United Nations

General Assembly

Distr.: General
9 November 2009

Original: English

**Committee on the Peaceful
Uses of Outer Space**

Capacity-building strategy of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response

Contents

I. Introduction

1. Throughout the centuries, societies around the world have faced the consequences of natural phenomena such as earthquakes, landslides, volcanic eruptions and tsunamis. Systematic analyses of such phenomena and their impact, as reflected in the disasters they provoke, have allowed scientists to characterize the peculiarities of such natural events and identify the social trends that make societies vulnerable to such phenomena. And while, in the twentieth century, Governments established national emergency committees to respond to such events in a more coordinated manner, the increase in the number of disasters around the world has now forced Governments to rethink their strategy.

2. During the International Decade for Natural Disaster Reduction, which was marked between 1990 and 1999, the United Nations led the way for a change in paradigm concerning the way in which disasters were approached by introducing the notion of "risks" as preceding disasters and "risk management" as a set of measures aimed at reducing the extent of disasters. Accordingly, a society is seen to be at risk when it is exposed to a hazard and is vulnerable to such an event. Thus, risk is expressed as a combination of hazard and vulnerability. Reducing the level of risk to a community, either by reducing its exposure to a hazard or by reducing its vulnerability, should mitigate the impact of events such as earthquakes, floods and volcanic eruptions.

3. In 1999, the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) took place, giving root to the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER). Building upon the recommendations of UNISPACE III, the Committee on the Peaceful Uses of Outer Space established the Action Team on Disaster Management to assess the feasibility of implementing an integrated, space-based global natural disaster management system. Between 2000 and 2004, the Action Team identified several gaps and constraints that did not allow disaster and risk management agencies to make efficient and timely use of space-based information (A/AC.105/893, paras. 5 and 20). Among those constraints were the following:

(a) Many countries had little or no access to the benefits of space systems;

(b) There were few national focal points for facilitating access to space-based information and services;

(c) There was a gap between the user communities (disaster and risk management agencies) and space application providers;

(d) There were difficulties in accessing archived space-based data because it was not organized in a database.

4.   In addition, while noting that there had been many training events and courses offered on a variety of topics concerning disaster-risk management, the Action Team concluded that the use of space-based information for such a purpose had only been tackled within the context of pilot efforts in a few developing countries. As a consequence, other gaps identified by the Action Team were:

(a)   The lack of efforts to standardize procedures concerning the use of space-based data and information for disaster-risk management;

(b)   The lack of trained staff within disaster management agencies with the capacity to make use of space-based information for risk management, disaster response and recovery.

5.   In 2006, the General Assembly established UN-SPIDER through its resolution 61/110 to provide universal access to all countries and all relevant international and regional organizations to all types of space-based information to support the full disaster management cycle by being a gateway to space information for disaster management support, serving as a bridge to connect the disaster management and space communities and being a facilitator of capacity-building and institutional strengthening, in particular for developing countries.

6.   Capacity-building and the strengthening of institutional arrangements at all levels are the key to increasing the ability of agencies at the national level and organizations at the regional and international levels to effectively use space-based information and services for disaster reduction, preparedness, response and recovery (A/AC.105/893, para. 39 (c)). Those activities include compiling information relevant to capacity-building opportunities and facilitating capacity-building efforts targeting practitioners and end-users in a variety of agencies, networks and organizations.

7.   In order to facilitate capacity-building efforts, the capacity-building strategy contained in the present document was developed following the guidelines contained in General Assembly resolution 61/110 and in the report of the Secretary-General on UN-SPIDER (A/AC.105/893). The following essential elements were taken into consideration in developing the strategy:

(a)   Building capacity means doing more than training individuals; it also involves strengthening institutional frameworks and procedures for solving problems, and carrying out activities to fulfil the mandates of the relevant institutions;

(b)   Training efforts should be made through the network of regional centres on space science and technology education, affiliated to the United Nations, and other centres of excellence, such as the International Institute for Geo-Information Science and Earth Observation in the Netherlands, the Asian Institute of Technology in Thailand and the Centre for Geoinformatics at the University of Salzburg in Austria, with the support of agencies such as the German Aerospace Center (DLR) and the National Disaster Reduction Centre of China;

(c)   A curriculum tailored to the needs of the target audience and aimed at contributing to achieving the objectives of UN-SPIDER should be developed;

(d)   Activities should be coordinated, with the support of the regional support offices and national focal points established under UN-SPIDER, with other regional

and international organizations, such as the International Strategy for Disaster Reduction (ISDR), the Group on Earth Observations (GEO), the Office for the Coordination of Humanitarian Affairs of the Secretariat, the World Meteorological Organization, the United Nations Development Programme and the United Nations Educational Scientific and Cultural Organization. Activities should also be coordinated with regional organizations specifically targeting risk reduction and emergency response, such as the Coordination Center for the Prevention of Natural Disasters in Central America, the Earthquake Readiness Programme of the Caribbean Disaster Emergency Response Agency, the Asian Disaster Preparedness Center, the Asian Disaster Reduction Center and the International Federation of the Red Cross and Red Crescent Societies.

8.   The expected beneficiaries of those capacity-building efforts include the disaster-risk management and humanitarian communities, non-governmental organizations providing support, academic and scientific agencies involved in monitoring events, and private-sector space technology companies interested in providing support to or in developing products needed to support activities targeting disaster-risk reduction and insurance companies.

9.   The present document presents the capacity-building strategy of UN-SPIDER. The strategy incorporates contributions made at the UN-SPIDER workshops held in Bonn, Germany, in 2007, in Salzburg, Austria, in 2008, and in Vienna in 2009. In addition, it has benefited from the support of experts from various centres of excellence and international organizations. The document contains an outline of how the strategy is nested within the UN-SPIDER framework of activities and presents the proposed approach to capacity-building. That approach rests on training individuals to use space-based information to support activities targeting the full disaster management cycle, on institutionalizing the use of such information in agencies and organizations responsible for conducting those tasks and on supporting access to hardware, software and related infrastructure to make use of such information. All of that is dependent on the corresponding implementation strategies. Section IV of the present document contains information on monitoring and evaluation and on the need to identify short and long-term goals.[1]

II.   Mission of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response and capacity-building

10.   Experience has shown that activities carried out at all stages of the full disaster management cycle involve a variety of agencies from the public and the private sectors, at different levels, and that such activities are best conducted through a coordinated approach. In both disaster-risk management and emergency response it is essential to use accurate and timely information for assessing existing or emerging situations and for making decisions regarding the course of action to be taken. Despite the fact that space-based information can be useful for supporting the full disaster management cycle, it is rarely used by those in charge of coordinating

---

[1] See also *Official Records of the General Assembly, Sixty-second Session, Supplement No. 20* (A/62/20), paras. 140-160.

and conducting related activities. Because of that, the mission statement of UN-SPIDER is to "ensure that all countries and international and regional organizations have access to and develop the capacity to use all types of space-based information to support the full disaster management cycle" (A/AC.105/893, para. 40).

11. To fulfil that mission, UN-SPIDER was established on three pillars to serve in the following capacities:

(a) As a gateway, to promote access to and the dissemination of information, including case studies and best practices on the use of space-based data to support disaster management;

(b) As a bridge, to foster alliances between the space and disaster management communities through the creation of a forum where both communities can meet and discuss relevant issues;

(c) As a facilitator of capacity-building, to increase the ability of individuals, agencies and organizations to effectively access and use space-based services for disaster reduction, preparedness, response and recovery.

12. Capacity-building efforts need to be conducted in such a way as to enable beneficiaries to access space-based information and services and, subsequently, to use them in the most efficient and timely fashion.

13. With regard to the disaster management cycle as a whole, the so-called "cycle of disasters" shows how some communities may experience disasters as a consequence of recurring natural events (see figure I). The cycle also shows the link between the different tasks that need to be carried out before, during and after such disasters.

Figure 1
The cycle of disasters

14. Prevention and mitigation activities are conducted to minimize risks associated with any hazard. That is done by reducing exposure to hazards and reducing

vulnerabilities as well as through measures to avoid the occurrence or an increase in frequency and/or severity of hazards.

15. Preparedness measures are implemented by agencies and organizations to minimize the impact of specific events with the aim of providing a timely and efficient response in case of disaster. Response and recovery activities are then carried out after the disaster has taken place and include such phases as rehabilitation and reconstruction.

16. Because the cycle of disasters requires disaster-risk reduction activities to be carried out before a disaster and emergency response and recovery activities to be carried out after a disaster, capacity-building efforts within UN-SPIDER have been designed and implemented to cover both aspects.

17. As mentioned in paragraph 7 above, building capacity means doing more than training individuals to improve their skills and knowledge. If agencies are to make use of such information to support the full disaster management cycle, it is imperative that they recognize its value in order to include such access to and use of this type of information as part of their standard operating procedures, and to recognize the value of capacity-building efforts. Accordingly, incentives, norms, regulations and policies that promote the use of space-based information and applications to reduce the risk of disasters, essential for sustainable development, need to be institutionalized.

18. The objective, then, is to ensure that States recognize the value of all types of space-based information and that they access such information to reduce the impact of disasters before they happen and to respond more efficiently to disasters after they have taken place.

19. As expected, in order to reach this objective, the target audience, which is composed of decision makers and staff in agencies, regional and international organizations, networks of practitioners and communities of practice, need to improve their performance with regard to accessing and using such information.

20. Capacity-building efforts are expected to yield the following results:

(a) National agencies and regional and international organizations, as well as networks of practitioners and communities of practice, recognize the value of space-based information and space-based services, and thus the use of such information is institutionalized;

(b) Individuals in those agencies, organizations and networks are more knowledgeable about space-based information and have improved the skills needed to access and use such information.

III. Capacity-building in the scope of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response

21. The overall goal is to ensure that communities facing the threat and consequences of disaster recognize the value of space-based information and then

promote its use through disaster management agencies for prevention, mitigation, preparedness, response and recovery.

22. As shown in figure II, a variety of activities will be carried out in the framework of UN-SPIDER to accomplish that goal. In countries where agencies already use space-based technologies to support activities in all phases of the disaster management cycle, it is foreseen that awareness-raising, outreach and technical advisory support will be sufficient to further increase access to and use of such space-based information. In countries where space-based technologies are not being used, capacity-building efforts will also be required.

Figure II
Capacity-building efforts in the framework of UN-SPIDER
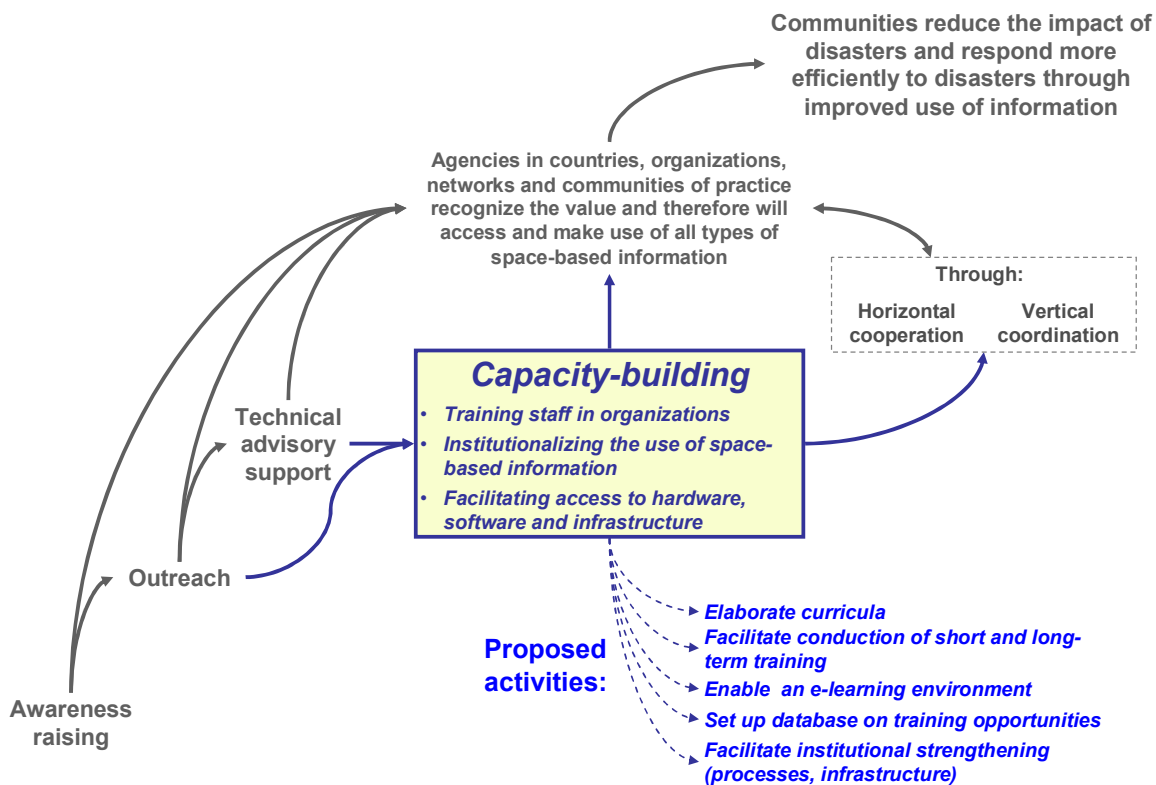
23. During the initial phase, the focus will be on awareness-raising and outreach activities. Those activities will be conducted at the international and regional levels with the aim of providing visibility to UN-SPIDER and as a means to establish a critical mass of experts and practitioners from both the space applications and disaster management communities. Following awareness-raising campaigns and the organization of outreach workshops and related activities, efforts will go into providing technical advisory support at the country level.

24.   Capacity will be built through a variety of complementary approaches, stressing that the aim of the capacity-building effort is not only to train individuals in agencies at the national level and in regional and international organizations but also to strengthen the capacity of national agencies through the provision of policy-relevant advice. Capacity-building activities will begin with the establishment of an expert group on capacity-building that will assist UN-SPIDER staff in elaborating curricula and in selecting the content and design of products needed to carry out the proposed capacity-building activities.

25.   As an outcome of capacity-building efforts, practitioners in disaster management agencies and organizations and in networks and communities of practice should be able to access and use space-based information and services directly or through horizontal cooperation.

IV. Approach to capacity-building

A. Institutional aspects: guidelines

26.   To achieve the capacity-building goal, two types of efforts must be conducted, in parallel, in the framework of UN-SPIDER:

         (a)   The value of space-based information and space-based services must be demonstrated to decision makers in agencies and organizations so that the use of such information and services becomes institutionalized;

         (b)   Training activities should be facilitated to increase the ability of practitioners in agencies, organizations and networks to access and use such information.

27.   In short, efforts must ensure that disaster management practitioners become aware of the value of space-based information and that access to such information is then facilitated through a variety of means for its subsequent use in all phases of the disaster management cycle.

1. Space-based information

28.   An assessment of agencies in those countries that already make use of space-based information and services for a variety of applications indicates that at least four conditions are met in those countries, as shown below:

Condition	Comment
Space-based data are available and accessible	It is important to recognize the fact that the ability to access space-based data will depend, inter alia, on the required spatial, spectral and temporal resolution, the cost and the existence of any restrictions on access.

Agencies recognize the relevance of using space-based information to make decisions	This condition is equally important, as staff members, even if capable, may not use such data if the leadership within the agency does not consider it necessary or if the agency does not use such information as part of its standard operating procedures.
Staff in agencies possess the knowledge and the skills to access and process the information	Staff members must possess both the knowledge and the skills to access and process space-based data and to extract relevant information for the desired purposes targeting disaster-risk reduction and emergency response.
Facilities, hardware and software to acquire, process and use the information are available and operational	Staff members who possess both the knowledge and skills to be able to access and process space-based information adequately need the relevant infrastructure.

29.   The UN-SPIDER capacity-building strategy, by incorporating the elements described in paragraph 9 above, has been developed to meet all four of those conditions.

2.   Disaster management cycle

30.   Given that UN-SPIDER must support all phases of the disaster management cycle, two key issues need to be considered in the context of capacity-building:

(a)   Risks (hazards and vulnerabilities) may vary from place to place;

(b)   Different types of agencies are involved in the different phases of the disaster cycle.

31.   The first issue implies that UN-SPIDER must be able to target a variety of risks and tailor its capacity-building activities in different regions of the world to the types of risks that may exist in such regions and localities.

32.   The second issue implies that it is imperative for UN-SPIDER to tailor its capacity-building activities so that they reach at least two types of target groups: the group focusing on disaster-risk management activities (prevention, mitigation and recovery) and the group addressing disaster response activities (preparedness and response).

3.   Capacity-building

33.   In the framework of UN-SPIDER, capacity-building is understood as: "The process of facilitating the strengthening of the capacity of individuals, teams and agencies with regard to the use of space-based information to prevent, mitigate and respond effectively to the challenges posed by natural hazards and related humanitarian crises."

34.   Based on that definition, capacity-building includes four types of activities:

(a)   Facilitating access to space-based data and services;

(b)   Providing policy-relevant advice to agencies and Governments regarding the use of space-based (spatial) information to support the full disaster management cycle;

(c)   Facilitating the training of individuals to access and use such data;

(d)   Facilitating access to infrastructure, hardware, software and services for space-based applications.

35.   In the framework of UN-SPIDER, training is understood as: "The process of facilitating knowledge-sharing and learning with the overall objective of continuously improving the skills of individuals with regard to the use of space-based information to prevent, mitigate and respond effectively to the challenges posed by natural hazards and related humanitarian crises."

36.   As expected, there is a strong link between training and knowledge management. If the vast amount of information on best practices is not made available, training will be ineffective and will not be able to contribute to the improvement of the collective capacity of organizations. In the framework of UN-SPIDER, knowledge management is defined as: "A range of disaster management and emergency response practices, related to the use of space-based information, adopted by organizations to identify, create, represent and distribute their knowledge with the objective of improving performance, seeking innovation, transferring lessons learned (for example between projects for validating services) and generally developing collaborative practices. Knowledge management is frequently linked to the idea of learning organizations with a focus on specific knowledge assets and the development and cultivation of channels through which knowledge flows."

B. Individuals

37.   Through training programmes facilitated by UN-SPIDER, individuals will broaden their knowledge and improve their skills so that they can better use space-based information to support activities in all phases of the disaster management cycle. To that end, training efforts in the framework of UN-SPIDER will have four components: curricula; short and long-term training activities; e-learning; and a database of training opportunities.

1. Curricula

38.   Taking into consideration the needs of its target audiences, specific curricula will be elaborated with the support of centres of excellence, the regional centres on space science and technology education, affiliated to the United Nations, the network of regional support offices, experts from the space, disaster management and emergency response communities, and the expert group on capacity-building to be set up by UN-SPIDER staff. Two separate curricula are envisioned, one on disaster-risk management and the other on emergency response, in order to reach those two different audiences, which use different types of space-based information.

39.   In developing the curricula, the following four elements will be taken into account: learning objectives, content selection, syllabi and training approach.

2. Short and long-term training activities

40. The component on short and long-term training activities will focus on the design and carrying out of standard training activities with the support of centres of excellence, regional centres on space science and technology education, affiliated to the United Nations, and other regional and international organizations. Short-term training programmes will target specific issues, such as the use of particular tools or processes, with the aim of strengthening the capacity of individuals. Long-term activities will address a combination of issues and aim to enhance the capacities of agencies or the synergies among agencies.

41. Activities include workshops and exercises (two to five days long), short, intensive training events (spring or summer schools, block courses, one to three weeks long) and courses (one to several months long).

42. Workshops will target very specific topics and will be structured in such a way as to concentrate on specific skills. Similarly, contingency and near-real-time exercises will be set up with realistic scenarios in mind to complement other training activities.

43. Short, intensive training events (for example spring and summer schools or block courses) will include theoretical discussions as well as hands-on training on basic space technology and its uses for disaster-risk management and emergency response, geographical information systems, interpretation and visualization of spatial data and applications via examples and case studies. Each course will be dedicated to a particular theme. In addition, the events will promote the exchange between Earth observation providers and end-users.

44. The courses will provide an overview of how to use space-based information for disaster-risk management in general and for a variety of specific hazards in particular. In the case of emergency response, space-based technologies (such as the Global Navigation Satellite Systems and other forms of satellite communications systems) and ways of activating structures aimed at supporting disaster response will be addressed in addition to the issue of using space-based information.

45. UN-SPIDER staff, with the support of an expert group on capacity-building, will design and set up modules on issues they consider to be necessary.

46. Training modules will include case studies, best practices, guidelines on how to carry out specific tasks related to access to and use of space-based information for disaster-risk reduction and emergency response.

3. E-learning

47. E-learning options will complement the standard workshops, short intensive training events and courses mentioned above.

48. Efforts will be conducted in the framework of UN-SPIDER to promote the support of regional and national training centres to host such e-learning segments, including universities dealing with the topics of space-based information, geo-information and disaster-risk management. To that end, the knowledge portal of UN-SPIDER will be structured to link such efforts and include guidelines and additional information that will complement e-learning efforts.

49.   The e-learning component will be designed with the support of the regional centres on space science and technology education, affiliated to the United Nations, centres of excellence and space agencies, taking into consideration existing e-learning platforms that have been set up by a variety of agencies, including United Nations entities. The training material will be developed to meet the particular needs of target audiences.

4.   Database of training opportunities

50.   Taking into consideration that training activities will be carried out by national, regional and international agencies worldwide, a clearing house of training opportunities will be established and continuously updated. Criteria used for including training opportunities in the database include the following:

(a)   Geographical coverage;

(b)   Range offered (in terms of topics, duration, qualifications);

(c)   Indicators for assessing quality;

(d)   Language of instruction.

51.   In addition, criteria will be developed to assess existing training offers, and the results of assessments will be disseminated and discussed.

52.   A learning approach that combines e-learning and short and long-term training activities is foreseen to complete the training of individuals already working in the areas of disaster-risk management or emergency response.

C.   Institutionalizing the use of space-based information

53.   In the framework of UN-SPIDER, strengthening agencies relates to the provision of policy-relevant advice on how to use space-based information and space-based solutions to those agencies involved in supporting all phases of the disaster management cycle. As a long-term activity, an outreach effort will be made to inform decision makers within those agencies of the benefits of using space-based information and space applications to support the full disaster management cycle. That will be carried out through twinning efforts with the aim of supporting agencies to modify the way in which they conduct specific activities, including the way in which they use information for making decisions.

54.   In that context, the term "twinning" would entail linking, through UN-SPIDER, one or more agencies in countries that already make use of space-based information and services with one or more agencies in countries that do not make use of such information and services. Through examples provided by the former group of countries, agencies in the latter group of countries could modify their operating procedures regarding the use of information to support the full disaster management cycle.

D. Infrastructure

55. As stated in the introduction, a key element for enabling agencies to access and use space-based information to support the full disaster management cycle is infrastructure. Infrastructure, in the context of UN-SPIDER, refers to facilities, equipment, hardware, software and services required to be able to access and use space-based information.

56. Given that space-based data are managed and processed using information technologies and recognizing the role of the Internet as a medium through which information is now typically accessed and exchanged, capacity-building efforts will have to include supporting agencies to seek resources to acquire and maintain such infrastructure.

57. In addition to the technical infrastructure, a structured and well-managed spatial data infrastructure is essential for effectively using space-based information.

V. Implementation

58. Taking into consideration the guidance provided by the General Assembly when it established UN-SPIDER, in particular on the role of UN-SPIDER as a facilitator for capacity-building, the following should be done:

(a) It should be recognized that agencies and practitioners in developing countries may already possess some capacities, so capacity-building efforts should build upon these efforts and be structured in order to meet the needs of agencies and practitioners with different levels of capacity;

(b) The capacity-building approach should be designed with the support of an expert group on capacity-building, to be established in the framework of UN-SPIDER;

(c) Capacity-building activities should be carried out through the regional centres for space science and technology education, affiliated to the United Nations, centres of excellence worldwide, United Nations training centres related to UN-SPIDER and other national or regional training centres where remote sensing and earth observation applications are taught;

(d) Efforts should be coordinated with the network of regional support offices, the national focal points, and regional centres or agencies devoted to risk reduction and emergency response;

(e) At the global level, efforts should be coordinated with the following: ISDR, which is aligning its efforts along the lines of the Hyogo Framework for Action 2005-2015;[2] with GEO, which is conducting international efforts on a variety of topics, including capacity-building, similar to those being made in the framework of UN-SPIDER; and United Nations entities and other international agencies;

---

[2] Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters (A/CONF.206/6 and Corr.1, chap. I, resolution 2).

(f)   A learning approach based on a combination of e-learning and face-to-face instruction should be used;

(g)   Training activities worldwide conducted by a variety of national, regional and international agencies should be taken advantage of through the set-up, maintenance and availability, through the knowledge portal, of a database of training opportunities.

59.   Capacity-building efforts aimed at strengthening the capacity of agencies to access and use space-based information to support the full management cycle will be conducted in a systematic manner. Recognizing that, pursuant to the Hyogo Framework for Action, it is the responsibility of Governments to reduce risks and hence disasters, UN-SPIDER will ensure that its capacity-building activities are conducted to support national platforms for disaster reduction that are being established through efforts led by ISDR. This approach will ensure that efforts contribute to strengthening the capacities of those agencies that are members of such national platforms and that isolated approaches that may not lead to long-term results are avoided.

60.   In the context of training activities, a regular training programme will be set up to ensure that participants complete a set of training activities that involves both e-learning and face-to-face instruction.

A.   Partners in capacity-building efforts

61.   Capacity-building efforts within a given country will be conducted in coordination with the national focal point and the regional support office that have agreed to support the provision of assistance to that country. The involvement of a regional support office is essential to ensure that capacities within a region are built in a uniform way and so that neighbouring countries can start cooperating once capacity-building efforts have been conducted.

62.   Training will be facilitated through a variety of activities conducted by partners in the framework of UN-SPIDER. These activities will include the following:

(a)   Mobilizing experts to participate in workshops and training activities offered by partners on topics of relevance to UN-SPIDER;

(b)   Mobilizing practitioners and staff in need of training on specific topics to participate in activities offered by partners;

(c)   Organizing specific training activities with the support of partners.

63.   In addition, selected UN-SPIDER partners will be requested to provide assistance in developing the curricula and in identifying best practices, case studies and content for both the e-learning component of the training and the traditional courses and training activities conducted by or on behalf of UN-SPIDER. That will be done through working groups; regional and international UN-SPIDER workshops will provide opportunities for such working groups to interact.

B. Types of training events

64. It is expected that the types of training events described in table 1 will take place.

Table 1
Details in training events, by type

Type of training event	Purpose	Organization and frequency	Target audience
High-level seminar	To present the quantitative and qualitative benefits of space-based and geographic information	One day per year, in combination with other international events aimed at bringing together the target audience	Top-level managers and decision makers in national agencies and in regional and international organizations
Training course	To provide in-depth training on a technical subject	On a recurring basis, for a duration of three days to three weeks, organized by a training agency	Maximum of 30 technical staff
Summer/spring school	To provide professional and/or academic training	Frequency to be determined, for a duration of one or two weeks, organized by a national regional support office, national focal point or UN-SPIDER partner	Maximum of 40 participants with different backgrounds
Seminar	To allow for an intense discussion on a particular topic	As often and for as long as needed, possibly as a series, organized by UN-SPIDER	Maximum of 25 experts with a similar background
Workshop	To allow for an intense discussion on a particular topic	Once a year, for four to five days, organized by UN-SPIDER with partners	Maximum of 30 technical staff from different backgrounds in selected cases

C. Fund-raising strategies

65. Fund-raising is essential for ensuring the sustainability of capacity-building activities. UN-SPIDER staff will continue to contact funding agencies to solicit and secure resources to facilitate such activities.

D. Analysis of strengths, weaknesses, opportunities and threats

66. Considering that disaster-risk reduction and emergency response activities are coordinated by Government agencies and that a network of platforms has already

been established by ISDR, as contemplated in the Hyogo Framework for Action. UN-SPIDER should not establish parallel structures but, rather, aim to work through the national platforms promoted by ISDR.

67. As part of its technical advisory support role, UN-SPIDER will help Government agencies carry out a strengths, weaknesses, opportunities and threats (SWOT) analysis as an initial step in outlining a capacity-building plan for such agencies. It is expected that national focal points and regional support offices will support States in carrying out the SWOT analysis.

1. Individuals

68. Individuals will benefit from a training programme of e-learning activities to be complemented by other training courses and workshops. From an organizational point of view, training efforts will be conducted as short-term activities to be complemented by long-term activities aimed at strengthening agencies.

2. Institutionalizing the use of space-based information

69. In addition to training individuals, UN-SPIDER will provide, in parallel, policy-relevant advice to agencies on how they can strengthen their capacities. On the basis of the many lessons learned from a variety of agencies in countries that have provided technical assistance for building capacity, the twinning approach described in paragraph 54 of the present document will be adopted by UN-SPIDER to achieve this segment of capacity-building. To that end, agencies in countries that have recognized capacity will be approached by UN-SPIDER to assist in the establishment of such twinning efforts.

3. Infrastructure

70. To further strengthen the capacities of agencies, UN-SPIDER will, whenever appropriate, support agencies in developing countries in their request for technical assistance in the form of infrastructure for accessing and using space-based information to support the full disaster management cycle.

4. Plan of action

71. The capacity-building strategy will be implemented according to a plan of action that addresses the following: curricula, a catalogue of training opportunities, content, mixed learning opportunities, training material, guidelines for the training programme, guidelines for strengthening institutions, updates and translation issues.

Curricula

72. Curricula are to be developed with the support of the expert group on capacity-building (yet to be established) and taking into consideration the purpose, the training approach, the different types of target audiences, the learning objectives and success criteria of the training. Ideally, it should be possible to use the same curricula for on-site and e-learning or a combination of the two.

Catalogue of training opportunities

73. A catalogue of training opportunities is to be set up in the UN-SPIDER knowledge portal and updated on a regular basis, with inputs from partner agencies.

Content

74. The expert group on capacity-building will review examples of existing content with the purpose of identifying, cataloguing and indicating how such content should be employed. That task should also help identify gaps in existing material that will need to be elaborated specifically for UN-SPIDER purposes. The selection of content will be based on the type of target group and the type of risk. Regional support offices will provide feedback concerning specific types of content related to their region.

Mixed learning opportunities

75. Once the content of the training courses has been identified and selected, the expert group on capacity-building will advise UN-SPIDER on what should be included in the e-learning component and what will be included in traditional on-site courses, short intensive courses (spring and summer schools), exercises and workshops.

Training material

76. Once the content has been classified, UN-SPIDER staff will assemble it according to the guidelines of the expert group on capacity-building. It is expected that the expert group will provide suggestions on how to make the best use of existing material. Efforts should be made to promote the use of local data and local case studies, which will be easier to understand by the target audiences.

Guidelines for the training programme

77. The guidelines for the training activities and complementary efforts for strengthening agencies are to be elaborated. The guidelines will address issues such as admission criteria, the registration of practitioners in the training programme, a database to track the progress of practitioners, the schedule of annual training activities and criteria for evaluating the progress made by participants.

Guidelines for strengthening institutions

78. As already mentioned, UN-SPIDER must complement training efforts by providing policy advice and organizing twinning efforts to ensure that agencies will be able to use the skills and knowledge acquired by staff members trained in the framework of UN-SPIDER. In addition, there is a need to facilitate the establishment of infrastructure so that agencies can access and use space-based information and space applications to support the full disaster management cycle. To that end, guidelines will be elaborated to provide such complementary assistance to national agencies, with the support of partners and in line with regional efforts of ISDR and other agencies.

79. Given that methods and tools to access and use space-based information to support the full disaster management cycle are constantly evolving, the expert group

on capacity-building will be requested to track those changes and to indicate to UN-SPIDER staff which elements should be incorporated into the training programmes and how (in e-learning modules, traditional courses, workshops or exercises).

Translation issues

80. Since training programmes and capacity-building efforts will be carried out in languages other than English, UN-SPIDER will endeavour to have its material translated, with support from agencies in those countries where the target languages are spoken.

81. A simplified representation of the capacity-building strategy of UN-SPIDER is presented in figure III. The three target groups (institutions, infrastructure and individuals) are represented in the top left-hand area. Short-term goals are presented for each of those groups, while medium and long-term goals are presented for agencies, organizations, networks and communities of practice as a whole. The lower area of the figure shows the tasks to be carried out through a combination of learning opportunities and the role of regional support offices, national focal points and partners in assisting in those capacity-building efforts.

Figure III
Capacity-building strategy of UN-SPIDER
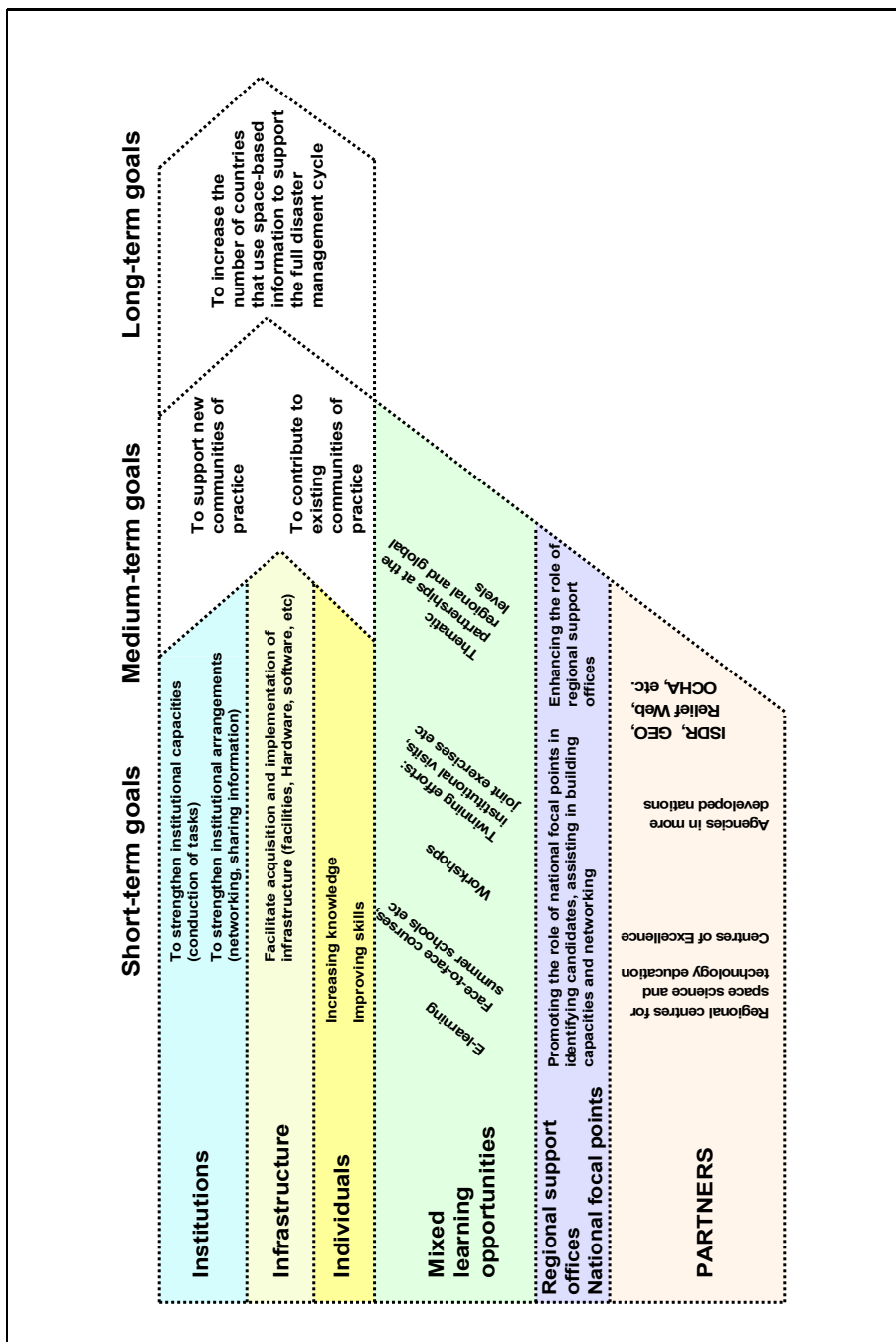
VI. Monitoring and evaluation

82.   Monitoring and evaluation are essential for assessing the progress made by UN-SPIDER in achieving the proposed goals related to capacity-building. In order to be able to monitor and evaluate activities, it is key to identify and agree on indicators of progress and on benchmarks.

83.   When defining those indicators, it is important to take into consideration both disaster-risk reduction activities and emergency response activities, as well as the need to focus not only on individuals but also on agencies and networks or communities of practice. In addition, it is important to recognize that some outcomes will appear in the short term, some in the medium term and yet others in the long term. For example, while training activities targeting individuals can be accomplished in the short-to-medium term, activities aimed at strengthening agencies through twinning and similar efforts require a longer period of time. In addition, while the activities may target audiences at the country level, it is important to keep in mind goals to be reached within UN-SPIDER itself related to networks and communities of practice or partnerships it will establish, as such networks will play a role in developing new ways of using space-based information in the disaster management cycle.

84.   The Kirkpatrick model will be employed to evaluate the training component of the capacity-building efforts to be conducted by UN-SPIDER. Table 2 presents an outline of elements to be considered when designing the monitoring and evaluation process.

Table 2
Elements of a monitoring and evaluation model

Target group	Range		
	Short term	Medium term	Long term
Individuals	Training programmes targeting all phases of the disaster-risk management cycle have been prepared	Training efforts have been conducted Training efforts have been assessed by individuals participating in those training efforts Performance of trained individuals has been assessed by supervisors	Training efforts have been validated Performance of agencies has been assessed by decision makers Results have been assessed by decision makers
Institutions	Strategies to institutionalize the use of space-based information have been designed and elaborated	Efforts have been made with regard to the proposed twinning approach and other parallel efforts Performance of institutions has been assessed by supervisors	Agencies have institutionalized the use of space-based information

| Target group | Range | | |
	Short term	Medium term	Long term
Networks of communities of practice	Networks targeting the use of space-based information and services through UN-SPIDER have been established, targeting all phases of the disaster-risk management cycle, established	Networks and communities of practice have started collaborating to develop methods and tools to increase the use of space-based information and services	Performance of agencies has been assessed by decision makers Methods and tools developed through networks and communities of practice have been tested and validated in agencies and organizations

85.   In the context of UN-SPIDER, milestones will be linked to efforts completed in other regions.

VII. Conclusion

86.   Capacity-building efforts are essential for UN-SPIDER to fulfil its mission. The capacity-building strategy outlined in the present document highlights the need to not only focus on training activities but to also undertake complementary efforts to strengthen agencies, with the aim of improving the quality of the work and the results provided by such agencies in support of the full disaster management cycle.

87.   In its role as a facilitator of capacity-building efforts, UN-SPIDER will conduct activities with and through partner agencies such as the network of regional centres on space science and technology education, affiliated to the United Nations, other centres of excellence, and national and regional training centres that provide training on topics of relevance to UN-SPIDER.

88.   Efforts will be made to ensure that capacity-building activities are properly coordinated so as to avoid duplicating work and leaving gaps unattended. Efforts will also be made to coordinate with space agencies and other regional disaster management agencies operating on various continents, such as the Asian Disaster Preparedness Center, the Asian Disaster Reduction Center, the Coordination Center for the Prevention of Natural Disasters in Central America, the Andean Committee for Disaster Prevention and Relief and the Earthquake Readiness Programme of the Caribbean Disaster Emergency Response Agency.

89.   Notwithstanding the efforts of the Office for Outer Space Affairs, through UN-SPIDER, and of other international and regional organizations, capacity-building remains the responsibility of national agencies. Long-term success will only be achieved if agencies requesting the assistance of UN-SPIDER change their procedures and if Governments are willing to support such efforts, particularly by recognizing the relevance and importance of using information to make decisions and by recognizing the value of training individuals to access and process information for such purposes.

90.   The topic of the use of space-based information and space applications to support the full disaster management cycle is still under discussion and is continually changing as new technologies and tools become available. Thus, it is imperative that UN-SPIDER also keep updating its capacity-building efforts to provide developing countries with the most modern and efficient tools to support the full disaster management cycle and, by doing so, to support those countries in achieving sustainable development.

————————