

Community Empowerment For the Under-Served

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Challenges

Community building

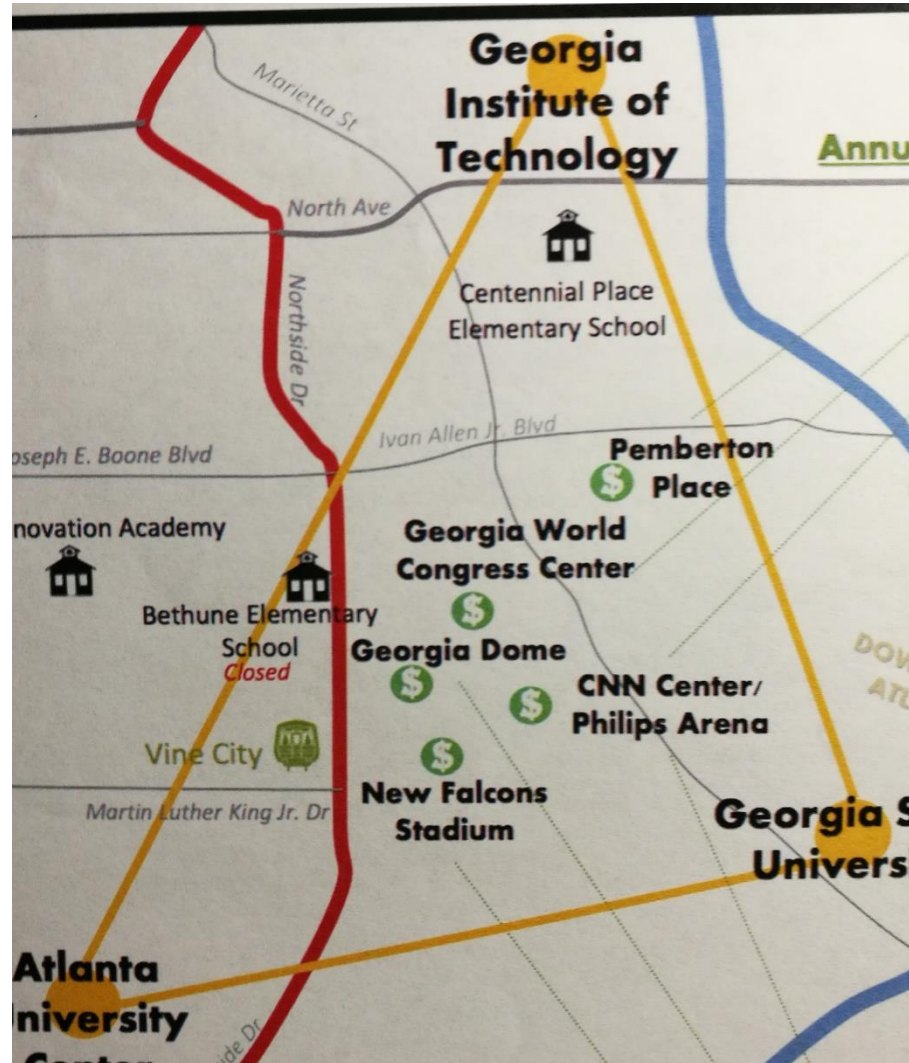
- Helps build Social Capital
 - Norms and trust that facilitate coordination and cooperation
- Helps Governance
 - Community's capacity to formulate norms, promulgate those norms to a relevant community, monitor departures from norms, and intervene to effect norm-compliance
 - From local level to International level

Community Context

Urban neighborhood
on Atlanta's Westside

Generalizes to other
similar urban under-
served areas

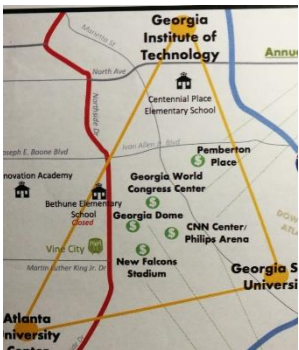
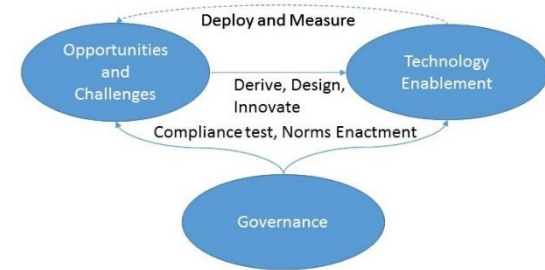
Solutions applicable
to rural areas,
disaster prone areas,
and under-developed
parts of the world



Challenge in bringing “smart services” to these communities

It's not an IT Problem!

- Understanding Community Needs and Ethos
 - What are societal issues plaguing under-served communities?
 - Income inequality
 - Instability of the demographic mix
 - Unemployment (pertains to skills development, lack of opportunities, lack of timely information about opportunities)
 - Housing
 - Public transport
 - Safe havens for children
 - Safety
- Not all such issues can be fixed by technology
 - “Calmly” blend technology into social fabric

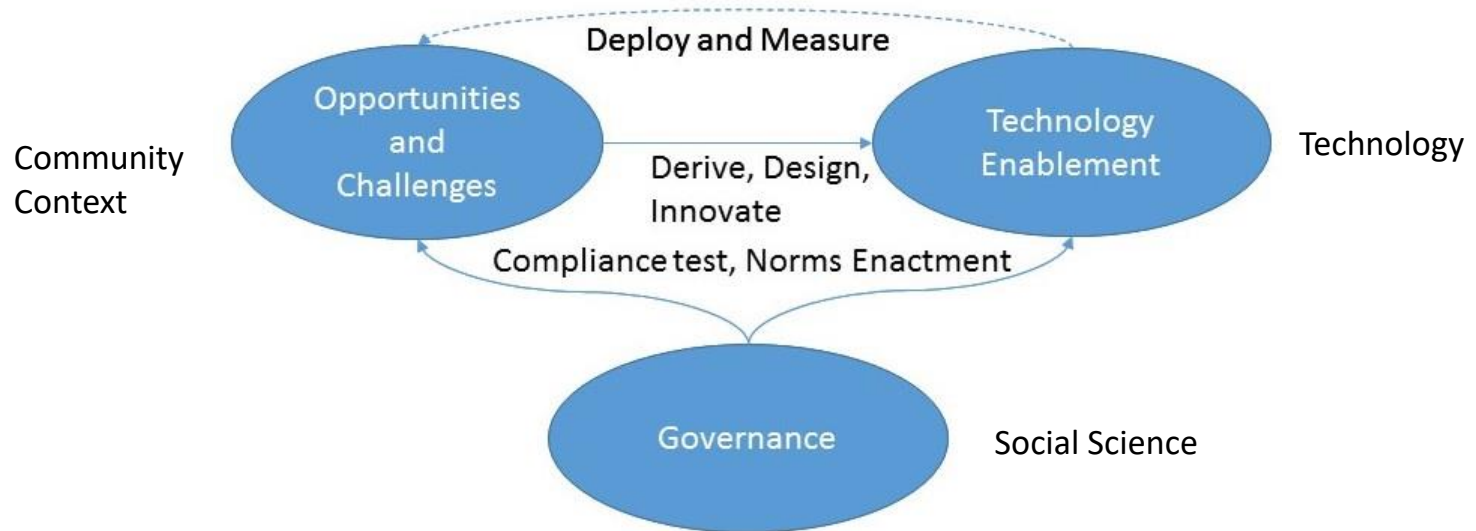


- Deliberately incorporate and operationalize in partnership with stakeholders
- Eye toward the metrics and accountability that will support success

Opportunities

Over-arching Question

- How can we help under-served communities participate in the digital revolution that is swirling the more affluent urban communities?
- Solution space



Eye towards “leap frogging” over barriers and lack of opportunities in the digital revolution for such communities

Under-served communities and social capital

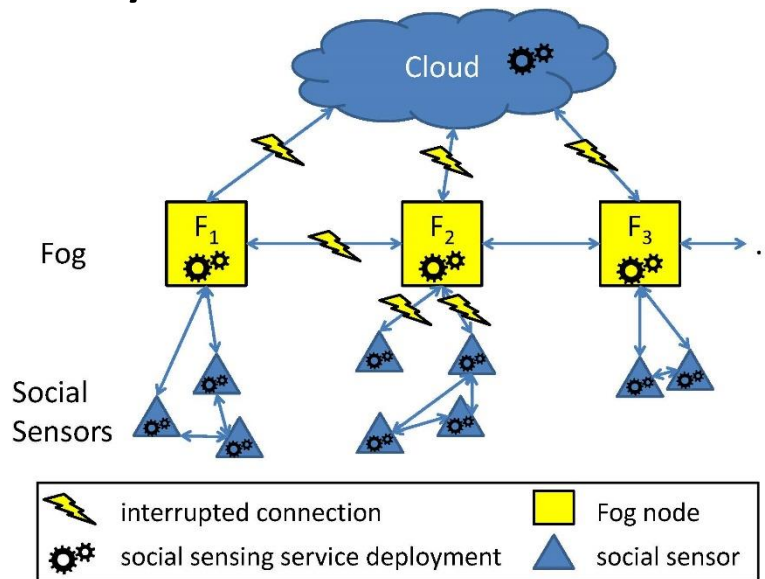
- Rural and under-served communities
 - Many of the technology enablers may be unreliable or just not available
 - Users in such communities unable to afford 24/7 access to the Internet
 - No ROI for the service providers for developing the infrastructure
 - Government and NGOs can do only so much...
 - GPS may be the only reliable signal!



How can we build the technological elements that power the well-served communities, but without the reliance on infrastructure support (such as wide area Internet connectivity or the Cloud)?

Opportunity: Geo-distributed infrastructures

- Social sensing without reliance on Internet connectivity



- Fog as enabler for decentralized sensing service
- Social sensing as a distributed service
- Volatile nature of sensor, Fog, Cloud connectivity primary considering in constructing such services

Opportunity: Inexpensive energy efficient COTS technology

Fog Device	Computational Capabilities	Containers Supported?	Connectivity
Routers	Low	Yes	WiFi, LAN
μ Computers	Medium	Yes	WiFi, LAN
Kiosks	High	Yes	WiFi, LAN
Drones	High	Yes	WiFi, 4G

- Research questions

- Functionalities in each component (Cloud, Fog, Sensor)
- APIs for different components
- Social sensing app components dissemination in the Fog
- Physical and social challenges in networking Fog devices and sensors
- Security, Trust, and Privacy
- Smart analytics combining multiple sensing modalities
- Network convergence for “future proofing”

