

Mobile Applications in Developing Regions: WiNS-DR Panel

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Landscape

- Developing Regions:
 - Limited access to power and communication facilities
 - Often characterized by low literacy
 - Could benefit from *indigenous* applications, in addition to voice communication
 - With relatively little or no “Internet bias”

Some Challenges

- Power-constrained system design
 - Solar-powered access points, power-sensitive topology maintenance
- Lower literacy means higher bandwidth
 - Video in all forms - streamed, live, interactive
- Need for indigenous applications
 - Crop disease diagnosis (aAqua), crop price setting, eye care (Aravind)

Why Mobile Applications for DR?

- Many regions rely on Telecenters (similar to human-operated phone booths)
- Emerging applications (e.g., aAqua, Aravind Eye care) make use of such Telecenters
- Mobile voice for DR is here!
- Progression from “aggregate” to “personal” communication is inevitable
- Mobile data communication for DR is feasible, technology-wise

What are Mobile Applications for DR?

- Retrofitting Online Experience?
- Indigenous applications?
- Combination of Online and Indigenous applications?

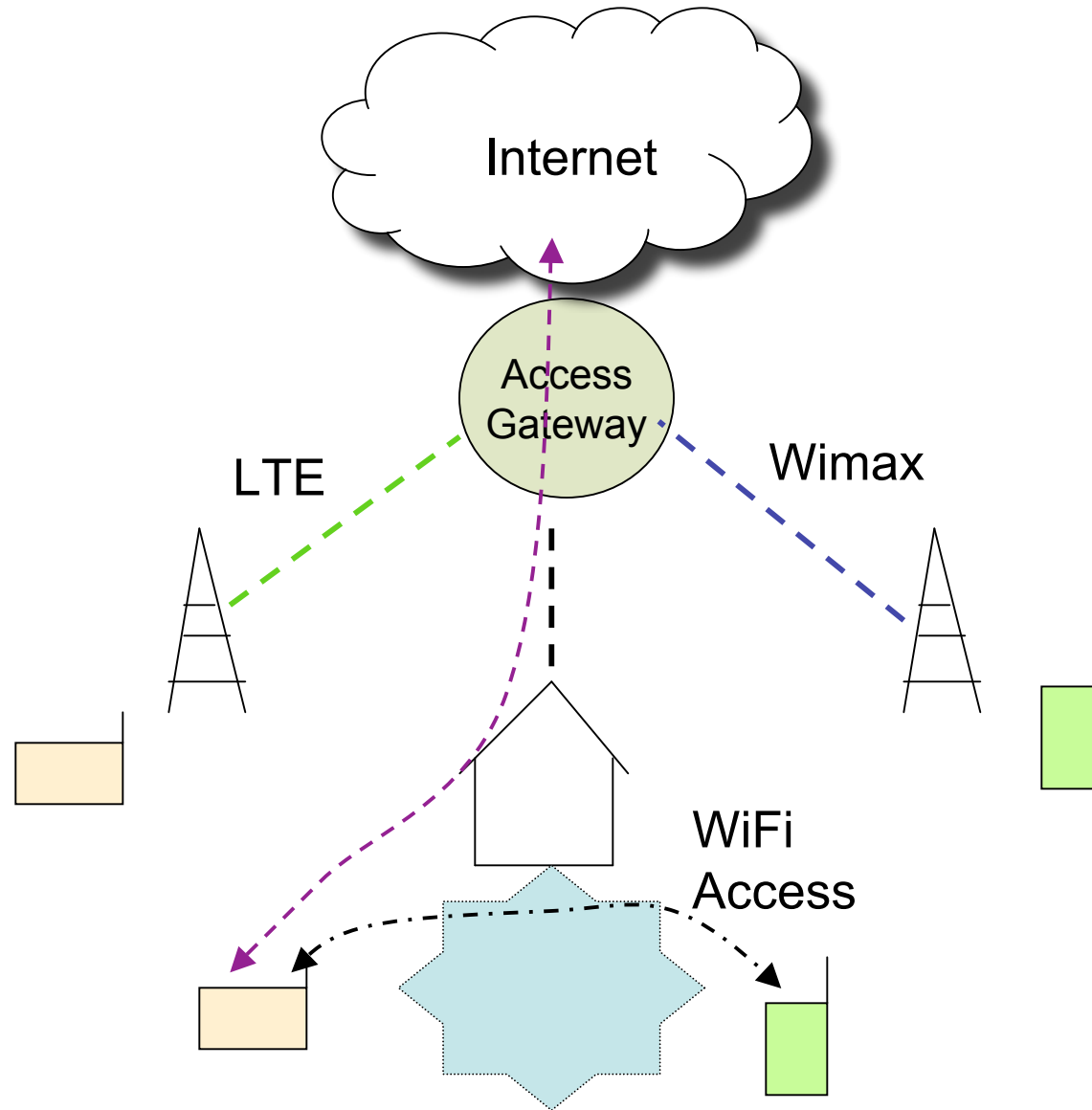
Some Characteristics

- Intermittently-On:
 - Must be able to function with varying power and connectivity
 - Continuity with offline and online transitions
- Localized Communication to limit backhaul access:
 - Wikipedia at the Telecenter
 - Voice, Push-to-Video without traditional Switching Centers and servers
- Higher bandwidth needs, “Intuitive” UI, (very) low cost

Adjoining Mobile Networks

- End users need reliable voice (and, to a lesser extent, SMS)
- Improvised mobile networks provide voice - *Village Connection* from Nokia Siemens Networks
- What about Internet access? Pricing and backhauling will be feasible?

4G Architecture with Heterogeneous Radio Accesses (including WiFi)



Summary

- Impressive progress in applications for DR with advances in technology, yet largely limited to “aggregate” usage
- Unique challenges for mobile applications for DR in terms of infrastructure, operating conditions and usage
- Challenging to build high-impact applications with different set of assumptions compared to the “online model”
- Adjoining with mobile systems presents interesting opportunities