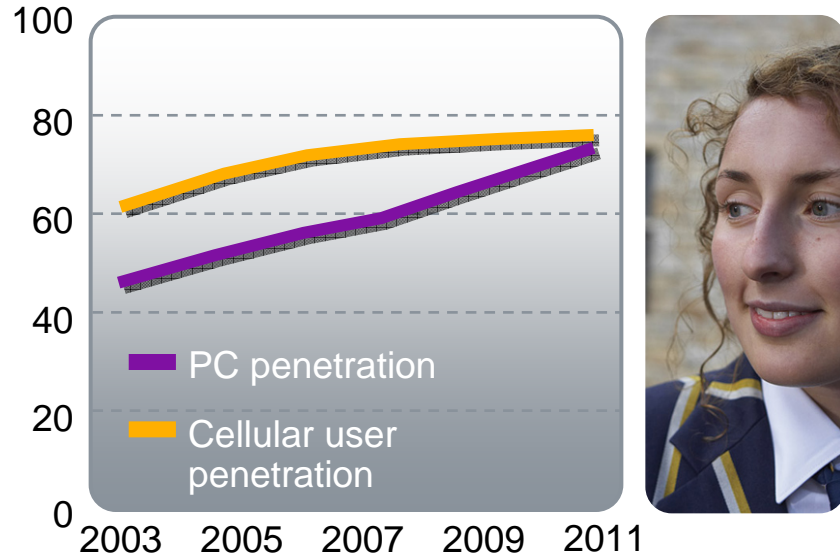
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The opportunity in Emerging Markets

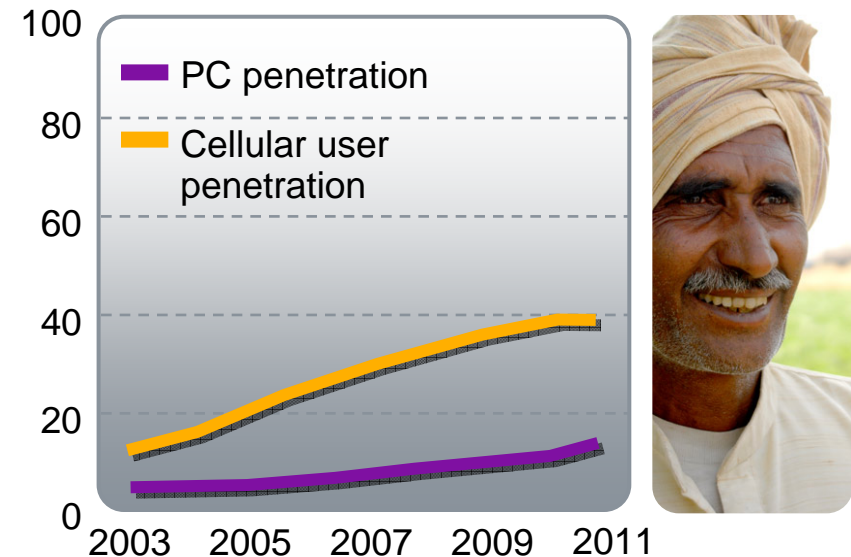
Mature markets

User penetration (%)



Emerging markets

User penetration (%)



- Overall high growth opportunity in emerging markets
- The cellular penetration supersedes the PC penetration by far, which drives our belief that mobile owners will drive the growth
- Internet in emerging markets will be fixed and mobile

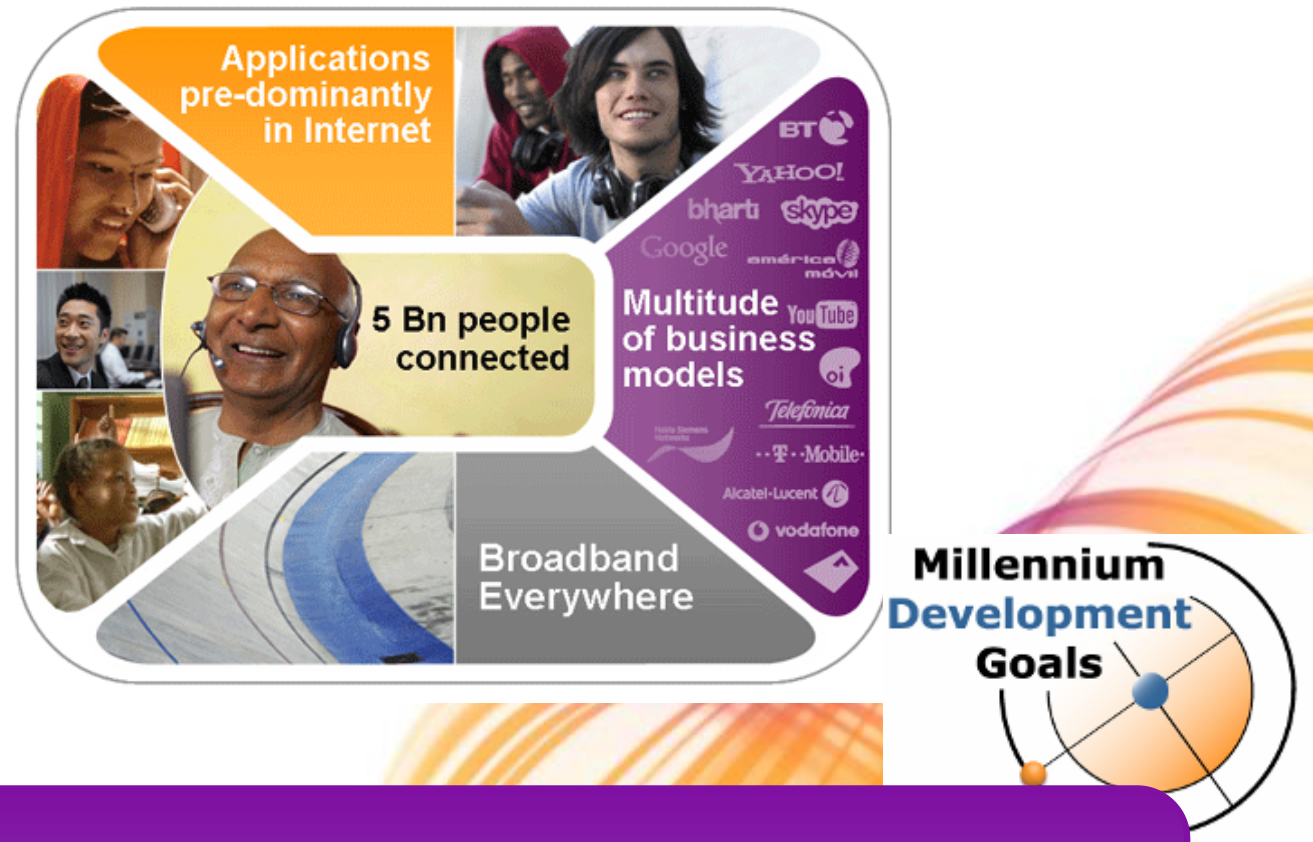
Source: Nokia Siemens Networks 2007

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Our vision: 5 billion people connected by 2015



Universal access to information and communication technologies boosts the economic and social development of nations*

* United Nations

Rural subscribers present an unlocked potential

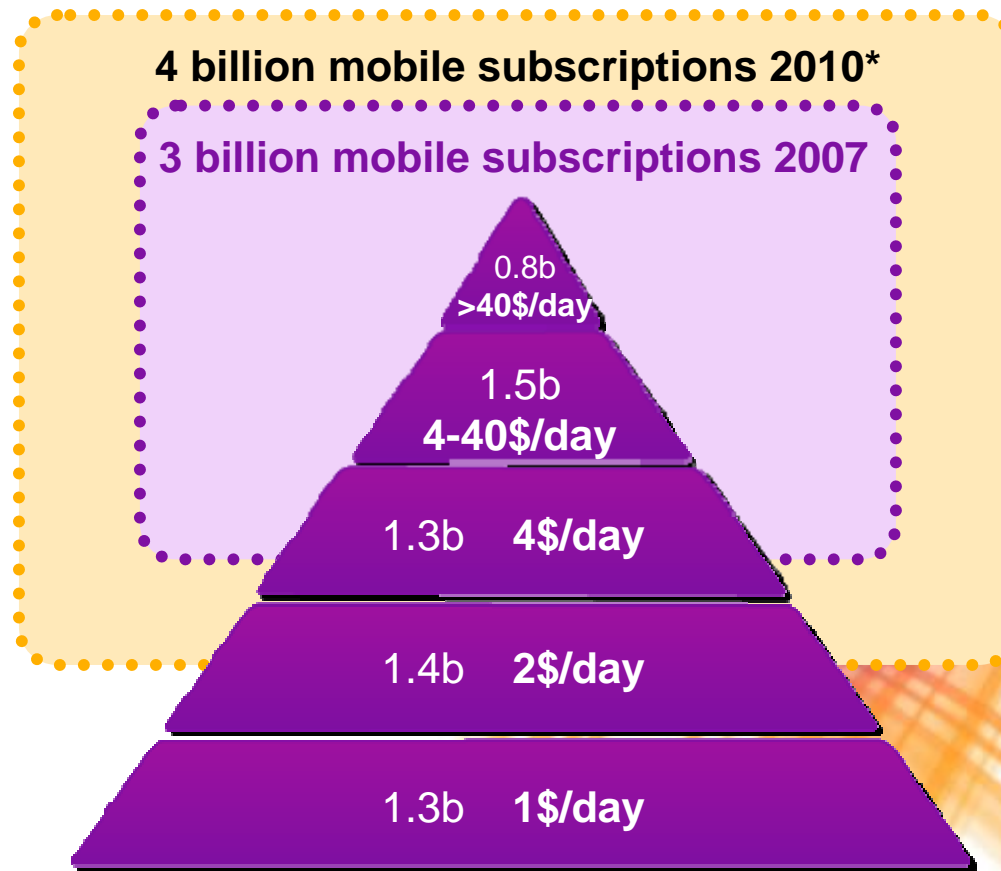
- Close to 3 billion people live in rural areas
- In Africa about 70% and in Asia 60% of the population live in villages*
- Often there is no communications service available
- Characteristics of a potential village subscriber
 - Income less than USD 3 per day
 - Irregular income, money is not saved
 - Brand-conscious



Innovative solutions are required for tapping into the rural business profitably

* Source: "Urban and Rural Areas 2003", Population Division, UN.

Strong growth in mobility continues



**World population split according to income segment
(USD per capita per day)****

*Nokia

**United Nations

According the recent studies the need is clearly there

Towards effective e-governance: the delivery of public services through local e-content

The Commonwealth Telecommunications Organization (CTO), Nokia and Nokia Siemens Networks research initiative in India, Ghana, South Africa

- Users have clear desires for health, education and income-generating services
- Successful delivery of public services through e-content requires a sustainable business model for all parties

Connectivity Scorecard

pioneering global Information and Communications Technology (ICT) index measuring the extent to which governments, businesses and consumers make use of connectivity technologies to enhance social and economic prosperity.

Professor Waverman, LECG, Nokia Siemens Networks

- Different economies have different needs
- Connectivity Scorecard demonstrates countries could benefit more from deployment of telecom and IT infrastructure - utilizing the full potential and benefits of ICTs

Nokia Siemens Networks Village Connection

meeting the challenge of connecting the next billion

The challenge:

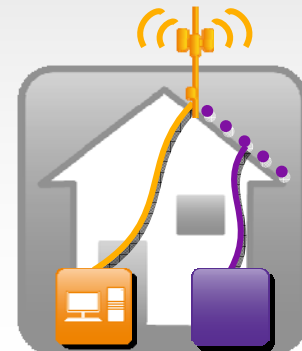
- Profitable mobile connectivity for rural subscribers who typically can afford US\$ 3 per month

The solution: Village Connection

- Significantly reduced TCO through novel network architecture and slim site solution
- New business model enabled by local subscriber management

Ready for roll-out:

- Connecting communities in India now
- Global roll-out started 1Q2008



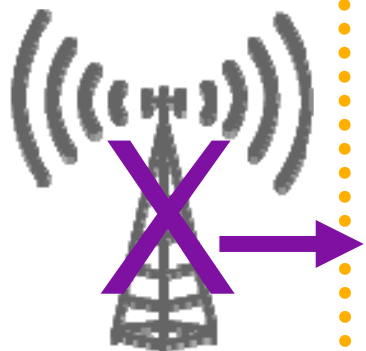
PC BTS Battery

Optional
Solar Panel

Innovation: Nokia Siemens Networks Village Connection

GSM Access Point in a village

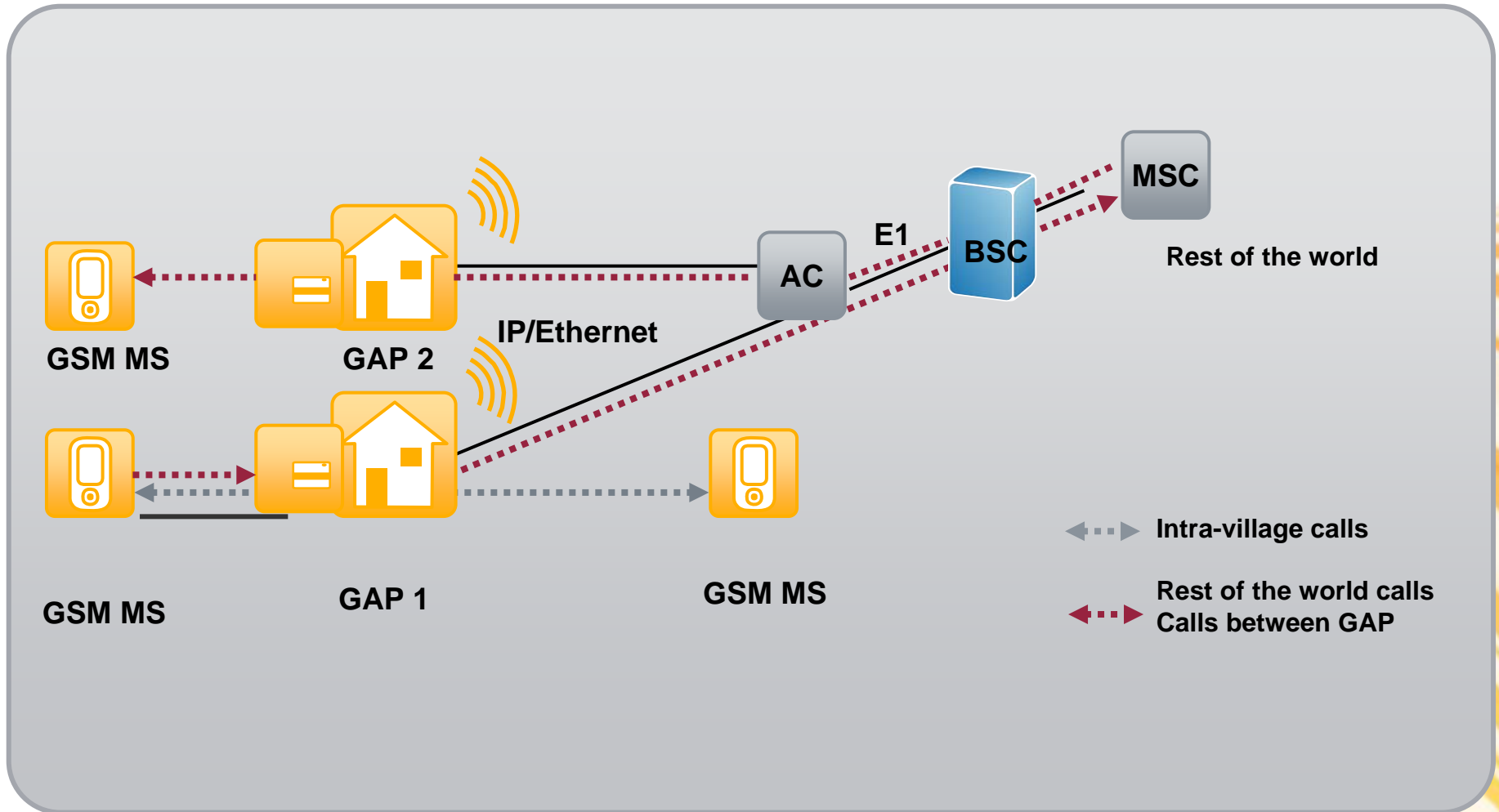
- GSM handsets used
- Cost-effective “mini” network: village internal calls are connected locally
- Enables local operation and subscriber management



A new solution
A new business model

Village Connection for rural villages

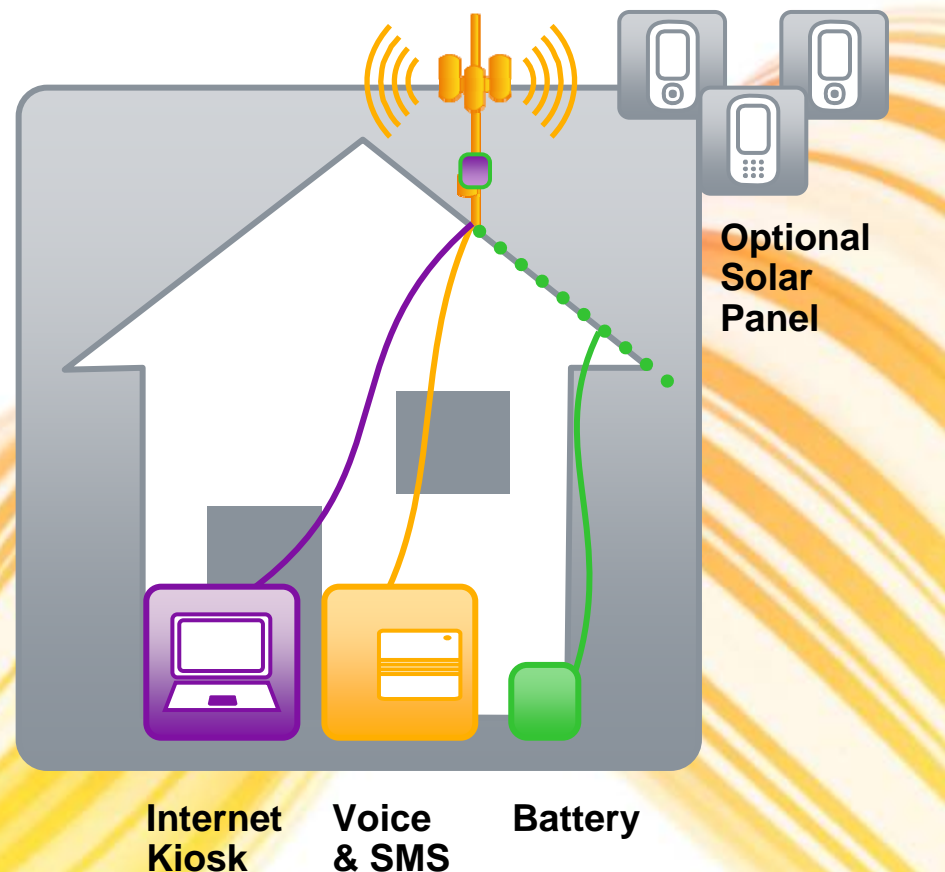
Rel 2.0



Lean approach for rural coverage: Village Connection

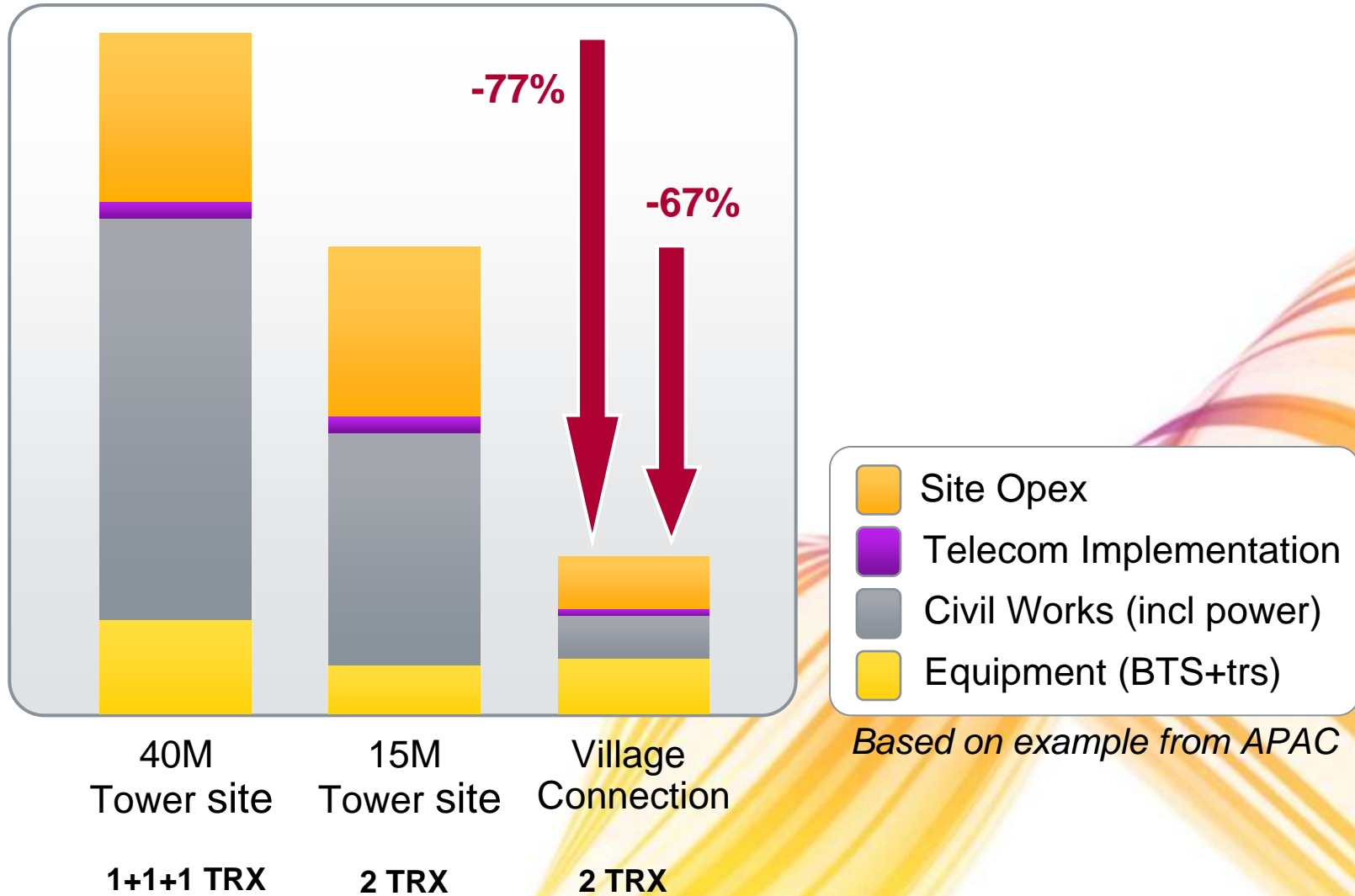
GSM Access Point in a village

- 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

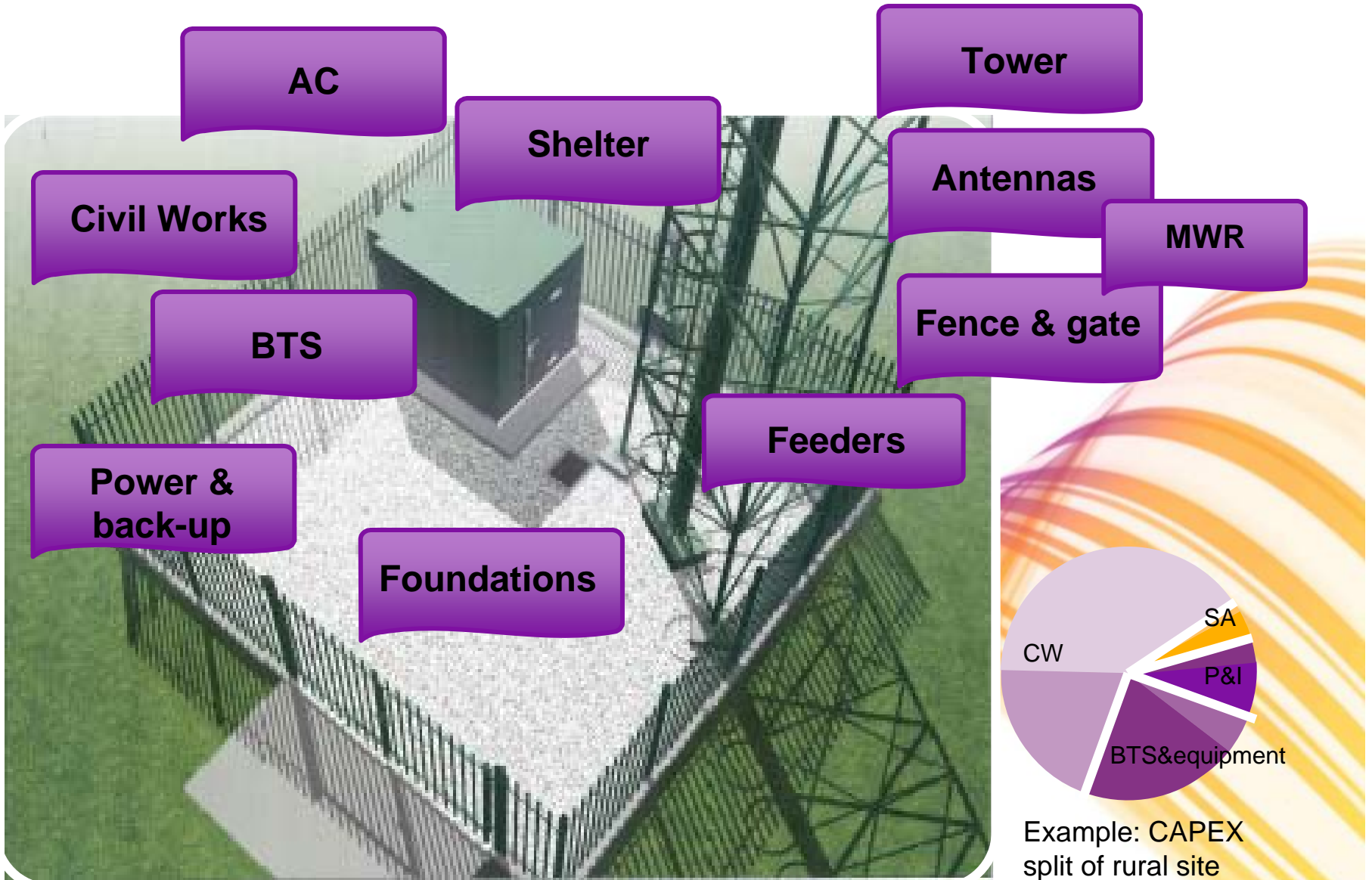


Up to 80% less site CAPEX
Minimal OPEX

Village Connection slashes site CAPEX and OPEX



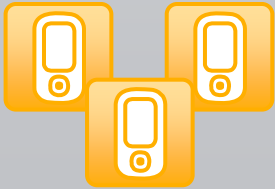
Civil Works dominate traditional rural site cost



Village Connection Internet Kiosk: the intermediate step towards personal internet services

Voice services

Personal Voice
and SMS



Village Connection

Shared Internet

Consumers will want to try out the benefits that internet will bring and understand the value

Internet kiosk to access Internet with assistance

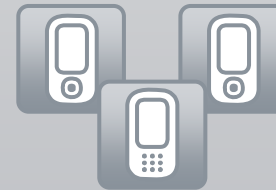


Internet Kiosk

Village Connection
+ Internet Kiosk

Mobile Internet

Personal
Mobile Internet



Bridging the digital divide: Shared Internet connections

Overcoming Bottlenecks to Broadband

- A shared access point providing urban
Ghanaians with broadband access



“In today’s world there is nothing like teledensity for voice, you must work to increase teledensity for broadband. If you want to do broadband in the same way you must actually provide a broadband type of café in the villages”

Mr Ashis Sanyal, Director, e-Governance,
Department of IT, India

Village Connection Internet Kiosk

Everyone benefits



Villagers

Spending less

- Access to info without travel time and cost
- Preventive health measures

Earning more

- Employment possibilities
- Better market price for products
- Better education



Entrepreneur/host

Revenue from villagers

- Access charge
- Usage charge

Revenue from content providers

- Assistance for service usage
- Training of villagers



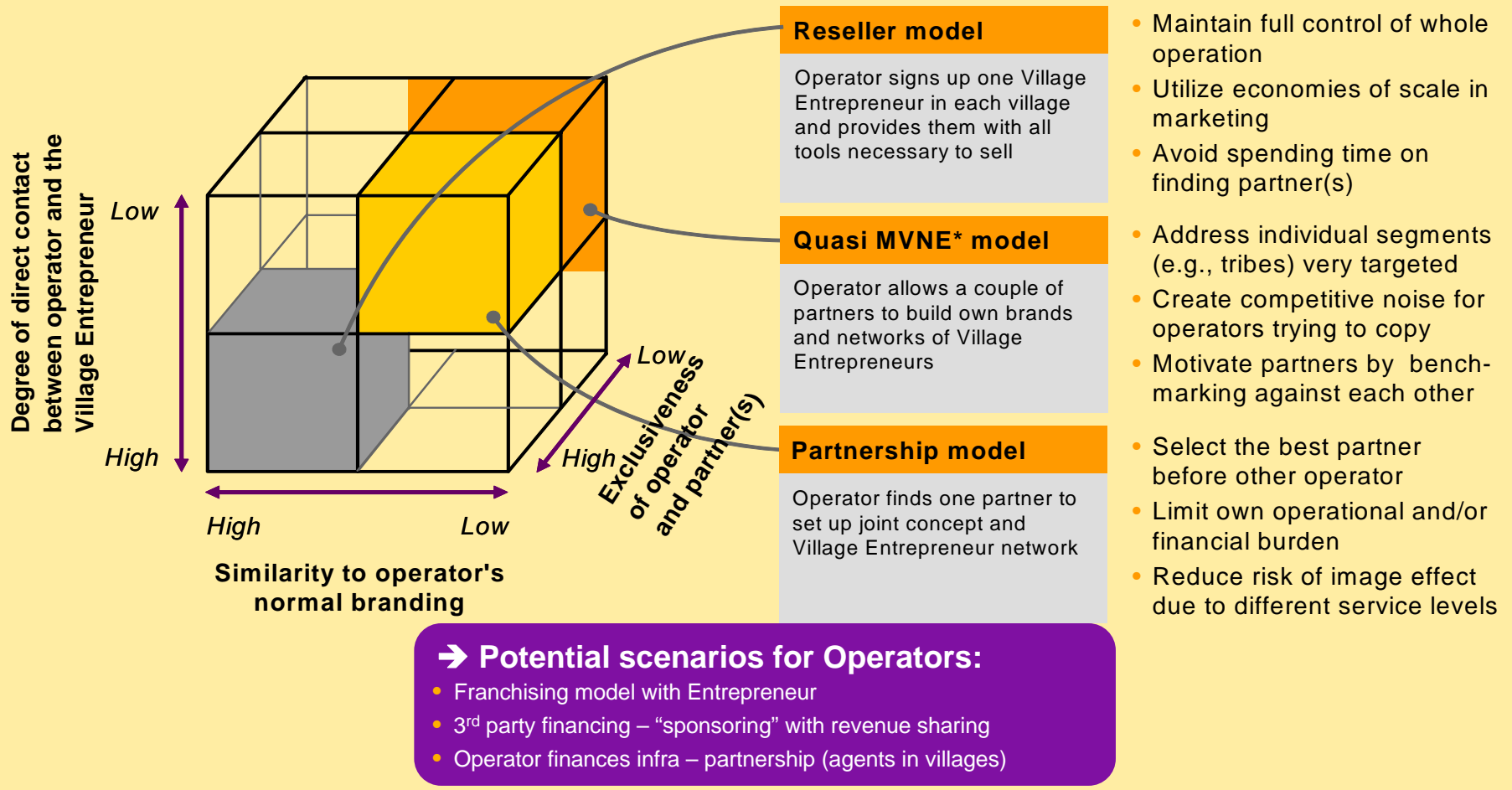
Operator

Internet access to villages at minimal incremental cost

Revenue sharing with entrepreneur

The choice of partner and franchise model is decisive for the entire business system

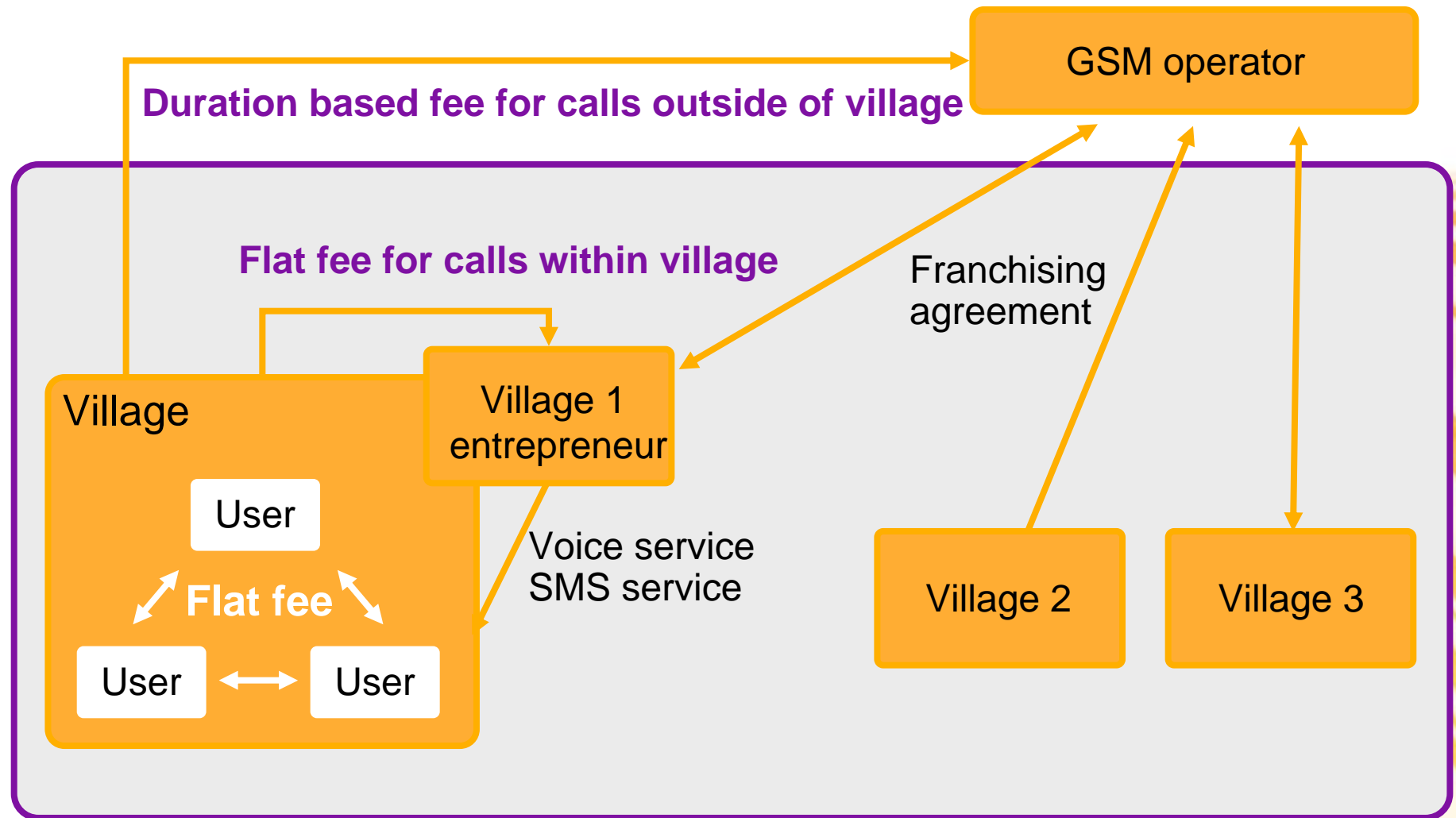
Examples of possible partner and franchise models



*MVNE stands for Mobile Virtual Network Enabler and is an entity helping setting up Mobile Virtual Network Operators (MVNOs)

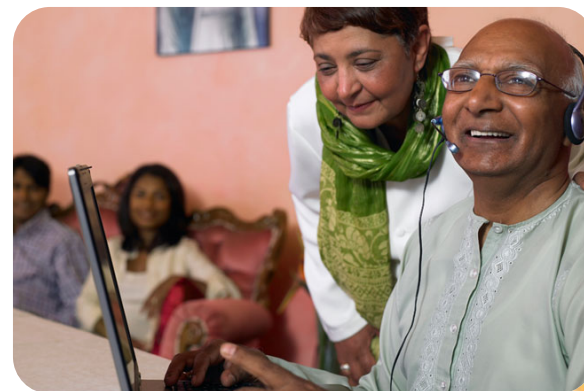
Source: Business Monitoring International; The Economist Intelligence Unit; CIA Fact Book; Nokia Siemens Networks Consulting

Franchise business model makes operating village networks easier for the operator



Pilots successful in India

- Our Village Connection solution has been deployed and tested in India
- Finding a village entrepreneur was easy
- With initial training village entrepreneurs operate networks smoothly
- Village subscribers generate a lot of traffic
 - In one pilot case 400 calls/day were made by 40 users*
- Lots of positive interest and attention amongst village residents and from neighboring villagers



Out-of-the-village calls

52.5%

47.5%

52.5%

Village internal calls

* calls were free of charge within the village for pilot purposes

Common trends in emerging markets

Economy

- GDP growth continues despite international credit crunch
- Large income divide between urban and rural populations
- Large population under 30

Telecom Industry

- Low mobile penetration, customer acquisition highly important
- Low fixed line internet penetration
- Large prepaid market
- Few handset subsidies
- Current focus on 2G

Regulation

- Regulatory environment still developing
- Wide variety of spectrum policies possible

Nokia Siemens Networks Village Connection competitive advantages

Using GSM handsets:

The lowest cost of ownership to subscribers due to abundant supply of GSM handsets also at lower price points

Supporting local subscriber and network management:

Operators can reduce their operating expenditures by working together with a village host of the Access Point

Software as main solution component:

Avoiding investments in specialized – and therefore costly – network elements

Support from experienced Nokia Siemens Networks staff:

We do business in 150 countries offering you our experience with network solutions and services

Unlocking business value through our Village Connection



It is giving us a good source of income and villagers are getting great coverage as well.

- *entrepreneur*

This is a small system and it is very beneficial for us, we can talk while sitting in the house.

- *GSM phone user in a village*



Things are done on the phone; there is a saving of fuel cost, saving of money. We never thought that there would be something like this.

- *GSM phone user in a village*

This system is very useful to me. I can do my work at home while operating this system and I am increasing my knowledge and education also... and I have made some financial gain as well.

- *entrepreneur*



Nokia Siemens Networks Village Connection turns rural village coverage into an attractive opportunity

“Things are done on the phone; there is a saving of fuel cost, saving of money. We never thought that there would be something like this.”

- GSM phone user in a village

Thank you

A decorative graphic consisting of multiple overlapping, wavy lines in shades of orange and yellow, flowing from the bottom left towards the top right of the slide.

Thank you.

