

DETAILED INITIATIVE IMPLEMENTATION PLAN (IIP)

1. Proposed Initiative: Enhancing Healthcare in Afghanistan through Space-based Tele-health services

NEED ASSESSMENT

2. Issues of Afghanistan Needs (Afghan Inputs)

- **Traumatic situation of younger Afghan people (25% of people in <25 yrs age). Need for professional psychological advice. Long-term impacts of post-war environment.**
- **Lack of professional medical experts in different areas – physicians, surgeons, psychiatrists etc**
 - i. **1 para-med or practicing physician for every 50K persons.**
- **Lack or no good medical facilities (basic and advanced) and equipment. Lack of access to these facilities is yet another issue.**
 - i. **As an example, 5 hospitals in Kabul, 3 in Kandahar and 2 in Herat**
 - ii. **50 of 330 districts have no basic health and medical facilities.**
- **Need for upgradation of skills of existing medical/healthcare professionals (doctors, paramedics, pharmacists etc)**
 - i. **Existing medical/healthcare professionals are providing very basic and low-level of services based on knowledge acquired 20 years back.**
- **Increase number of paramedic staff in Afghanistan to cater to needs**

ROLE OF SPACE

3. Rationale for Space Inputs

- **Create teaching ends connecting to multiple locations (virtual class rooms) to provide simultaneous teaching and training through quality and consistent teaching aids and systems**

- Expertise of a small group being outreached to a larger set of people
- Bridge and link a specialty hospital to an area requiring expert services.
- Instant connectivity and access – bring professional medical experts access to Afghanistan
 - i. Easy and fast transfer of medical data of patients
 - ii. Video-conferencing facility for experts to see and listen to patients and patients to see and listen to the expert
- Easily replicable to more and more areas
- Space based Tele-health proven in many countries – Canada, India

4. Scope of the Initiative (Purpose and Goals):

Bring the benefits of space-based connectivity to Afghanistan to:

- enable improved quality health services covering training and education of medical professionals and establish newer health services
 - i. by maximizing the outreach of small group of expert medical advise – both from outside and within Afghanistan for a larger healthcare system in Afghanistan.
- Spread over a larger geographic spread

5. How to achieve this Goal

The system envisages identifying specialist Centres within Afghanistan or willing medical institutions outside duly equipped with appropriate medical equipments and expertise with an uplinking/downlink facility with 2-way video.

The advise of these specialists could be made available to a number of rural or district health Centres duly equipped with necessary equipments and connectivity.

Establish a routine training for paramedical staff as part of this facility.

As a first step, the proposal is to establish a demonstration system involving a specialty hospital in Afghanistan/outside with 2or3 rural health Centres. The same could also be used for training of paramedical staff and provision of professional training and tele-counselling services. This would also help in creating a cadre of paramedical staff. This demo-phase would be for about 1 year.

As a next step, replication of the network to more areas in Afghanistan could be considered.

BENEFITS

6. What benefit will come to the ATA:

ATA will be able to provide advanced level of health services and also enable a medical infrastructure in Afghanistan. Afghan medical personnel also will be able to enhance their expertise.

7. How the benefit would go to the people of Afghanistan?

Afghan people will benefit from the Telemedicine as they will be able to get expert medical advice.

8. Brief Summary of Initiative (Can be well written):

The first aim of the initiative is to demonstrate a proto-type telemedicine experiment in Afghanistan by providing connectivity of an identified hospital in Afghanistan with a specific specialty hospital in another part of the world.

The demo can be planned for 3-6 months.

The major steps for this are:

- Identify a Nodal Ministry in Afghanistan as the “beneficiary”**
- Identify a hospital in Afghanistan**
- Identify a hospital in another part of the world (HOW)**
- Obtain satellite transponder for a demo for 3-6 months**

- Procure and Establish the ground infrastructure at the 2-ends
- Train and orient a few medics and technicians from Afghanistan (HOW)
- Establish connectivity
- Run the experiment for 3-6 months
- Work for expanding the demo to an operational system

RESOURCES

9. Possible Lead Agency: World Health Organisation; Doctors without Borders; UN-OOSA

10. Target ATA: Ministry of Health Services, Afghanistan

11. Local Afghan Non-Governmental Organisation, if any. ??????

12. Involvement of any other Agencies (list and give Contact Person/Address): UN-OOSA

13. Space resources required and Potential providers:

A satellite transponder would be required – which when available could be used for shared bandwidth for tele-edu and other connectivity applications.

14. List of Equipment, if any.

Transponder

Specialised equipment in Referral hospital

Ground VSAT and Telemedicine equipment in Afghanistan

VSAT and equipment in speciality hospital

15. Estimated Cost for Initiative

Transponder 200K US\$ (shared for tele-health and tele-edu and other requirements.

TELEMED GROUND SYSTEMS:

Referral medical facility in 1 key Afghan hospital: 100K

Medical equipments in 3-4 Afghan hospital: 150k

Logistics in Afghanistan (Building, Power etc) – 100k

OTHERS

Training of Afghan persons: 50K

Other logistics and materials: 100K

Miscellaneous and Project Management: 50K

Grand Total - 0.75 million US\$ (which can sustain the experiment for 1 year)

The cost of expanding scope would be mainly on the Ground Systems and other project costs – these can be determined later.

TIMELINE

16. Broad Schedule.

Project Go ahead	T
Finalise Project and Anchor agencies	T+1
Training of Afghan persons	T+2
Afghan logistics	T+3
Establish VSAT systems	T+3
Readiness of Transponder	T+3
Test and Evaluation	T+4
Run Experiment?Demo	T+4 to T+12
Review and Expansion of Scope	T+10

17. Critical Decisions

18. Issues and Challenges involved

19. Inter-relationships

20. Proposed Next Steps

DETAILED INITIATIVE IMPLEMENTATION PLAN (IIP)

- 1. Proposed Initiative: Strengthening Education and Training in Afghanistan through a Space-based Distance education system**

NEED ASSESSMENT

- 2. Issues of Afghanistan Needs (Afghan Inputs)**

75% of the <25 yrs group having no formal education.

Skill upgradation towards a profession

Nursing

Automobile maintenance

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Training of Teachers

Literacy oriented

Primary/Secondary education support

Enhancing University education

Very low-level of basic facilities for an education system – teachers, skills of teachers, text-books, class-rooms, teaching aids etc

Need for a consistency in the education system and need for standardizing the education system

ROLE OF SPACE

- 3. Rationale for Space**

Use the broadcasting capability of the space system to provide a single-point to multi-point connectivity and outreach of education and training materials.

Flexibility of using round-the clock space-based facility for a variety of purposes and in time-shared mode for a number of applications.

4. Scope of the Initiative (Purpose and Goals):

Enable the strengthen the professional training, school and University level education by bringing designed content to specific areas in Afghanistan. The following priority needs to be addressed:

- **Professional Training – paramedics, technicians, automobile maintenance, RS and GIS, construction etc**
- **Training of Teachers**
- **Provision of primary/secondary school education support**
- **Literacy**
- **Advanced University education**

5. How to achieve this Goal

The system envisages establishing education Centres within Afghanistan and establishing connectivity to educational institutions within and outside duly equipped with appropriate equipments and expertise with an uplinking/downlink facility with 2-way video.

The advise of these education specialists could be made available to a number of education and training programmes duly equipped with necessary equipments and connectivity.

Establish a routine training for professional staff as part of this facility.

As a first step, the proposal is to establish a demonstration system involving the following:

- **Professional education in support of Tele-Health services and other areas as required**
- **Training of Teachers module**
- **Support primary/secondary school education**
- **Enable a good University education system in modern subjects**

For all this, suitable content generation in Afghan language will be called for (adapting available content from other parts could be utilized). Issue of copyright and permission for the demo must be addressed.

Necessary hub facilities in Afghanistan for content generation and transmission will be required.

This demo-phase would be for about 1 year

As a next step, replication of the network to more education facilities in Afghanistan could be considered.

BENEFITS

- 6. What benefit will come to the ATA:**

- 7. How the benefit would go to the people of Afghanistan?**

- 8. Brief Summary of Initiative (Can be well written):**

RESOURCES

- 9. Possible Lead Agency for initiative (suggested): UNESCO, UN-OOSA**

- 10. Space resources required:**

A common transponder can meet the requirement of tele-health and tele-education initiative.

11. **Target ATA: Ministry of Education, Afghanistan**
12. **Local Afghan Non-Governmental Organisation, if any. ?????**
13. **Involvement of any other Agencies (list and give Contact Person/Address):**

14. **List of Equipment, if any.**

Satellite Transponder (shared)

DRS

2-way SIT

Content Database systems

15. **Estimated Cost for Initiative**

Transponder is not costed here as it is already costed in Tele-health initiative. The same bandwidth could be utilized for tele-edu initiative also.

TELEEDU GROUND SYSTEMS:

Main Uplink Hub with Studio and Content generation/adaption facility: 200K

VSAT 2-way interactive system for Training of Teachers and Professional Training (2-3): 80K

DRS for Primary School (4-5): 20K

Logistics in Afghanistan (Building, Power etc) – 100k

OTHERS

Training of Afghan persons: 50K

Other logistics and teaching materials: 100K

Miscellaneous and Project Management: 50K

Grand Total - 0.60 million US\$ (which can sustain the experiment for 1 year)

The cost of expanding scope would be mainly on the Ground Systems and other project costs – these can be determined later.

TIMELINE

16. Broad Schedule.

Project Go ahead	T
Finalise Project and Anchor agencies	T+1
Training of Afghan persons	T+2
Afghan logistics	T+3
Content Planning and Generation	T+5 and onwards
Establish VSAT systems	T+3
Readiness of Transponder	T+3
Test and Evaluation	T+5
Run Experiment/Demo	T+5 to T+12
Review and Expansion of Scope	T+10

17. Critical Decisions

18. Issues and Challenges involved

Identification of priority professional training areas

Where to start?

Identification of what content is already available in the world.

Generation of content or Adaption of content from other sources for Afghanistan

Buildings, Power, maintenance, support staff, etc

19. Inter-relationships

The tele-health and tele-edu initiative could use the same transponder facility and also, maybe, the ground segment if commonality can be established geographically.

The success of the tele-health and DSS initiative would very much depend upon a good content of training on these areas that can be administered using space.

20. Proposed Next Steps

DETAILED INITIATIVE IMPLEMENTATION PLAN (IIP)

1. Proposed Initiative:

Enable Afghanistan to access the International Disaster Charter

NEED ASSESSMENT

2. Issues of Afghanistan Needs (Afghan Inputs)

- **Establishing a suitable emergency response system**
- **Identify the point of contact in Afghanistan (Authorized user)**

ROLE OF SPACE TO FULFILL THIS NEED

3. Rationale for Space

- **Usage of the already established organisation of the International Charter**

4. Possible solutions

4.1 Contact the UN Organisations aware of the Charter and activate the Charter via UN OOSA (Co-operative body) in case of major disaster

4.2 Have a bilateral agreement with one of the Charter Authorized users : ESA members Civil Protection Authorities (CPA), Canadian CPA, ISRO, NOAA, French CPA, Argentina CPA

4.3 Use diplomatic channels to reach one of the above mentioned CPA, France is putting together the procedure in such a way that every French Embassy will name a contact point (scientific service) who will identify the appropriate organisation in charge of disaster management (DM) in the country.

In case of major disaster the operational channel will be :

Local DM contact → French Embassy → French Ministry of foreign affairs(Paris) → French CPA → **Charter activation**

5. How to achieve these Goals ?

Charter capability already exists

→ Afghanese CPA need to be aware of the system and able to use delivered products and provide feedback

BENEFITS

6. What benefit will come to the ATA:

- Help to improve disaster prevention, anticipation, monitoring and mitigation
- Fast reception of change detection/disaster assessment maps

7. How the benefit would go to the people of Afghanistan?

- Improve disaster mitigation
- Quick knowledge on the size of the disaster and constitution of an archive data base

8. Brief Summary of Initiative (Can be well written): N/A

9. PIA Contact point for initiative:

Charter members

RESOURCES

10. Space resources required and Potential providers:

None

11. Target ATA (Give Details) :

**Ministry of Interior, Defence, Environment of Afghanistan (?)
Civil Protection Authority**

12. Local Afghan Non-Governmental Organisation, if any. NGOs

13. Involvement of any other Agencies (list and give Contact Person/Address):

Charter members + UN OOSA

14. List of Equipment, if any.

- Internet and FTP access at the central facility to receive processed products with appropriate hardware and image processing and GIS software**
- Possibly telecommunications equipment to major local civil protection/emergency centers (if any)**

15. Estimated Cost for Initiative

Only cost of above hardware and software, in the order of 100 k\$ for the central facility and 30 k\$ per local emergency centers + probably existing VSAT access

TIMELINE

16. Broad Schedule. N/A

Charter available right now

17. Critical Decisions N/A

18. Issues and Challenges involved

Be sure that Afghanistan's personnel in the central emergency center is properly trained in Earth Observation and GIS techniques to efficiently use the delivered products

19. Inter-relationships

Tele-education for training of central and local emergency centers

20. Proposed Next Steps

Equipment procurement (see 14) and capacity building (see 18)

DETAILED INITIATIVE IMPLEMENTATION PLAN (IIP)

1. Proposed Initiative: Providing geo-spatial information from space-based systems in support of developmental activities in Afghanistan

NEED ASSESSMENT

2. Issues of Afghanistan Needs

Many needs could be supported by the space based systems presented in table 4.1. This initiative is focused on three very important needs indicated by order of priority, to improve the daily life in Afghanistan and contribute to creation of a sustainable Afghan society.

2.1 Short term needs:

2.1.1 Development of the secondary Roads

Assuming that the construction of the “ring” roads can be finished according to the current Afghan plan, the first priority will be to establish links among the different parts of Afghanistan, particularly in order to integrate the various populations. These secondary roads are essential to facilitate the movement of people and the broad distribution of goods, particularly food and agricultural production.

2.1.2 Supply of drinking water and construction of a water reservoir for hydro-electric power plant in Kabul region

Afghanistan, and Kabul in particular, is suffering from a shortage of clean drinking water.

2.1.3 A national level planning and management tool

2.2 Longer term needs

2.2.1 Integrated water resource management (IWRM) : Water supply, including surface and groundwater (drinking, agriculture, manufacturing and energy)

Water is a key element to sustain life and food production. Presently there is no water management scheme, which leads to an important waste of the resources and to a lack of water in many regions that cannot produce the required food.

2.2.2 Agricultural Crop monitoring system (acreage, yield estimate, planning), including illicit crop monitoring

Insure the appropriate production of food is a necessity. Creating the conditions for a development of agriculture that takes into account the environment and the distribution of the population in Afghanistan is a fundamental need of Afghanistan.

2.2.3 Multi-scale GIS databases at national and local levels

Such databases are necessary to support development at a variety of details.

ROLE OF SPACE

3. Rationale for Space in meeting these needs

To realize each of these projects, space provides the basic information for planning purposes such as: synoptic view of the current situation on large area coverage in digital format and at different scales, high repeat ability leading to the possible comparison of situations at different time, provides information remotely, day and night, particularly important in areas that are not easily reachable, good recognition of objects, digital information easily comparable over time and that can be integrated with other information in geo-spatial databases.

Space facilitates the constitution at the national and regional levels of such integrated GIS databases

Furthermore, Space can provide the needed information at a relatively low cost, faster, accurately enough, more efficient compared to conventional means.

4. Proposed projects under this Initiative (Purpose and Goals):

In order to achieve these projects a multi-step process is proposed
- first phase projects

- a. extension of these projects for the generation of national GIS databases

4.1 First step

4.1.1 Secondary roads infrastructure:

Space provides efficient tools and the basic information for

- i. planning, and identifying priority routes
- ii. generating 2D and 3D topographic and land-use maps at the appropriate scale for these routes with an accuracy of a few meters both horizontally and vertically.
- iii. estimating subsidence with an accuracy of the order of the millimeter
- iv. geological surveying for landslide and terrain movements detection
- v. assessment of conditions of existing roads (type of road, road condition, infrastructure conditions, etc)

Deliverables:

- b. 3D topographic maps for planning the secondary roads at scales of 1/25k
- c. 3D topographic maps for supporting the construction of the secondary roads at scales of 1/10k
- d. 2D and 3D land-use maps of the same areas at the same scales
- e. map of risk assessment along the proposed roads, allowing identification of areas of hazards (landslides, steep slopes, avalanches, etc.)

4.1.2 Supply of drinking water and construction of a water reservoir for hydro-electric power plant in Kabul region

Space systems can be used supply the necessary information to:

- f. monitor water reservoirs and sources, snow melt, lakes, and river level, and groundwater,
- g. support planning for estimation of water quality
- h. identify location of the dam
- i. design drinking water distribution system as a function of population density

Deliverables

- j. optimal location of dam (taking into account environmental and social issues, population densities, etc.) and impact of hydro-electric power plants on irrigation,
- k. 2D and 3D topographic and geologic maps for supporting the construction of reservoirs and waterways,
- l. maps of the water reservoirs and hydrologic network
- m. regular update of the situation for both surface and groundwater (level of the water table), on the appropriate format,
- n. provide maps (in digital and paper forms) to support the distribution of drinkable water as a function of population density, and survey of these systems

4.1.3 a national level planning and management tool

Space systems can be use to generate the basic data for integration into the GIS database

Deliverable: the GIS database at 1:250k scale

4.2 Second step

4.2.1 Integrated water resource management (IWR)

Space systems can be used to provide the data in order to:

- o. monitor water reservoirs and sources, snow melt, lakes, and river level, and groundwater,
- p. support planning for waste treatment plants and estimation of water quality
- q. identify location of dams (hydro-electric power-plants and irrigation)
- r. provide inputs to runoff models (water supplies, prediction of floods)
- s. gather data from ground based network collecting hydrologic data and water pollution data
- t. design drinking water distribution and irrigation systems as a function of population density and agriculture management

Deliverables

- u. water resource management information at the level of each catchment (implying the development of catchment models),
- v. regular update of local conditions for both surface and groundwater (level of the water table), on the appropriate format,
- w. ideal location of dams (taking into account environmental and social issues, population densities, etc.) and impact of hydro-electric power plants on irrigation,
- x. maps (in digital and paper form) to support the design of irrigation system, distribution of drinkable water and waste management as a function of population density, and survey of these systems
- y. information for run-off and flood forecasting and mitigation, flood risk maps, and prediction of water supplies

4.2.3 Agriculture: Crop monitoring (acreage, yield estimate, planning) and illicit crop monitoring

This project is closely linked to the previous ones, particularly regarding irrigation. Space can contribute to:

- z. mapping land-use, crop types and acreage (including location), state and health of crop and field management practices,
- aa. estimate yields of different crops per region, early estimate of shortage,
- bb. identifying the most appropriate culture for a given soil type and location
- cc. identifying illicit crops (poppy and others)
- dd. to crop management.

Deliverables

- ee. maps (in digital and paper forms) with acreage for different crops, including location and estimate yields of illicit crops

- ff. Statistics of crop production (including illicit crop) per region
- gg. regular update of crop situation
- hh. Early estimation of yields and warning of eventual shortages

4.2.3 Multi-scale GIS databases at national and local levels

- National level database at 1:250k
- National level 1:50K database
- Local level 1:25k and 1:10K database

4.3 Third step

Decision Support Systems models/applications on

- Infrastructure planning/routing
- Water management – surface and groundwater
- Agriculture services
- Urban Management

5. How to achieve this Goal

First step undertaken directly at the operational level, for selected geographic areas

- ii. Generate interest for the project at the management level in Afghanistan and funding agencies.
- jj. Identify prioritized areas
- kk. Identify project managers, one from Afghanistan and one contracted by the funding organization,
- ll. Identify the team that must be educated in parallel with contracted personnel
- mm. Collect the required data (space and in-situ)
- nn. Acquire the relevant system to integrate the various data and analyze them in order to provide information services,
- oo. Acquire the local logistic support (vehicle, data collection platforms, etc.)
- pp. Build capacity

Second and third step could be first limited to particular regions

- qq. Education and professional training of those who will build and use the system
- rr. Hardware and software system to implement the GIS
- ss. Maintenance of the system, including continuous education

BENEFITS

6. What benefit will come to the ATA:

Data from the space systems will provide the means for better decision making to resolve the key issues mentioned above.

7. How would these projects benefit the people of Afghanistan?

In the first step, these projects would improve production and delivery of drinking water, energy, more efficient transportation infrastructure.

In the second step, they would improve the agriculture network resulting in higher crop production and monitoring, optimize the use of water for people, agriculture and industry

8. Brief Summary of Initiative:

TBD

RESOURCES

9. Possible lead agencies

AIMS
UNEP
UNESCO

10. Space resources required and Potential providers:

Space images
Eventually a data receiving station (possible second step)
Data collection platforms (PTTs)
Hardware and software to process the data, information center at regional and national levels
Telecommunication for gathering local information

11. Target ATA (Give Details) :

MR. Khaliki will activate the appropriate ministries

12. Local Afghan Non-Governmental Organisation, if any. ??????

13. Involvement of any other Agencies (list and give Contact Person/Address):

FAO, UN-DP, UN-ODC

Partners for demonstration and installation
Partner for long term operation

14. List of Equipment, if any.

TBD

15. Estimated Cost for Initiative

1 million Euros for 500 km of road

More details TBD

TIMELINE

16. Broad Schedule.

TBD

17. Critical Decisions

TBD

18. Issues and Challenges involved

Appropriate data at the appropriate time

Identify the leader of each project, providers of funds, images,

19. Inter-relationships between the initiatives

Tele-education for training in cooperation with UN-00SA and regional centers

Tele-education and tele-health for some part of the hardware.

20. Proposed Next Steps

Two streams of action in parallel, but well coordinated:

- tt. M. Khaliki contacts the appropriate organizations and ministries in Afghanistan and prepares a visit in Afghanistan with the support of Dr. Chafii for the Embassy in France
- uu. IAA presents the projects to international organization and potential donors

Organize a visit in Afghanistan in order to

- w. present the projects
- ww. discuss their actual implementation and prepare a plan

Start the education of the future teams involved

- xx. request scholarships for Afghans for courses in existing regional centers (such as UN centers,) and the Afghan AACA (Afghan assistant Coordination Association)