

Afghanistan Spatial Data Infrastructure (ASDI)

Workshop Statement and Proposed ASDI Initiative and Road Forward

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Government of Afghanistan (GoA)
Office of the Vice-President

Prepared by:

Afghanistan Central Statistics Office, and
Afghanistan Geodesy and Cartography Head Office
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Executive Summary

Good decision making requires good information, and many organizations need the same information, but in Afghanistan, like most countries, there is no structure for the effective coordination and sharing of these data among different organizations. Geographic Information System (GIS) technology is commonly described as a computerized system for the compilation, access, retrieval, analysis and display of geographic and geographic-related data. Modern GIS is much more than computerized mapping - it can provide an information infrastructure for bringing all manner of data together geographically to support integrated and multi-sector decision-making at many levels. An Afghanistan Spatial Data Infrastructure (ASDI) is envisioned to support the coordination and sharing of fundamental geographic information across the country's government and supporting institutions.

The first major workshop to introduce the concept of National Spatial Data Infrastructure (NSDI) for Afghanistan was held July 17-20, 2006 at the newly opened Afghanistan Central Statistics Office (CSO) Conference Hall, in Kabul. The three-day workshop was attended by over 170 people representing over 50 organizations from the Government of Afghanistan (GoA), international aid, security and support agencies, non-government organizations, and institutions of higher education. The workshop was co-sponsored by the CSO and the Afghanistan Geodesy and Cartography Head Office (AGCHO) under the GoA Office of the Vice-President, and with the financial and technical support of the United States Geological Survey (USGS) and the United States Agency for International Development (USAID).

ASDI as proposed is not a government unit or a facility, but rather a broad-based, inter-institutional cooperative initiative to promote the development and sharing of fundamental, commonly needed information across Afghanistan

The current document is based on international experience and feedback from Workshop attendees and defines an approach for moving an ASDI Program forward in a manner that addresses both urgent, near-term needs as well as longer term strategic planning and the need for incremental program development over time. A first discussion draft copy was distributed to all the attendees of the Workshop for further review and comment. Feedback from this review was used to develop this final document that will be submitted to the National Committee for Statistics and ultimately the Office of the President for adoption as a formal initiative of the Government of Afghanistan.

Several key initial implementation "Tracks" have been identified to collectively build an effective ASDI foundation over an initial 24-36 month period. These tracks have been defined based upon feedback from the Workshop attendees as well as the experience of the participating experts. Many of these activities can be carried out in parallel by multiple partner organizations, while some may be organization-specific and/or

dependent on the outputs of other related programs. Each program element is summarized here, and presented in more detail in the following sections, including definition of the specific tasks that are needed to carry out each:

Track 1 - ASDI Stakeholder Assessment and Strategic Plan. A ASDI Stakeholder Assessment and Strategic Plan development program is proposed to identify those agencies, institutions, organizations, and companies that are the primary producers and custodians of the most commonly needed statistical and spatial information, assess their current status in terms of institutional and technological capacity, needs, priorities, issues and opportunities for the development and utilization of the ASDI. A collaborative 10 month program is proposed to work with all these agencies and organizations to collect and analyze this information and develop a strategic plan to guide ASDI development over the next several years.

Track 2 - Major Project Data Coordination. There are at present several significant ongoing and planned projects that are developing statistical and geographic data in the Country, with little coordination or common standards among them. Some of these projects are known, but it can be expected that others will be identified during the ASDI Summit and stakeholder interview sessions that are part of Track 1. This effort will seek to help align the data development efforts of current major projects in the Country in a manner that does not disrupt the project flow, but optimizes the data outputs in a form that will be beneficial to the entire ASDI stakeholder community.

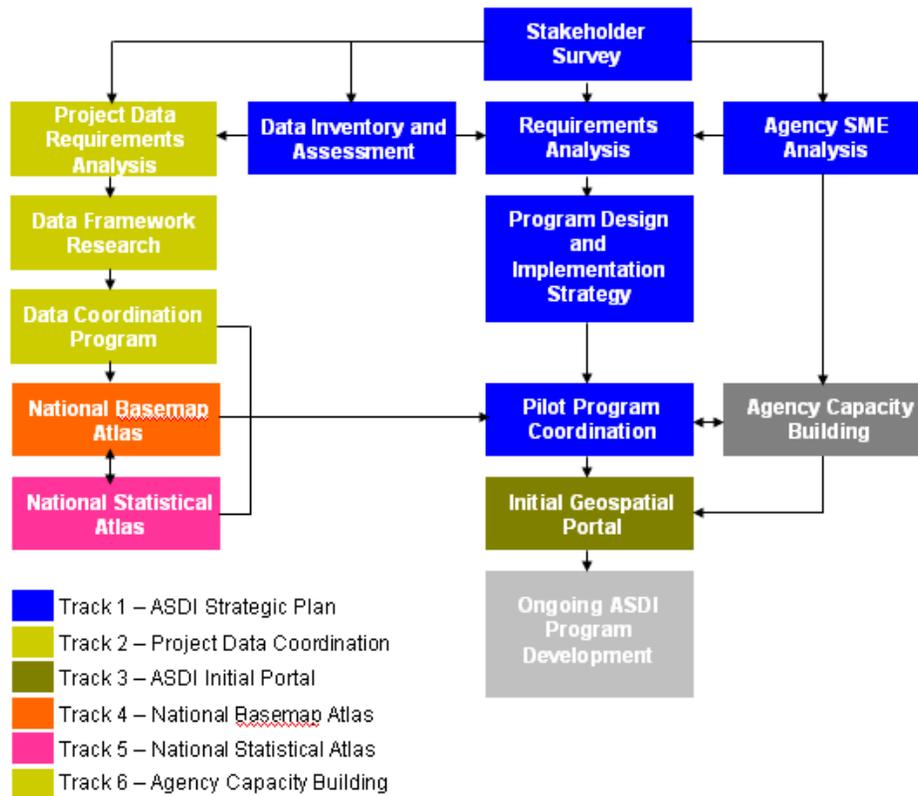
Track 3 - ASDI Initial Portal. An initial website will be developed to provide basic information concerning the ASDI, its components, and participants. This will also establish an initial data access portal to demonstrate such technology and provide a technology foundation that can be expanded and refined as the community of participants grows, and the extent of available fundamental statistical and geospatial datasets increases.

Track 4 – National Topographic Basemap Database and Map Atlas. At present there is no common, up-to-date digital topographic basemap series available for Afghanistan. The need for such mapping ranges from local government, utilities and others who work at the community level who need detailed maps of the urban areas at a scale of 1:1K, to more generalized mapping covering rural and regional areas that are needed for national and regional agricultural planning, transportation planning, environmental resource management, and other purposes. This program will involve the development of such a database, as well as the production of associated orthophotography and vector line mapping.

Track 5 - National Statistical Database and Atlas. At present there is no common, comprehensive up-to-date statistical atlas available for the Afghanistan Country. The need for such statistics range from agency specific operational information, inventory and performance information and statistics for key sectors, population and vital statistics, and other matters. This program will involve the development

of such a database of base level statistics, as well as the production of a statistical and geostatistical atlas to communicate this information in an effective manner.

Track 6 - Agency Enterprise Capacity Building Program. Once the fundamental data sets (FDS) have been created through various projects and programs, it will be critical that the custodian agencies and institutions begin the task of continuous data updating to ensure that the information investment is maintained into the future. As part of the ASDI program the project team will be prepared to mobilize support selected FDS custodian agencies in the development and implementation of their own enterprise information management (IM) plans, system design, and capabilities, including the implementation of the required and technical and human infrastructure. With careful planning and design, the development of an operating IM capability within each of the agencies that will be the data custodians for the most critical FDS can be carried out strategically and cost effectively over time.



As illustrated in the diagram above, all of the Tracks outlined above are interrelated and somewhat interdependent, but each has been defined in a manner that is flexible and can be adjusted to fit the evolving situation in the Country. Following review and additional feedback from the relevant agencies and organizations, this workplan will be further refined and a final Workshop Report created for formal submission to the GoA Office of the Vice-President for further deliberation.

1.0 Introduction

The first major workshop to introduce the concept of National Spatial Data Infrastructure (NSDI) for Afghanistan was held July 17-20, 2006 at the newly opened Afghanistan Central Statistics Office (CSO) Conference Hall, in Kabul. The three-day workshop was attended by over 170 people representing over 50 organizations from the Government of Afghanistan (GoA), international aid, security and support agencies, non-government organizations, and institutions of higher education. The workshop was co-sponsored by the CSO and the Afghanistan Geodesy and Cartography Head Office (AGCHO) under the GoA Office of the Vice-President, and with the financial and technical support of the United States Geological Survey (USGS) and the United States Agency for International Development (USAID). This “Workshop Statement and Proposed ASDI

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Program and Road Forward” defines an approach for moving an ASDI Program forward in a manner that addresses both urgent, near-term needs as well as longer term strategic planning and the need for incremental program development over time. This discussion draft copy is to be distributed to all the attendees of the Workshop for further review and comment. Feedback from this review will be used to develop a final document that will be submitted to the Vice-President’s Office for further deliberation and potential adoption as a formal initiative of the Government of Afghanistan.

1.1 Purpose

Good decision making requires good information, and many organizations need the same information, but in Afghanistan, like most countries, there is little structure for the effective coordination and sharing of these data. Geographic Information System (GIS) technology is commonly described as a computerized system for the compilation, access, retrieval, analysis and display of geographic and geographic-related data. Modern GIS is much more than computerized mapping - it provides an information infrastructure for bringing all manner of data together geographically to support integrated and multi-sector decision-making at many levels. An Afghanistan Spatial Data Infrastructure (ASDI) is envisioned to support the coordination and sharing of fundamental geographic information across the country’s government and supporting institutions.

Any effective information infrastructure must provide an enabling framework of standards, policies, data, procedures, and technology that is needed to support the effective coordination and dissemination of essential information. The concept of basic infrastructure supported by government is well established. In all nations, the major road and telecommunications networks, basic health and education facilities, and other major facilities have been originally funded by governments. It is a critical role of government to provide a common and consistent infrastructure to support a wide variety of government, private sector and community activities. The concept of NSDI views societal data as an infrastructure, with the same underlying rationale and administrative characteristics and responsibilities as any other infrastructure. This spatial data infrastructure is needed to support a nation's economic growth, and its social and

environmental objectives, backed by the standards, guidelines, policies and protocols needed to maintain the integrity of the infrastructure, and to guarantee access. Extensive national spatial data infrastructure (NSDI) initiatives are underway around the world. These existing programs have established important groundwork, but Afghanistan, like all countries, has special political, security, economic, cultural and legal contexts that require a unique approach.

The concept of basic infrastructure supported by government is well established. In all nations, the major road and telecommunications networks, basic health and education facilities, and other major facilities have been funded by governments. It is a critical role of government to provide a common and consistent infrastructure to support a wide variety of government, private sector and community activities. The concepts of NII and SDI view societal data as an infrastructure, with the same underlying rationale and administrative characteristics and responsibilities as any other infrastructure. This data infrastructure is needed to support a nation's economic growth, and its social and environmental objectives, backed by the standards, guidelines, policies and protocols needed to maintain the integrity of the infrastructure, and to guarantee access. While not all aspects of SDI can or should be "owned" by government, government has a critical responsibility and role for initiating and facilitating its development and evolution. In Afghanistan today, the special and important roles played by the security forces, international donors, United Nations, non-government organizations, and the private sector in the development and application of GIS and statistical information to critical local and national issues suggests that this broader stakeholder community can and should be direct partners in any SDI initiative. In addition, there are regional and international initiatives that SDI efforts in Afghanistan can align with to mutual benefit, including but not limited to the United Nations SDI Strategy, Global SDI, ISO, Open GIS Consortium (OGC), OpenGIS, and others.

The ASDI is conceived as a national initiative to harmonize, integrate and optimize the development and sharing of fundamental geographical and statistical information across all government agencies, and key organizations in the broader stakeholder community mentioned above. This initial program is intended to accomplish several key strategic objectives, including:

- Identify all the key institutional players involved in the development and use of commonly needed statistical and geographic information, and begin building a “community” of stakeholders;
- Broaden awareness regarding common information needs, issues, opportunities and constraints at all levels of the stakeholder community;
- Build awareness and appreciation of international standards and “sound practice” methods at the technical levels of the stakeholder community;
- Encourage organizations to work together on common needs;
- Develop a common strategic road map for moving the ASDI initiative forward;
- In parallel, respond to urgent needs for information and information management capacity building;

- Set in place the mechanisms for building basic information management capacity in all the key government agencies and other stakeholder organizations;
- Rationalize respective roles and responsibilities for the compilation, management, use and distribution of commonly needed information resources across the GoA.

1.2 Process

The three-day ASDI workshop covered a wide range of topics intended to raise awareness of the issues and opportunities associated with the development of NSDI internationally, and the types of challenges that will need to be overcome to build such an infrastructure for Afghanistan. The workshop was supported by Geographic Planning Collaborative, Inc. (GPC), a U.S. based international GIS consulting firm that has been involved in planning and implementation of GIS technology in over 65 countries over the past 25 years, including national and regional SDI development efforts in such diverse places as Oman, Thailand, Lebanon, Iraq, Bahrain, Libya and Jamaica.

The first day of the workshop covered the essential principles of GIS, the evolution of the technology, and how organizations have evolved to take advantage of technological advancements and the advent of “societal GIS” and NSDI. Participants were introduced to the stages of development of GIS technology over the past 30 years, from the origins of GIS as a tool to support specific projects, to successive levels of organized approaches to GIS data development and management, and the emergence of NSDI as a societal infrastructure. The first day venue also covered the application of GIS to a wide range of sector applications, and stressed the introduction of the technology as an essential tool for decision-making in all sectors.

The second day included the presentation of over 10 agencies and institutions active in the development and application of GIS data in Afghanistan. Each agency presented work carried out by their agencies and institutions to-date, and their plans for the future.

The third day included a review of several NSDI case studies from around the world, a summary of “lessons learned”, and implementation considerations for moving an ASDI forward. This third day culminated with asking each individual to respond to several key questions regarding how to best move forward with an ASDI initiative. This latter exercise yielded over 100 pages of valuable responses and opinions. All three days also included active participation by the audience, and all comments and opinions were carefully recorded throughout each session.

The results of the workshop have now being compiled to this “Workshop Statement and ASDI Road Forward” document, and a CD containing all the presentations. The document will consider all the information and input from the workshop participants, including priorities and opinions expressed. The document will outline the major components of an ASDI and a general program outline for moving an ASDI forward as a cooperative initiative among all the involved agencies, organizations and institutions. A draft document will be prepared and distributed to all the participants for review and comment. All comments will be reflected in the compilation of a final version that will

be presented to the GoA Vice-President and other high officials for the consideration of a formal adoption of an ASDI as a matter of national priority. This consensus document is also intended to be used by the Afghanistan GIS community individually and collectively to communicate the importance of the ASDI to donor and international finance institutions.

The development of this program is being carried out through a step-by-step, practical process that will establish a strategic and evolving framework for a long term ASDI, and provide coordination and support to the development of its various components through a carefully conceived and guided incremental process. It is recognized that this infrastructure can only be as strong as the community of agency stakeholders that comprise it, thus each component of the program will seek to build on and leverage the many good works being carried out in many of the more progressive agencies in the Afghanistan Country, across all sectors.

Given the potential significance and impact of the ASDI to the security, rebuilding and future prosperity and modernization of the Country, It is proposed in this document that the ASDI initiative be adopted as a program under the sponsorship and facilitation of the Afghanistan Government Executive Offices and Council of Ministers. It will involve direct cooperation among several key agencies to establish the initial foundation of the ASDI, and this initial network of partners will be expanded to include the broader ASDI stakeholder community of government agencies, institutions, non-government organizations, and the private sector that can benefit from, and contribute to, the ASDI as a societal resource for the Country.

1.3 Components of the ASDI Initiation Workplan

Several key implementation “Tracks” have been identified to collectively build an effective ASDI foundation over an initial 24-36 month period. These tracks have been defined based upon feedback from the Workshop attendees as well as the experience of the participating experts. Many of these activities can be carried out in parallel by multiple partner organizations, while some may be organization-specific and/or dependent on the outputs of other related programs. Each program element is summarized here, and presented in more detail in the following sections, including definition of the specific tasks that are needed to carry out each:

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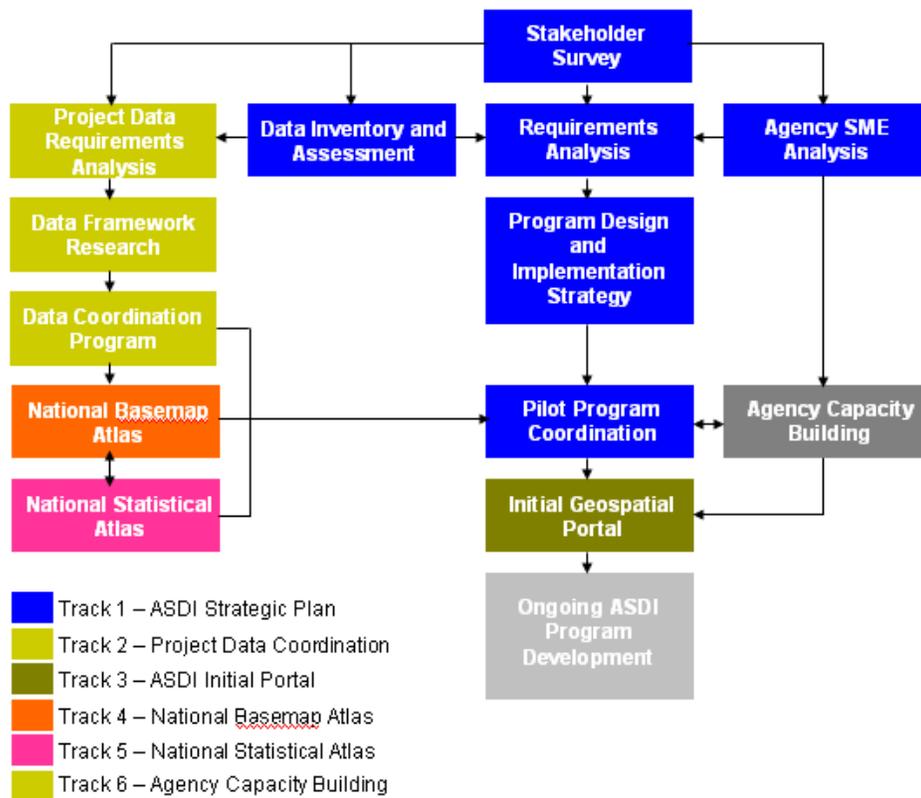
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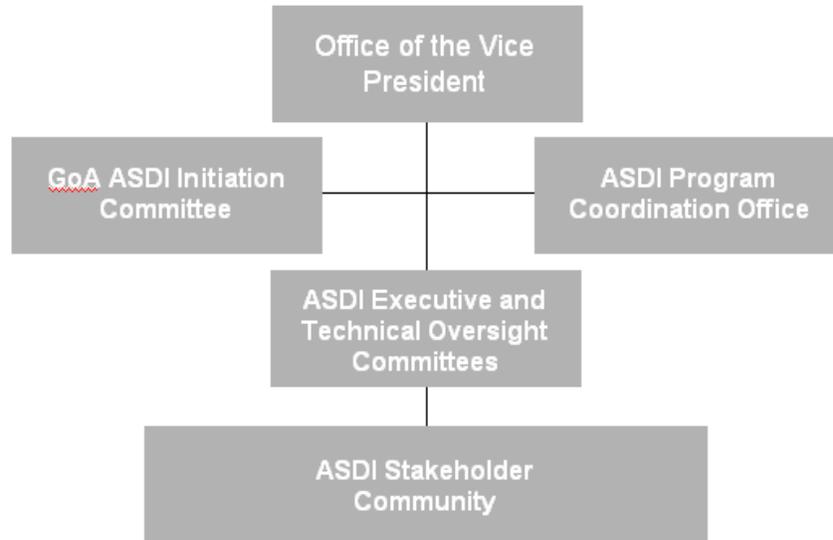
Track 6 - Agency Enterprise Capacity Building Program. Once the fundamental data sets (FDS) have been created through various projects and programs, it will be critical that the custodian agencies begin the task of continuous data updating to ensure that the information investment is maintained into the future. As part of the ASDI program the project team will be prepared to mobilize support selected FDS custodian agencies in the development and implementation of their own enterprise information management (IM) plans, system design, and capabilities, including the implementation of the required and technical and human infrastructure. With careful planning and design, the development of an operating IM capability within each of the agencies that will be the data custodians for the most critical FDS can be carried out strategically and cost effectively over time.



As illustrated in the diagram above, all of the Tracks outlined above are interrelated and somewhat interdependent, but each has been defined in a manner that is flexible and can be adjusted to fit the evolving situation in the Country.

1.4 Team Organization for Carrying Out the Initial ASDI Program

A multiple-stakeholder team will be assembled to carry out the activities outlined in this Work Plan. This includes an ASDI Program Coordination Office Team that will be administered under AGCHO and will be responsible for the day-to-day coordination and facilitation of the ASDI Initiation Program, a government ASDI Initiation Committee that will initiate the ASDI as an official priority initiative of the GoA, and Executive and Technical Coordination Committees chaired by representatives of AGCHO and CSO, and with membership from all the participating major stakeholder agencies, and special sub-committees and working groups that will be formed as needed to support specific activities in the overall program. This team structure is illustrated in the diagram below, and further described in following text.



ASDI Program Coordination Office Team. The ASDI Program Coordination Office Team, initially under the administration of AGCHO will be responsible for the overall management and administration of the two-year ASDI initiation program outlined in this Work Plan. This team will include a Program Director, Deputy Director, and several Technical and Administrative Support staff. Specialist international and local consulting staff will be mobilized as needed to support specific parts of the overall program. Specific duties of the ASDI Program Coordination Office will include, but not be limited to:

- Program management and administration;
- Project management;
- Recruitment, mobilization and coordination of specialist short-term consultants;
- Facilitation, coordination, and support of Executive and Technical Committee activities and functions;
- Program monitoring and periodic status reporting;
- Support Executive Oversight Committee meetings and activities;
- Chair the Technical Oversight Committee.

GoA ASDI Initiation Committee. A government-driven initiation committee has been proposed to drive the processes within the Government of Afghanistan (GoA) and key aligned partner agencies and institutions that can best support the adoption of the ASDI as a priority initiative recognized by the highest levels of the national leadership. This Initiation Committee is to include the following members:

- AGCHO;
- CSO;
- Ministry of Interior (MOI);
- Ministry of Agriculture;
- Ministry of Justice;

- United Nations Population Fund (UNFPA);
- United States Geological Survey (USGS);
- United States National Geospatial-Intelligence Agency (NGA);
- ACBAR;
- Afghanistan Academy of Sciences
- Kabul University

The primary role of this Initiation Committee will be to sponsor the promotion of the ASDI as a matter of national priority and adoption as an official initiative recognized by the highest levels of the GoA. Specifically, this process includes the following basic steps:

1. Submit the ASDI Initiation Committee and Work Plan to the Office of the President. The President will then refer this issue to the National Statistics Committee (NSC);
2. NSC will invite members and AGCHO Director to attend a meeting to discuss this proposal. At this meeting, the Vice President will ask the CSO Director to submit a proposal to include AGCHO as part of the NSC;
3. The NSC will then hold a meeting to review the proposed ASDI Initiation Committee and to make appropriate changes;
4. The NSC may refer their decision to the President for final acceptance;
5. The ASDI Initiation Committee will then start its activities.

Executive Oversight Committee. The Executive Oversight Committee (EOC) will be co-chaired by the Directors of CSO and AGCHO, and will include the Ministers or other executive representatives leaders from all the key participating stakeholder organizations. This Committee will provide oversight and guidance to the overall ASDI Initiation Program, and will have decision authority over all matters that are of a policy or financial matter in the Program. Examples of representative sectors and organizations that will participate in the EOC will include, but not be limited to:

Government of Afghanistan (GoA)

- AGCHO;
- CSO;
- Afghanistan National Development Strategy (ANDS);
- Ministry of Transportation;
- Ministry of Telecommunications;
- Civil Aviation Department;
- Ministry of Agriculture;
- Ministry of Defense;
- Agrometeorology Department;
- Ministry of Mines & Industries;
- Ministry of Interior;
- Ministry of Rural Development and Rehabilitation;
- Ministry of Water & Energy;
- Ministry of Information & Youths;
- Ministry of Higher Education;

- Ministry of House Construction and Irrigation;
- Directorate of Municipality;
- Public Utilities & City Development;
- Ministry of Economy;
- Department of Geology and Mines;
- Ministry of Justice;
- of Environment;
- Ministry of Public Works
- Ministry of Health;
- International Chamber of Commerce of Afghanistan.

Security Forces

- ISAF
- NATO

United Nations, International Technical Support, and Donor Agencies

- USGS;
- NGA;
- UNGIWG (United Nations Geospatial Information Working Group);
- European Union;
- USAID
- AIMS;
- CARE International;
- UNFPA
- UNAMA;
- UNHCR;
- UNDP;
- WFP;
- UNICEF;
- FAO.

Private Sector

- Selected private sector leaders that have demonstrated significant commitment in supporting the GIS community – these will be periodically nominated and elected by the members of the EOC.

The above stakeholder organizations will undertake a process initially to nominate a core group to lead the Executive Oversight Committee, and several representative Councils to represent the interests of the various groups of participants. The process by which this will be carried out will be spelled out in the EOC Charter that will be prepared by the GoA Initiation Committee, and then refined by the EOC once it has been formulated.

Specific duties of the ASDI Executive Oversight Committee will include, but not be limited to:

- Oversee ASDI Program and provide strategic guidance;

- Make decisions or recommendation to the Office of the VP regarding all program-related policy and financial matters;
- Make decisions or recommendations to the Office of the VP regarding issues that cannot be reconciled at the Technical Committee level;
- Communicate issues to their respective agencies and organizations.

Technical Oversight Committee. The Technical Oversight Committee will be chaired by the Director of the ASDI Program Coordination Office, and will include the Coordinators and Technical Leads from all the key participating organizations mentioned previously. This Committee will provide technical oversight and guidance to the ongoing accomplishment of the ASDI Initiation Program, and will work together to discuss and resolve issues of a technical nature. Specific duties of the ASDI Technical Oversight Committee will include, but not be limited to:

- Oversee technical aspects and coordination within the ASDI Program;
- Make decisions regarding technical and operational coordination matters;
- Defer decisions to the Executive Oversight Committee that cannot be resolved at the Technical Committee level;
- Communicate issues to their respective Ministers or agency Heads.

As Needed Sub-Committees and Working Groups. There will be a periodic need for the formation of special sub-committees and working groups to address special issues throughout the initiation period of the Program. These groups will either be planned or formed on an as-needed basis depending on the matter to be addressed, and will largely consist of persons from the participating agencies and organizations. Specialized consultants may also be included to provide input and guidance where needed. The basic duties of the sub-committee and working groups will vary with each specific issue but will include in general the following:

- Problem definition and clarification;
- Research into specific international standards and best practices;
- Refinement or re-crafting of international models to meet the needs of the Afghanistan Country;
- Analysis of alternatives and options;
- Develop best approach and recommendations for consideration by the Executive or Technical Committees;

2.0 ASDI Initiation Program

The following presents a draft work program for the launching and development of the ASDI. The program includes a variety of both strategic long term as well as near-term urgently needed activities that can be carried out in parallel to promote a better and more coordinated information development and sharing environment in Afghanistan.

2.1 Track 1 - ASDI Stakeholder Assessment and Strategic Plan

The participants and potential beneficiaries of the ASDI are numerous and diverse in their broad range of interests and current capabilities. An ASDI Stakeholder Assessment and Strategic Plan development program is proposed to identify those agencies that are the primary producers and custodians of the most commonly needed statistical and spatial information, assess their current status in terms of institutional and technological capacity, needs, priorities, issues and opportunities for the development and utilization of the ASDI. A collaborative 10 month program is proposed to work with all these agencies to collect and analyze this information and develop a strategic plan to guide ASDI development over the next several years. The following outlines the tasks involved in carrying out this program.

2.1.1 Task 1 - Mobilize Inception Program

Once the official mandate for the ASDI has been established, it will be necessary to mobilize an inception program to help guide the planning program. This will need to include several sub-tasks including

Assemble and Mobilize ASDI Planning Team. A team of both local experts and international specialists will be required to develop the ASDI Strategic Plan. A team will be configured and mobilized to carry out the tasks outlined in this workplan.

Formulate Executive and Technical Committees. Experience suggests that it is desirable to establish two levels of agency representation to support the development of an ASDI Strategic Plan. The first will include an Executive Committee comprising representation from the President and Vice-President Offices and the Council of Ministers and Heads of the key participating organizations. This Committee will address matters affecting policy, finance and resolution of issues that are not solved at the operational level. A second Technical Committee will comprise ASDI Coordinators from each organization who will participate in the operational and technical level conduct of the strategic planning process.

The carrying out of the ASDI Strategic Plan will be facilitated by an acting Program Director and Deputy. As conceived, the Program Director and Deputy will play a facilitation and advisory role in the program inception process, and be generally responsible to oversee and followup the initial planning and establishment of an eventual

permanent ASDI Office reporting to the Vice-President and Council of Ministers. The Program Director will need to have significant previous international experience in the broad issues of national and regional information infrastructure, and various approaches to its implementation. The Deputy should be a person with some background in this subject, but most importantly should have a solid grounding in the form and functioning of the Government of Afghanistan (GoA), and the situation in the Country. It is likely that during the Program Director will need to be brought in from outside for the inception program period, and will later phase out to a more limited advisory role once the permanent ASDI Office as a formal function of the GoA has been established. The Deputy will be expected to play an important role in both the inception and operational periods.

As stated earlier in this paper, the purpose of the permanent ASDI Office will be to facilitate the collection and dissemination of critical information from, and among all key government sectors. This will provide the foundation for a broadly-based national information infrastructure that will support critical decision making and coordination among all the relevant agencies. The multiple-sector nature and breadth of the permanent ASDI Office function, the critical nature of the information that it will coordinate, and the impact this information will have on physical, economic and social development in GoA underscores the importance of the permanent ASDI Office Director and Deputy roles that will guide this permanent function into being.

The inception phase of permanent ASDI Office development will extend from initial assessment of information requirements to the establishment of the initial, functioning ASDI Program Coordination Office. Through this initial formation stage, the Program Director and Deputy will be expected to carry out the following essential functions:

- Provide ongoing liaison between the Executive Offices, AGCHO, CSO, and other key GoA ministries, and other stakeholder organizations;
- Assist in establishing lines of effective communication and coordination between the stakeholders and the planning team;
- Participate in initial meetings with agency executives to represent the Executive Offices and Council of Ministers, and to ensure there is clear understanding regarding the initial ASDI mandate, its purpose, and importance to the GoA;
- Participate in various multiple-agency workshops and meetings throughout the various permanent ASDI Office planning and implementation stages;
- Identify and address any issues regarding information collection, sharing and use that may arise during the agency planning process. In some cases this may involve presenting such issues to the higher authorities for direction;
- Support the synthesis and communication of planning team findings, alternatives and recommendations to the higher authorities, and facilitate the formal process for policy adoption and agency formation;
- Maintain ongoing communication channels with all the participating agencies to ensure they are informed and engaged throughout the ASDI initiation process;
- Oversee the development of the ASDI Program Coordination Office's initial facility, infrastructure, and staffing;

- Oversee the initial phase of agency operation to ensure normalization and institutional stability, in accordance with the permanent ASDI Office intent and vision.

2.1.2 Task 2 – Conduct Planning Program Kickoff

In the first task, the planning team will collaborate with key stakeholders to conduct several activities that will kick off the ASDI planning project. This will include the refinement of the project scope, clarification of roles and responsibilities, identification and classification of the stakeholder community that will be invited to participate in the study, review primary stakeholder background information, and preparation and presentation of an orientation seminar to explain the purpose and process of the ASDI Strategic Planning process.

The implementation of the initial ASDI will focus on those sectors and data topics that are most important to the physical, economic, social and environmental development of the country. Experience suggests that there are usually a select group of agencies and institutions that will need to participate most directly in the setup and initiation of the ASDI building process. The project team will hold an initial one-day meeting to discuss the stakeholder community and identify those entities that will be 1st, 2nd, and 3rd tier ASDI stakeholders. Prior to this meeting, the planning team will collect background information about all of the potentially relevant government departments. This information will provide the team with an understanding of the basic mission and functions of each agency, and this information will be used to classify the stakeholders to the three tiers. 1st tier will include those organizations that will be directly involved in building and maintaining "fundamental" data topics, or will be highly important users of such information. Tier 1 stakeholders will be selected for direct interviews in the next task. 2nd tier are those that are either contribute directly to framework data topics, and will be heavy future users of such information. Tier 2 stakeholders will be asked to fill out detailed questionnaires but will not be directly interviewed unless it becomes obvious through the process that there is a need to do so. The 3rd tier comprises the remaining spectrum of the end-user community that will use information technology in the future and can benefit from the ASDI, but may not be direct contributors to its initial development. Classification will be based on criteria gathered by the planning team from past efforts that will need to be crafted to meet the specific situation of Afghanistan. The classification of these entities will be used to structure the level of involvement in subsequent tasks. In general, international experience suggests that the following data topics comprise "fundamental" information in most countries, although this list varies from place to place:

- Population and Socioeconomic (census enumeration boundaries and socioeconomic statistical information at level of detail needed to support urban planning and other uses);
- Personal identification information;
- Cadastral (land ownership boundaries and data);

- Capital investment and development tracking (capital projects, building permits, land subdivisions, etc.);
- Economy (business locations and data, regional import/export, movement of goods and services);
- Employment statistics and locations;
- Health statistics and facilities;
- Education statistics and facilities;
- Basemap (horizontal and vertical control, planimetric features and georeferenced imagery at various scales as required for different levels of applications);
- Gazetteer (place and landmark identification);
- Transportation (roads, highways, rail, etc.);
- Addresses (buildings and other addressable structures and locations);
- Administrative (administrative boundaries);
- Soils and surficial geology;
- Land use and land cover (existing land use, vegetation, etc.);
- Surface hydrology (streams, rivers, drainages, coastline, etc.);
- Remotely sensed data (spectral and geographic type, resolution and coverage vary with applications);
- Utilities (electricity, water, telephone, gas, etc.);
- Public facilities (schools, hospitals, places of worship, etc.);
- Town and Regional plans.

It will be important that the project team have a working familiarity with the basic organizational structure and mandates of the major agencies to be supported by the ASDI, prior to carrying out the orientation seminars and user interviews described later. In preparation for the orientation seminars and user interviews to be conducted later, the project team will collect and review background materials concerning the primary stakeholders. This will include the review of new or under-development formation laws and any available organizational charts, mission statements and other background information needed to understand the "business" of each major agency. The planning team will request this information from the agencies over a several week period. Once this information has been collected, the entire team will meet over a two-day period to review the agency information and conduct the agency classification to the various Tiers as previously described.

Once a review of the major stakeholders has been conducted, the planning team will prepare and present an orientation seminar to representatives of the organizations that will participate most directly in the ASDI project. This will focus on the ASDI planning and design process, and the role of the GoA representatives in conducting the study. In general, the seminar will cover the following topics:

- ASDI planning study purpose, process and intended results, including an explanation of the interview questionnaire;
- Roles and responsibilities of the participants;
- Expected products and outcomes.

If necessary, the seminar may be repeated in consecutive sessions, in order to maximize the number of attendees. Attendees of the orientation seminar will receive a booklet outlining the major points presented.

It is expected that the Task 2 effort will be carried out over a 2-3 week effort onsite in Kabul, with possible additional sessions in other major centers in the Country. The collection and compilation of background information will have been carried out by the planning team in advance of this onsite effort.

2.1.3 Task 3 - Conduct Stakeholder Survey

A variety of organizations involved in the development or use of fundamental data in the Country will be interviewed to determine the current situation in these agencies and to surface the basic requirements for an ASDI. These will include representatives of selected government organizations that will be chosen to participate in the initial planning study.

For the purposes of this study, the various participating agencies will have been classified to 3 tiers of involvement as described previously. Selected organizations in the top two tiers will be identified to represent the ASDI requirements of the broader community for the purposes of ASDI initiation. Direct interviews will be conducted with several organizations within the Tier 1 and 2 organizations. Questionnaires will be provided to 3rd Tier organizations upon specific request or special circumstance.

Conduct ASDI 1st Tier Stakeholder Interviews. A series of issues should be explored with several organizations that are likely to play a key role in the ASDI development. It is expected that this will include up to 25-30 organizations, including GoA ministries, Parliament, representative international aid agencies, security agencies, NGO's, and others. Topics that will be addressed in each interview will include, but not be limited to the following:

- Agency mission and organization
- Agency functions and most common data topics needed;
- What basic data, statistics, and geographic data generated or used;
- What major IS/GIS-related projects that have been carried, are underway, or are planned for the near future;
- For data used, where acquired, and in what form, scale, data resolution, etc.;
- What issues, opportunities or constraints for ASDI development;
- What needs for information exchange regarding IS/GIS and related technologies;
- What internal technical capacity maintained now, including staff skill levels, existing computerization, and data communications infrastructure;
- What existing framework of policies or regulations that would affect data sharing and related issues.

Interviews will be expected to last 6-12 hours per agency depending on the role and complexity of each organization. These interviews will be conducted at the offices of each of the selected agencies.

Administer 3rd Tier Stakeholder Questionnaires. In parallel to the interview process described above, a focused questionnaire will be prepared and distributed to selected groups within the 3rd Tier group of agencies. This questionnaire will cover many of the same issues that will be addressed in the interviews, but will be filled out directly by the respondents. It is expected that questionnaires will be distributed to up to 20 additional organizations. The organizations will be given two weeks to prepare their responses, to coincide with the completion of the Tier 1 and 2 agency interviews. Questionnaires may also be distributed to 3rd Tier organizations only upon request or special circumstance that justifies an organizations special needs or potential contribution to the initial ASDI design and development.

The results of the interviews and questionnaire responses will be documented to a Technical Memorandum for use during subsequent tasks. This will be provided by the planning team to the participating government agencies for review and comment.

2.1.4 Task 4 - Conduct Data Inventory and Assessment.

Information from Task Two will be used to compile a representative inventory and brief evaluation of key fundamental data in the various ministries, inclusive of data in both digital and hard copy forms. Special focus should be placed on the most commonly needed, fundamental data topics as discovered in the previous task. Characteristics of the data sources such as accuracy and level of detail, currency and quality, subject matter presented, and possible automation problems should be considered. Redundancy of data collection by different agencies, as well as inconsistencies between data sources of the same data theme, should be evaluated. A data inventory and evaluation Technical Memorandum will be produced to provide a summary of each data source referenced during the interview stage.

2.1.5 Task 5 - Conduct SME Rapid Assessment

All the GoA Ministries are in the process of evolving their respective roles and responsibilities. It can be expected that many of these agencies will require some time to develop and stabilize their operational functions. How each agency develops these functions and the information management systems to carry them out will have a direct bearing on their ability to function as a reliable node in the overall ASDI information sharing network. During this Ministry formulation process is an excellent time to introduce IM technologies and methods at an appropriate level that can support immediate needs while providing a strong foundation for further modernization and institutional strengthening over time. During the stakeholder interview process described previously it will become clear what agencies need and want such support. A branch activity is suggested here to mobilize additional sector-specific subject matter expert (SME) teams to work with selected agencies to further assess their institutional situation

and to lay out an agency-specific capacity building program aimed at supporting them to develop the base foundation enterprise information management systems and procedures needed for them to support their own operations and to participate effectively in the overall ASDI.

Each SME team would be mobilized to work directly with selected Ministry staff to conduct the following:

- Develop a general overview which briefly describes the primary functions of a "good practice" agency for the assigned sector, based on international experience in this sector. This will include the major activities that each functional area comprises and the primary information topics that would be involved
- In consultation with the ASDI Planning Team and appropriate agency staff, assess the existing agency functions and their national and sectoral priorities against the list of good practices, identified in the previous subtask, to perform a "gap analysis". The gap analysis will identify those areas in most need of capacity building in order for the target agency to become a responsible custodian and/or user of fundamental data.
- Develop and document a capacity building framework and associated workplan that can be carried out in the next 1-3 years to address the human, technical, and organizational capacity building needs of the agency.

The above information will be developed jointly through a collaborative effort between SME's with extensive international experience in the identified sectors with internal teams assigned by the Ministries. Each Ministry team will produce an Institutional Strengthening Rapid Assessment and Capacity Building Program technical memorandum. These documents can then be used by the involved agencies to initiate their own internal capacity building programs, and will be further used to support the ASDI Planning Team as an additional input to the ASDI requirements analysis activity in the next task.

2.1.6 Task 6 - Conduct Requirements Analysis

The results of the previous tasks will be compiled to a synthesized form that will define the broad requirements of the ASDI. This will build on ASDI structures from around the world, but will be crafted to meet the specific requirements of Afghanistan. Subjects that will be addressed in the requirements analysis will include, but not be limited to the following:

- Major national and sectoral priorities that can be supported by ASDI;
- Existing situation with IS/GIS technology use in the GoA, general overview;
- Existing fundamental data infrastructure issues and opportunities;
- Existing technical computing infrastructure issues and opportunities;
- Existing technical staff capabilities, issues and opportunities;

- Organizational issues and opportunities, including consideration of institutional strengthening and adjustment recommendations;
- Policy and regulatory issues and opportunities;
- ASDI staging and timing issues and opportunities.

The results will be documented to a Technical Memorandum that will be provided to the participating agencies for review and comment.

2.1.7 Task 7 - Prepare Conceptual Program Design and Implementation Plan

In this task, a conceptual system framework design for the ASDI program and a strategy for its implementation will be prepared. The strategy will address all the key components of the proposed ASDI, including:

Staging. Experience suggests that ASDI development is best approached as a staged process that can occur over a number of years, and given the transitional nature of Afghanistan will require constant monitoring and periodic course adjustment. The definition of stages and associated outcome scenarios is important to defining what the ASDI will look like and how it might function through various stages of development. It is expected that the initial stages will need to directly reflect security, stabilization, development and reconstruction priorities in the country.

Data Clearinghouse. A conceptual design for a national data clearinghouse should be developed, including a general definition of its recommended form, function and operational responsibilities, funding options, and other issues.

Metadata. Metadata standards are well established in many countries, and these can be used as a starting point for developing a standard that is appropriate for a given situation. Full metadata standards are extensive and complicated. Some agencies may not be prepared to document their data at this level, so it is important to clearly identify which components of the metadata are absolutely required, and those that may be documented over time, or on an as-needed basis.

Data Standards. There will be a need to identify the fundamental data sets that are commonly needed by the majority of stakeholders. A conceptual framework design and general guidelines for these data topics should be prepared, considering the application requirements of the users, the business processes by which this information is maintained, the form of the existing data, and any special relationships with other data that will need to be maintained. Spatial and tabular relationships among the fundamental data topics should be considered in the development of an integrated data framework.

Considerable work has already been done in the development of standards in many countries, and it may not be necessary or appropriate to develop completely new standards. Time and effort may be saved by adapting existing standards to meet national needs.

Procedures and Responsibilities. Processes and functions of the primary participants in the initial building of the ASDI should be clearly spelled out. Processes to be addressed in the program design study will be focused on data conversion, integration, management and dissemination. The program design should also describe other process-related standards that will need to be addressed in the future.

Organization. The program design will define the conceptual structure for the permanent ASDI Coordination Office, including general roles and responsibilities, staffing, and cooperative linkages with other organizations. It will also define organizational and staffing issues of the other key agencies that will be involved in the initial stages of ASDI development, including the identification of various levels of committees that will be required to provide oversight, coordination and communications within the ASDI community at both executive and technical levels.

Technology. A technology framework for the ASDI will be described in the conceptual system design, including software, hardware, data communications and system protocol issues. The conceptual design will focus on the required technical functions and capacity of the system, rather than any configuration specifics. This conceptual description can be used later as the basis for a physical system design that will provide detailed specifications for the actual system components at the time of implementation.

Communications. A framework of methods and procedures to establish and maintain active communications among the ASDI user community will be identified in the conceptual design. This may include standard and as-needed information dissemination, executive and staff level committee meetings, a web site or other medium for communicating status and new developments, email list servers, annual conferences, and other means of maintaining clear communications and information flow among participants.

Cooperative Partnerships. A central mandate will establish responsibility for the development, maintenance and dissemination of fundamental datasets by a network of partners. This will need to be supported by formalized agreements among all the key participating member agencies and organizations. These agreements may take the form of Memoranda of Understanding (MOU), joint cooperative agreements, letters of intent, or other documented forms. Any such agreements should clearly spell out the roles and responsibilities of the participants, specific commitment of staff time, equipment, funding, or other resources, and timeframes for carrying out these commitments. The program design should identify what cooperative partnerships will need to be formulated later to carry out parts of the ASDI development.

Implementation Strategy. A strategic plan for the initial implementation of the ASDI should be developed. While some fundamental components of the ASDI may take substantial resources and many years to complete, experience suggests that it is absolutely critical that visible and compelling benefits are made evident throughout the development process. The implementation plan should be carefully crafted to focus on

the early execution of those components that are practical to implement, that can support the most urgent needs, and that will yield near-term, visible benefits. These are all necessary to gaining and sustaining the executive and administrative support that will be necessary to build the system, and maintain support over time. Longer term issues should also be addressed in the plan, but these should be carefully balanced against the framework of more immediate and visible topics that will be needed to “market” the system during the early stages of development.

The implementation plan should clearly define specific tasks to be carried out, task responsibilities, timeframes, task interdependencies, milestones, task products and other issues. Depending on the situation, the implementation plan may be conservative, limited in scope and primarily focused on specific foundation issues such as the initial establishment of the permanent ASDI Coordination Office and beginning the process of compiling, publishing and disseminating the most important data. A more ambitious course may be prescribed where there is the interest, support, and resources to carry out a larger and more aggressive implementation program. In either case, a pilot program will be specified as an initial testing ground for the ideas and approach expressed in the conceptual design. The pilot will also be useful for demonstrating the utility and potential benefits of the system to others. The Pilot Program will be structured to a limited implementation of key components of the design for one or more specific geographic areas.

The results of this task will be documented to a draft ASDI Program Design and Implementation Strategy report. Copies of this will be provided to all the participating stakeholders. A final workshop will be held with key members of the participating agencies and Committees to review and discuss the study findings and recommendations.

Following the workshop, the ASDI Planning Team will compile and synthesize all final comments and suggestions. These will then be used by the joint team to develop the final project report.

2.1.8 Task 8 - Coordinate Pilot Program Development

A pilot program implementation can be used to test and refine the assumption of the Program Design and Implementation Strategy in advance of full implementation. The full scope and timing of this will be determined during the process described previously.

2.2 Track 2 - Major Project Data Coordination

There are at present several significant ongoing and planned projects that are developing statistical and geographic data in the Country, with no coordination or common standards among them. Some of these projects are known, but it can be expected that others will be identified during the ASDI stakeholder interview sessions described earlier. The investment that these projects are making in the development of data to support their project activities could be leveraged to support many other applications beyond the original purpose, if these data are developed in a manner that is compatible and

interoperable. The following outlines a series of tasks that can be carried out by the ASDI Team to help align the data development efforts of current major projects in the Country in a manner that does not disrupt the project flow, but optimizes the data outputs in a form that will be beneficial to the entire ASDI stakeholder community.

In parallel with Track 1 described previously, a series of specialized team will be mobilized to work with agencies that are responsible for specific major projects that will generate data that will provide the information foundation for the ASDI. The sub-team will work with each of the involved agencies to develop a more detailed understanding of their specific project requirements, and to work with them to develop geospatial data specifications that both meet project needs as well as meet the broader requirements of the ASDI.

2.2.1 Task 1 - Conduct detailed project requirements assessment workshop

A series of project requirements workshops will be carried out with each of the identified project teams. These workshops will be facilitated by the ASDI team with the support of specialist consultants as needed. Workshops will generally pursue the following line of inquiry:

- Overview the project purpose and objectives;
- Describe the project scope of work;
- Identify project stages and components;
- Identify data compilation or collection, manipulation, analysis, visualization, and reporting or thematic mapping requirements at each stage;
- Identify what agencies are expected to provide the required data, and what information topics require original data collection (household surveys, traffic counts, census taking, detection of underground utilities, etc.);
- Identify what original data collection tools and techniques are being used or expect to be used;
- Identify what specialized data analysis tools and techniques are expected to be applied;
- Identify how the compiled or collected data are to be organized and managed during the project;
- Identify how the compiled or collected data are to be maintained and updated during the project;
- Identify how the analysis results are to be used, and managed;

The above information will be documented for each of the identified major projects.

2.2.2 Task 2 - Identify and assess existing international data models

For many of the fundamental data topics that will be developed to support the major projects, there already exists international data model standards addressing these topics. Because these models reflect the experiences and trial-and-error application of these models to many considerations by a broad group of users, they are often quite

comprehensive, large and complicated. In this task, those models will be referenced and assessed to determine their applicability to situation in Afghanistan.

2.2.3 Task 3 - Prepare draft data model and alternative compilation strategies

In this task, the applicable components of the international data models will be crafted to meet the needs of the identified projects, and the ASDI. This will likely involve trimming back the comprehensive international models to an applicable subset of information that is needed in the near to medium term, and is information that will be collected and actually maintained by the Agencies because it is critical to their business. Other more detailed or esoteric data requirements will be omitted from the initial models for the sake of practicality, although they can be added in the future if needed. In addition, the specific conditions of Afghanistan may also dictate structural aspects of the models that must be designed to reflect unique situations and requirements, and these will be imposed carefully to capture this information without adversely affecting the structure and usability of the basic model.

In addition to the modeling exercise, the ASDI Planning Team will also work with the project data stakeholders to identify and assess various alternative methods for data compilation, integration, and automation. These strategies will consider the availability of existing information, needs for original data collection, accuracy requirements, and other factors.

2.2.4 Task 4 - Conduct data model review and refinement workshop

Once the above tasks have been carried out, the ASDI Team will conduct a series of data model and compilation strategy review and refinement workshops with various relevant stakeholder agencies. This will be important to ensure that all the issues that need to be considered to effectively support the major projects, in addition to being structured to support the broader and longer term requirements of the ASDI.

2.2.5 Task 5 - Prepare final project data specification and compilation strategy

The results of all the previous tasks in this Track will be compiled to a final set of specifications and compilation guidelines. This information will be documented to a Project Data Guidelines and Specifications report for each project that will outline what information is to be collected and how it is to be structured to support each of the individual projects, and how that information is to be either used directly or transformed to a more generic form later to support the ASDI.

2.2.6 Task 6 - Design pilot data program

In this task, the project team will prepare a design for a data conversion pilot program. This will include one or more areas of limited topical and/or geographic extent at one or more scales as needed to best test and refine the concepts represented in the project data specification and compilation strategy. This program design will lay out the scope of

work for the next task. It is anticipated that each responsible agency will carry out its own portion of the pilot implementation.

2.2.7 Task 7 - Coordinate pilot effort

A series of pilot area data conversion efforts will need to be carried out to test and refine all the design and data conversion assumptions presented in the above Project Data Guidelines and Specifications report. It is likely that to adequately represent the different types of conditions in Afghanistan, that it may be necessary to select several areas of limited geographic scope. Areas will be chosen where multiple interrelated data topics will need to be collected and in situations that reflect the range of conditions that are likely to be encountered throughout the Country. The ASDI Team will work with the involved stakeholders to develop the specifications for the pilot efforts, and these will be compiled to a Pilot Data Conversion Plan that will be followed by each of the participating agencies or their contractors, within certain timeframes that have been designed to acknowledge the priorities and timing considerations of each of the data generating projects. The ASDI Team will play a coordinating role in the pilot conversion efforts to ensure that the activities of each of the participating agencies is carried out in close integration with the other participants, and according to the agreed specifications, standards and guidelines.

2.3 Track 3 - ASDI Initial Portal

A sub-team will focus on the design and implementation of an initial ASDI Portal capability within the ASDI Coordination Office and one or more of the major participating agencies. This initial Portal or network of portal nodes will be based on proven and supported commercial off-the-shelf software that is consistent with international standards, open and scalable to meet future needs. This Portal will provide a common technical infrastructure for the sharing of statistical and geospatial metadata inventory prepared during Track 1, and a common resource for initial data sharing among the major projects and other ASDI stakeholders.

2.3.1 Task 1 - Prepare Portal specifications

The ASDI Strategic Plan will have determined the general requirements for statistical and geospatial portal or clearinghouse. In this task, that conceptual framework will be expanded and refined to develop a more detailed set of technical specifications for all the components, including the required hardware capabilities, software functionality, metadata standards, data and application services. The detailed specifications will be further developed by a small team, and this information will be documented to a form that can be used to support the assessment of technology alternatives in the next task.

2.3.2 Task 2 - Assess and acquire Portal software

It will be important that the ASDI choose a technology platform for the initial portal that is based on international standards, can be quickly and cost-effectively implemented in a short period of time, is well supported by the vendor, and is flexible and scaleable to support a larger and more diverse user community over time. At present, the number of available technology solutions that meet these criteria are limited, but there may be more choices available by the time this stage of the project is reached. This task will involve comparing the functional portal specifications to the available technology solutions at that time, and to choose and acquire the system that best meets the identified short term and longer term needs and issues.

2.3.3 Task 3 - Prepare Portal Customization Design

The portal design activities will focus on the development of a robust software design for the ASDI Portal while leveraging the efforts to date on other portal implementations. Specific areas of focus will include

- HTML Design (overall look and feel)
- Home Page Design and Content Development
- Thematic Categories Definition
- Search Capabilities
- Place Name Gazetteer Implementation
- Map Viewer
- Statistical Graphics Viewer
- Basemap
- Login/Authentication/User Profiles
- Metadata Publication
- User and Metadata Administration
- Bilingual Support
- Hardware/Network/Software Architecture

The chosen Portal software should provide the user with access to a centralized introductory Web page that will allow the user to search metadata, view the results, participate in an ASDI forum, and provide user help and user account set-up pages. The ASDI Portal administrative staff will be provided with tools to approve data submitted for publication and to view Portal monitoring reports. In the future, administrative staff should also be able to set-up and execute the import/export of metadata to and from other metadata servers on the ASDI Network.

The ASDI team will develop a draft Portal Customization Design document based on the requirements and joint design discussions with the ASDI committee. The design discussions should be undertaken in an interactive session that will allow for maximum dialog between the Vendor and ASDI teams. The Portal Design document should be updated based on the feedback provided in the design review meeting.

2.3.4 Task 4 - Prepare Portal technical environment

In advance of the onsite training and setup for the geospatial portal, ASDI Coordination Office and/or participating agency staff will need to ensure that the technical environment is fully prepared. This includes both the computing environment setup, as well as ensuring that the appropriate data and metadata have been prepared for incorporation to the portal. It is important that ASDI technical staff review and confirm all the required setup steps as documented by the vendor. Other issues may require additional investigation, thus there should be a conversation between the ASDI IT staff and vendor technical staff to ensure that all issues are adequately resolved in advance of the onsite training in the next task.

2.3.5 Task 5 - Migrate metadata catalog

The development of Tracks 1 and 2 will have resulted in the compilation of an initial statistical and spatial information catalog for Afghanistan, inclusive of information in both hardcopy and digital form. This will also include the detailed metadata and specifications for the data topics and layers that are to be produced as part of the major projects. This information will have been entered to a Data Inventory database, and in this task that information will be migrated, as appropriate, to the Portal metadata catalog in preparation for Portal implementation and training in the next task.

2.3.6 Task 6 - Conduct Portal implementation and training

Portal technology available commercially in the marketplace can be implemented in the course of setting up and configuring the system. In this task, the ASDI IT staff will collaborate with the vendor to implement the Portal software within the ASDI computing infrastructure. This includes installation and testing of the core software and application software components within the ASDI computing environment.

2.3.7 Task 7 - Internal roll-out and review

Once ASDI staff have fully installed and tested the geospatial portal, it should be rolled-out for internal access and review. It might be advisable to assign 5 or 6 specific ASDI staff to carry out this review within a specific period of time. These people should have the background and interest to understand the basic purpose and structure of the portal, and should have participated in the introductory portion of the training exercise as described earlier. Their review and comments should be documented towards the development of a future enhancement program.

2.3.8 Task 8 - Publish Portal to the Internet

When all aspects of the geospatial portal have been tested and stabilized, then the site should be opened for Internet access as appropriate. Ideally, access to the geospatial portal will be provided through the GoA website, and will be open for general access and browsing, with exceptions for those data that should be accessed only by authorized agencies. At a minimum, the portal component should be accessible to other government

agencies in Afghanistan who are significant spatial data stakeholders, and who are participating in the development of the ASDI.

2.4 Track 4 – National Topographic Basemap Database and Map Atlas

At present there is no common, up-to-date topographic basemap available for Afghanistan. The need for such mapping ranges from local government, utilities and others who work at the community level who need detailed maps of the urban areas at a scale of 1:1K, to more generalized mapping covering rural and regional areas that are needed for regional agricultural planning, transportation planning, environmental resource management, and other purposes. A GIS-based topographic database, based on international standards, is needed at selected mapping scales to support all ASDI stakeholders who have a need for spatial information. This program will involve the development of such a database, as well as the production of associated orthophotography and vector line mapping.

2.4.1 Task 1 - Conduct basemap requirements workshop

Central to any effective GIS in Afghanistan is the development of consistent and accurate topographic basemaps. These are needed at selected scales that will be required to support different levels of applications. There is a wide range of stakeholders with an interest in basemap information. It will be very important that this community have an opportunity to make their interests and needs known so that these can be reflected in the development of an appropriate specification, use of standards and development of a staged production plan that is responsive to the needs of the GIS community.

A topographic basemapping workshop is conceived to introduce the community of interested stakeholders to the principles, issues and opportunities related to GIS-based topographic mapping at different scales, and the technologies and methods that are used to do so. This 1-day workshop, led by the AGCHO with support of international subject matter experts and selected others, will in general cover the following topics:

- Introductions
- Overview of workshop scope and outputs
- Presentation of current basemapping situation in Afghanistan;
- Overview of the principles and practice of topographic basemapping and basemap data modeling;
- Re-establishing a national geodetic control network;
- Local survey network densification;
- Survey control for digital terrain model (DTM) development;
- Aerial photography and Lidar data capture;
- Orthophotography production;
- Feature and information extraction through photogrammetry;
- Making photogrammetric data GIS-ready;
- Building and managing a seamless topographic basemap database;

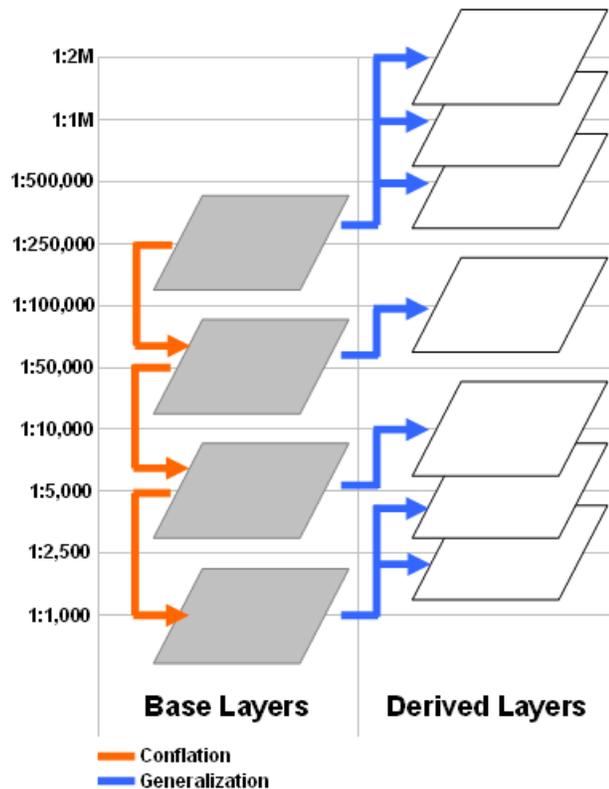
- Designing and producing cartographic outputs;
- Building and sustaining statistical information partnerships.

International “sound practices” for each of the above areas will be presented, along with demonstrations and examples. Participants will be encouraged to interact with the presenters to ensure that the material is well understood, and to surface any special issues and requirements from the user requirements. All feedback provided will be recorded for reference in later steps.

2.4.2 Task 2 - Prepare basemapping specifications

In the second step, a small team of topographic basemapping specialists will be assembled to develop a detailed specification for a basemapping program for Afghanistan. This will include the international sound practice components referenced previously, as well as end user input received through the workshop process.

Per the diagram adjacent, original basemapping may be carried out at specific base scales, from which more generalized mapping can be derived. For each scale of basemapping there are well-established standards and specifications for the preparation, compilation and production of topographic basemaps. However, many of the existing methods are based on classical cartographic production techniques. GIS technology now provides a means for structuring topographic basemapping data in ways that can effectively serve many important analytical purposes, in addition to the production of common standard cartographic products. The ASDI basemapping



team will assemble the best digital basemapping standards from around the world and adapt these to meet the specific needs of Afghanistan. Once the draft specifications have been developed, these will be passed to all the interested stakeholders for review and comment. Any feedback received will then be considered in the development of a final specification that will be used to guide subsequent steps in this program.

2.4.3 Task 3 - Carry out initial basemapping program

Much of the initial basemapping program will require specialized expertise and equipment that is not currently available in the Afghanistan Country. While a majority of the necessary production work will need to be outsourced, it will be important that this project be used as an opportunity to start building in-Country capabilities. The technical specifications developed in the previous step will be used as the basis for the development of a Request for Proposal (RFP) that will be used for international competitive tender. In addition to the normal technical mapping specifications, the tender will include a requirement to include capacity building and direct involvement of the appropriate GoA agency staff in each step in the process.

2.4.4 Task 4 - Publish basemap data and map series

As each priority area at each basemapping scale is completed, the digital information can be published to the geospatial portal, described elsewhere, for access by the authorized organizations. In addition, it may be desirable to use this digital information to design and publish digital image and hardcopy map series for more general distribution. The scope of this effort will be determined during Task 1 discussions.

2.4.5 Task 5 - Establish program for ongoing basemap development and updating.

Once initial topographic basemaps have been created, the further development of topographic basemap data for other areas of the Country and updating of that information will need to be carried out for this data to remain current. This will be especially true at the more detailed scales, where day to day changes in buildings, roads, and other features are changing constantly. International experience suggests that much of this local updating can be carried out through partnership between the topographic basemapping entity and other stakeholders, such as other Ministries who have responsibility for overseeing the changes on the ground. For example, under this scenario, the responsibility for updating building outlines would be carried out in part by the local municipality or other responsible agency on behalf of the rest of the community of users, based on the building permit process, where this is well instituted and consistently applied. In other cases, the building permit process will only cover formal development and there may be a continuing need to use other means to capture informal development that is also going on. It can be expected that these sorts of anomalies will decline over time as development becomes more regularized, but in the meantime practical measures will need to be taken to make sure that basemap data remains current over time.

2.5 Track 5 - Country Statistical Database and Atlas

At present there is no comprehensive, up-to-date statistical atlas available for Afghanistan. The need for such statistics range from agency specific operational information, inventory and performance information and statistics for key sectors, population and vital statistics, and other matters. A wide variety of key statistics and associated development indicators has been defined by the Afghanistan National Development Strategy (ANDS). This program will involve the development of such a database of base level statistics for selected topics and areas of the Country, as well as the

production of a statistical and geostatistical atlas to communicate this information in an effective manner.

2.5.1 Task 1 - Conduct statistical atlas requirements workshop

Central to any effective collection and use of statistics in the Country is the direct involvement and contribution of information from all the Ministries and other organizations. It will be very important that this community have an opportunity to make their interests and needs known so that these can be reflected in the development of an appropriate specification, use of standards and development of a staged production plan for mutual development of statistical data management capabilities that is responsive to the needs of the ASDI community at all levels.

A statistical atlas workshop is conceived to introduce the community of interested stakeholders to the principles, issues and opportunities related to the compilation of critical statistics and indicators, and the technologies and methods that are used to do so. This 1-day workshop, led by the CSO with the support of international experts and selected others, will in general cover the following topics:

- Introductions
- Overview of workshop scope and outputs
- Presentation of current statistics situation in Afghanistan;
- Overview of the principles and practice of statistics, indicators, and related data modeling;
- Establishment of a base level of essential Country statistics and indicators;
- Operational collection of information through agency business transactions;
- Conducting special surveys;
- Geostatistical mapping, analysis and visualization;
- Building and managing a common-purpose statistical atlas and associated database;
- Designing and producing statistical products;
- Building and sustaining statistical information partnerships.

International “sound practices” for each of the above areas will be presented, along with demonstrations and examples. Participants will be encouraged to interact with the presenters to ensure that the material is well understood, and to surface any special issues and requirements from the user requirements. All feedback provided will be recorded for reference in later steps.

2.5.2 Task 2 - Prepare Country statistical atlas specifications

In the second step, a small team of statistical atlas specialists will be assembled to work together to develop a detailed specification for a Country statistical atlas development program for Afghanistan. This will include the international sound practice components referenced previously, as well as end user input received through the workshop process.

The statistical atlas team will assemble the best norms and standards from around the world and adapt these to meet the specific needs of Afghanistan. Once the draft specifications have been developed, these will be passed to all the interested stakeholders for review and comment. Any feedback received will then be considered in the development of a final specification that will be used to guide subsequent steps in this program.

2.5.3 Task 3 - Carry out initial statistical atlas development program

Development of the Afghanistan Statistical Atlas will require the information and expertise of several organizations. A multi-agency team will be assembled to carry out this effort. The KRISO will head up this team, with the direct support of the AU/MMA staff. It is expected that several other sector and support ministries, agencies and organizations will also participate, including but not limited to JHIC, sectoral ministries, and others that will be solicited to assist this effort. The atlas will be developed according to the specifications developed in the previous task.

2.5.4 Task 4 - Publish base statistical data and Country statistical atlas

As each priority area of the statistical database is completed, the digital information can be published to the ASDI portal, described elsewhere, for access by the authorized organizations. In addition, it may be desirable to use this digital information to design and publish a digital version of the statistical atlas for more general distribution. The scope of this effort will be determined during Task 1 discussions.

2.5.5 Task 5 - Establish program for ongoing statistics updating.

Once the initial statistical atlas has been created, the updating of that information will need to be carried out for this data to remain current. International experience suggests that much of this updating is most effectively carried out through partnership between the national statistical organization and other stakeholders, such as other Ministries who have responsibility for generating such information as part of their work. For example, under this scenario, the responsibility for updating building permits would be carried out in part by the local municipality or other responsible agency on behalf of the rest of the community of users, based on the building permit process, where this is well instituted and consistently applied. In other cases, the building permit process will only cover formal development and there may be a continuing need to use other means to capture information regarding informal development that is also going on. It can be expected that these sorts of anomalies will decline over time as development becomes more regularized, but in the meantime practical measures will need to be taken to make sure that statistical information at all levels remain current over time.

2.6 Track 6 - Agency Enterprise Capacity Building Program

Once the Fundamental Data Set (FDS) statistical information topics and geographic layers have been identified and developed, it will be critical that the custodian agencies begin the task of continuous data updating to ensure that the information investment is maintained into the future. As an option, the project team will support selected FDS custodian agencies in the development and implementation of their own enterprise information management (IM) plans, system design, and capabilities, including the implementation of the required and technical and human infrastructure. With careful planning and design, the development of a full IM capability within each of the agencies that will be the data custodians for the FDS can be carried out strategically and cost effectively through incremental capacity building over time.

The major investment in the development of the majority of the required FDS data topics and layers will have been completed as part of various project works. With new data modeling and powerful statistical and IM tools for data analysis and visualization, the system can be rapidly expanded and the benefits can accrue to nearly every stakeholder group across Afghanistan. It can also establish Afghanistan as a regional showcase, to demonstrate the application of a coordinated approach among major national agencies and projects as the basis for creating a viable ASDI foundation, and the institutional capacity to sustain and maximize the infrastructure into the future.

Just as there are time-proven methods for carrying out master planning, there are likewise certain steps that need to be taken to develop an effective system design and implementation strategy for each of the individual custodian organizations. An enterprise IM capability is more than hardware, software and digital data. It also includes people and the administrative structures and business processes by which work is organized and carried out. Any effective plan for the systematic and strategic establishment of a functional IM capability at the FDS custodian agencies will need to address all these factors in an integrated fashion.

The following outlines a generic approach for system planning and design that can be further customized to meet the specific situation and needs of each FDS custodian agency. Although this investigation will be focused specifically on the IM requirements of each agency, it is also suggested that this be carried out within the context of a full inventory and structured rationalization of all the most important business processes of each organization, as a refinement of the more generalized business assessment carried out in the context of the Track 1 - ASDI Stakeholder Assessment and Strategic Plan. This will greatly help to strategize the optimum use of IM technology throughout the agencies, and provide a well-documented business process framework that can be used to address other technology requirements and process optimization within those organizations, now and in the future.

The following sections provide an outline of each of nine generic agency system planning and design tasks, the activities involved in each, and the products that should be generated at each step in the process. These may be adjusted to accommodate the specific needs of each involved agency.

2.6.1 Task 1 - Conduct Kickoff Meetings and Team Formulation

It is expected that the development of a comprehensive IM capability within the Agency will involve a team effort involving government staff working closely with specialist IM consultant support at key junctures. The Agency staff has an intimate familiarity with all the business processes and operations of the organization, and a knowledge of the existing systems and how they were developed. IM specialist consultants can provide familiarity with structured enterprise IM design and optimal implementation methods, and can bring direct experience gained through helping many other organizations around the world to address similar issues and challenges to those faced by the Agency.

In the first task, the IM Team will hold a project kickoff meeting to identify team members, review the project requirements, and assign specific roles, responsibilities and timeframes to the participants. This meeting should be attended by both key Agency Management staff, the Agency project manager, the international consultants, and at least one assigned representative from each of the participating Directorates or Sections.

The second day will focus on meeting with relevant department directors or key staff within those departments that will be the primary stakeholders for the proposed land data management system. Discussions will cover divisional priorities, and identify what specific groups and individuals should be included in the interviews to be carried out later. These will include groups within the Agency, as well as primary stakeholders out that the Agency interacts with. It is expected that approximately 12-15 interview sessions within and outside the Agency will be necessary to adequately define the range of Agency operational needs and the internal/external "market" for Agency data. It will be important that sufficient interviews are conducted to both understand the full range of applications that will need to be considered in the development of an appropriate Agency data model, the related business processes and requirements, and the administrative and technical issues that may be involved in the two-way sharing of this information with other organizations.

The results of the kickoff meetings will be documented to a Technical Memorandum outlining the interview program. This will be developed in close coordination with the Agency IM Project Manager, who will subsequently be responsible for assisting in setting the meeting schedule with Agency staff and other external organizations.

2.6.2 Task 2 - Orientation Seminar

An Agency-specific Orientation Seminar will be conducted to present the results of the "IM Requirements Overview Assessment", and to illustrate how other organizations around the world are using IM to address the same issues, and to explain the steps that will be involved in carrying out the Agency IM implementation.

The seminar will be structured to last three to four hours. It will consist of two parts. The first part will focus on summarizing the results of the "IM Requirements Overview Assessment". For each application area outlined in the Assessment, the range of

identified Agency IM requirements will be described, and a series of showcases from around the world will be shown to give Agency managers and staff an idea of how others are using IM to address very similar issues.

The second part of the seminar will focus on explaining the steps to be followed in carrying out the Agency IM implementation, including the overall process, purpose and objectives of each task, and what will be expected of the involved Agency staff.

2.6.3 Task 3 - Conduct Stakeholder Interviews

Overview interviews will have been conducted with a number of Agency managers and operational staff to gain a more detailed understanding of potential IM applications that could benefit the organization. These interviews will utilize and build on the more general information that was collected in the Track 1 - ASDI Stakeholder Assessment and Strategic Plan effort. The findings of that effort will be documented to a "IM Requirements Overview Assessment". In this task, the Team will conduct a series of detailed interviews to confirm and refine the information collected during the previous effort, and will address at a more detailed level all of the relevant Agency business processes and associated IM application and data requirements. Interviews will also be conducted with those external agencies that have fundamental interactions with the Agency.

This “enterprise” assessment approach will consider the full range of relevant operational responsibilities and activities of the various departments within the Agency, and primary stakeholders outside of the Agency.

The interview task will use a structured approach to confirm and document the primary business operations of the Sections, and the IM applications, data requirements, and related issues within each. Information about department needs will be collected through a series of group interviews. It is anticipated that there will be a need to conduct approximately 12-15 group interviews, each requiring approximately 2-4 hours. More time will be required to address the operational details of some of the Agency Sections. A more abbreviated method will be used for external agencies where the investigation will be limited to those issues that are related to the Agency. The exact number of interviews will be confirmed during the Task 1 Kickoff Meetings.

A structured interview technique will be used to effectively gather the required information, while allowing for sufficient interaction and idea sharing with the participants. Special business process modeling tools may be used to simultaneously facilitate and document this information. The needs assessment interviews will be focused around the following structured line of inquiry:

- Mandate and responsibilities;
- Existing business functions and processes;
- IM and related data used and generated;

- Data manipulation requirements (input, management, query, analysis, display, product output, etc.);
- Data content, accuracy, currency, format and accessibility requirements;
- Data format standards and requirements;
- IM related computing infrastructure currently in use or planned for implementation in the near future;
- Existing staff computing skills and experience;
- Special concerns and issues.

Other related topics and issues may be explored based on the specific situation of each group being interviewed. While all the relevant business function areas will be addressed at some level, special attention will be paid to those that were identified as special priorities during the Task 1 - Kickoff Meetings.

Department and other interviews will be documented immediately and returned to the interviewees for review and confirmation. Information collected during the interviews will be compiled initially to a draft "Stakeholder Needs Survey" report inclusive of textual descriptions, process flow diagrams and other techniques for recording relevant aspects of the various department and functional groups therein. In addition, an inventory of all the most important data stores used by both internal and external agencies will be listed. This inventory will be used to guide the IM data inventory and assessment to be conducted in the next task. The draft Stakeholder Needs Survey Report will be provided to Agency Managers for review and comment. Input from the Managers will be incorporated to a final version of the report.

2.6.4 Task 4 - Conduct Data Inventory and Assessment.

During Task 3, samples of data generated or used by the various internal and external groups will be collected and compiled to an organized data sample archive. In this task, the information will be analyzed to evaluate the range of geographic and related data required, and potential issues regarding data integration, automation, access and ongoing maintenance. Characteristics of the data sources such as accuracy and detail, currency and quality, detailed subject matter presented, and possible automation problems will be considered. Redundancy of data collection by different Sections or agencies, as well as inconsistencies between data sources of the same data components will be evaluated.

This part of the work will focus on developing a comprehensive inventory of the "fundamental" IM data to be considered in the conceptual design of the Agency's Enterprise IM program. Existing and planned systems that may relate to the management and manipulation of these data will also be inventoried. Special emphasis will be given to the fundamental data sets (FDS) that are needed to support the ASDI, but will also address those areas that are of the highest priority to the Agency. The data inventory will include base information, statistics, map and associated tabular (Attribute) data as well as other forms and formats of data including drawings, text and graphics. Data sample information sheets will be prepared for each data sample obtained during the interviews. Emphasis will be placed on characteristics of the data, and how they are used in support

of the previously identified business functions of the Agency. The assessment sheets and synthesis information will be compiled to a draft "Data Inventory and Assessment" report. The draft report will be provided to Agency for review and comment. Agency input will be incorporated to a final version of the report.

2.6.5 Task 5 - Prepare Needs Assessment and Requirement Analysis.

Information from the previous tasks will be further compiled and synthesized to "Agency IM Needs Assessment and Requirements Analysis Report". This will combine the findings of both the previous Stakeholder Needs Survey and Data Inventory and Assessment reports, and cross-reference and synthesize this information in a form that will clearly identify and characterize the needs, opportunities and constraints that need to be considered in the development of the Agency Enterprise IM scenarios and priorities in the next task. These issues will be depicted in textual descriptions, graphic and statistical forms that will make it easy for Agency management to fully understand the implications of the decisions and priorities that will need to be set in the next task.

The requirements analysis information will be compiled to a draft "Agency IM Needs Assessment and Requirements Analysis" report. The draft report will be provided to Agency for review and comment. Agency input will be incorporated to a final version of the report.

2.6.6 Task 6 - Prepare System Design and Implementation Strategy

In this task, the Team will develop a comprehensive system design and implementation strategy for the Agency Enterprise IM. This will define all the major components that are required for a functioning system, an implementation strategy for phased development of the system over time, and a Request for Proposal (RFP) document to be used for soliciting competitive bids for the implementation stage, if required.

The system design will be structured to address all the three major framework components of a viable "system" that will be needed to operate and maintain a viable Agency IM program, including the business framework, the technical infrastructure, and the institutional infrastructure. It will also identify essential components that should be implemented first to establish the technology foundation and support priority applications, followed by the incremental development of additional components towards a comprehensive enterprise system over time.

The system design will address the following issues, at a minimum:

Data Framework

- Basic data content and structure, especially for FDS and other data topics that may be of high priority to the Agency;
- Relationships and integration dependencies with other graphic layers;
- Relational keys required;
- Other related data;

- Source inputs, methods and processes for both initial land database development and maintenance;
- In house or external development.

Application Software Framework

- Application software functional requirements;
- Workflow integration;
- Number of users and benefits to be accrued;
- Data stores maintained;
- Implementation recommendations (potential for incremental implementation, dependency upon other functional modules, availability of off-the-shelf applications software suitable to meet some or all of the Agency's requirements, and other issues).

Computing Infrastructure Framework

- Hardware, software and network component requirements;

Administrative Framework

- Proposed workflow processes, including inputs, processes (including editing and versioning), and outputs;
- General staff types, roles and responsibilities;
- Commitment levels (hours per week, etc.)
- Institutional agreements required;

Staff Training Program

- Initial and ongoing staff training requirements;
- Type and number of personnel who should attend training.

Once the conceptual system design has been prepared, the Team will prepare a generalized implementation strategy for the development of the Agency IM, and an estimation of the resource requirements for carrying this out. This task will outline at a general level a coherent and prioritized implementation sequence for the development of the system, including a pilot system that will be used to test the assumptions of the system design, and phasing strategies, if any are deemed to be necessary. The implementation strategy will, in part, need to synchronize with the development of the ASDI, and other key priority application areas. The strategy and resource requirement estimates will address all the system components listed previously, including an estimation of initial system implementation costs, maintenance costs and annual budget requirements.

All of the above information will be synthesized to prepare a Request for Proposal. Both the conceptual system design and implementation strategy will be prepared as vendor-independent documents that articulate the requirements and strategies of the Agency, but leave the technology solution and details open for competitive bidding by vendors and consultants.

All the above information will be structured to a System Design and Implementation Strategy Report that will be submitted to the Agency in draft form. Agency will provide comments that will be used to develop the final report.

2.6.7 Task 7 - Conduct Pilot Implementation.

A Pilot program will be implemented as the first step in the implementation process. This 2-3 month program is intended to test the design assumptions developed previously within a topically and/or geographically limited area, and to refine the implementation strategy with new findings. At a minimum, the Pilot program will address the following:

Data model physical design and conversion. The conceptual data models developed previously will be used to develop detailed physical models where needed. The physical data models for the FDS topics and geographic layers will have been developed previously. Those additional data layers that are of high priority to the Agency will be addressed in this task.

Linkages to related data stores. Sample data from several existing systems will be loaded and refined to accommodate direct linkages to the new IM data.

Prototype applications and analyses. Once the above information is prepared, the Consultant will prepare several example application and analysis prototypes. These will be useful for testing the new data structure, and to illustrate to Agency staff the implications of the IM. Primary emphasis will be placed on those tools that will be needed to effectively update and maintain the FDS data layers that will be relied upon by the rest of the ASDI community.

The Pilot results will be evaluated by the Agency and Consultant teams. The results of the evaluation will be used to make any necessary refinements to the system design or implementation strategies in advance of full system implementation.

2.6.8 Task 8 - Full System Implementation.

The full system implementation will be carried out according to the System Design and Implementation Strategy, and any revisions resulting out of the Pilot program. This will be carried out in several inter-related Components, including:

Component 1 – Agency Business Framework. This component will address the rationalization and confirmation of the business vision, mission, goals and objectives that will drive the primary form and function of the Agency now and into the near future.

Component 2 - Database. Full conversion and enhancement of the existing mapping information to a new geographic data model. It is anticipated that most FDS will be under development through the specific projects. This task will address the development of additional data layers that are of priority interest to the

Agency. Enhancement of other existing systems to strengthen links to the IM, and conversion of other selected data stores for use within the Agency Enterprise IM and ASDI environments.

Component 3 - Applications. Development of key business processes and tools to ensure the accurate and timely update of the newly structured database. This will also include the development of other priority operations support applications, and the special applications and analysis routines to support specific projects.

Component 4 - Computing Infrastructure. This track will address the implementation of any hardware, core technology software, network and peripheral devices upgrades or acquisitions that are needed to support the initial system.

Component 5 - Training and Staffing. This track will address the full range of staff training activities that will be needed to allow Agency staff to operate and maintain the new IM, and to guide its extension and refinement into the future. This will include both classroom as well as on-the-job training and technical assistance.

Component 6 – Institutional Infrastructure This section will address the development of policies, standards and other aspects of the institutional infrastructure that is needed for effective IM management and use in the Agency. The establishment of an administrative structure to manage the IM implementation and to assume configuration management responsibilities once the initial implementation project is complete will also be addressed

2.6.9 Task 9 - Operational Deployment.

As the phased implementation of the Agency IM is carried out, completed components will be put into operation as part of the organization's day-to-day activities. Operational roll-out should be carefully planned and coordinated with the involved staff in each Department or Section. Sufficient technical support should be provided to ensure that staff are completely comfortable with the use of the new tools as an integral part of their daily work. As these modules are stabilized in the operational environment, the IM program can begin to refocus on ongoing configuration management issues and adaptive management into the future.

Appendix A – Summary of Participant Feedback from Workshop

The following summarizes the feedback received during and from basic questions that were posed at the end of the 1st Afghanistan Spatial Data Infrastructure Workshop, 17-19 July 2006. The feedback has been re-compiled from notes and written participant responses to several key issue areas for expression in a common form, and to highlight those issues that appear to be most important to the participants. These issues were then considered in the development of the proposed workplan presented previously in this document.

The development of an ASDI is critical to the further development of the Afghanistan Nation. With twenty-five years of conflict leading to the current situation, the County of Afghanistan has a significant challenge ahead of it to re-establish security, the infrastructure needed to meet basic human needs, and the resource management needed to capitalize on the country's significant human and natural resources and diverse cultural heritage. Accurate and up-to-date information that can be shared freely among all the government agencies, security forces, international donor and finance institutions, institutions of higher learning, non-government organizations and others is critical to coordination and good decisions according to many workshop attendees. In addition, the development of an ASDI should be done in a practical and tangible manner that reflects current priorities and challenges, and that will result in positive impacts in the very near future. Such collection and sharing of information is also seen as critical to the reduction of redundancy, promotion of standards, and the encouragement of transparency across all the contributing organizations, and should be treated as an important component of agency capacity building and modernization. At least one respondent indicated that the development of the ASDI should also be considered under the social safety and disaster preparedness provisions of the London Compact, and included within the 5 Year Strategy. It was also stated that the culture and traditions of people should be taken into account and be respected as an integral philosophy within the ASDI program. Several respondents indicated that adequate funding should be established to ensure that the ASDI can be effectively carried out, both as a national initiative and as a component of individual agency capacity building and within their various projects and programs. Many indicated that the ASDI program must have direct participation by key agencies and will need to be independently facilitated and monitored.

The ASDI is related to other key information issues in Afghanistan. The ASDI should be developed in a manner that is compatible and coordinated with other critical societal information needs, including but not limited to:

- Vital statistics (births, marriage, death, etc.);
- Property titles and deeds;
- National census;
- National Identification Card (TAZKERA);
- Healthcare statistics;
- Education statistics;
- Economic statistics.

Involvement and active participation by key organizations in Afghanistan is key to the success of an ASDI. There are many organizations that can benefit from the proposed SDI, but some of these will be most critical in building the initial foundations for the program. The active involvement of the President, Vice-President, and Council of Ministers is critical to establish the initial legitimacy and mandate of the initiative, and to guide its policies and direction. Other operational agencies who are the major producers, maintainers, and users of fundamental, commonly needed information must drive the implementation of the program with some level of central facilitation and coordination. Most respondents indicated that the international donor, technical assistance and financial institutions can play an important role in leveraging broad experience, standards and professional practices from around the world. A process needs to be established whereby each group of participants can initiate and sustain cooperation and information sharing over time. Initiation of such a broad, cooperative effort should start with a clear picture of the existing situation in each agency, and the existing or needed linkages among agencies and others in the stakeholder community. Once this picture is clear, then the participants should work together to contribute to making decisions about what needs to be done first. Committees at different levels and/or organized around specific topics may need to be formed to accommodate this participation.

According to the workshop attendees, the most key ministries for driving the initial ASDI forward include the following. The order of this list does not represent any sense of relative importance in this regard, but was simply compiled based on the order of appearance in the respondent feedback:

- AGCHO;
- CSO;
- Ministry of Transportation;
- Ministry of Telecommunications;
- Civil Aviation Department;
- Ministry of Agriculture;
- Ministry of Defense;
- Agrometeorology Department;
- AIMS;
- Ministry of Mines & Industries;
- Ministry of Interior;
- Ministry of Rural Development and Rehabilitation;
- Ministry of Water & Energy;
- Ministry of Information & Youths;
- Ministry of Higher Education;
- Ministry of House Construction and Irrigation;
- Directorate of Municipality;
- Public Utilities & City Development;
- Ministry of Economy;
- Department of Geology and Mines;
- Ministry of Justice;

- Ministry of Environment;
- MAAHF;
- USGS;
- European Union;
- CARE International;
- UNAMA;
- UNHCR;
- UNDP;
- WFP;
- UNICEF;
- FAO;
- Private Sector.

Within the above list, the most often listed organizations that respondents felt needed to be closely coordinated to effectively initiate the ASDI included:

- AGCHO;
- CSO;
- AIMS.

An organized, incremental national strategy for how to move forward is needed. It was well recognized by the Workshop attendees that an organized and systematic strategy is needed to move the ASDI initiative forward in a coordinated way. Most respondents stressed the need for more joint meetings, workshops and the formulation of focused committees and working groups to continue building awareness and communication among the participating groups. Most people stressed that such strategy needs to focus on immediate, practical needs and not be too theoretical or a “paper strategy”. Some also recognized a need for several key agencies to drive most of the ASDI initiation process, but that all stakeholders should have visibility to the process and access to all the products and conclusions. Another point mentioned by some respondents was that data collection by the agencies responsible for particular sectors should be done by them in a way that is accurate, timely and reliable, and that they will need to develop their own internal capacity to collect and manage this information as part of the implementation process. Verification of the origin and validation of collected information will need to be documented in a clear and common manner according to some standard, and the adoption of this and other standards will need to be built into the ASDI implementation approach. All of the most important parts of the ASDI implementation process will need to be overseen and directed by some sort of steering committee or similar function.

A central, cross-agency coordination function is needed. Most respondents indicated that the coordination of the ASDI across agency and organization boundaries will require an independent facilitation and coordination function that reports directly to the highest levels of government. There must be a clear and unambiguous mandate and assignment of responsibility for this function, and all the key organizations need to be directed to coordinate with that function in a practical manner. In accordance with most of the case studies presented in the workshop, many respondents indicated that at least two levels of oversight committees will be needed, including an executive function to look after

overall guidance, policies and priority matters, while a technical committee would address issues of a more technical and operational nature. In both cases, committees would include representatives from all the participating organizations, although a few respondents expressed their opinion that such committees should be under a specific agency or ministry. Formulation of a central repository for the distribution of key data developed by various organizations was brought up several times.

There are ongoing national and provincial projects that could provide valuable input to the ASDI. There are currently a variety of projects being undertaken or planned by various agencies and organizations that involve the development of significant geographic data that could be useful to others, but there is presently no way to coordinate such efforts. Specific projects that were mentioned, but not further qualified, include:

- National census;
- National Vulnerability Project;
- Agriculture Survey Project;
- Cadastral Survey;
- Geology Survey;
- National Topographic Basemapping;
- Water Resource Protection.

While the time allotment for the workshop did not allow further exploration of these and other ongoing or planned projects, it was generally recognized that among the participating organizations there are likely many such efforts that could be coordinated now and in the future to the benefit of the entire ASDI stakeholder community.

Additional awareness and capacity building is needed for organizations to appreciate why the ASDI is critical, and to participate effectively. Most respondents indicated that this Workshop was their first exposure to the concept of SDI, and that more awareness building will be needed within their own organizations to expose more staff to the potential and to convince managers and leaders to make the necessary investment of staff time and resources in building internal capacity and benefiting from the efforts of others. Specific and general examples and suggestions included:

- Provide AGCHO with more staff training in the methods, tools and operation of a modern national topographic mapping organization;
- Establish common technical workshops and training programs to bring together talented people from many related organizations to learn together;
- Develop specific technical training programs that are tailored to the needs of specific agencies and organizations;
- Develop linkages and ties between existing legacy or newly established systems, such as the Mass Health Service System, and others;
- Work with various international development, technical assistance, donor and NGO organizations to promote and support technology development and capacity building within individual agencies;

Agency GIS development efforts can be aligned with the goals and principles of the SDI. Many respondents indicated that some agencies are already developing their own systems within existing projects and programs, and that these efforts should be aligned with the objectives and intended outcomes of the ASDI. There are many uses of GIS technology to support agency efforts in almost every sector, as covered in the Workshop. To the extent practical, agency-specific efforts can be easily aligned with the broader, cross-sector objectives of the ASDI through additional coordination, use of international standards, and other measures. It was well recognized by Workshop participants that the strength of the ASDI will be highly dependent upon the agency “building blocks” that make it up, thus strengthening individual agencies helps to strengthen the whole structure. This is key to the success of the future ASDI.

Lessons learned from the international community are valuable, but need to be tailored to the situation in Afghanistan today. Many respondents agreed that methods, tools and approaches developed in the international community can provide a valuable reference for Afghanistan, but that ultimately an approach must be crafted that is responsive to the situation and realities that are specific to the Country.

Building capacity and self-determination of the ASDI by Afghanistani’s is important to the long-term viability of the program. Several respondents pointed out that while the support given by the international community to security and development in Afghanistan is appreciated, that it is ultimately the responsibility of the Afghan people to take responsibility for, and own any initiative like an ASDI. Thus, international support is needed, but strong local capacity building efforts should be build into each project and program.

Joint projects for initial data development will be needed. There is a serious lack of basic, commonly needed information in Afghanistan, and some of this information will need to be developed initially as joint programs among the most involved agencies. Many respondents indicated a need for basic topographic mapping and statistical information at various levels and resolutions. Others indicated a need for better telecommunications infrastructure to support connectivity among agencies, and other mentioned the need for collection and common access to satellite data.

The following donor and finance organizations will likely be most interested in funding ASDI development. In the opinion of the Workshop attendees, the following donor and finance agencies will likely be most interested in being involved in ASDI development. These are listed in order of appearance in the Workshop written responses:

- G8 Members;
- USAID (United States);
- CARE International;
- World Bank;
- JICA (Japan);
- UNHCR;

- European Union;
- Asian Development Bank (ADB);
- GTZ (Germany);
- DFID (?)

Opinions about the Workshop. The following is an unedited listing of the most commonly stated opinions about the Workshop itself. This was intended to gauge the effectiveness of this particular venue and how it was presented, as well as provide a basis for reflecting on the next question which addresses what issues should be addressed in future workshops..

- This workshop was very effective and educative in all aspects and we got enough information about the related organizations and in some extent the expectations were obtained
- The SDI or GIS workshop in easily manner could present some information to us so that we can use the obtained information from this project efficiently.
- The workshop was designed to raise the knowledge of staff for fulfilling their tasks. We have received what we expected from the workshop because it was a very good
- The workshop was educative and the expectations were in some extent obtained
- The workshop was very appreciable and educative but more expectations were felt, like to receive some handouts from this workshop as Mr. Fahim Zaheer said. My view is that which many things should be discussed close to the NSDI by the agencies rather than some unrelated issues and mainly information should be presented about the progress in Afghanistan in this regard
- The workshop was good. In some points about some issues, the given information was not correct because there was a bit exaggeration.
- I found out the workshop very good and valuable for myself that I could learn many things through it. What I expected was cleared in the workshop.
- Though it is my first time that I attended in such Workshop mainly about NSDI so it was good and I found it very efficient. We expected to obtain more information about ASDI but it was not presented in adequate amount.
- The workshop was educative and our expectation was to receive some handouts in both Dari and English languages. We hope that the next workshop should be oriented in such manner that includes the explanations and obtained achievements from workshop of NSDI in Afghanistan and we wish you could take into account these comments for next workshops.
- “The answer was not given”
- The workshop was absolutely something new in its nature for us; actually the participants got some new ideas and opinions around tasks and responsibilities of the NSDI that could help to make ASDI in the country. The presented presentations were effective and given mass information about NSDI and GIS. We hope to receive the hard and soft copies of the given presentations.

- The workshop was oriented with good quality and it was so educative and efficient that could raise the level of our knowledge. Our expectations were obtained for learning and we got awareness of new technology.
- The workshop was very efficient for raising our awareness about ASDI in Afghan community.
- Our initial expectations were obtained.
- The workshop was extremely effective and efficient. It gave us awareness for the first time even about the work and speed of authorized organs. I had the dreams of this kind of workshop and I am sure that most of the participants would have liked it and the outcome would result very well.
- Today is the age of computer and internet so we wouldn't start from zero perhaps our initial step wouldn't be taken beyond the zero level unless we could manage and coordinate all related and responsible administrations.
- The three days long workshop was very interesting and it was educative too. Our expectation was to receive the context of this workshop in hardcopies to explain it for the staff of our own administrations. For me all the things were very interesting and I got short notes of all the issues that I would be able to use them in the future.
- Really the workshop was educative and we could learn something in general about SDI and what we expected from the workshop, obtained.
- The three days long NSDI workshop was very interesting for me. My desire and expectation from Mr. Mark is to use his obtained experiences of the different countries in to Afghanistan as well. If the NSDI process goes like its beginning it would be effective.
- Workshop was very interesting and we caught many things through it.
- The issues and topics, which were raised in the workshop considered in right path
- Workshop was very good. I understood many things in this workshop
- The workshop was effective and we could gain something.
- The Workshop was good but less understanding and making understand was done because there was not much opportunity for open discussion. In some extent our expectation obtained but not entirely.
- The workshop was very educative though Afghans will have less opportunity to access the ASDI in the country. Our expectations were obtained from this workshop
- This workshop was good. The expectation for the next workshop is to have more publicity about the significant of SDI in the country because if you give good awareness about this project then you would receive good feedback by the audience for progress, for example: This workshop was digested very well only by the field professional men but unprofessional people obtained less opinions because they had no preparedness or pre-awareness for the context though it is something vital.
- Holding these kinds of workshops is significant because all ministries and donor agencies come around giving details of their progress about their undertake projects and these workshops should be held timely.

- Yes. This workshop was informative and we could use it very well. That kind of topics and issues should be raised to be effective for Afghan infrastructures.
- This three day long workshop was excellent in its nature. For the coming workshops the professional men should be invited to gain something from their knowledge and experience.
- Holding of this workshop was considered valuable and it was effective. The three day long workshop was very good. We have learnt the points that we had no information about. The present expectations were obtained but several expectations have been created after the workshop to the new movements.
- This workshop will be a well step toward SDI in Afghanistan.
- Workshop was good. In the coming workshops the transportation expenses and providing certificates must be taken into account for the participants.
- In my view the three day long workshop could not respond for all issues and problems so some more workshops should be held in the future. In next workshop all contexts must be recorded and at the end they should be distributed as handouts.
- We were witness of several workshops but none of theme had such valuable context like this workshop.
- I think we have used very well the time in this workshop.
- The workshop was good and %50 our expectations were obtained.
- The NSDI workshop was effective.
- The workshop was accomplished well. What we expected obtained in some extent and we could receive some new awareness about NSDI.
- Since we got information about new technology so it was very interesting. The time was short and most of it wasted by presentations of some other organizations and ministries.
- It was important because it is the first time that we learn the Global meanings of data collection system. It was initial step toward NSDI, if the coming workshop could be held in small size it would be better.
- The workshop was very good and it was educative too. Sometimes the presentations were derailed from (NSDI) the real path.
- This workshop was quite something new and was really educative. We have learnt something from American specialists that we can use them in the future. The expected desire was obtained. The topics about Libya and Qatar were ideal for me.
- The workshop was considered positive and effective. Yes. I obtained more than what I expected. Holding and Monitoring of such workshops in the future.
- This workshop opened a new chapter to Afghan Geodesy and Cartography and it was very good in giving mentality for ASDI.
- The workshop was good but about GIS the presented information was not adequate to satisfy our expectation hundred percent. In the coming workshops GIS should be taught entirely.
- It was a chance for us to compare our information with other countries and this was very effective. Our expectation entirely was not obtained so we need more workshops mainly in training style to learn more about this new movement.

- It was a good workshop very helpful and useful for data coordination. Yes of course I did meet our expectations.
- It was fine and interesting. The most important is training of SDI.
- The content was good but general what I think was fine and this stay but in future since the idea of SDI is rear now so we need to talk about special issues in future.

Ideas for future ASDI-related Workshops. The following includes a listing of the most often repeated ideas and request for issues to be addressed in future ASDI related workshops. These have been minimally edited to reflect common ideas that may have been stated differently.

There is a need for more awareness building about GIS and SDI at all levels in many organizations. The 1st ASDI Workshop presented a good overview of the principles involved, examples from around the world, and a sense of what related efforts are already ongoing in the County. This Workshop was attended by a large audience, but there are many staff and management within all the attending organizations that could also benefit from additional exposure and understanding.

We need more practical “how to” training in GIS and SDI. Most people are not yet familiar with the technology and how it is applied. There is a need for more focused training and workshops to address specific areas of interest, such as database development, performing spatial analysis with GIS, cartographic production, and other practical issues and skills.

Implementation of the ASDI should include a variety of workshops. Many attendees indicated that they felt that the implementation of the ASDI initiative should include, as an integral component of its structure and approach, additional awareness, technical capacity building, and on-the-job training opportunities that are specifically focused on those areas that are of particular significance to Afghanistan.

All workshops and trainings should have handouts and related documentation that can be circulated generally. On the basis of popular demand, the presentations from the current Workshop are being compiled and distributed to all the attendees. In the future, all such material should be compiled to a common repository (ideally in both Dari and English) and made available to all interested persons in the Country.

Both general GIS technical and sector-specific application training is needed in most organizations. There is a significant need for additional technical GIS training across the entire community. This includes both general technical training as well as sector application specific training within specific organizations for such areas as, but not limited to:

- Transportation;
- Water resource management;
- National topographic mapping;
- National statistics;
- Environmental protection;

- Utility management;
- Local government;
- Geostatistics, etc.

Future workshops should have more advanced notice and specifics that the attendees can use to prepare themselves. For many people, the presented material is new, so any advance detailed agenda and associated reference material that can be used for people to prepare themselves would be appreciated.

More meetings and workgroup meetings are needed to establish coordination among organizations. There is a need for some working venue by which groups can be convened and mobilized to coordinate with one another in the development and dissemination of key geographic and related statistical information.

Future workshops might be organized around particular issues that are of priority significance to Afghanistan. This might include workshops specifically focused on the application of GIS and statistics to agriculture, economic development, security and disaster preparedness, local government, environmental resource management, etc.

In general, future workshops should have more opportunity for interactive involvement by the audience. There are many questions and clarifications that can be made with more audience participation.