



# **Information Communications Technology Support to Reconstruction and Development: Some Observations from Afghanistan**

**Frank Kramer, Stuart Starr, Larry Wentz**

Center for Technology and National Security Policy

National Defense University

Kramerf@ndu.edu, Starrs@ndu.edu, Wentzl@ndu.edu

12th ICCRTS

“Adapting C2 to the 21st Century”



# Purpose

- Increase awareness of importance of Telecoms and IT as an enabler of cross sector reconstruction and development

*“Information Communications Technology (ICT) is the merger of Telecommunications and Information Technology”*

- ICT investment priority needs to be equivalent to roads, water and power



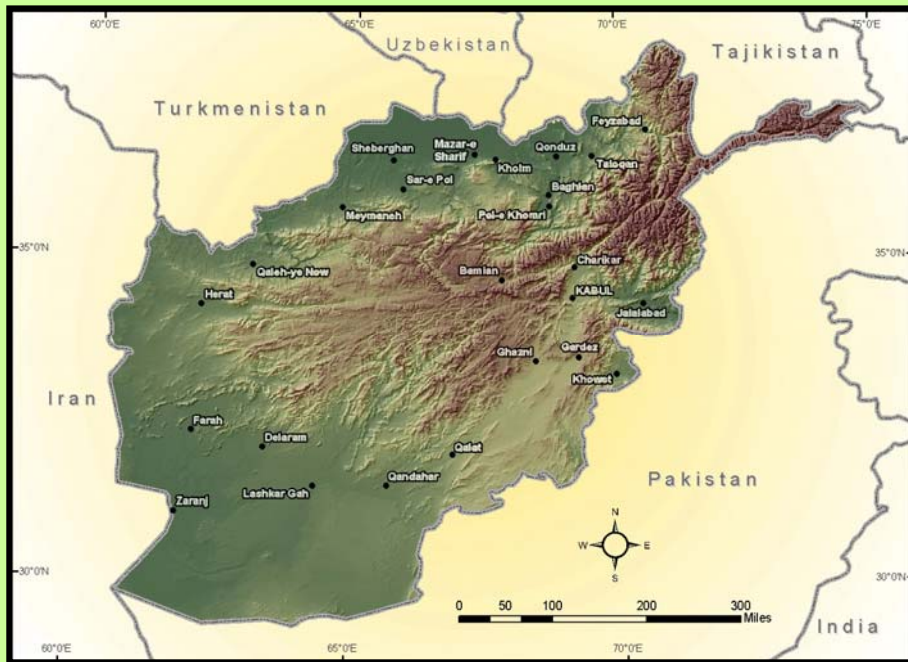
# Observations

- Afghanistan ICT a “Success Story”
  - Government of Afghanistan vision and support at highest levels
  - Knowledgeable and experienced Ministers of Communications
    - Vision, strategy and plan
  - Early emphasis on establishing Telecom and IT policies, regulations, laws, and regulatory authority
  - Use of civilian advisors embedded in Ministries
  - Donor assistance for public sector infrastructure and to MoC
  - Good public-private sector partnership
  - Early ICT capacity building initiatives (MoC, USAID, UNDP)

But.....

- There were and still are challenges

# Afghanistan



**Population** : 30 Million (45% under 15 years)

**Land Locked country**

**Size**: Slightly smaller than Texas

**Literacy**: 36% (male: 51%, female: 21%)

**Life Expectancy**: 42.7 male, 43 female (2004)

**Languages**: Pashtu (35%) & Dari (50%)

**Religions**: Sunni Muslim (80%) & Shia Muslim (19%)

**GDP (per capita)**: \$800 (2004)

**Unemployment Rate**: 40%

**Industry**: small-scale production of textiles, soap, furniture, shoes, fertilizer, cement, hand-woven carpets; natural gas, oil, coal and copper

**Agriculture**: Opium poppies, wheat, fruits, nuts, wool, mutton, sheepskins, and lambskins

**Arable Land**: 12%

**Minerals and Resources**: Natural gas, petroleum, coal, copper, chromite, talc, barites, sulfur, lead, zinc, iron ore, salt, precious and semiprecious stones

**Currency**: Afghani (45 to 1 U.S. \$)

**Banks**: 6 Private commercial banks in Kabul



# Afghanistan End of 2001



- Telecommunications infrastructure destroyed
- Roads, power, water, health care, and education disrupted or dysfunctional
- Lacked functioning government and laws, regulations and enforcement mechanisms
- Management, administration and technical skills left country
- Lacked an Internationally agreed ICT strategy and plan for reconstruction and development including a national support strategies and plans
  - At the outset of intervention
    - Donors shunned providing telecom reconstruction funds for public services
      - Influenced by “Washington Consensus” championed by the World Bank
      - USG took a largely hands-off approach to underwriting Afghan telecom
    - World Bank and USAID eventually invested in public sector ICT
- Lot’s of International civil-military responders
  - Coordination and information sharing problematic

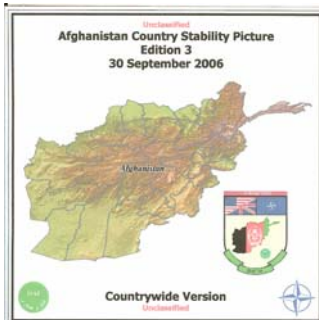
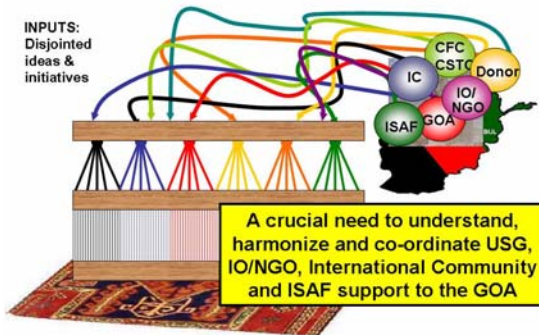


# Afghanistan Transitional Government: ICT Vision December 2001



- ICT will be critical to
  - Success of planned national elections
  - Facilitate communications among the central government and regional authorities.
- Recognized as being important to
  - Supporting the collection of taxes and customs duties
  - Establishing a national banking system
  - Enabling other political, security, governance, judicial, social and economic recovery actions.

## Afghanistan: The Challenge



- Coherent ICT investment strategy for reconstruction and development problematic
- Civil-Military coordination and information sharing problematic (not a technology issue)
- Common shared situation awareness for reconstruction and development (especially ICT)
- Force protection complicates conducting reconstruction and development activities
- Need to manage expectations





# Afghanistan Environment June 2006



- A weak but functioning government
  - With elected officials but corruption and legitimacy challenges
- Peace and stability fragile
  - Insurgency on the rise
- Establishing legitimacy and transparency a challenge
  - 75% of development spending initially outside of government channels
  - 70% of spending in Kabul but only 10% of the people live there
- Lack leaders, managers, administrators, and technical personnel with 21<sup>st</sup> Century skills
  - Business practices and management and project management
  - Telecom, computer and English language





# Afghanistan ICT June 2006

- Telecommunications and Internet Policy approved October 2003
- Comprehensive Telecom law passed in 2005
- Afghan Telecom Regulatory Authority (ATRA) created in 2006
- International involvement
  - ICT Investors
    - World Bank, USAID and CFC-A CERP and PRTs
    - CSTC-A for MoD/MoI (ANA/ANP)
  - UNDP, World Bank, and USAID initiatives
    - Advisors in ministries and agencies (e.g., MoC, Afghan Telecom, ATRA)
    - Capacity building: Univ Computer Science, 6-CISCO academies, 12-ICT Training Centers
- Strong demand for telecom services
  - In 2002 fewer than 40,000 telephones working nationwide (not interconnected)
  - June 2006 over 1.4 million subscribers and growing rapidly
- Telecom sector has attracted more private investment than any other sector
- Estimated that over 40,000 jobs have been created in the telecom sector
- Largest single legitimate revenue producer (over \$100 M in 2006)

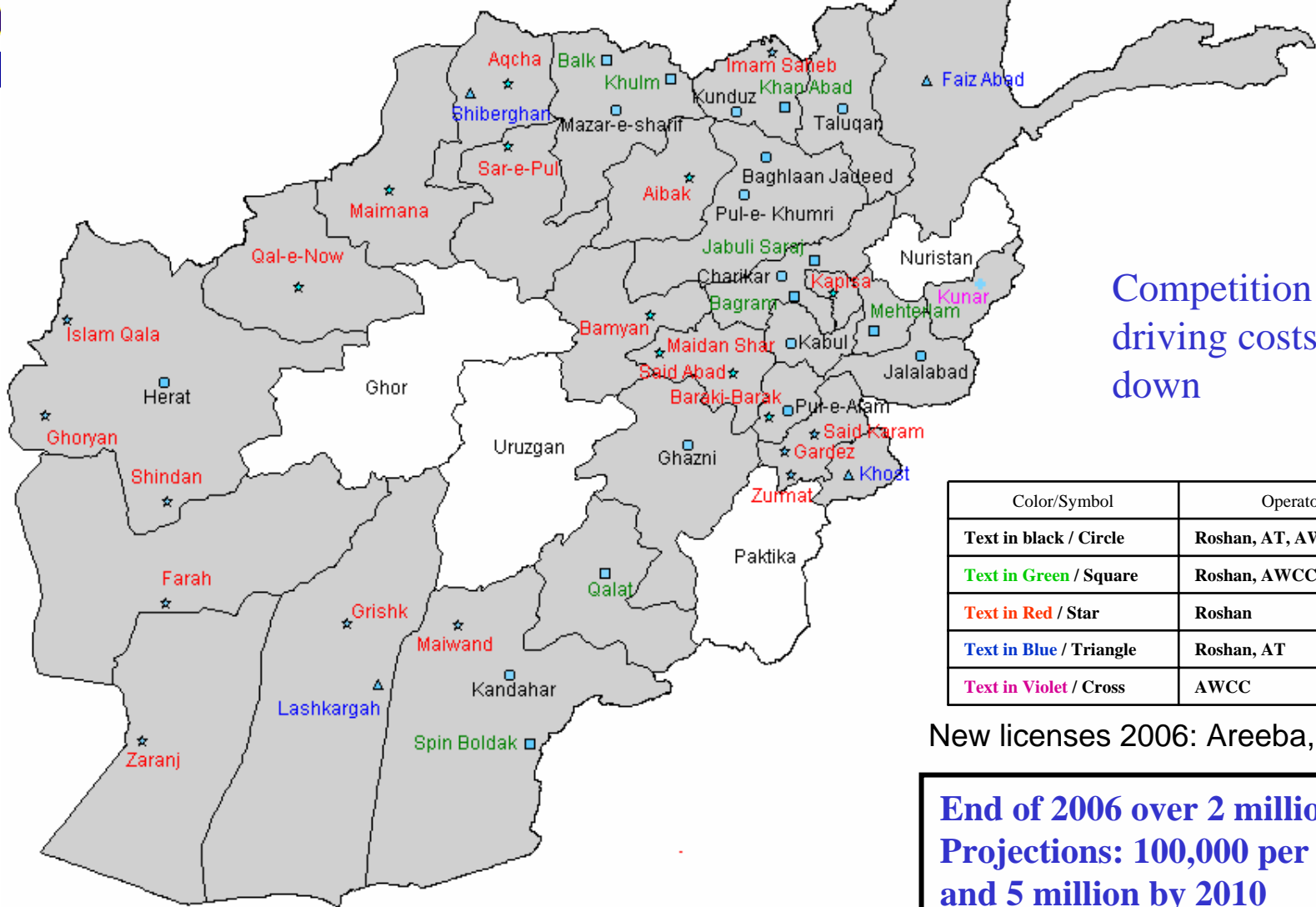


# MoC ICT Investment Strategy



- Private sector
  - Mobile access and services to major urban areas
- Government
  - Backbone services
  - Fixed mobile services (wireless local loop) in major urban areas
  - Service provisioning at district level
  - Selective extension of access to services to rural areas

# Afghanistan ICT – April 2006



Competition driving costs down

Color/Symbol	Operators
Text in black / Circle	Roshan, AT, AWCC
Text in Green / Square	Roshan, AWCC
Text in Red / Star	Roshan
Text in Blue / Triangle	Roshan, AT
Text in Violet / Cross	AWCC

New licenses 2006: Areeba, Etisalat

**End of 2006 over 2 million users**  
**Projections: 100,000 per month**  
**and 5 million by 2010**

**April 2006: 50 out of every 1,000 Afghans are connected**



# Private Sector Services



Khost Internet Cafe

- Internet Service Providers (ISPs)
  - Over 300K users
  - Hundreds of Internet Cafes
- Private industry and NGO VSAT networks
  - Reconstruction teams
  - Humanitarian assistance
  - Education/Healthcare
- Public Call Offices
  - Cellular fee-for-service
- Global mobile SATCOM
  - Globalstar, Iridium, Thuraya and INMARSAT



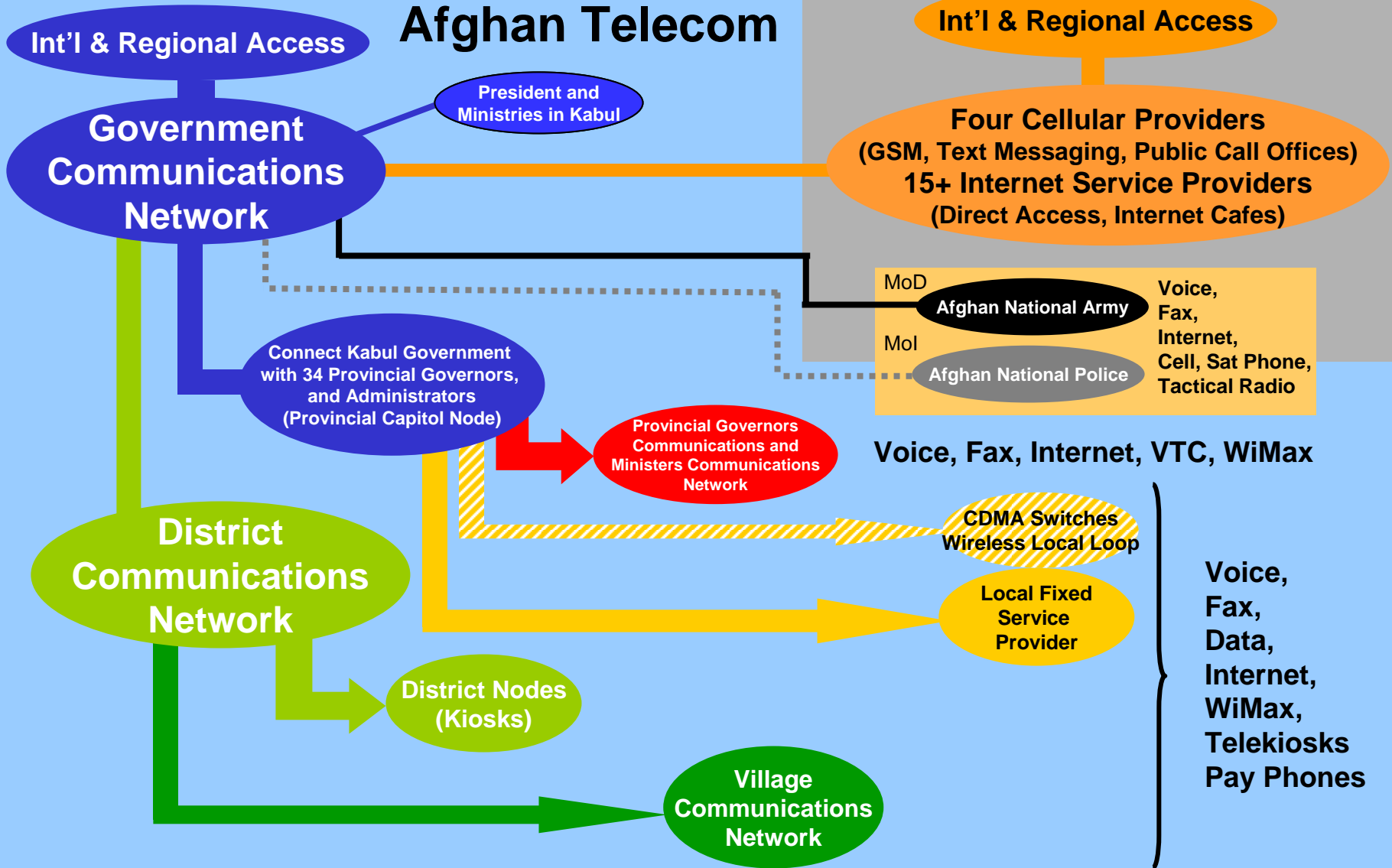
# ICT Environment--Afghanistan



- Government use of ICT increasing
  - Government and District Communications Network (GCN/DCN) being implemented by MoC and operated by Afghan Telecom
  - MoC owned Afghan Telecom corporatized
    - To be privatized in near future
  - National fiber optic network around ring road contracted
  - Independent ICT networks being established by MoD and MoI to support the Afghan National Army (ANA) and Police (ANP)
    - Both fixed satellite-based networks and mobile tactical capabilities
    - Use of GSM cellular and access to GCN services
  - Ministries implementing independent IT networks



# “Default” Afghanistan ICT Architecture



Transmission Backbone: Satellite, Digital M/W, Fiber Optic Cable, Copper Cable



# ICT Environment--Afghanistan



- ICT sector growth more than voice
  - Wireless data, Internet and e-Solutions
    - Internet access and coverage in all major urban areas
      - Internet Service Providers
        - » Direct access and Internet Cafes
      - CDMA wireless local loop Internet/data access
        - » Trial city-wide service offering in Kabul
    - Exploring Internet banking and data networks to link banks
    - Exploring e-Government for Ministries
    - Exploring expanding Internet to schools and Universities
    - Local Fixed Service Providers in smaller towns and villages
      - Wireless voice, data and Internet access
  - Cell phone functionality expanding
    - SMS: Text messaging
    - GPRS: Connect laptop to cell phone to access Internet
    - Exploring use of cell phones for financial transactions
      - G-Cash, CelPay, Smart Money like capabilities--Cell phone wallet





# ICT Environment--Afghanistan



- Preliminary steps for broader ICT use undertaken
  - Satellite and Microwave long distance networks deployed nationally
  - Expanding Regional interconnections and International capacity
  - Contract for a national fiber optic network
  - Ministries introducing ICT
    - Largely separate and independent solutions
  - ICT being selectively introduced into education, health care, and other sectors but not as an integrated and coordinated approach
    - Largely private sector and NGO initiatives
  - MoC/Afghan Telecom expression of interest proposal to franchise operation and management of DCN nodes
  - Establishing modern ICT Institutes for capacity building
    - CISCO academies, ICT training centers, University programs in computer science and telecoms



# Making Progress But Not Without Challenges

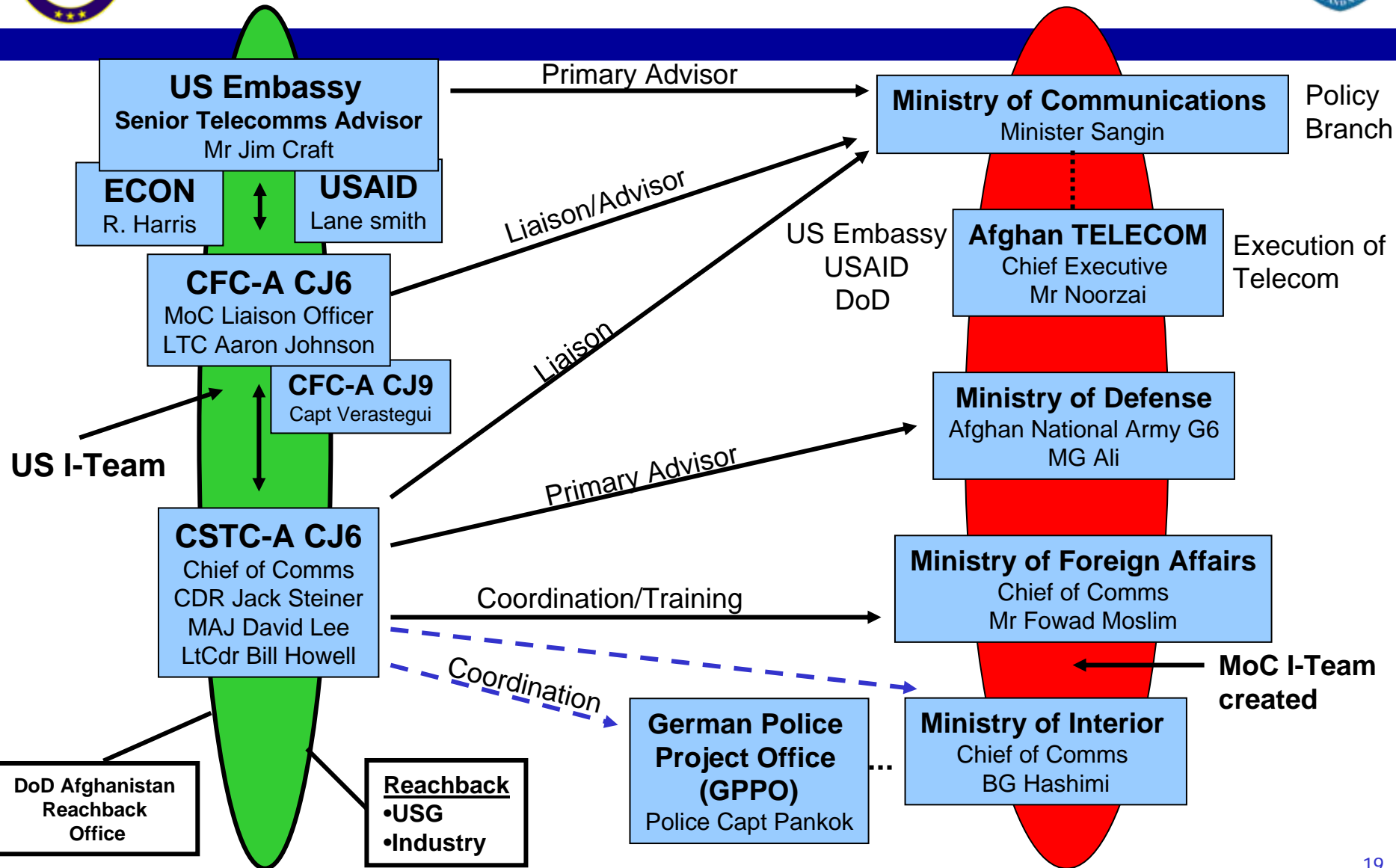
- Public and Private ICT infrastructure fragile and business processes weak
  - Telecom network
    - Ability to support emergency response
      - Cell network overloaded during May 2006 riots in Kabul
    - Quality and capacity marginal but getting better and costs coming down
    - Coverage largely urban areas, little to no coverage in rural areas
    - Data strategies and services inadequate to support eSolutions and broader user community access to and use of the Internet
    - Security issues with growing Afghan Critical National Infrastructure
      - Cyber security
        - » Virus and spyware protection, intrusion detection-protection, firewalls
        - » Control use of pirated software and porn surfing by gov't employees
        - » CERT, cyber laws or enforcement mechanisms
      - Physical infrastructure and key personnel protection
        - » Insurgency is growing and threatening personnel on government facilities but not attacking infrastructure
        - » Criminal elements steal equipment
        - » 24x7 protection is over 20% of the cost of doing business in private sector
  - Most Afghan ministries have minimal IT organizations
    - Implementation of internal capabilities is uncoordinated and non-standard
    - Lack “Chief Information Officer Culture” (business processes, standards, best practices,..)
  - Very thin layer of competence and skills of ICT service providers and users



# Afghanistan Environment June 2006

- Much remains to be done to make it a viable and robust network to support security, governance and other sector needs
  - Need a coherent International strategy and approach to supporting ICT development and its use as an enabler of cross-sector development
    - Currently driven by cylinders of excellence for sectors
  - Coordination and information sharing among responders and with GoA remains a challenge
    - Lack a shared common operational picture for ICT reconstruction and development
    - Sharing among US Embassy, USAID, US Military and others varies and still is a challenge
      - Was working for ICT sector until rotation of civil-military personnel
    - Ad hoc approaches employed to try to improve
      - Liaisons, coordination teams, reachback groups, portals, embedded SMEs in ministries, USACE developing a shared common operating picture for development (USG, UN, ISAF, GoA stakeholders)

# ICT Coordination Relationships Afghanistan: June 2006





# Some Useful Next Steps



- **ICT support for governance and security**
  - Fund and implement the remaining 22 provincial governors communication network
  - Extend GCN service to provincial police chiefs
  - Extend DCN services to district administrators and police
  - Enhance robustness and performance of GCN/DCN
- **Improve ICT access and use for education and healthcare**
  - Implement pilot programs to extend ICT to rural areas
    - Digital solar village like capabilities
  - Market and enhance DCN services
    - Improve local marking at District level
    - Pilot option to franchise DCN nodes and services
  - Wire up campuses and connect Universities via Internet
  - Link University Medical Schools and Hospitals via Internet
  - Link Hospitals and Healthcare centers via Internet
  - Provide Internet services and computers to schools



# Some Afghanistan “Take Aways”



- Understand the culture
  - Need to understand and be accepted
  - “Three Chai tea” rule
  - Perceptions of “Power” counts
  - Need to keep your word
- Manage expectations
  - Don’t over expect Afghans ability to perform
    - Lack of ICT skills and modern business skills and practices
  - Don’t raise expectations of Afghans if not sure of ability to deliver
- Good public-private sector partnerships key
  - Enable private sector
- ICT is important as both a sector and as an enabler—priority needs raised
- Collaboration and information sharing important—common shared situation awareness



# Questions?

