Proceedings

Regional Workshop on
"Information Systems for Agricultural Research for Development"

Cairo – Egypt, 27 - 30 May, 2007

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Food and Agriculture Organization of the United Nations
Regional Office for the Near East
Cairo, 2007

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LIST OF ACROMNYMS

AARINENA	Association of Agricultural Research Institutions in the Near East and North Africa
AGRIS	International Information System for Agricultural Sciences and Technology
AGROVOC	Multilingual Agricultural Thesaurus
AP	AGRIS Application Profile
ARD	Agricultural Research and Development
CMS	Content Management System
CN	Concept Note
FAO	Food and Agriculture Organization
ICM	Information and Communication Management
ICM4ARD	Information and Communication Management for Agricultural Research &Development
ICT	Information and Communication technology
IMARK	Information Management Resource Kit
NARIC	National Agricultural Research Information Centre
NARIMS	National Agricultural Research Information Management System
NARS	National Agricultural Research System
NENA	Near East and North Africa
NERAKIN	Near East and North Africa Rural and Agricultural Knowledge and Information Network
RAIS	Regional Agricultural Information System
RNE	Regional Office for the Near East
WAICENT	World Agricultural Information Centre of FAO
WANA	West Asia and North Africa

A. Introduction

1. The Regional Office for the Near East of the Food and Agriculture Organization of the United Nations, (FAO) organized a regional training workshop on "Information Systems for Agricultural Research for Development" in collaboration with the Association of Agricultural Research for the Near East and North Africa (AARINENA) and Egypt National Agricultural Research Information Centre (NARIC) from 9:00 a.m. at the Shepherd Hotel in Cairo, during the period from 27 to 30 May 2007, with the participation of Information Management and Networking Specialists from Egypt, Iran, Jordan, Lebanon, Oman, Qatar, Morocco, Sudan and Yemen.

2. This regional workshop was designated for capacity building and development of ICT/ICM Specialists and Library Information and knowledge Management Specialists in the application of Information and Communication Management Systems (Agricultural Research Information Management System for strengthening Agricultural Research for Development) for strengthening Knowledge Resources Linkages in Near East Member States in Regional Levels. It was also designed to improve the information infrastructure in the Near east and North Africa region through introducing a "Near East Regional Agricultural Knowledge and Information Network, NERAKIN" developed by FAO and providing the appropriate training for participants.

B. Goals and Objectives

3. The main objectives of the regional workshop were as follows:
   - To assist information Managers in developing an information strategy for their organizations and in establishing new structures and procedures for effective information management
   - To introduce possible approaches to building national systems based on existing experiences and tools, leading towards a "Near East Regional Agricultural Knowledge and Information Network, NERAKIN" developed by FAO
   - To build the capacity of the participants from 10 countries on how to operate and use NERAKIN as a platform for knowledge sharing and collaboration for Agricultural Research and Development (ARD) for target groups and stakeholders on a regional level in NENA.

C. Agenda and List of Participants

4. The workshop was held at the Shepherd Hotel in Cairo, during the period from 27 to 30 May 2007, and organized by FAO in collaboration with AARINENA .The agenda of the regional workshop is shown in Annex I. The workshop was attended by participants from 9 countries and 3 regional and international organizations (Annex II). Representation of all regions was achieved through the attendance of at least two members of each sub-region.
   - From the West Asian sub- region, Iran attended.
   - From the North African sub-region, Morocco attended.
   - From the Arabian Peninsula sub-region, Qatar and Oman attended.
   - From the Nile valley and Red Sea sub-region, Egypt, Sudan, and Yemen attended.
   - From the Mashreq sub-region, Lebanon and Jordan attended.

D. Workshop Approach

5. The first part of the workshop lasted one day and aimed at raising the awareness on improving rural and agricultural information dissemination through interactive workgroups to discuss developing an information strategy and implementing new structures and procedures for effective information management and investing in agricultural information for development.

    Part 1: Investing in Agricultural Information: The objective is to introduce managers to issues related to developing an information strategy for their organizations, and in establishing new structures and procedures for effective information management, and to review possible approaches to development of national capabilities in information management and networking. The target audience was a small number of managers and/or decision-makers from agricultural research organizations in the Near East region, who are able to affect decisions made within their organizations. Two participants, one senior manager and one technical manager, will be drawn from each of eight countries: Egypt, Iran, Jordan, Lebanon, Morocco, Qatar, Oman, Sudan, and Yemen. The technical content for this part of the workshop is based on the IMARK module *"Investing in Information for Development",* to address the following three interrelated topics: Information strategy; Organization and management issues; and Disseminating Agricultural Information. The format included lectures and group discussions. This part extended for one day (first day in the workshop).

6. The second part of the workshop continued for three days to perform the following:
    -   To introduce possible approaches to building national systems based on existing experiences and tools, leading towards a "*Near East Rural and Agricultural Knowledge and Information Network, NERAKIN*" developed by FAO and
    -   To build the capacity of the participants from 9 countries on how to operate and use NERAKIN as a platform for knowledge sharing and collaboration for Agricultural Research and Development (ARD) for target groups and stakeholders on a regional level in NENA (Near East and North Africa) for disseminating agricultural research knowledge and information for improving food security and agricultural and rural development in member countries at national and regional levels. Opportunities will be provided for stakeholders (trainees) to give feedback and comments on the proposals for establishing the Network.

    Part 2: NERAKIN for Building National Agricultural Information Networks in Agricultural Research for Development: The objective is to build and assign in collaboration with FAO a team of professional facilitators and focal points belong to coordinating centers on technical aspects of information management and networking working on" Near East Regional Agricultural Knowledge and Information Network, NERAKIN" developed by FAORNE and to build the capacity of the participants from participating countries on how to operate and use NERAKIN as a platform for knowledge sharing and collaboration for Agricultural Research and Development (ARD). The target audience was information and library specialists in agricultural research organizations in the Near East region. The participants are technical persons specialized in information management and networking that drawn from each of ten countries: Egypt, Iran, Jordan, Lebanon, Morocco, Qatar, Oman Sudan, and Yemen. The technical content for this part of the workshop is based on the training materials developed and provided by FAO/RNE. The format included lectures, hands-on technical sessions, and group discussions. This part extended for three days (second, third and forth day of the workshop).

E. Opening Session

7. Dr. Ayman Farid Abou Hadid, Vice President of Agricultural Research Center of Egypt, welcomed all participants on behalf of the President of the Agriculture Research Center (ARC). He emphasized the vital role the Information and Communication Technologies that can play in the development of Agriculture in the countries of the Near East and North Africa region and the commitment of ARC in using this technology.

8. Dr. Stephen Rudgard, Chief of WAICENT Capacity Building and Outreach, KCEF, FAO-Rome, gave a speech in which he emphasized that FAO is facilitating and supporting Information and Communication Management/Technologies (ICM/ICT) activities for development in the Near East and North Africa region and other regions around the world as strengthening the capacity to access and exchange information and knowledge is very essential for the development objectives of poverty eradication, food security, sustainable rural and agricultural development and increased productivity and competitiveness.

9. Dr. Ibrahim Hamdan, AARINENA Executive Secretary, gave a speech (see Annex III) which started with welcoming all participants attended this meeting on behalf of the Association of Agricultural Research Institutions in the Near East & North Africa (AARINENA). He emphasized that Agricultural development in NENA region could be enhanced by effective and efficient exchange of knowledge and information as stakeholders in Agricultural research for development have major problems in obtaining accurate and timely information and modern information and communication technologies could help in promoting information exchange among all stakeholders.

10. The AARINENA Executive Secretary indicated that Information and communication management is one of the key activities of AARINENA working plan in the last seven years. AARINENA in collaboration with GFAR held a series of consultations and workshops to establish the Regional Agricultural Information System (RAIS). He invited all participants including all the newly AARINENA elected steering committee members for discussing the technical aspect of the FAO proposal on "Near East Rural & Agricultural Knowledge and Information Network (NERAKIN)" [see Annex IV] endorsed by AARINENA executive committee in its last meeting at ICARDA on the 5th of May 2007 in the working group session on the second day of the workshop taking into consideration the advantages and disadvantages of options of the establishment of the regional network.

First Session/First Day of Regional Workshop – Sunday 27 May 2007

F. Advocacy Session on Investing in Information for Development

11. The main objective of the <u>Advocacy Session on Investing in Information for Development</u> was to assist information managers in developing an information strategy for their organizations, and in establishing new structures and procedures for effective information management.

12. The advocacy session lasted for one day and was based on the IMARK module "Investing in Information for Development", focused on strategic management approaches to the changing information needs and new skills required to implement new structures and procedures for effective information management. It reviewed current trends in access to and dissemination of information, and how Information and Communication Technologies (ICTs) can affect and enhance information activities in an institutional environment.

13. The advocacy session on Investing in Information for Development addressed the following three interrelated topics: (1) Information strategy; (2) Organization and management, and (3) Information dissemination. Participants were divided into three groups and worked through three management "cases". The topics covered in the cases were taken from units of the Module, specifically Unit 2 (Information Strategy), Unit 5(Organization and Management), and Unit 4 (Information Dissemination).

14. A presentation was given by Mr. Stephen Rudgard for each individual case study before proceeding with the discussion group. Three resource persons facilitated the group discussions.

15. Background information of the one day programme, information on the three cases given to the discussion groups, and the output of the groups are all attached to this report as Annex V.

Second Session/ Second Day of Regional Workshop – Monday 28 May 2007

G. Overview of NARIMS National System and NERAKIN Regional Network.

Goal and Potential Use of ICTs in Agricultural Research for Development.

16. Mr. Ibrahim Hamdan (AARINENA Executive Secretariat) **e**xplained the Status of Agriculture sector in WANA Region as follows:
   - The Near East and North Africa Region is a "food deficit region", and perhaps the largest "net food importer" among developing countries.
   - The food gap in the region is expected to increase due to limited supply compared to effective demand, and therefore food insecurity has become a very serious problem in some countries.
   - Approximately 60% of the population in the region lives in rural areas and is dependent on agriculture for their livelihood; therefore, decreasing agricultural production has a negative impact on food security.
   - The region is characterized by high population growth rate amounting to 3%, which is higher than the world rate (1.7%) and the industrialized countries rate (0.7%).
   - The population in 23 countries in the region was estimated at 385 millions, and expected to reach 582 millions in 2015

17. He indicated that the challenges for the WANA Region are:
   a. The WANA region has to harness new technologies to meet Challenges in rapidly developing agriculture and needs increased research capacities in biotechnology ,
   b. Use of new materials in agriculture for conserving natural resources and improving agricultural productivity and Information & Communication Technologies (ICTs)

18. He pointed out the Potential Use of ICT for Agricultural Research for Development as follows:
   - Managing, sharing and exchanging scientific and technical information related to agriculture at national, regional and global levels. The main challenge is in collation of agricultural information at national level and sharing it through digital and electronic means in Arabic and English within the WANA region. AARINENA with the support of FAO , ICARDA and GFAR can provide a platform for building national and regional consortiums and networks that contribute to effective and efficient sharing of this information within the region
   - Enabling sharing of research data especially those related to production characteristics, genetic material, and natural resources. This data is increasingly needed for biotechnology, knowledge based systems and geographical information systems (GIS). Collaboration between the NARS in GIS can contribute significantly to use of natural resources and land use planning. AARINENA and its cosponsors can support development of mechanisms that assist sharing and exchanging of this data within the WANA region.
   - Efficient management of research is an important issue within the region. Sharing of information related to research institutes at National and Regional levels, research expertise, research projects outputs can bring greater economies of scale in research as also contribute to exchanging technologies.
   - ICTs are contributing significantly to development of new approaches to agricultural extension. In Egypt, VERCON as an ICT enabled information system for extension has been

developed and this is being spread to several countries in the region by FAO.

- The region is a rich producer of marketable agricultural products. However, it lacks on-line agricultural market information systems. It is important that the region develops, through public and private partnerships, market information systems that enable small producers and entrepreneurs participate in national, regional and global agricultural markets. The regional agricultural information system can promote the development of market information systems.
- The region has weak agricultural education systems. ICTs can contribute significantly to on campus agricultural education, continuing education of agricultural professionals in the field and provide learning opportunities to farmers, as demonstrated in several Asian countries, to use new technologies and grow new crops.
- There is a need to develop better infrastructure for communications within the NARS. This will improve governance in the NARS and improving efficiency and effectiveness of the research processes as also in creating better research networks. While most NARS now have websites, they are still poor in having appropriate, relevant and useful information. Having content on the NARS websites is one of the most critical areas that AARINENA RAIS can help collaboration for.

19. He pointed out that NENA region constraints in Effectively using ICTs are as follows:
   - Lack of awareness among policy makers and leaders on how to make use of ICTs to improve ARD
   - Inadequate investment in infrastructure, digital content generation and management of information at the Institute level and the NARS
   - Lack of skills to develop, manage and make effective use of ICT enabled agricultural information systems
   - Insufficient collaboration within the region between NARS, across regions and with International Institutions dealing with managing agricultural information. This hampers rapid development of ICT enabled agricultural information systems.

20. He finally emphasized that there is a need for steps to be taken as follows:
   - Identify concrete steps that need to be taken to make more efficient agricultural information systems at country and regional levels.
   - Identify the areas of cooperation and collaboration within ourselves and with International agencies.
   - Make the development of effective agricultural information systems an important pillar of AARINENA Work-plan activities.

An Overview of the new AGRIS Initiative.

21. Mr. Stephen Rudgard, Chief WAICENT Capacity Building and Outreach, presented the new AGRIS initiative to enhance the impact of science and technology on enhancing food security, rural livelihoods, and responsible use of natural resources. The main purpose of this initiative is more effective information and communication management (ICM) in support of agricultural research and development.

22. It is envisioned that the outcome of new AGRIS initiative would include: (1) stronger national information policies and strategies around ICM in agricultural research and development, (2)

clear facts-based ICM plans and investments at national and institutional levels, (3) better information products and services delivered to local and national stakeholders, and (4) one "international" approach with all key stakeholders.

23. He gave special remarks and informed the participants on the outcome of October 2005 Expert consultation "International Information Systems for Agricultural Science and Technology – Review of Progress and prospects" at FAO-Rome which endorsed the themes of ICM4ARD and recommended a greater cooperation among various organizations and networks under a new initiative of New AGRIS Initiative.

24. He identified the urgent need for advocacy at various levels to promote and exploit the full potential of ICT/ICM in agricultural research for development. Planning in NARS is essential for strong ICM comprising vision, strategy, policy framework, operational plans, monitoring and evaluation in order to address needs/demands of internal/external stakeholders and to use/build effectively ICM (human and technological) capabilities for agricultural research for development. This is because the lack of ICM planning means outputs are not disseminated effectively and therefore research and development resources are wasted and the NARS public image is poor due to lack of credibility.

25. Mr. Rudgard presented the outcomes of Expert Consultation in 2005 and brought together representatives of various international, regional, national and thematic initiatives to consider agricultural information professionals can work together more effectively to influence national and regional policy frameworks for better coherence in agricultural information systems at all levels. He pointed out that to follow up the recommendations of the Consultation, three task forces, representing three themes of ICM4ARD – advocacy, capacity building, and content management (three elements of onion model) – have been set up. A set of outcomes were foreseen as emerging from follow-up to the Consultation:
   - Agricultural information professionals would be able to ensure their work has more impact and to work together more effectively;
   - Coherence and integration of agricultural information management and systems would be strengthened;
   - National and regional policy frameworks would recognize the value of and support agricultural information systems.

Review of Case Study on Egypt National Agricultural Research Information Management System (NARIMS)

26. Mr. Mahmoud Rafea started his presentation with defining NARIMS as National Agriculture Research Information Management System. It is a Web based bi-lingual information system aimed at capturing and disseminating information about: Research institutions, Researchers of those institutions, Publications and Research Results issued by those researchers, Projects completed or currently active, and National Agriculture and Veterinary Research Plan in Egypt. It has Backend for data management and Front-end for data browsing and searching

27. He stated that the vision of NARIMS as follows: NARIMS can help to meet the imperative challenge of building capacity in agricultural information management as a priority area in its agricultural development policies, it is based on sharing of information to strength research, and

it is a step towards an Agriculture Information Network.

28. He provided an elaboration on current infrastructure of ARC network which consists of two campuses network in Dokki and Giza regions. Dokki campus network includes 19 Sites and Giza campus includes 14 Sites. The ARC future plan is to establish a VPN connection for all research stations in all Governorates to the head quarter in Cairo and to be linked to networks of both Egyptian Universities Network (EUN) and Ministry of Communication and Information Technology (MCIT) of Egypt.

29. A focus was also given on NARIC Organizational Structure and Institutional Capacity Building including Training of trainers (TOT) on ICT and IM, Training on information automation, IMARK and NARIMS Modules, and TOT and Training on Arabic AGRIS Application Profile (AP), documents indexing, and cataloguing.

30. He mentioned the difficulties they are facing in building such a system: Management of content, Securing ARC Enterprise Network, Management of the system operation, and Management of every part of the network. With reference to the management of content, motivating people to feed the system with data as Bottle necks is verification of data. Regarding the current Status of Securing ARC Enterprise Network, ARC Enterprise network is protected from external hacking by using firewall as the first guard for the network then Network Intrusion Prevention System to recognize attack pattern or anomaly traffic or both of prevention approaches and internal hacking by determining which users can access which resources by using firewalls. Clients are protected from virus and worms attacks, Servers are protected from all attacks in addition to allowing the accessibility to servers for the required services only, and Remote sites are protected from external and internal hacking, similarly

31. Reference to Management of the system: traditional Backup and recovery is not sufficient, therefore it is necessary to implement redundancy and load balancing techniques to keep the system up all the time. A Design for Replication Model as Round Robin as a redundancy solution is not sufficient, and there is Need for Reporting System about network status in periodical basis that include statistics of traffic, number of users, infrastructure status, …etc.

32. He explained that lessons learned through NARIMS TCP National project are as follows:
    - A champion from the agriculture top management is an important factor for success.
    - Steering committee creates an enabling policy environment.
    - Institutional Development: Organization restructuring is important for sustainability as efficient structures and procedures facilitate management.
    - Training for Capacity Building: Training motivates people and enhances their skills with consequent institutional capacity building. Training of trainer (TOT) proved to be an efficient approach.
    - Building partnership and Helpful alliances (FAO GILF/GILW with National Counterparts software development team) not only ensure the quality of the system but also reduce risk and production time. Building on existing is important initiative as we should not start from scratch (EIMS, AGROVOC and AGRIS AP).
    - Teamwork, Collaboration and partnership between FAO GILF/GILW and national counterparts played a driving force for success.

- More Time and continuous support from high management are still required to enforce the institutional development introduced by FAO and approved/applied by national counterparts.
- Use appropriate technology for both infrastructure and software development. (in the pilot project)
- Open source technology proved to be successful initiative to be implemented in NARIMS in the near future.

Working Groups Outcomes on Development of National Initiatives.

33. The participants divided into three groups to discuss Constraints and Issues around Development of National Systems. The following is the outcome of the discussion of the three working groups:

Issue	Constraints	Potential Solutions
Policy	• Low priority given to agriculture and agricultural research *(in some countries)*. • Lack of vision and strategy for ICM in agriculture research and development. • Policymakers' (especially NARS leaders) lack of awareness of value of ICM. • NARS give low priority to ICM. • *Changes in policymakers and specifically NARS leaders*	• Ensure continuing advocacy support from regional bodies (e.g. AARINENA) and other external sources to raise NARS leaders/managers awareness of practical value of ICM. • As proof of concept for policymakers, initially develop a demonstration system focusing on a few high priorities research topics, or *(for large countries)* start with a small-scale pilot network with just a few institutions. • Promote ICM outputs/systems to attract political support and funds.
Institutions (amongst potential network members)	• No champions for ICM in agricultural research. • Lack of clarity of roles of institutional members of network. • No organizational units in NARS dedicated to ICM. • Unclear responsibilities/terms of reference for ICM tasks inside NARS. • No support from NARS institutions' senior managers. • Need for coordination of collaboration between NARS and international agencies. • Lack of monitoring and evaluation.	• Identify one institution to lead and facilitate development of the network. • Ensure champion(s) are identified, preferably in each institution, and form a network steering committee that will take the lead on network development. • Organize consultation(s) with appropriate (selected NARS) institutional stakeholders to gather feedback on system design. • Develop clear and well constructed proposal with appropriate network architecture and appropriate ICM solution/technologies at reasonable (sustainable) cost.
People	• Lack of ICM skills (e.g. systems development, indexing). • Inadequate planning of human resource development, specifically in	• Negotiate specific Human Resources and Staff Development plans for ICM to ensure that the right people are in the right place with adequate

Issue	Constraints	Potential Solutions
	ICM – with no routine upgrading of technical skills. • Incorrect staff selection for ICM training. • Few/no fulltime staff in NARS dedicated to ICM. • Staff allocated to ICM leave organization or have their responsibilities changed.	motivation and incentives. • Develop contacts with organizations in other sectors (e.g. universities, health, ICT, science) to access skills/resources etc
Content	• Lack of access for ICM staff to researchers' information. • Agreement of priorities for data/information acquisition/dissemination. • Lack of use of common data formats. • Unclear IP/ownership policies.	• Coordinate with NARS scientific committee(s) to ensure access to content and appropriate selection of priorities. • Develop common policies on standards and IP as part of the network.
Technology	• Inadequate network infrastructure and IT resources. • Necessity for regular upgrades. • Incompatibility of operating systems. • Lack of appropriate software.	• Secure procurement of adequate technology infrastructure etc. through network proposal and advocacy. <u>See Policy level.</u>
Financial	• Too little budget allocated to agriculture and to research *(some countries)* • Too little budget allocated to ICM in agricultural research.	• Secure funding through network proposal and advocacy. <u>See Policy level.</u>

In addition to the above conclusion, the following are the good practices in national networking resulted from the expert consultation on the new AGRIS vision conducted on 2005:

- Existence of a clearly defined strategy and objectives
- Tangible commitment to the strategy from major players including government
- Assurance of adequate funding resources for the network members
- Strong but sensitive leadership provided by a national focal point
- Participatory approach in the national network with appropriate recognition of all partners
- Development of information repositories of documents (metadata/full text) and people/organizations/activities
- Adoption of a single model for IM with common formats and standards
- Focus on content quality
- Focus on development of human resources

An Overview of options for design and architecture for a regional information network: *"Near East Rural & Agricultural Knowledge and Information Network"* (NERAKIN).

34. An overview presentation on NERAKIN *"Near East Rural & Agricultural Knowledge and*

Information Network" was given by Mr. Magdi Latif to the participants. The NERAKIN Network objectives, expected outputs, regional components, national components and portals, and a demonstration of the NERAKIN virtual platform and national portals were provided during this session.

35. The development objective of NERAKIN network is to enhance information and knowledge access and exchange within the region for ARD in Near East and North Africa, and at the global level. This network would provide mechanisms to strengthen, coordinate, and add value to national, regional and international initiatives in order to increase agricultural production and improve food security in Near East countries, and for the benefit of improving performance of farmers and agrarian businesses. The immediate objective of the proposed Network is to strengthen the capacities of Ministries of Agriculture and agricultural and rural research institutions for effective information management and knowledge exchange in support of rural and agricultural development in the region

36. It was shown that NERAKIN could be a platform for knowledge sharing and collaboration among agricultural research and development (ARD) of target groups and stakeholders at the regional level of the region. The NERAKIN concept was created specifically to enhance the management, exchange and subsequent retrieval of digital agricultural information among NENA member countries. The NERAKIN Application allows sharing of information across different types of systems and provides guidelines on recommended practices for front end and back end management based on the AGRIS Application Profile as a major step towards metadata-based systems of data access and exchange.

37. A brief description was provided of the NERAKIN Application developed by FAO to provide standard mechanisms intended to augment the capacity of national research and development institutions in the region to pursue effective content management and exchange of information and knowledge in support of rural and agricultural development in the region. The NERAKIN Application was shown to be a Multilingual (Arabic, English, French, and Farsi) information system. Subsequent enhancement of improved information generation is also foreseen as a result of the expected continuous supply of adequate information. In adopting the Application, subscribing focal points would ensure membership in national and regional networked portals. They would also become legible to contribute into and access the international stream of information.

38. The expected achievements of NERAKIN are:
    – All ARD institutions should be networked through a regional network and national systems/portals. For further elaboration, the outputs expected to be produced from NERAKIN during its first phase of three years of operations (2007-2010) are:
    - A Regional Gateway function and a collaborative network of technical institutions and organizations committed to capacity building in this area.
    - A pilot NERAKIN knowledge and information management system of national components including modules (information systems) on documents, institutions, experts and projects; facilitating access to other agricultural information services and databases relevant to the rural and agricultural sector; and enabling the exchange of information and knowledge among stakeholder groups.

- All ARD institutions networked through a regional portal as well as through national portals.
- A team of national selected focal points and technical staff at the agricultural institutions trained on how to adopt and integrate information from their institutions into the NERAKIN and to maintain it as a high-quality information and communication resource using the NERAKIN Application and modern information management techniques.
- Development of operational plans for the network that would strengthen knowledge-sharing and learning process and foster partnerships for broader knowledge-sharing and learning at national and regional levels.
- Development of an operational framework that would define the roles and responsibilities of all the stakeholders at the national level.

39. The specifications of the NERAKIN Application were described as follows:
- Open source technology (MySQL), capable of operating on Windows and Linux platforms, compliant with the new initiative on Information Systems in Agricultural Science and Technology under the Open Archives Initiative/Open Access publishing standard. .
- Participating institutions can upload their own materials in a centralized system, or develop their own distributed system(s) with support for a Region-level system (NENA), National-level systems, and Institutional/Community level systems (Ministries, Research Institutions , Specialized Research Institutions, Universities, Libraries, Farmers Organizations, and NGOs….etc)
- Standards for information management: AGMES – Agricultural Metadata Element Set, AGRIS Application Profile, AGROVOC
- Capability for exporting/importing data between institutions at national level and with the regional network as well as with International AGRIS Network.

40. The Operational Framework of NERAKIN at the National Level was presented and is as follows:
- Assign and build capacity of Coordinating Unit that includes National Admin/Focal point;
- Develop the system steering committee that includes a national coordinator, technical director and members;
- Assign stakeholders who will be responsible for managing their own information (1-Institution Admin 2- Data Entry Users);
- Connect institutional entities that are not connected and enhance the infrastructure within the different connected institutions (hardware installation);
- Install software system in institution servers (*Plug and Work*);
- Building capacities of institution staff on the use of system (training);
- Data collection/validation/publishing and feeding to system;
- Conduct awareness raising workshops and promote the system.

41. The benefits of partnerships and networking are: a collaborative system and effective communication, exchange of information and knowledge, enhanced technical cooperation, reduced costs of operation, synergies in information management, and use of agreed standards, methodologies and tools.

42. The main challenge issues facing the appropriate implementation for NERAKIN network are:
- Decentralization: establishment of national networks – institutions and policies;
- Capacity building: supporting decentralization;

- Standards and tools: common approaches;
- Partnership: at regional and international level.

43. The presentation has effectively provided an online demonstration on NERAKIN network to demonstrate the front end of regional portals and the national portals of the nine countries participating in this regional workshop. The content management system of NERAKIN was also briefly demonstrated online as in-depth demonstration was to be given on the next day on the agenda.

Working Groups Outcomes on Development of Regional Initiative.

44. The participants divided into three groups to discuss Advantages/Disadvantages of options of the establishment of the regional network. The following is the outcome of the discussion of the three working groups:

45. The creation of the regional initiative to support development of national information networks will affect the participating national institutions.

46. The types of content to be accessible would include: research and extension documents; experts/researchers/personnel systems; and news related to the agriculture sector, local/ national events.

47. **Benefits/Opportunities**: The regional initiative would add value to national system/networks, and can in no way replace them. It would develop into a common platform co-owned by all partners for sharing public goods, which would offer greater visibility and credibility for each participating country. The national and regional information strategies and policies would inform each other, to ensure coherence of approach. The initiative would:

- Address stakeholders' needs more effectively as it would:
  - Promote collaboration and sharing between countries of information on agricultural science and technology and experience in its use;
  - Provide wider access to content;
  - Raise awareness of regional agricultural problems/issues;
  - Enhance quality of scientific and technical information.

- Reduce time/cost/effort of developing national information networks due to:
  - Shared values in ICM, including common formats/standards;
  - Provision of success stories in ICM and development of information networks, which would encourage countries that have not yet built national networks;
  - Cooperation and collaboration on solving common ICM problems;
  - Enhanced capacity building (and productivity) of ICM staff.

48. **Risks/Threats:** Some aspects of the regional initiative were identified as potential threats that would need to be addressed if they are not to reduce its impact/value. Steps should be taken to ensure that the initiative will not be:

- Dominated by one (or more) country/ies in such a way that causes resentment amongst the others;
- Devalued by inactive members that reduce the benefits for active members;
- Subject to political influence that might divert network priorities;
- Creating dependency of weaker countries on stronger ones;
- Unclear about intellectual property rights in a way that might undermine collaboration.

49. The regional initiative would also have to address the fact that participating countries would have national networks with variable capacities and capabilities, so there can be no universally applicable approach. There would also be a risk that sustainability will be quite fragile owing to uncertainty of continuing availability of funds at national level, and also at regional level for maintenance of the regional hub.

50. Success factors for regional networks
- Existence of a regional information strategy;
- Development of a Secretariat role for regional activities;
- Focus on capacity building at national level;
- Focus on community of practice amongst the information specialists;
- Raising awareness of issues at political level;
- Formation of strategic partnerships amongst the major stakeholder organizations.

51. All participants were agreed that the main objective is not to build regional information "System". The objective is to build capacities in information management at national level with institutional networks providing mutual support. The targets are (i) self-sufficiency, (ii) empowerment, (iii) interoperability.

Third Session/Third Day of Regional Workshop – Tuesday 29 May 2007

H. NERAKIN New Development Front End and Content Management System (CMS)

NERAKIN Application and Workflow Management System

52. The NERAKIN Application and Workflow Management System were presented to the workshop participants. A detailed description of the Application components is provided in Annex VII, The following points were highlighted:
    - NERAKIN Application: The interface components provide the information retrieval/browsing functionalities, and are available to any site user. The administrative components provide the data management functionalities that enable system administrators to input/update/delete data items into the NERAKIN database. These components are accessible by system administrators only.

    - Users and their Roles: Several types of users have been foreseen, wherebyeach user would have particular responsibilities. These users are National Administrator, Institution Administrator, Publisher and Data Entry. Each user has his/her own user name and password to log on to the system with specified authority.

    - Workflow: The various workflows for Documents, Projects, and Personnel/Researchers were presented. All modules have two levels of workflow except Documents module has three levels of workflow for content quality control to be in compliant with AGRIS system.

General Comments about the NERAKIN Application

53. The following comments on the NERAKIN Application were received from the workshop participants:
    - Help section is required to be included in the CMS for assistance and guidance for data providers.
    - The CMS should have the capability to allow the users to perform the following management functionalities:
      1. National Admin can change his user name or password;
      2. National Admin can edit, delete Institution Admin;
      3. National Admin can edit, delete Institution Publisher;
      4. Institution Admin can edit his username or password; and
      5. Institution Admin can edit, delete Data Entry.
    - A search facility is required in the CMS to facilitate data entry and management.
    - Further development is requested for the advanced search facility of NERAKIN Front end.
    - Test and validation are still needed for fields' validations. An error message is also required to explain the error made and possible suggestion for correction.
    - An alerting system is required to advise whether operations performed have been completed successfully, such as adding a new user, or if not then the reason for failure should be given. It is supposed that the form needs to become empty after that.
    - The system should incorporate an "Undo" functionality, and a message should be displayed before deleting a record.

-   More countries are required to be included in the regional platform.
-   New Interfaces for Arabic/ French /Farsi for the user and administrative interfaces.

Discussion and Conclusion

54. The session was concluded with the following issues:
- The interactive discussions of the participants included issues such as criteria of assigning a national admin, a national documents publisher, an Institution admin and an Institution data entry. The issues of content quality, available repositories, and institutional and national systems interoperability were raised.

- It was ascertained that NERAKIN is designed to act as a common regional platform co-owned by all participating countries to reflect the state of knowledge and information generation and exchange and to connect all NARS of the region through a regional portal as well as national portals.

- The AARINENA ICT/RAIS Steering Committee met and decided the following (see Annex VI): With regard to NERAKIN Application, the AARINENA ICT/RAIS Steering Committee adopted it as a platform for knowledge sharing and collaboration for development in NENA region. AARINENA will champion its implementation and decide on the course of actions required. ICT/RAIS SC also recommended that NERAKIN is to focus on the thematic regional network module and NARIMS is to focus on national level as it was agreed upon in previous meetings and recommended that FAO continue to provide facilitation, support and maintenance for the system. Also, it is recommended that Information of both the NARIMS and the NERAKIN are put on AARINENA.RAIS website and electronic versions of both reports are circulated.

- It was agreed that NERAKIN would promote the bibliographic information control and management among member countries. It would provide wider access and subsequent generation of higher quality scientific and technical information.

- The Workshop recommended that steps should be taken to provide guidelines and manuals to ensure the best possible quality of content and smooth administration. The guidelines should include HR development policy i.e. terms of reference, training tools, rules of cataloguing and indexing, standard authority lists and codes, etc. Adequate measures should be taken to ensure sustainability and expansion of modules to include thematic systems.

Fourth Session/Fourth Day of Regional Workshop -Wednesday 30 May 2007

I. Arabic AGRIS Application Profile (AP) for indexing and Cataloguing

55. As more and more organizations, NARS and national systems make their institutional or national bibliographic databases accessible over the Internet, there is a demand for standards and common formats to facilitate exchange among such heterogenous systems as well as cross-searching across different platforms. With the current trend for promoting reuse instead of reinvention, the AGRIS AP has been created drawing elements and refinements that are already in existence.

56. A proposal for the creation of a new metadata standard for AGRIS references was presented at FAO COAIM 2000 (Consultation on Agricultural Information Management) to address the concept of interoperability, sharing and exchange of knowledge and information. The new metadata standard created is entitled "AGRIS Application Profile". It defines a set of high quality metadata on scientific and technical papers, and is directed at improving accessibility of materials on the Web. A related document was produced to explain procedures and best practice on how institutions whose local XML-enabled database does not follow the AGRIS standards can be configured to generate AGRIS AP XML data that can be disseminated to and harvested by the AGRIS system. FAO made AGRIS AP not only available in English anguage but also in Arabic language for Arabic speaking stakeholders in NENA region

57. Training on Arabic AGRIS Application Profile (AP) for indexing and cataloguing and inserting the appropriate metadata was provided to improve the workshop participants/trainees understanding of AGRIS AP so that they can index publications and documents efficiently.

58. The presentation aimed at acquainting the Workshop participants on AGRIS Application Profile (origin, definition, concept, methodology, need, metadata set, and subject control tools). It has given an overview on AGROVOC multilingual Thesaurus as a subject content control tool. A brief review on document collection policy control was also addressed.

59. The presentation covered an overview of AGRIS AP origin, purpose, methodology, goals and objectives and the concept of resources coverage policy at institutional level. Criteria of document selection, items to be excluded or to be included were elaborated. AGROVOC thesaurus was introduced, that covered types of relationships, construction of a word block and types of terms (material, property, entity, process, proper names, discipline and event).

60. A brief description of the metadata schema adopted by AGRIS AP was reviewed. It was ascertained that the data elements included in the metadata conforms to the international standard common format to enable institutions to pursue the best possible practices in the description, exchange and retrieval of agricultural information resources.

61. The discussions followed manifested the interest of the participants to adopt AGRIS AP as a guideline tool for bibliographic description. They acknowledge its effective function in the new global applications for sharing and exchanging of information and experience.

62. The AGROVOC and AGRIS Categorization Scheme as standard encoding schemes have enjoyed high rate of interest to ensure high quality control of content.

63. Further elaborations were given during this session on AGRIS Application Profile Definition; Goals, Objectives and Methodology of AGRIS Application Profile; and AGROVOC and its structure in addition to the Elements in AGRIS Application Profile which were also provided and demonstrated to participants (see Annex VIII).

Discussion and Conclusions

64. This session was concluded with the following issues:
   - The discussions followed by the obvious interest of the participants to adopt AGRIS AP within the institutional, national or regional systems, as a guideline tool for bibliographic description. They acknowledged its effective functionalities in the new global applications for sharing and exchanging of information and experience.

   - The AGROVOC and AGRIS Categorization Scheme as standard encoding schemes have enjoyed high rate of interest and their role was recognized to ensure high quality of content.

   - It is recommended that institutions intending to implement AGRIS AP should be supported and provided with technical assistance, detailed guidelines and training. It was stressed that system developers should consider AGRIS AP in mapping their systems. It was urged that institutions whose local databases do not follow the AGRIS standards be configured to generate AGRIS AP XML data that can be disseminated to and harvested by the AGRIS system.

   - The participants were satisfied to hear and see that AGRIS AP and AGROVOC have been implemented in NERAKIN, and NERAKIN is in compliant with new AGRIS initiative and international standards including AGRIS AP/Dublin Core Unqualified Elements/Open Archives Initiative/Open Access publishing standard.

J. NARIMS Application

65. Two hours were taken to present and demonstrate the NARIMS application and its installation procedures. The presentation consisted of the following components:
   A. Introducing the NARIMS Installation Tools as a part of a methodology for developing the research information management modules. This methodology describes the management structure of the Information Units (IUs) within an organization. It delineates the steps that an organization may follow to manage the development and maintenance of NARIS using the NARIMS suite of tools and the NARIMS modules. Those steps are:
   - Establish IUs
   - Build essential infrastructure
   - Conduct training for organization staff
   - Install NARIMS set of tools
   - Populate the system with data
   - Conducted complementary workshop and training as needed

66. The following components were also presented:

B. A desktop utility designed to:
- Test configuration of MS Windows so that it prevents the installation on a wrong configuration
- Create all required database tables on MS SQL server
- Initialize tables with necessary data including coordinator default username and password
- Define the second language beside English
- Copy web page templates to target directory
- Define virtual directory to MS Internet Information Server
- Create links between web page templates and created database
- Create shortcuts for web pages on the desktop

C. A tool designed to customize organization structure and terminology using captions and menus. Further, it initializes the system with:
- Instances of the first level of organization structure
- Define administrators' username and password for each defined instance
- The defined administrators use it also to:
  a. Define instances for each of the already defined organization structure levels
  b. Define the data-entry username and password and their privileges

D. A prototype of NARIMS which enables the management of data entry, and which is reflected on the web pages of the user interface.

K. **WORKSHOP CONCLUSIONS**

67. The AARINENA Executive Committee in its meeting at ICARDA on the 5 May 2007 endorsed and supported the establishment of NERAKIN, as proposed in a concept note submitted and presented to the Committee and attached to this report as Annex IV. The Committee took into consideration the following:
    - The network should be linked to AARINENA and its implementation to be supported by FAO and GFAR taking into consideration the current existing RAIS and its governance structure;
    - The overall monitoring of the Network should be the role of AARINENA;
    - The activities of the network should be NARS-driven.

68. With regard to the NERAKIN Application, the AARINENA ICT/RAIS Steering Committee adopted it as a platform for knowledge sharing and collaboration for development in NENA region. AARINENA will champion its implementation and decide on the course of actions required. The ICT/RAIS Steering Committee also recommended that NERAKIN is to focus on the thematic regional network module and NARIMS is to focus on national level as it was agreed upon in previous meetings and recommended that FAO continue to provide facilitation, support and maintenance for the system. Also, it is recommended that information on the NARIMS and NERAKIN Applications are made available on the AARINENA.RAIS website and electronic versions of both reports are circulated.

69. The NERAKIN Application is designed to provide a regional infrastructure with open source technology compliant with the new international initiative on Agricultural Science and Technology Information and Knowledge, and the international standards including AGRIS AP and the Open Archives Initiative. It has been built based on bottom-up approach (institutions/national/regional), and therefore NERAKIN cannot exist at a regional level without national contributions and institutional networks.

70. It is suggested to develop a **<u>Near East Regional Expanded AGROVOC</u>**, the aim of which is to properly represent in depth, the subject content of literature and resources generated in the Near East region. Adequate expression of the whole set of descriptors (global, regional and local), would hence justify accurate search and precise retrieval of regional resources handling local concepts. The methodology of developing the Near East Regional Expanded AGROVOC includes:
    - Development of a Term Record Format using Access;
    - Collection of regional vocabulary literature;
    - Consulting resource specialists and institutions;
    - Identifying AGROVOC main classes to which the regional descriptors will be linked.
    - Manual input/editing of records;
    - Machine input/editing of records;
    - Development of the Nucleus for Near East Regional Expanded AGROVOC;
    - Setting up a plan to add and update the Expanded AGROVOC by member institutions.
    The above suggestion would be discussed with the Knowledge Exchange and Capacity Building department (KCE) in order to get their remarks on the applicability of implementation and their clearance on the appropriate modalities, if applicable.

71. It is recommended to compile a Union Catalogue (List) of NE Agricultural Serials. It would help NARS communities in the NE region to properly identify serial publications in the region with a view to improve and encourage the scientific publishing movement in the region.

72. The researchers' code numbers should be established at national and regional levels to easily make distinction between them which could be as incentives for active researchers.

73. Steps should be taken to provide guidelines and manuals to ensure the best possible quality of content and smooth administration. The guidelines should include a human resource development policy i.e. terms of reference, training tools, rules of cataloguing and indexing, standard authority lists and codes, etc. Adequate measures should be taken to ensure sustainability and expansion of modules to include thematic systems.

74. The workshop participants were agreed to adopt AGRIS AP within the institutional, national or regional systems, as a guideline tool for bibliographic description. They acknowledged its effective functionalities in the new global applications for sharing and exchanging of information and experience.

75. The AGROVOC and AGRIS Categorization Scheme as standard encoding schemes have enjoyed high rate of interest and their role was recognized to ensure high quality of content. It is recommended that institutions intending to implement AGRIS AP should be supported and provided with technical assistance, detailed guidelines and training.

76. It was stressed that system developers should consider AGRIS AP in mapping their systems. It was urged that institutions whose local databases do not follow the AGRIS standards be configured to generate AGRIS AP XML data that can be disseminated to and harvested by the AGRIS system.

77. The workshop aimed at raising the awareness on improving rural and agricultural information dissemination through developing an information strategy and implementing new structures and procedures for effective information management. The workshop also introduced the Near East Rural and Agricultural knowledge and Information Network (NERAKIN) developed by FAO and built the capacity of the participants from 9 countries on how to operate and use NERAKIN as a platform for knowledge sharing and collaboration for Agricultural Research and Development (ARD) for target groups and stakeholders on a national and regional levels in NENA (Near East and North Africa) for disseminating agricultural research knowledge and information for improving food security and agricultural and rural development in member countries at national and regional levels.

78. The workshop concluded with a positive note endorsing the NERAKIN Regional Network based on the outcome of the second session of the second day on development of a regional network, taking into consideration the AARINENA ICT Steering Committee and the Executive Committee meetings comments.

Workshop Agenda
Regional Training Workshop on
Information Systems for Agricultural Research for Development
27 May – 30 May 2007

Sunday, 27 May 2007

09:00 - 09:15	Registration
Opening Session	
09:15 - 09:45	Opening Statements by Representatives (AARINENA, FAO and NARIC)
09:45 – 10:00	Coffee Break
Advocacy Session on Investing in Information for Development. Chairman: Mr. Ayman Abu Hadid, Deputy President of ARC, Egypt Resource Persons: Mr. Stephen Rudgard (FAO), Mr. Magdi Latif (FAO),and Mr. Mahmoud Rafea (NARIC/CLAES), and Mr. Mohamed Kassem (AERDRI)	
10:00 – 12:00	Case #1: An Information Strategy for National Agricultural Research Institute (NARI).
12:00 – 13:00	Case #2: Information Dissemination in Agricultural Research Council (ARC).
13:00 – 14:00	Lunch Break
14:00 – 15:00	Case #2: Continued (Information Dissemination in ARC)
15:00 – 15:15	Coffee Break
15:15 – 17:15	Case #3: Outsourcing at Kochi Institute of Agriculture (KIA).
Wrap-Up Session	
17:15 – 17:30	Evaluation and Wrap-Up

Monday 28 May 2007
Overview of NARIMS National System and NERAKIN Regional Network.
Chairman: Mr. Ibrahim Hamdan, AARINENA Executive Secretary
Resource Persons: Mr. Stephen Rudgard (FAO), Mr. Mahmoud Rafea (NARIC), Mr. Mohamed Kassem (AERDRI) and Mr. Magdi Latif (FAO)

09:00 – 09:15	Goal, Potential Use of ICTs in Agricultural Research for Development, Constraints and Expected Outputs. Mr. Ibrahim Hamdan (AARINENA)
09:15 – 10:00	Overview and discussion of new AGRIS Vision. Mr. Stephen Rudgard (FAO)
10:00 – 10:15	Coffee Break
Plenary Sessions	
10:15 – 11:00	Review of Egyptian Case Study on National Agricultural Research Information Management System (NARIMS), including system demonstration. Mr. Mahmoud Rafea (CLAES Director, Egypt NARIC)
11:00 – 12:00	Working Groups Session 1: Constraints and issues around development of national systems.

12:00 – 13:00	Plenary Session for Working Group Presentations.
13:00 – 14:00	Lunch Break
Chairman: Mr. Mahmoud Rafea (CLAES Director, Egypt NARIC)	
14:00 – 15:00	Overview of options for design and architecture for a regional information network *"Near East Rural & Agricultural Knowledge and Information Network"* (NERAKIN). Mr. Magdi Latif (FAO)
15:00 – 15:15	Coffee Break
15:15 – 16:00	Working Groups Session 2: Advantages/Disadvantages of options of the establishment of the regional network.
16:00 – 17:00	Plenary Session for Working Group Presentations.
Wrap-up Session	
17:00 – 17:30	Wrap-up session with conclusion and recommendations to be formulated presented and approved by the participants.
20:00 – 22:30	Dinner

Tuesday 29 May 2007
Hands-on training on NERAKIN New Development Front End and Content Management System:
Chairman: Mr. Ahmed Rafea, CLAES Adviser
Resources persons: Mr. Gamal Andrawes, Ms. Wafaa Saleh and Ms. Shaimaa Eltorkey

09:00 – 9:30	NERAKIN Workflow Management System. Ms. Wafaa Saleh
09:30 – 12:00	Front end and Content Management System of Document repository Information System module including importing and exporting from AGRIS Network. Mr. Gamal Andrawes
12:00 – 13:00	Front end and Content Management System of Institutions Information System module: to acquire the data and metadata data related to the Institution structure and work on the data entry screen, queries and reports of this module. Ms. Wafaa Saleh
13:00 – 14:00	Lunch Break
14:00 – 15:00	Front end and Content Management System of Personnel Information System module: to acquire the data and metadata data related to the projects in research and any other scientific disciplines and work on the data entry screen, queries and reports of this module. Ms. Wafaa Saleh
15:00 – 15:45	Front end and Content Management System of Projects Information System module: to acquire the data and metadata data related to the Experts in research and any other scientific disciplines and work on the data entry screen, queries and reports of this module. Ms. Wafaa Saleh / Ms. Shaimaa Eltorkey
Wrap-up Session	
15:45 – 16:00	Wrap-Up session with conclusion and recommendations to be formulated presented and approved by the participants.
16:00 – 17:30	RAIS-ICT Steering Committee Meeting

Wednesday 30 May 2007
Training on Arabic AGRIS Application Profile (AP) for indexing and Cataloguing and inserting the appropriate metadata: to improve the workshop participants/trainees understanding of AGRIS AP so that they can index publications and documents efficiently. All the contents and training materials will be provided by FAO in printed and electronic format.

Chairman: Mr. Mohamed Sallam**,** Chairman of RAIS-ICT SC
Resources persons: Mr. Gamal Andrawes, Mr. Ahmed Noor, and Mr. Mahmoud Rafea

09:00 – 10:00	Introduction: AGRIS Application Profile: Goals, Objectives and Methodology and AGRIS Application Profile: what is an application profile? Advantages and Essential Definitions. Mr. Gamal Andrawes
10:00 – 10:15	Coffee Break
10:15 – 11:15	Elements in AGRIS Application Profile: Titles, Creators, Publishers, Subjects, identifiers, Formats and availability in addition to issues concerning AGRIS: Bibliographic levels. Mr. Ahmed Noor
11:15 – 13:30	NARIMS Installation Tools. Mr. Mahmoud Rafea
13:30 – 14:30	Lunch Break
Wrap-up Workshop	
14:30 – 15:15	Wrap-up the workshop with conclusion and recommendations on the NERAKIN regional network to be formulated, presented and approved by the participants.

List of Participants of Regional Workshop on
"Information Systems for Agricultural Research for Development"
May 27 – 30, 2007
Cairo, Egypt

No.	Name	Country
1	Mr. Mohamed Noaman Sallam Director of Extension Programs & Projects General Directorate of Technology Dissemination (GDTD) (AREA) {Chairman of AARININA-ICT-RAIS steering Committee} Email: sallam2003@yemen.net.ye	Yemen
2	Mr. Mohamed Ali Al-Najhi Director of Computer department (AREA) Email: najhi@yemen.net.ye	Yemen
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5	Mr. Kamal El-Siddig, Director, Administration of Human Resource Development and Information Agricultural Research Corporation Email: k_elsiddig@yahoo.com	Sudan
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22	Mr. Stephen Rudgard Food and Agriculture Organization Chief of WAICENT Capacity Building and Outreach Division Email: Stephen.rudgard@fao.org	FAO
23	Mr. Magdi Latif Regional Information Management Officer FAO, Regional Office for the Near East Email: magdi.latif@fao.org	FAO
24	Mr. Ghazi Jawad Al-Jabri Communications Coordinator International Center for Biosaline Agriculture (ICBA), Emirates Email: g.al-jabri@biosaline.org.ae	ICBA

**Statement of AARINENA at the Opening Session of the
Workshop on ARD
Ibrahim Hamdan,
27-30 May, 2007
Cairo-Egypt**

Distinguished Participants,
It gives me a great pleasure to welcome you to this meeting on behalf of the Association of Agricultural Research Institutions in the Near East & North Africa (AARINENA).

In this Region, Agricultural development could be enhanced by effective and efficient exchange of knowledge and information. Stakeholders in Agricultural research for development have major problems in obtaining accurate and timely information. On the other hand, modern information and communication technologies could help in promoting information exchange among all stakeholders.

Information and communication management is one of the key activities of AARINENA working plan in the last seven years. AARINENA in collaboration with GFAR held a series of consultations and workshops to establish the Regional Agricultural Information System (RAIS).

It started at AARINENA 7th General Conference in Beirut in March 2000 which approved the Regional Information Strategy for Agricultural Research Development, followed by and expert consultation meeting in Cairo in October 2000 to develop a plan for implementation of this strategy for the WANA region. The plan included preparation of a project proposal to develop regional agricultural information system and establishment of a web site.

At the ICT Inter-regional meeting held at Cairo, May 2005. the National Agricultural Information System(NAIS) was recognized as a building block of the regional and global Agricultural Research for Development System that provide information on institutes, experts, research projects and research outputs as of highest priority for implementation.

AARINENA website is operational since July 2002 from AREO, Iran and this site acts as a gateway that includes useful information, related to the national agricultural research organizations, universities, NGOs, and farmer organizations in the region. The site was enhanced and Arabic version was completed in collaboration with FAO/RNE.

AARINENA Steering Committee was established in February 2003. The Committee includes representatives of the five AARINENA sub-regions and representatives from FAO, ICARDA, AOAD, GFAR and later Biodiversity International. The Committee held its third meeting in Amman in 2006 elected new members and prepared a three year working plan that included establishment of focal point units in each country.

In your meeting today, the participants will include all the newly elected steering committee

members who will be discussing the technical aspect of the FAO proposal on " Near East Rural & Agricultural Knowledge and Information Network (NERAKIN)" I am confident that in your working group session you will consider the Advantages/Disadvantages of options of the establishment of the regional network .

I am glad to inform you that AARINENA executive committee in its last meeting at ICARDA on the 5th of this month has supported the establishment of NERAKIN taking into consideration that:
1. The network to be linked to AARINENA and its implementation to be supported by FAO and GFAR taking into consideration the current existing RAIS and its governance structure.
2. The overall monitoring of the Network by AARINENA
3. The activities of the network should be NARS driven.

Before concluding my statement, I would like to take this opportunity to thank the Government of Egypt represented by the National Agricultural Research Information Center (NARIC) of ARC-Egypt for hosting this meeting. I would like also to thank FAO for the financial and technical support of this meeting. The valuable efforts of Mr. Magdi Latif, FAO Regional Information Officer, are highly appreciated.

I wish you a successful and productive meeting.

Thank you

CONCEPT NOTE
Prepared for AARINENA
by the Food and Agriculture Organization of the United Nations
April 2007

NERAKIN - Near East Rural and Agricultural Knowledge and Information Network

A: The Context

1. The agricultural sector dominates the economies of the majority of the countries in the Arabic - speaking countries in the Near East and North Africa (NENA) region, and yet it remains a vulnerable sector. Despite the progress made in agricultural growth and food production by some countries, the region as a whole continue to be a net importer of food and agricultural products. The countries of the region must increase their food supply and their exports; develop their human and institutional capacities, technology packages, delivery systems and physical infrastructure.

2. The potential for increasing agricultural outputs in the region is great. Crop and livestock yields under farmers' conditions are markedly lower than results obtained under comparable conditions elsewhere. The durable solution for improving agricultural performance in the countries of the region counts largely on the transformation of its agriculture research and development systems to render it capable of generating and transferring productivity enhancing technologies.

3. Science based agricultural systems has delivered real benefits to farmers, processors and con- sumers through the development and implementation of new knowledge and technologies. However, agricultural development in NENA region, continue relatively susceptible by the ineffective and incompetent exchange of knowledge and information. Indeed, the capacity to access and exchange information, and to convert it into useful knowledge, is very essential for the development objectives of poverty eradication, food security, sustainable development and increased productivity and competitiveness. Policy makers need to understand national needs, capacities, agricultural production, and other information to plan for agricultural development and the research to support it.   In the research sector itself, scientists need to keep themselves up-to-date with international research.

4. Modern Information and Communication Technologies (ICTs) have introduced a new dimension and, if properly applied, can help in promoting knowledge and information exchange. Knowledge-based systems and decision support technologies can be used to allow the various stakeholder groups to encapsulate technical information that they generate in a suitable form to make it available to others. Web-based technologies can be used to create platform-independent systems that can be accessed remotely, either interactively online or in passive mode offline.   Internet connectivity allows dissemination of information and

knowledge within regions, and can give instant access to global information and knowledge resources.

5. AARINENA has recognized for some time the value of expanding the use of modern ICTs in agricultural research for development in NENA Region is to facilitate the exchange of information and knowledge among certain key stakeholders, and thereby facilitate the sustainable development of the region. To this end, AARINENA Executive Committee agreed in December 2001 to establish a Regional Agricultural Information System (RAIS), and approved the proposal of Agricultural Research and Education Organization to host the AARINENA-RAIS Secretariat in Iran. The RAIS stakeholders included National Agriculture Research Systems (NARSs), Advanced Research Institutions (ARIs), Non-Governmental Organizations (NGOs), International Agriculture Research Centers (IARCs), the private sector, farmers' organizations, and development assistance agencies.

B: The Rationale

6. For this purpose, AARINENA and FAO in co-operation with the countries of the region will build on the previously conceived AARINENA RAIS and develop a <u>Near East Rural and Agricultural Knowledge and Information Network (NERAKIN).</u> Technical inputs and policy support would be provided by FAO in collaboration with the Arab Organization for Agricultural Development (AOAD), the International Centre for Agricultural Research in Dry Areas (ICARDA), and the Global Forum for Agricultural Research (GFAR)

7. This concept note outlines a three-year project (starting from 2007 to 2010) in which FAO will facilitate in collaboration with AARINENA the creation of a <u>Near East Rural and Agricultural Knowledge and Information Network (NERAKIN)</u> platform for knowledge sharing and collaboration for Agricultural Research and Development (ARD) for target groups and stakeholders on a regional level in NENA.

C: Development Objective

8. The ultimate development objective of NERAKIN is to enhance information and knowledge access and exchange within the region for ARD in Near East and North Africa, and at the global level. This network would provide mechanisms to strengthen, coordinate, and add value to national, regional and international initiatives in order to increase agricultural production and improve food security in Near East countries, and for the benefit of improving performance of farmers and agrarian businesses. The immediate objective of the proposed Network is to strengthen the capacities of Ministries of Agriculture and agricultural and rural research institutions for effective information management and knowledge exchange in support of rural and agricultural development in the region.

D: Expected Outputs (Results)

9. The proposed Network is expected to produce, during its first phase of three years of operations (2007-2010), the following specific outputs:

- A pilot *Rural and Agricultural Knowledge and Information Network (NERAKIN)* through building a Regional Gateway function and a collaborative network of technical institutions and organizations committed to capacity building in this area.
- A pilot NERAKIN knowledge and information management system of national components including modules (information systems) on documents, institutions, experts and projects; facilitating access to other agricultural information services and databases relevant to the rural and agricultural sector; and enabling the exchange of information and knowledge among stakeholder groups.
- All agricultural research institutions networked through a regional portal as well as through national portals
- A team of nationally selected focal points and technical staff at the different agricultural institutions trained on how to adopt and integrate information from their institutions into the NERAKIN and to maintain it as a high-quality information and communication resource using NERAKIN content management system and modern information management. These trained staff will be expected to train others in the future.
- Development of operational plans for the network that would strengthen knowledge-sharing and learning process and foster partnerships for broader knowledge-sharing and learning at national and regional levels.
- Development of an operational framework that would define the roles and responsibilities of all the stakeholders at the national level.

E: Organizational and Institutional Arrangements

10. The Network would establish its own governance structure based on the models established by GFAR for other developing region's networks. It would set the specific bylaws and set its annual program of operations with clearly defined roles and responsibilities for each member and the milestones to be delivered by the members over the planning period. It would be represented in the AARINENA.RAIS governance structure through both the FAO representatives and the member NARS representatives. This will establish synergies with all AARINENA.RAIS activities. FAO would facilitate this process, and interact with the national institutions in each member country in support of their own efforts to develop their national knowledge and information management systems. The network would be supported financially by the national contribution of its stakeholders as well as the additional contributions to be mobilized from its potential donors.
11. FAO and AARINENA would support the capacity building efforts of the network member institutions and facilitate the provision of software necessary to activate the network operations. The effort by FAO would therefore, have to be country specific to be tailored to the needs of each institution. The network has to be driven by its members who must assume the full responsibility for its operations and sustainability.
12. FAO along with other institutions that support AARINENA would assist the network in the development of the specific M&E system and the conduct of an external evaluation of the network performance over time to establish credible records for building confidence with the

donor community in support of its further development.

F: The Next Steps

13. This Concept Note has been prepared for the consideration of the Executive Committee of AARINENA at its next meeting at Aleppo, Arab Republic of Syria. Once endorsed by AARINENA, FAO will facilitate moving the process forward after full consultations with the national agricultural and rural institutions of the member countries, and relevant regional partners, towards the full establishment of the network.

Annex

1. NERAKIN REGIONAL SYSTEM SPECIFICATIONS AND COMPONENTS

The Near East Rural and Agricultural Knowledge and Information Network, NERAKIN will be developed building on the following:
   a) NARIMS successful implementation modality (FAO Project TCP/EGY/3001 in Egypt)
   b) Development of a Regional Digital Library integrating other modules (Agriculture E-accession, E-journal, E-Books, E-learning, country profile modules), based on the recommendations received from the seven participating countries in the sub regional training workshop "Digital Libraries for Management and dissemination of Agricultural knowledge for Development" organized by FAO and AOAD in January 2006,
   c) Development of a module on Electronic Community System (ECS) at the Regional Level which will include mainly two components, an Electronic Forum for discussion and a Question-and-Answer service,
   d) Implementation of the Open Archives Initiative and development of applications layers for open archives initiative which will provide excellent opportunities for service providers through creating gateways for regional collaborative knowledge networks as cotton gateway, olive gateway, date palm gateway, medicinal plants gateway and others.
   e) Global.RAIS and ICM4ARD activities of AARINENA
   f) ICT-KM activities of CGIAR Systems Office related to the NENA Region

Ultimately, NERAKIN is expected to be composed of eight components:
   1. **Near East Agricultural Research Knowledge and Information System (Developed and accessible) which includes an agricultural research management information system (ARMIS) component and contributes to the AARINENA.RAIS and EGFAR activity in this area.**
   2. **Near East Regional Agricultural News (Developed and accessible)**
   3. **Near East Digital Agricultural Libraries System (still under Development)**
   4. **Near East Thematic Knowledge Gateways/Networks Using Open Archiving Initiative (To be developed at next stage).**
   5. Near East Statistical Information System (Developed and accessible - FAO and AOAD Collaboration)
   6. Near East Regional VERCON (To be developed at later stage)

7. Near East Marketing Information System (To be developed at later stage)
8. Near East Food Security Information System (To be developed at later stage)

Note: This proposal only covers the first four components

2. <u>NERAKIN SPECIFICATIONS:</u>

2.1 The NERAKIN architecture on the one hand will enable all participating institutions to upload their materials in a centralized system, and on the other hand will allow for the development of distributed systems in each country.

2.2 NERAKIN will be designed for the whole region with focus on the countries that are lacking networking infrastructure facilities and technical/human resources capabilities.

2.3 NERAKIN will be available online for all member states in Near East and North Africa Region.

2.4 NERAKIN will be designed for building regional infrastructure with state of the art platform open source technology and in compliant with New Initiative on Agricultural Science and Technology Information and Knowledge sharing and international standards including AGRIS AP/Dublin Core Unqualified Elements/Open Archives Initiative/Open Access publishing standard.

2.5 Its architecture is based on region – countries/member states – communities – NARS (MOA/Research Centers/universities) – Information centers/Libraries. Build the Structure of the application to support
   - Region (Near East)
   - Countries (Egypt, Jordon, Oman, Qatar, Yemen, Libya, Sudan, Morocco, Iran…etc)
   - Communities (Ministries, Research Centers, Specialized Research Centers, Universities, Libraries, Farmers Organizations, and Non Governmental Organizations….etc)

2.6 Technology is only one factor that will help in achieving other key factors for successful implementation on a regional basis, such as institutional development, implementation capacity, mobilization of human resources for a strong capacity building efforts.

2.7 The proposed NERAKIN will be introduced in a step by step mode, creating clusters of collaborating centers and adding new centers continuously.

2.8 The main investment to achieve this network architecture is capacity building with partners to allow them an efficient content management in their research institutions. Here, substantial investment will be necessary. In addition to the efforts and involvement of international and regional organizations in this regard, regional project document will be formulated for submission to international donor organization as agreed by AARINENA Secretariat during the ICT General Assembly meeting that held at Amman, Jordan in April 24-27, 2006.

3. <u>NERAKIN REGIONAL SYSTEM COMPONENTS</u>

3.1 The NERAKIN components to be developed in the first phase will be: (1) the Near East Agricultural Research Knowledge and Information System and (2) the Near East Regional Agricultural News. The regional component will include the following structurally-linked modules:
   1. <u>Regional Document Repository Information System</u>: A web-based Arabic/English bilingual system capturing and disseminating information on technical reports, publications and documents produced by the entire Ministry of Agriculture and Agricultural Institutions and other relevant sources in the countries of Near East Region. The development of a

national Open Archive on agriculture science to increase the visibility and diffusion of the nationally produced publications will be introduced.

2. Regional Institutes, Information System: A web-based Arabic/English bilingual system capturing and disseminating information about institutes, departments, and laboratories in the agriculture sector in the countries of Near East Region.

3. Regional Experts/Personnel Directory: A web based Arabic/English bilingual information system capturing and disseminating information about personnel and subject experts (gender disaggregated) in the agriculture sector in the countries of Near East Region.

4. Regional Project information system: a web based Arabic/English bilingual system capturing and disseminating information about development and research projects carried out in the entire ministry of agriculture and elsewhere in the national agriculture sector in the countries of Near East Region, including project title, location, subject, objectives, summary, dates, main findings and funding agency.

5. Regional News and Events Information Management System: a specific content management system based on a web based application software tool developed in-house and provided by FAO. It will contain agricultural and rural news of the countries of Near East Region

6. Regional Discussion Forum for community of practice: an electronic forum (in Arabic and English) to enable researchers, professional, extension workers, and other interested stakeholders to communicate informally through interest groups in a variety of subjects.

3.2 All modules in NERAKIN will be developed using MySQL open source database engine and DotNet Frame Two/Three platform for front-end as well as content management system (backend).

3.3 All modules in NERAKIN will be absolutely portable, to be deployed easily in other machines and to be operated on Windows and Linux platforms.

3.4 Offline system will also be available with capability for exporting/importing facilities with the regional network as well as with International AGRIS Network. Each information centre or library in each individual country in the region will be an AGRIS Resource centre.

4. NERAKIN NATIONAL SYSTEM COMPONENTS

In the first instance, national networks will be developed in up to nine countries/NARS and the components will share a common relational database to enhance the integrity and efficiency of the whole system and will also provide a gateway to the regional component in order to enable national stakeholders accessing the regional component and use all the facilities it provides. The national component for each country will include the same structurally-linked modules as the regional system:

1. Document Repository Information System
2. Institutes Information System
3. Experts/Personnel Directory
4. Project information
5. News and Events Information Management System
6. Discussion Forum for community of practice

Background on
Advocacy Session on Investing in Information for Development

Programme

The programme for the day was built around the IMARK Module entitled "Investing in Information for Development". Participants worked through three management "cases". The topics covered in the cases were taken from units of the Module, specifically Unit 2 (Strategy), Unit 4 (Information Dissemination), and Unit 5 (Organization and Management).

Format of Cases: Each case takes approximately two hours.

Introduction (Presentation from the Module)	15 minutes
Individual Reading of the Case	15 minutes
Discussion of the Case in Small Groups	45 minutes
Discussion of the Case in Plenary Session	30 minutes
Wrap-up (including Presentation from the Module)	15 minutes

Programme:
10:00-12:00	Case #1: An Information Strategy for NARI
12:00-13:00	Case #2: Outsourcing at KIA
13:00-14:00	Lunch
14:00-15:00	Case #2: Outsourcing at KIA – (Continued)
15:00-15:15	Tea
15:15-17:15	Case #3: Information Dissemination in the ARC
17:15-17:30	Evaluation and Wrap-Up

Resource Persons:
Stephen Rudgard, FAO
Magdi Latif, FAO/RNE
Mahmoud Rafea, NARIC, Egypt
Mohamed Kassem, AERDRI, Egypt

Resource Materials:

Participants received printed notes and the IMARK Module, "Investing in Information for Development" on CD. They were encouraged to use this CD as a self-teaching resource in their convenient time.

Methodology:

The format included lectures and group discussions. Critical issues and approaches will be explained in detail, such as human resources management, adoption of new technologies, planning of investment, negotiation with information providers, and monitoring and evaluation. The participants will be provided with courseware materials in printed and electronic format.

Advocacy Session on Investing in Information for Development

Case 1: An Information Strategy for NARI

Dr. Khadar looked at the papers on his desk. Each day there seemed to be more. In one pile were several messages relating to questions about how to coordinate information activities, whether information services were appropriate to the audience's needs, and even requests for funds to cover information-related costs. What did these people expect? He had limited resources. How was he supposed to make decisions?

Dr. Khadar was the Director of the Crops Research Department at the National Agricultural Research Institute (NARI). The NARI family of organizations included 6 research departments at headquarters, 7 specialized institutes, and 16 agro ecological research stations. In 2005, scientists in these organizations were carrying out more than 500 research projects.

One of his responsibilities was for development of information management (IM) at NARI. This responsibility for IM was a new one for Dr. Khadar. He was actually a biometrician by training. When the NARI Executive Director had decided three months ago that NARI had to do something to keep up with "the information revolution", he had turned to Dr. Khadar. Why? None of his colleagues had an explanation, except that somehow his background in biometrics and computing seemed to make him the best candidate for the job. At the time, he had wondered why the head of the Computer Unit hadn't been asked, but the President had wanted someone on the NARI management board to play the lead role.

Anyway, there was no sense asking too many such questions. He had the job. But now what should he do? Information seemed a very big field. His head was full of ideas and concepts that he wasn't fully familiar with, including complex Web-based information systems, multimedia CD-ROMs, and new applications and technologies. There was no doubt that "the information revolution" was happening. He knew that other national agricultural research organizations in the region were developing networks and specialized information systems, and many NARI scientists were demanding personal access to the Web. What role should NARI headquarters play in directing and supporting IM development?

Dr. Khadar saw two policy options. The first was easy: to continue as is. Let each department, institute, and research station go on developing the systems as they wanted to. Dr. Khadar thought that the case against such an option seemed obvious. Some of these units would spend money on systems they didn't know how to use. Others would invest in software applications no one else was using, and others would duplicate investments that other units had already made. On the other hand, could an organization like NARI really plan its IM development?

Dr. Khadar wasn't sure. Soon after he had been given the assignment, NARI had sent him on a training course at the National School of Management (NSM). There the professors had told him about the importance of strategies and plans. He had heard much talk about priority-setting and resource allocation. He wasn't sure how it all applied to IM. He wondered if maybe IM was a field that was moving so fast that it couldn't be planned and controlled in a normal sense.

But – there was the second policy option: an information strategy.

If they did need an information strategy, then how to begin? Dr. Khadar remembered other presentations at the NSM. One of the professors there had argued that a large organization should not think of one strategy for "information", but rather should try to break up the subject into component parts. Dr. Khadar wondered about the relevance of this principle for NARI. What resources and activities should be included in the strategy? How should existing constraints be addressed? One of the major themes in the MSM course had been that today "all information management issues quickly become information technology issues".

Just then the phone rang. The Executive Director was on the line. He reminded Dr. Khadar that a World Bank team would soon be arriving in the country to discuss plans for a new agricultural development project in which NARI would have a major stake. The Executive Director laughed. "You know the Bank", he said, "it's full of economists who want to have strategies and plans for everything. I would like NARI to allocate some of the money to information, and if so then we're going to have to present a strategy. I'll leave it up to you to figure out how we should develop one. By next Monday morning, I'd like you to send me a draft Terms of Reference (TOR) for a strategy development team."

As soon as the President had hung up, Dr. Khadar took out a piece of paper and wrote the following memo to the Heads of Department in NARI.

NARI will be making a bid for funds from the new World Bank loan for "Agricultural Services Development", some of which will be allocated to its information services. The Bank Appraisal Mission has requested an outline information strategy, before beginning to identify the component. Through this memo, I am advising colleagues that we need to meet to address this, and I note some issues to stimulate and guide your thinking prior to the meeting.

1. How should we organize the development of an IM strategy? Should we do everything ourselves or do we need to involve outsiders? If the latter, what are the potential risks and benefits?

2. What should we do first? What types of background analyses should we prepare?

3. After we have done our preliminary work, what are likely to be the main steps and milestones in our strategy development process?

4. Whom should we consult during this process?

5. Are there other headings that should be added?

Case 1: An Information Strategy for NARI - Working Group Output

Question 1A: *How should we organize the development of an IM strategy?*
> The Information Strategy offers a framework with a direction and priorities which can guide staff and other stakeholders in managing their various information-related activities. Also, it helps them understanding the relationship between them. The development of an IM strategy should be

organized as follows:
- Executive Summary –provides a quick overview of the full-length report;
- Background - explanation of the context (overall organizational strategy), and the strategic issues faced (key external factors, and any explicit constraints) related to information;
- Objectives – in relation to information management and systems for tasks such as acquisition and dissemination. Three important generic types of subjects in an Information Strategy are content, technology and use. Clear reference must be made to NARI's overall objectives;
- Options – review of the range of alternatives and their relevance to strategy and risk factors leading to identification of priorities;
- Outputs - outline of key information products and services to be acquired and disseminated, and the internal/external audience(s) and markets for them;
- Requirements – overview of investments, organizational structures, resources (e.g. IT), and skills;
- Conclusions – leading to which options you have chosen;
- Annex: Implementation plan(s) – taking into consideration, human, physical and financial resources, specific steps to be taken in order to implement the strategy, with a schedule and assignment of responsibilities.

Question 1B: *Should we do everything ourselves or do we need to involve outsiders? If the latter, what are the potential risks and benefits?*
- Establish a committee composed of representatives from Research institutions, IM/IT specialists, Decision makers and Stakeholders. However, NARI's own information management specialists should have a key role in developing the strategy.
- Specialized consultants from outside NARI should be involved, in terms of (a) audiences for NARI's information products/services, and (b) resource persons experienced in developing strategies.
- The preferred option was to include specialized consultants from outside in development of the strategy along with specialized representative from NARI who will report to the committee. The following is the list of expected benefits and risks:

Benefits	Risks
- May use high capability and expertise - May ensure good outcomes in line with standard - May compensate for insufficient internal capacity in strategy development - May enable comparison of existing systems with other (external) options - May build internal capacity - May bring in new perspectives and ideas on strategic issues in IM - May bring in complementary skills that did not already exist in the organization - May be a mechanism to involve audiences in strategy exercises	- May increase costs - May not address organization's needs effectively - May not result in internal "ownership" of the document - May be difficult to locate the right people - May not understand the core "business" of the organization - May not include all stakeholders - May try to impose inappropriate strategic directions

Question 2: *What should we do first? What types of background analyses should we prepare?*
- Form a strategy development team, and recruit external resource persons;
- Prepare a concept note and ToR for the strategy exercise (background, problem,

possible alternatives, deliverables, resource requirements, duration);
- Identify funds and other necessary resources;
- Identify needs/requirements of stakeholders taking into consideration content, current strategies, information flow, media and libraries (documentation/classification);
- Identify beneficiary (stakeholders)
- Identify existing situation and available resources (human, physical, and financial)
- Analyze national and organizational agricultural strategy(ies) and policy(ies).

Question 3: *After we have done our preliminary work, what are likely to be the main steps and milestones in our strategy development process?*
- Define the Visions/Goals of the IM strategy
- Define the objectives for information-related activities that will enable the organization to achieve its overall objectives;
- Undertake a SWOT analysis;
- Analyze existing information management needs, activities and processes, including consultation with stakeholders and audiences;
- Identify strategic alternatives and options;
- Select strategic priorities and options;
- Present strategy to organization, to management, and to staff to for inputs and feedback and their consensus; Consult with stakeholders to get their inputs and feedback
- Approve and disseminate strategy.

Question 4: *Whom should we consult during this process?*
Internal Consultation: Decision Makers, Managers of Departments, Institutes, Researchers, and Information Specialists. Special attention should be given to financial authorities to get their support. External Consultation: Ministries, Audiences/Beneficiaries (Stakeholders)

Advocacy Session on Investing in Information for Development
Case 2: Outsourcing at KIA

Mr. Banda has just been given a new headache by his Governing Board. The Board has raised questions about his publishing programme, and it has asked him to come up with a new plan to justify future activities and investments.

Mr. Banda is Director of Information Technology at the Kochi Institute of Agriculture (KIA). Eighteen months ago he created an Electronic Publishing Unit (EPU). The KIA president had asked him to take this action, but it had not made him popular with the Director of the Communications Department which had traditionally handled all KIA publishing activities. He had just followed orders. The President had felt that most staff in the CD did not have the experience and skills to handle many of the new electronic media that were emerging.

The first job that Mr. Banda had given to his new EPU had been to create a KIA website. He had wanted the institute to have a presence on the WWW, somehow, though at the time KIA did not even have a reliable Internet connection. His solution had been to ask the national Ministry of Agriculture to host the KIA website on a temporary basis. This arrangement seemed to have worked. The EPU had developed materials and had sent them to the Ministry on CD-ROMs. The website was up-and-running and everyone seemed impressed! And now, continuing good news, just three months ago, KIA had gotten connected to a public sector network and now had much better Internet connectivity itself. Even so, Mr. Banda had not yet actually moved the website to a server at the KIA Computer Centre.

Some problems solved, but others were appearing… Almost as soon as the new Internet connection had become operational, the KIA Publications Committee had asked Mr. Banda to add both the Annual Report and several items from the Working Paper series to the new website. No one on the PC seemed really to understand what would be involved. The EPU itself was still small. The website was still being hosted somewhere else. Staff members started into their new jobs anyway and were doing well, until suddenly the head of the EPU resigned to join a private sector company at a much higher salary. Mr. Banda urgently advertised for a replacement, but KIA received no applications. He had no alternative but to jump in himself, he and his EPU staff worked several 16-hour days, and they were finally able to finish the year 2004 material and to publish it on the website. But how would he manage in 2005?

As if all that weren't enough, the KIA Extension Department had then approached Mr. Banda with a plan to create a series of electronic materials for a new farmer training service. The ED wanted multimedia CD-ROMs for use at regional research stations and district extension centres. And it had the funds to pay (from a World Bank loan). What could Mr. Banda say? The EPU staff had little experience in the production of multimedia materials and there was still a vacancy at the top. In some desperation, therefore, Mr. Banda had contacted colleagues at the Computer Centre in the Ministry. Could they help, just as they had done before with the website? Their answer had been "yes", but this time they said that they would have to charge KIA for their services. Mr. Banda was not so sure. The price that they were quoting seemed a bit high, and he had heard gossip that the quality of service being provided by the Ministry had been declining. One reason was that there had been a "brain drain" from there too to the private sector.

Then, just last week, Mr. Banda had had a visit from a representative of Ajax Media Services, a new local ISP (Internet Service Provider). This woman had said that AMS could provide KIA with a high-speed, broadband Internet connection immediately. It could also host the KIA website, and would be willing to assist with the preparation of materials for publication either on the website or through other media.

Mr. Banda was tempted. There seemed to be many arguments in favour. AMS had a growing list of customers and a good reputation. The connection it was offering was much faster than the one KIA now had. The EPU could certainly use help with the preparation of the 2005 Annual report and with the materials for the Extension Department. But the big argument against was cost. If he recommended to the President that KIA go with AMS on a one-year trial basis, he would be spending well more than 50% of his current annual budget on this single contract. Could he afford it? He had heard that the World Bank might be coming in with yet another new project, and that KIA might get some support, but no one knew for sure. He also guessed that AMS charges might go down as competition increased, but he did not know that for sure either. What to do? By next Monday afternoon, Mr. Banda had to have a draft set of recommendations ready for the Governing Board. He could think of three options right at the moment, though he realized that others might occur to him over the weekend.

Option 1: The Status Quo
- Continue with the current public sector Internet connection.
- Continue to have the Ministry host the KIA website.
- Continue to have the EPU do all web development and product development work.

Option 2: A Contract with the Ministry
- Continue with the current public sector Internet connection.
- Make plans to move the KIA website to an institute server.
- Make agreements with the Ministry for web development and product development work.

Option 3: A Contract with Ajax
- Sign a contract with AMS for a new broadband Internet connection.
- Host the KIA website on an institute server.
- Sign selected contracts with AMS for at least parts of the web development and multimedia product development work.

Mr. Banda wonders which option he should choose. What will be the effects of each of the three options on his programme, on his IT infrastructure, and on his EPU human resources? What are the pluses and minuses of each choice?

Case 2: Outsourcing from KIA - Working Group Output

Option 1: The Current Status
- Effects on programme: would lead to decline in quality of products and services
- Effects on human resources: would have associated skills/capacity development, but

likely to cause overload
- Effects on IT resources: would not develop internal infrastructure

Positive effects	Negative effects
- Lowest costs - within current budget - Services should be sustainable	- Dissatisfaction and lower quality of service - Overload on staff and IT resources - Staff dissatisfaction - Inability to cope with evolving demand - Possible conflict between KIA departments - Limited resources and Limited bandwidth - No scalability and Lack of control - Lower quality of work - Program will be declined

Option 2: A contract with the Ministry
- Effects on programme: would lead to decline in quality of products and services
- Effects on human resources: would not develop internal capacity(ies)
- Effects on IT resources: would enhance internal infrastructure

Positive effects	Negative effects
- Good quality of content - Improvements in reductions of workload of EPU staff - Good connectivity - Improvement in IT infrastructure - Take advantage of Ministry's complementary capacities - Closer ownership of the website - Need to define quality standards - Strengthen Partnership - Increased KIA focus on its "core" business - Better performance	- Higher costs - Less control over quality - Slow process and delivery - Loss of audience confidence - Less capacity

Option 3: A contract with Ajax
- Effects on programme: would lead to improvements in poorer quality products and services
- Effects on human resources: would not develop internal capacity(ies)
- Effects on IT resources: would enhance internal infrastructure

Positive effects	Negative effects
- Improved delivery of products/services - Improved quality and customer satisfaction - Increased KIA focus on its "core" business - Improved web connectivity (speed & reliability) - Improvement of website accessibility performance - Can be a temporary measure while KIA improves its own capacity	- Highest cost - Uncertain sustainability - Stronger ability to adapt to external changes - Less ownership

Preferred options: First choice - Option 3 if sufficient funding is available, otherwise Option 2 would be preferable. Option 1 was not approved in any case.

The following two tables of the other two working groups outputs are also supporting the outcome resulted from the above analysis made by the first work group for the three options:

The output of the second work group

Options	Weighted Factors				
	Financial Resources	**Programme**	**Infrastructure**	**Human Resources**	**Users**
Option 1					
A	3	1	1	1	1
B	2	1	2	2	1
C	4	3	2	2	1
					27
Option 2					
A	2	3	1	1	2
B	2	3	3	2	2
C	2	2	2	3	2
					32
Option 3					
A	1	4	4	4	4
B	1	4	4	3	4
C	1	3	3	4	4
					48

The output of the third work group

Indicators	Weight	Option 1	Option 2	Option 3
Cost	3	+	-	-
Time	2	-	+	+
Quality	3	-	-	+
Independence	1	+	-	-
Expertise availability	3	-	+	+
Threat	4	-	-	+
Human capacity building	2	+	-	-
Total Weighted Score		**6**	**5**	**12**

Advocacy Session on Investing in Information for Development

Case 3: Information Dissemination in the ARC

Mr. Banda has been given a new headache by the Management Board at the Agricultural Research Council (ARC). The Board has just raised several questions about his management of ARC's information dissemination activities, especially in the context of a new emphasis on electronic media, and asked him to come up with a plan for dissemination activities which also covers the needs for new investment.

Mr. Banda is the Assistant Director General in charge of Administrative Services, and is located in the headquarters of the ARC. Amongst his other duties, he has overall responsibility for the library, for publications, external communication, and also for IT systems and infrastructure at HQ and in all of the ARC's research institutes and stations. The ARC's six scientific institutes provide the information content for technical publications published at the HQ level, although he has had some quite tense discussions with Directors in the past about trying to bring a more strategic approach to their own publishing programmes.

Four years ago, Mr. Banda created a new Electronic Publishing Unit (EPU) by reassigning existing staff at the Director General's specific request. Traditionally, publishing activities had been handled by the Communications Unit and electronic systems by the Computing Unit, but there was a need for a new blend of skills to handle the new media. That decision had not made him popular with the Head of Communications or the Head of Computing.

The first task of the new EPU had been to undertake a major overhaul of the ARC website, so that the organization had a more appropriate presence on the Web. The IT Department had handled the hosting of the website, originally through the General Science Council, but latterly using the ARC's own web server acquired two years ago.

Then, at the end of 2003, the Board asked him to add the Annual Report and all of ARC's technical newsletters to the website. This put more stress on the EPU team in terms of collection and preparation of the material. The website is now up-to-date with those materials, but he does not know how they will cope in the future given all the other demands.

In 2004, he had approved the request from the Library to develop a publicly-accessible digital archive of the ARC's own technical documents, bulletins and publications, in the framework of the AGRIS network, published on the ARC website. The development work had kept the Library and EPU staff busy for over a year, and now there were demands to upgrade and extend services from the ARC institutes which meant he would have to ask them to contribute resources.

As if that hadn't been enough, the ADG in charge of Research had approached Mr. Banda two months ago with a big plan to create a series of electronic reference resources for a new service to support rural extension agents. They wanted a new series of multimedia resources for publication on the website, and also on CD-ROM so they could be supplied to the provincial extension offices. He is wondering what to do with the request as the EPU simply does not have the number of staff or the skills to take the job on, even though he can see the value of the new resources.

This latest request made him realize that the ARC has not invested in ensuring that its information is disseminated effectively and efficiently, and that resources are used properly. There had been no systematic market research on its audiences and clients or the demand for its information products and services, especially in relation to other sources of information. They do not plan ahead for the introduction of new information technologies, new methodologies, new audiences, new media and new types of products and services.

Then most recently, in a quick conversation with the Head of International Relations two months ago, it became clear that there will be a new source of investment on the horizon, because a long-promised World Bank National Agricultural Innovation Project is going ahead in 2007. Knowledge and information exchange, as well as information technology and systems development, are earmarked for new investment, so he will be looking at significant new funding support to develop the information dissemination programme.

The Board has asked him for an outline of a Plan in a month's time. So, Mr. Banda decides he must form a team of the Heads of Units at HQ and representatives on the six institutes, in order to try to achieve a truly ARC-wide approach. He wonders how the team should start their work, and he writes down some general topics on which they will need to have background data and information:
1. Audiences;
2. Existing products and services;
3. Existing capacities/resources (human and technological); and
4. Competitors.

What aspects of these four areas should they investigate? How should the Plan be structured?

Case 3: Information Dissemination - Working Group Output

14. Most organizations produce information. However, often the information they produce is not disseminated effectively. Three common constraints to effective dissemination:
    - Organizations do not undertake systematic **market research** on their audience(s) and clients.
    - They do not have **procedures** in place for continual **analysis** of their **products**, services, and dissemination mechanisms.
    - They do not **plan** for the introduction of new information technologies, new audiences, new media, and new types of products and services.

15. It is important to ensure that any information dissemination plans are compatible with the organization's strategy, if the latter already exists. An Information Dissemination Plan needs to be defined at least annually, and should ideally be revisited at least every three months to check whether adjustments need to be made.

16. The preparatory tasks to design a dissemination plan are as follows:
    External Analysis
    1. Identification and analysis of <u>existing and potential audiences</u>
    2. Assessment of your information competitors and your "comparative advantage"
    Internal Analysis

3. Description of <u>current information products and services</u>
4. Evaluation of your <u>current and future capacities</u> for effective information dissemination

17. To build an information dissemination plan, there are two kinds of analysis that should be performed: "external" and "internal".
    - Analysis of your audience(s):
      their identities; their characteristics; their specific needs; the kind of content; the type of medium; and priorities among them.
    - Analysis of the market trends and environment affecting the demand for your information products and services.

18. The following is the work group output on the basic steps for the design and implementation of a dissemination plan:

Audiences
- Who are they?
- What do they need?
- When did they want?
- Where are they?
- What level of sophistication?
- Subjects to be selected
- How we influence them
- Media preference

Products/Services (P/S)
- Newsletter
- Reports
- Journals
- Books/pamphlets
- Statistics
- Website
- Radio
- SMS
- Extension documents/brochures
- Multimedia(A/V) and CDs

Quality of contents (P&S)
- Accuracy
- Accessibility
- Validity
- Simplicity/Complexity
- Consistency
- Versatility
- Currency
- Timeline

- Usability

Staff	Management
− Expertise − Numbers − Adequacy − Skills and Training − Productivity − Job security − Incentive − Gender − Brain drain − Communication − Awareness of customers/stakeholders	− Structure − Procedures − Roles − Workflow − Goals − Monitoring & Evaluating − Direction − Quality control

19. To analyze the internal aspects of dissemination plan of an organization:
    - Examine products and services that you have in your current portfolio, and the resources and management procedures that you have in place to create and disseminate them.
    - Analyse issues such as Content, Media and Partners, keeping in mind that your audience(s) needs determine both the content and the media used (and not vice-versa).
    - Assess the quality of the products and services of your organization, and see how are they disseminated or shared with the users.
    - Analyse your organization's organizational capacity and performance

    The dissemination plan should define the following aspects of products and services offered by the organization:
    - DESCRIPTION (Content, Medium, Format, and Packaging)
    - CHANNELS (Frequency and Agents/Partners)
    - PRODUCTION (Process and frequency and Schedule)
    - MARKETING (Promotion and Advertising)
    - FINANCIAL ASPECTS (Income from public funds, sales, and/or sponsorships, Expenditure from costs of production, marketing and dissemination)
    New products and services may require a financial or business plan, projecting income and expenditure over two-three years.

20. To conclude, the basic steps for the design and implementation of a dissemination plan:
    - Analysis of the information needs of your various audiences.
    - Assessment of your current products/services and your dissemination services.
    - Examination of the market, with particular focus on competitors and partners.
    - Understanding the relationship between audiences, content, digital formats and media.
    - Setting priorities.
    - Assessing costs and benefits.

Minutes of the Fifth AARINENA-ICT/RAIS
Steering Committee Meeting
Tuesday 29 May 2007
Cairo, Egypt

Opening of the meeting

1. The meeting has been held, on 29 May 2007, during the Regional Training Workshop on "Information Systems for Agricultural Research for development", conducted in Cairo, Egypt

2. Representatives of the AARINENA-RAIS-ICT Steering Committee from AARINENA five sub-regions and representatives of FAO, and AOAD have attended the meeting.

3. The chairman of The Steering Committee (Dr. Sallam),, started this meeting by a welcome statement for all participants wishing them a successful meeting.

Approval of the meeting agenda

4. The chairman of The Steering Committee of ICT/RAIS presented the tentative Agenda which has been submitted earlier to all SC members. The participants adopted the following Agenda:
   - Opening and welcoming by the chairman
   - Discuss progress and actions taken by member countries on the establishment of information focal units.
   - Progress and utilization of NARIMS
   - Discuss actions to be taken to implement the 2007-2009 ICT-RAIS work plan.
   - Any emerging issues raised by participating members
     (NERAKIN Regional network will be discussed)
   - closing the meeting

Proceedings of the meeting

5. The chairman of SC of ICT/RAIS presented actions taken and progress made since last meeting (summary of the progress made is shown in annex 2);

6. Reference to the establishment of National Focal Points/Units within AARINENA members countries, he stated that there was poor interaction with NARS leaders and stressed on continuing efforts to strengthen Focal Units at national levels.

6. He mentioned that the concept note that was prepared and revised with emphasis to some priority actions and submitted to Dr Durah from the Biodiversity International to secure funds. Dr Durah, according to the Chairman, sent letters to all SC members of ICT/RAIS asking for letter of intent. The ICT/RAIS Steering committee members agreed that more elaborations and clarifications on areas of collaborations are still needed from Dr Durah to ensure that the proposed concept note goes in line with AARINENA ICT/RAIS work plan.

7. Regarding the focal points capacity building workshop that was planned to be held in Oman, it was agreed that it is still applicable with the assistance of Dr Hamdan (AARINENA Executive Secretary) to discuss and arrange for possible sources of funds and the contributions from ARC in Oman.

8. Regarding progress made in NARIMS, Dr Ahmed Rafea, informed participants that, NARIMS is in final testing and training material would be delivered to AARINENA very soon.

9. With regard to Near East and North Africa Rural and Agricultural Knowledge and Information Network (NERAKIN) as a tool, the ICT/RAIS SC adopted it as a platform for knowledge sharing and collaboration for development in NENA region. AARINENA will champion its implementation and decide on the course of actions required. ICT/RAIS SC also recommended that NERAKIN is to focus on the thematic regional network module and NARIMS is to focus on national level as it was agreed upon in previous meetings and recommended that FAO continue to provide facilitation, support and maintenance for the system. Also, it is recommended that Information of both the NARIMS and the NERAKIN are put on AARINENA.RAIS website and electronic versions of both reports are circulated.

10. Regarding tools to be implemented at national focal points level, ICT/RAIS SC agreed that, it is up to member countries to use existing tools such as NARIMS or NERAKIN and recommended to provide member countries with Beta copies for testing prior to their implementation.

XXXXXXXXXXXXXXXXX

Annex 1

List of participants:

Name of Participant	Countries Invited	Tel/ Fax	E-mail
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Annex 2
ARRINENA ICT-RAIS SC brief progress notes

Dr. Mohamed N. Sallam, Chair of the Committee

Cairo- May, 2007

Introduction

This brief progress note is prepared for the ICT-RAIS SC second meeting which would be held as a side event in Cairo in May 2007. The first meeting of the Committee was held in New Delhi, India in November, 2006 during the GFAR conference. During the first meeting, ICT-RAIS work plan for 2007-2009 was discussed and approved. Also the issue of establishing focal units was discussed where focal units TORs were approved. This brief progress report intends to highlight the most important issues of progress made so far since the Amman meeting in April 2006. Some important constraints affecting progress would also be indicated.

Progress made so far:

The main activities and steps made since the Amman meeting in April 2006 can be summarized as follows:
  - Attend AARENINA General assembly meeting in Amman (April, 2006)
  - Prepare ICT-RAIS minutes of Amman meeting
  - Prepare ICT-RAIS draft work plan 2007-2009 (June 2006)
  - Coordinate GFAR-AARINENA conference in Sanaa (June 2006)
  - Prepare draft TORs of Focal Units through coordination with regional Fora
  - Follow up establishing focal units with all NARS leaders (sending emails, letters to all leaders).
  - Prepare concept note for strengthening NAIS and RAIS through focal units
  - Attend APAARI meeting in Bangkok (July 2006)
  - Corresponding with some donor agencies, such as ICARDA, FAO, GFAR, for seeking training support.
  - Attend GFAR meeting in India (November, 2006), and ICT meeting.
  - Conduct the First ICT-RAIS meeting in New Delhi, November, 2006.
  - Work plan was revised and sent for comments to all ICT-RAIS SC members.
  - Established a Focal Unit within AREA-Yemen and ARC-Oman as separate units concerned with strengthening NAIS- some steps were taken and data entry was prepared.
  - Corresponding with all NARS leaders to encourage them establish similar Focal units
  - Coordinate with ARC-Oman for hosting the NIFUs training workshop meeting in Masqat-Oman.

- Coordinate with and report to AARENINA Executive Secretary in all ICT-RAIS aspects and for having training on NAIS and focal units.
- Follow up the NARIMS proposal with arrangements for training on this suite of tools.
- Meet with ICARDA and Bioversity information officials to discuss possibilities of cooperation in capacity building programs.
- Efforts in developing AARINENA website by Mrs. Taraneh.
- Coordinate with Dr. Durah in converting some important issues/activities of ICT-RAIS work plan into a concept note to be funded by some donor agencies.

Main constraints:
- Lack of funds for implementing the prepared ICT-RAIS work plan, except efforts and arrangements made by Dr. Hamdan in maintaining some activities.
- Lack of proper interactions and responsiveness by NARS leaders and some ICT-RAIS SC members concerning the establishment of focal units and sharing experience between member countries.

Further Elaboration on NERAKIN Modules

Introduction
NERAKIN package is developed by FAO and is designed to provide standard mechanisms intended to augment the capacity of national research and development institutions in the region to pursue effective content management and exchange of information and knowledge in support of rural and agricultural development in the region. Subsequent enhancement of improved information generation is also foreseen as a result of the expected continuous supply of adequate information. In adopting this package, subscribing focal points would ensure membership in national and regional networked portals. They would also become legible to contribute into and access the international stream of information.

NERAKIN is composed of two web interfaces: (1) Back end interface, for data content management and (2) Front end interface, for information retrieval.

Presently NERAKIN website structure includes 4 modules namely, document repository, projects, personnel and institutions. The package is expandable to accommodate such other modules as news, events and thematic.

An elaboration was given on an introductory overview on NERAKIN document repository module, the front end interface access, browse and search functions; the back end interface content management system, in which the roles of the three user levels (institution data entry, institution administrator and institution publisher) were emphasized

DOCUMENT REPOSITORY MODULE:
This module keeps track of publications generated by the authors of NERAKIN members. Each publication has specific data elements such as abstract, authors, keywords etc. The NERAKIN system provides a back end to store/update publications' data elements and a front end for browsing and searching.

NERAKIN FONT END INTERFACE
Users of NERAKIM front end interface can perform three functions (access, browse and search). Emphasis is drawn here to front end of document repository.

1) **Access Function**: The user in this function opens the browser by writing the address: http://www.nerakin.net/index.aspx, the website would then be displayed. He/ she could then select the country to be browsed from the country drop down list. The user can browse the whole document repository if he does not select a specific country.

2) **Browse Function**: The user clicks **Document Repository** on the left menu of the home page. A submenu will be to browse *Document by Subject, Document by Type, Summary Report and Advanced Search.*

- Clicking on **Documents by Subject**, the number of documents published by NERAKIN will be displayed according to AGRIS Subject Category Fields and Subfields. For example, on selecting the major field **Administration and Legislation,** two subfields are displayed (*Legislation, Public administration)*, the number displayed at the end of the field indicates the number of subfields under that major field and the number at the end of every subfield indicates the number of documents under that specific subfield. On clicking the subfield *Legislation,* documents under which is displayed, and clicking on any document thereof, a new window named "NERAKIN Record" will appear to display such information on the selected item as *Title, Author, Publication date, Abstract … etc.* Clicking on **XML** the document information will be displayed as an *XML file.*

- Clicking on **Document by Type,** publications authored by NERAKIN contributors will be displayed according to such types as *journals, books, thesis … etc.* Clicking on any document under **journals**, a new window named "NERAKIN Record" will appear to display such information on the selected item as *Title, Author, Publication date, Abstract … etc.* Clicking on **XML** the document information will be displayed as an *XML file.*

- Clicking on **Summary Report,** will provide aggregate data on the number of existing documents under each member country as well as *number of documents report* classified by type in every member country.

3) **Search Function:** NERAKIN furnishes simple and advanced search mechanisms. Clicking on *Advanced Search*, a user can search by a topic in the title, abstract or keywords. He can search by an author name, he can also search by document type, by corporate (institution), by year of publication, or by AGRIS Categories (fields and subfields). The search result will list relevant items according to the logic used, either simple or compound logic. The user has as many options to search for a research worker, a project, a scientific degree … etc.

NERAKIN BACK END INTERFACE: Content Management System
The NERAKIN back end interface represents the content management system that enables system administrators to Add/ Update/ Delete documents' data. There are three user levels responsible for administrating Documents' Records.

Content Management User Levels
1. Institution Data Entry (Add, Edit and delete records before sending).
2. Institution Administrator (Edit, Delete, Reject, and send records to Centre Publisher).
3. National Documents Publisher (Edit, Delete, Reject, Publish records into Front end interface).
4. National Administrator

1) Institution Data Entry:
He/she is to be assigned by the Centre Admin at the level of a member institution. A user name and password is then assigned to enable him/ her to carry out the assigned operations. The following functions are carried out by the Centre Data Entry:
- **Adding Record**:
  ⇒ Log in NERAKIN back end

$\Rightarrow$ Select the language

$\Rightarrow$ Click **Document Repository**

$\Rightarrow$ Then click **Add New**

$\Rightarrow$ Fill in the record data elements and click **Save.**

- **Edit/ Delete/ Send Record**:
  $\Rightarrow$ Log in, click **Document Repository**
  $\Rightarrow$ Select **work in progress** from status combo box**.**
  $\Rightarrow$ To delete, click **Delete** under Record name.
  $\Rightarrow$ To edit, click **Edit** under Record name, then change data, then click save.
  $\Rightarrow$ To send, click **Send** for approval, data entry has no right to edit or delete that record until returned to him by Centre Admin.

- **Display and Monitor Record's Status**: To display records in different stages:
  a) **Work in process**: Records added but not sent for approval.
  b) **To be approved**: Records sent to Centre Admin but not yet approved.
  c) **Published**: Records approved by Centre Publisher.
  d) **Rejected**: by Centre Admin and so returned to Data Entry. They can be edited, deleted or resent.

2) Institution Administrator:

He/She receives Records from Centre Data Entry**.** His/ her functions include the following duties:

- **Send records to Centre Publisher**:
  $\Rightarrow$ Log in, click Document Repository, and then click **to be approved** from the **Status** combo box.
  $\Rightarrow$ Click on **view** to revise the record details.
  $\Rightarrow$ If the record is accepted by the Centre Admin, Click **Send**.

- **Edit Records:**
  $\Rightarrow$ Log in, click **Document Repository**, and then click **to be approved** from the Status combo box.
  $\Rightarrow$ Click **Edit** to display Edit Document information page
  $\Rightarrow$ Click **Save** after editing
  $\Rightarrow$ Then **Send** to Document Publisher

- **Delete Records**:
  $\Rightarrow$ Log in, click **Document Repository**, and then click **to be approved** from the Status combo box.
  $\Rightarrow$ Click **Delete**

- **Reject Records:**
  $\Rightarrow$ Log in, click **Document Repository**, and then click **to be approved** from the Status combo box.
  $\Rightarrow$ Click **Reject**, to return the record back to Data Entry for Editing

- **Display and Monitor Records' Status**: To display records in different stages:
  a) **To by approved**: sent to him but not yet approved
  b) **Approved**: approved by him and sent to publisher for acceptance and publishing
  c) **Published**: approved by Centre Publisher
  d) **Rejected**: returned back to data entry

3) **National Documents Publisher:** He/ she is assigned by the National Administrator and given a user name and password. The Centre publisher receives Records from Centre Admin to edit and release them into the front end interface**.** His/ her specific functions include the following duties:
   - **Publish Records**:
     ⇒ Log in, click **Document Repository**, then select **approved** from the Status combo box.
     ⇒ Click **view** to revise record details
     ⇒ If accepted, click **Publish** to be released into the *front end interface.*

   - **Edit Records**:
     ⇒ Log in, click **Document Repository**, then select **approve**d from the Status combo box.
     ⇒ Click **Edit.**
     ⇒ Click **Save** after editing the record.
     ⇒ The record is updated before publishing

   - **Delete Records:**
     ⇒ Log in, click **Document Repository**, then select **approved** from the Status combo box.
     ⇒ Click **Delete**

   - **Reject Records:**
     ⇒ Log in, click **Document Repository**, then select **approved** from the Status combo box.
     ⇒ Click **Reject**
     ⇒ The Record returns back to Centre Admin where he can edit, delete, reject or resend to Centre Publisher.

   - **Display and Monitor Records' Status**: To display records in different stages:
     Log in, click **Document Repository**, then go to **Status** combo box.
     To display records in different stages:
     a) **Approved:** by Centre Admin
     b) **Published:** Accepted by Publisher
     c) **Rejected:** returned back to Centre Admin

   - **Import XML File:**
     The Centre Publisher can Import AGRIS AP XML file which is published directly into the front end interface. He/ she can also Export NERAKIM XML files to AGRIS.
     The file must contain a tag with the attribute ARN (AGRIS Record Number, Ex: IR1997000828). It must also be of the same country of origin.
     ⇒ Log in, click **Document Repository**, then click **Import XML**
     ⇒ Click **Browse button** then choose the XML file to be uploaded.

$\Rightarrow$ Click **Upload** button.
$\Rightarrow$ Click **Import AGRIS AP record** button, *The file will be published directly on the front end interface*

Types of back end interface pages were explained and demonstrated to the participants as follows:

Document main page :Used by Institution Data Entry to display and monitor record status with options to add new, view, edit, delete or send records to Institution Admin for approval.

Add publication page: Used by Institution Data Entry to select type of publication i.e. Journal article, Book, Thesis, Conference, etc, to add new record.

Data Entry page: Used by Institution Data Entry to display records in progress to be able to delete, edit and save and send record to Institution Admin.

Institution Admin main page: Used by Institution Admin to monitor and display status of records sent by Institution Data Entry to view, approve, edit, delete, or reject records. It enables him/ her also to convey records to Centre Publisher and receive rejected records from Publisher for subsequent disposal.

Edit Document information page: Used by Institution Admin to edit, save and send a record to National Documents Publisher.

National Documents Publisher Document main page: Used by National Documents Publisher to receive records approved by Institution Admin. It enables him to view the records received and to decide whether, to publish, edit, delete or reject.

Import XML main page: Used by National Documents Publisher to import an AGRIS AP XML file to be published directly to the front end interface.

Resources Cited:
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4. Hamdan, Ibrahim. (AARINENA Executive Secretary). Amman.
5. Hassanein, Ahmed. (IT Developer). FAO, NERO, Cairo.
6. Saleh, Wafaa. (IT Developer). FAO, NERO, Cairo.

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7. Association of Agricultural Research Institutions in the Near East and North Africa (AARINENA), Amman.

8. Central Lab of Agricultural Expert Systems, ARC, Cairo.

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9. Near East Rural and Agricultural Knowledge and Information Network (NERAKIN): Administrator and user guide. FAO; CLAES; AARINENA, May 2007. 70 p.
10. NERAKIN Document repository module. Andrawes, G. F. Power point presentation. May 2007. 31 slides.

Further Elaborations on AGRIS Application Profile

Definition; Goals, Objectives; Methodology of AGRIS Application Profile; AGROVOC and its structure in addition to the Elements in AGRIS Application Profile which were also provided and demonstrated to participants

What is AGRIS AP?

The AGRIS Application Profile (AGRIS AP) is a metadata standard created specifically to enhance the description, exchange and subsequent retrieval of agricultural Document-Like Information Objects. It is a metadata schema which draws elements from well known Metadata standards such as Dublin Core (DC), Australian Government Locator Service Metadata (AGLS) and Agricultural Metadata Element Set (AgMES). It allows sharing of information across dispersed bibliographic systems and provides guidelines on recommended best practices for cataloguing and subject indexing. The AGRIS AP is a major step towards exchanging high-quality and medium-complex metadata in an application independent format.

It is the new "Guidelines on Best Practices for Information Object Description" which supersedes the latest edition of "AGRIS Guidelines for Bibliographic Descriptions and Input Sheet Preparation", released by FAO, GILW in 1998.

Application Profile: Definition

An application profile is a type of metadata schema which consists of data elements drawn from one or more namespaces, combined together for a particular application.

Goals and Objectives

The goal of the AGRIS Application Profile (AGRIS AP) is to facilitate interoperability of metadata formats currently in use to enable linking of various types of agricultural information, therefore allowing users to perform cross-searches and other value added services. This approach would also facilitate the harvesting of data from participating countries; with the application of the AGRIS AP model, this harvesting process could be automated.

The objectives of the AGRIS AP are as follows:
- To serve as a flexible, platform independent, information exchange format that adheres to current metadata standards while being interoperable with different information systems for exchange of different types of information within the AGRIS Network**.**
- To facilitate exchange of more types of agricultural information resources that are not presently covered by the old exchange format, consequently enriching the information base for the participating members.
- To encourage participation by new members to the AGRIS Network.

Why is application profile necessary?

The available information on the internet, in most domains, is growing exponentially. To create quality metadata for this information is an expensive task that we will never be able to complete even with the help of automatic indexing tools. The real promise of metadata is not only its ability to help the user find relevant resources but also to facilitate sharing across proprietary systems as well as organizational boundaries.

Within a loosely-knit community or domain, the use of an agreed standard such as an application profile for sharing information is cost-effective with small amounts of data or information loss. The cost of moving towards complete homogeneity of information or metadata is as high as the cost of creating metadata from scratch.

This system of sharing using a common exchange layer provides the platform on which other services can be based. For example, a portal that brings together all the country specific regulations on "Animal Nutrition". In this case, the information is shared (by the different databases), merged (by normalizing and removing duplicates) and presented to the user (for browsing, searching etc.). Thus, the databases that are exposing their data are not only becoming interoperable with the portal itself but also with each other.

An application profile, or in database terms a data model, prescribes the vocabulary, content and structure rules that can be used to share information between heterogeneous datasets without requiring any change to the local system. The terms of this AP need to be 'negotiated' to represent the community and the domain in which it is being applied. Then, with the possibility of using tools such as XSLT, the information extraction and conversion becomes a simple yet extremely important task towards facilitating interoperability. The fact that the resource itself is not required to be attached to the metadata makes it easy to control access rights on it.

Methodology of AGRIS AP Formulation
The strategy and methodology adopted to formulate the AGRIS AP involved the following:
- Development of a conceptual map of the different types of information resources used in the AGRIS Application.
- Remodeling of the AGRIS data model to meet current information needs (such as description of Web pages and databases). .
- Evaluation of standards and common resource description practices, mainly using the Dublin Core Metadata Element set (DCMES) and the Agricultural Metadata Element Set (AgMES).
- Mapping of currently used elements to the available element pool from DCMES and AgMES.
- Proposing the unavailable elements and schemes to be included in the AgMES.
- Coding of the application profile schema into XML DTD, and studying of implementation results and problems for further enhancements and/or amendments.

RESOURCES
Wealth of resources
The importance of a collaborative network like AGRIS & CARIS and of the centers that participate in it globally lies in the documentation to which they alone have access.

The knowledge contained in the resources that are indexed and introduced into the national and

central AGRIS database is always intended to empower the policy and decision-makers, the agriculturalists, extension workers, researchers and scientists to strengthen their efforts towards food security and sustainable development. Good quality information can and does improve the quality of life itself.

Resources covered by the AGRIS centers i.e. illustrations, reports, theses, manuals etc. have been produced locally over time, and are often unavailable nowadays.

Electronic publishing has brought both new opportunities to users in the field of rare or limited publications it represents the gateway to accessibility. These documents can be scanned and reproduced on-line for everyone to consult. Even when they are in such a physical state that reprinting would do more harm than good, a document can be scanned and published on-line. These are the unique resources which the AGRIS resource centers are in a position to offer to the agricultural community in the world: printed references for the researcher, extension worker, scientist, investor and student. Making them available on line wherever possible perpetuates man's knowledge of agricultural systems in any given area, through access to a wealth of invaluable information derived from generations of practical experience.

Resources Collection Development Policy
The selection process of documents is of primary importance for all AGRIS resource centers. The centers are responsible for collecting all relevant material published within their territory in their specific field of activity. Every centre should establish its own policy and rules on what to include or exclude.

The contents of a documentary unit are, and should be, of general interest and the publications it holds should be obtainable.

Rules to be applied on items to be **excluded** may be: ephemeral material (short-lived information), restricted or confidential material (unless de-restriction is obtained from the creators), news on local events, announcements of awards, calls for vaccination against diseases, etc.), legislation on local subjects of short duration (decrees establishing prices of agricultural products in a province, resolutions naming officers, etc.), textbooks for secondary education and, in general, texts on the basic sciences, treated superficially, articles to promote sales of agricultural equipment and supplies (advertisements) which do not provide in-depth information , multilingual simultaneous editions, comments on agricultural exhibitions, inter-institutional agreements., non-original or repetitive material published in popular journals.

Rules to be applied on items to be **included** can be: preprints of important articles or copies of manuscripts, when available, as they are generally circulated long before the original article appears in print, a very short article on original taxonomic description, a case study in veterinary medicine, notes on projects in progress, summaries of theses or conference papers if full length work is not available, obituaries of outstanding scholars especially when they include a bibliography on a subject about which little has been published, serious editorials, regular columns, anonymous bibliographic units, opening speeches in meetings, conferences, etc.

The **scope of AGRIS** has been extended to include all forms of electronic publishing: databases,

web pages, national portals on scientific and technical information on agriculture. To recapitulate: the *breadth* of input to AGRIS is increasing to cover specialized and relevant *local* information, pertinent to agricultural sciences and technology, but without losing sight of its focus. This increase of scope would allow for more technical and scientific coverage.

Essential Definitions
Element: An element is described as a unit of data or metadata. The element allows us to give more information about the described information.
Element Refinement: An element qualifier makes the meaning of an element either narrower or more specific. Additionally, element refinement shares the meaning of the unqualified element, but with a more restricted scope. When a client does not understand the element refinement, it can be ignored and the value is used as content of the unqualified element.
Encoding Scheme: An encoding scheme aids in the interpretation of the value of an element. Encoding schemes may either be controlled vocabularies or formal notations. A value drawn from an encoding scheme can be taken from a controlled list of vocabulary (e.g. a term from a classification such as ASC (AGRIS Subject Categories) or a term from a thesaurus such as AGROVOC). Formal notations are used to format a value of an element (e.g., date expressed the "YYYY-MM-DD" format). When a client does not understand the encoding scheme, it can be still useful for human readers.
Namespaces: An **XML namespace** is a collection of names, identified by a URI (Uniform Resource Identifier) reference, which are used in XML documents as element types and attribute names. XML namespaces differ from the "namespaces" conventionally used in computing disciplines in that the XML version has an internal structure and is not, mathematically speaking a set.

AGROVOC
AGROVOC is a multilingual structured thesaurus of all subject fields in Agriculture, Forestry, Fisheries, Food security and related domains (e.g. Sustainable Development, Nutrition, etc). It consists of words or expressions (terms), in different languages and organized in relationships (e.g. "broader", "narrower", and "related"), used to identify or search resources. Its main role is to standardize the indexing process in order to make searching simpler and more efficient, and to provide users with the most relevant resources.

The AGROVOC Thesaurus was developed by the Food and Agriculture Organization of the United Nations (FAO) and the Commission of the European Communities, in the early 1980s. It is updated by FAO roughly every three months and users can see the specific changes on the AGROVOC website.

AGROVOC is available in the five official languages at FAO, which are English, French, Spanish, Chinese and Arabic. It is also available in Czech, German, Japanese, Portuguese, Slovak and Thai. Other languages such as Hindi, Hungarian, Italian, Korean and Persian are currently either being translated or revised.

AGROVOC Structure
GROVOC is made up of terms, which consist of one or more words representing always one and the same concept. For each term, a word block is displayed, showing the hierarchical and non-hierarchical relations to other terms: BT (broader term), NT (narrower term), RT (related term), UF

(non-descriptor).

For example:
Pollution (NT: Acid deposition; NT: Air pollution ; NT: Nonpoint pollution ; NT: Sediment pollution; NT: Water pollution; RT: Environmental degradation; RT: Pollutants ; RT: Pesticides)

Air pollution: (BT: Pollution; RT: Atmosphere; RT: Greenhouse effect)

These relationships provide the scope and structure for the AGROVOC thesaurus. For instance, knowing that a broader term for "Air pollution" is "Pollution" and that related terms are "Atmosphere" and "Greenhouse effect" defines the scope of information represented by these terms. Additional scope notes are used in AGROVOC to clarify the meaning and the context of terms when necessary. Taxonomic and geographical terms are tagged for easy searching, filtering and downloading.

However, the common nature of AGROVOC terms justifies its global functionality. The level of its structure doesn't penetrate into local or regional usage. Such local/regional deeper concept levels as sub national geographic regions (physical, climatic or administrative), plant cultivars/hybrids, animal breeds/ strains, local product brands, local/regional institutions, herbs, genomes, etc, are not expressed in AGROVOC. Based on this issue, it is recommended to develop a Near East Regional Expanded AGROVOC.

Elements in AGRIS Application Profile
AGRIS AP (Application Profile) Elements Presentations was provided. Agris AP is a metadata standard created specifically to enhance the description, exchange and subsequent retrieval of agricultural Document-Like Information Objects (DLIOs). It is a metadata schema which draws elements from well known Metadata standards such as Dublin Core (DC), Australian Government Locator Service Metadata (AGLS) and Agricultural Metadata Element Set (AgMES) namespaces. It allows sharing of information across dispersed bibliographic systems and provides guidelines on recommended best practices for cataloguing and subject indexing. The AGRIS AP is a major step towards exchanging high-quality and medium-complex metadata in an application independent format. The AGRIS AP is based on the
   • Dublin Core Elements and Qualifiers
   • Agricultural Metadata Element Set, and
   • Australian Government Locator Service Metadata Set

The goal of the AGRIS Application Profile (AGRIS AP) is to facilitate interoperability of metadata formats currently in use to enable linking of various types of agricultural information, therefore allowing users to perform cross-searches and other value added services. This approach would also facilitate the harvesting of data from participating countries; with the application of the AGRIS AP model.

The Objectives of this presentation ware to convey to the decision makers and strategy planners the following views:
   1. The origin of the AGRIS AP elements and its use and importance.
   2. The mandatory elements needed for cataloging the Agricultural knowledge resources in order to be identified and retrieved easily on the knowledge platform.

3. The standard way to enter each element and its refinements in its specified field in the system.
4. How to select and get the data from the resource.
5. What specifications should be considered when entering each element and the importance of applying the international standard in order to ensure quality information?
6. The use of each element refinement and sub elements.
7. Standardizing the data entry in the participating countries in the Near East and North Africa region will help to make use of their accumulative wealth of their recourses within the changing communication technologies.
8. The focus of this proposed system is placed on the publications which constitute the largest and most dynamic part of the Knowledge.
9. The need of a central authority to audit and validate and control the data and information quality and keep the standards needed by FAO to conclude this data in its AGRIS system.
10. The AGRIS AP Element Set is as follows: Resource Number (ARN): Unique IDs for resources; Title (Alternative Title); Creator: (Personal, Corporate and Conference (Personal Creator, Corporate Creator, Conference as Creator); Publisher (Publisher Name, Place of Publication); Date (Date of Publication); Subject: (Subject Classification, Subject Thesaurus); Description: (Description Notes, Description Edition, Description Abstract) ; Identifier: (Identifiers (Standard Numbers)); Type; Format: (Format Extent, Format Medium); Language; Relation; Availability: (Location of availability, Availability Number); Source; Coverage: (Coverage Temporal, Coverage Spatial); Rights: (Rights Statement, Terms of use); and Citation: (Citation Title, Citation Identifier, Citation Number, Citation Chronology)

The second part of the presentation was dealing with the export and import of data by using XML format and benefits of this format

The production and export of XML resources from local databases to the AGRIS AP model is facilitated when the source DB is XML-enabled that is if it supports extensions for transferring data between XML documents and their own data structures.

XML the extensible Markup Language is the universal format for structured documents and data on the Web. It is designed to improve the functionality of the Web by providing more flexible and adaptable information identification. It is called extensible because it is not a fixed format like HTML. Instead, XML is actually a 'metalanguage' -- a language for describing other languages -- which lets you design your own customized markup languages for limitless different types of documents. All these features make it an attractive standard for exchanging data.

The presentation included a brief idea on the following: header of xml files; declaring xml; declaring the document type; and declaring the namespaces

XML body of the document ;attribute ags: arn; root element ags:resource; element dc:title; element dc:creator; element dc:publisher; element dc:date; element dc:subject; element dc:description; element dc:identifier; element dc:type; element dc:format; element dc:language; element dc:relation; element agls:availability; element dc:source; element dc:coverage; element dc:rights; and element ags:citation.

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