An overview about ICT and Agricultural Information and Knowledge Management at the Agricultural Research Corporation (ARC)

Wad Medani – Sudan

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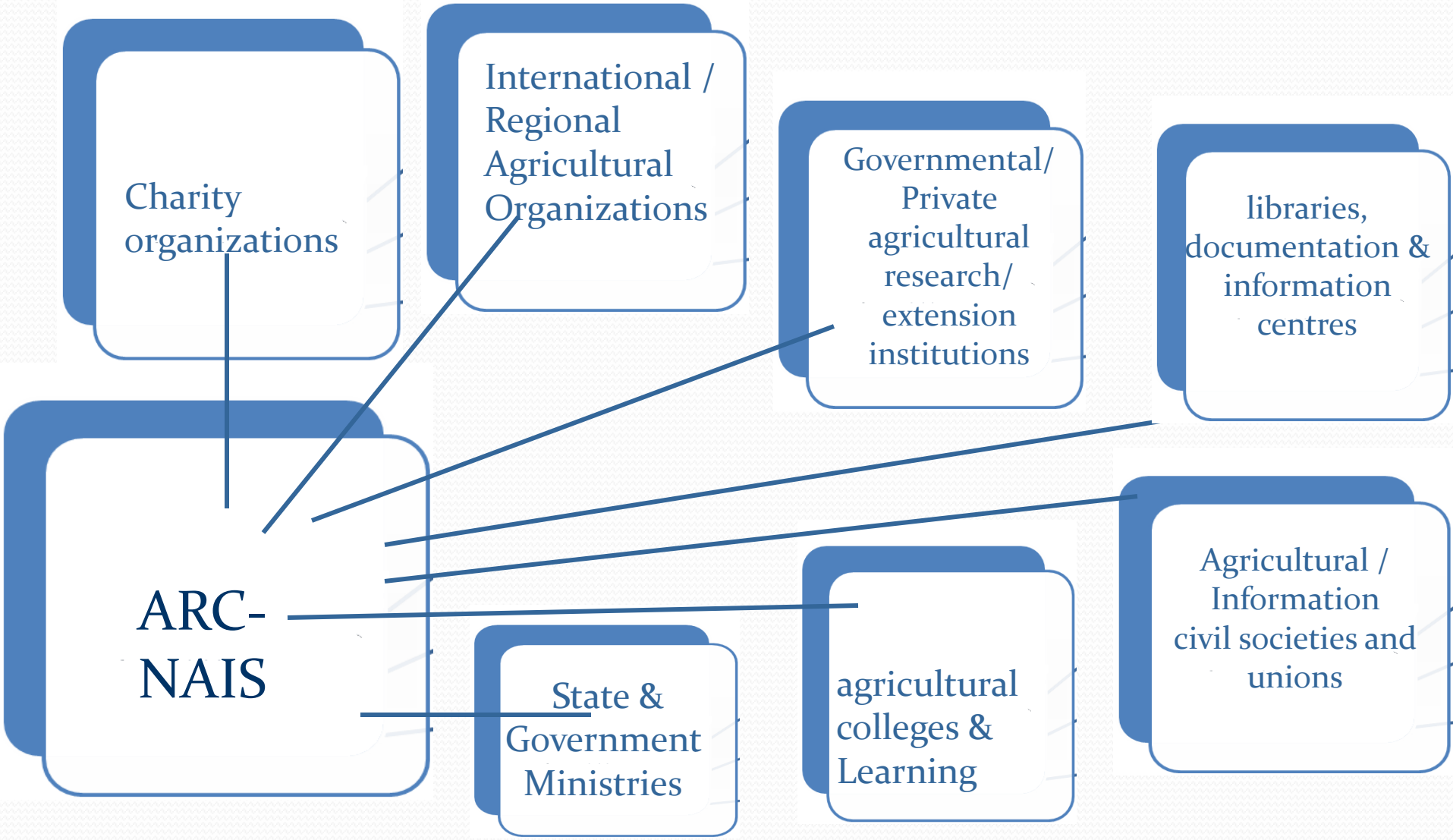
Introduction:

- Agriculture is a vital development tool in achieving the Millennium Development Goals in Sudan based on which the National Agricultural Renaissance Programme was launched. It is also recognized that knowledge is a critical factor in improving agricultural production and food security. In 2010, the Agricultural Research Corporation (ARC) was re-affiliated to the Ministry of Agriculture and Irrigation to assure executive program for national agricultural development.

Introduction – Cont.

- Within the framework of ARC as the NARIs of the Sudan, a remarkable index is the research and development performed in Sudan through collaborative projects with regional, international, sub-regional activities and initiatives. Most of them aim to improve agricultural knowledge sharing and management.

AGRICULTURAL INFORMATION AND KNOWLEDGE SYSTESMS IN THE SUDAN



Initiatives of ARC:

- INTERNATIONAL :

  FAO/AGRIS (Since 1976)

  AGORA (Research4Life) and CIARD-RING

Initiatives of ARC:

- Regional:

AARINENA:

NERAKIN of AARINENA

NAIS of AARINENA

ICARDA

The Twining of Agricultural Information Project

RAIN-WANA

IFAD/IDRC-CRDI

KariaNet

ASARECA AND FARA:

ASARECA/RAIN

FARA/RAILS and eRAILS

Other initiatives

Initiatives of ARC:

At National level:

Establishment of National Focal Units in the Sudan:

Sudan National Agricultural Information Network (SNAIN)

Sudan National Agricultural Information Network (SNAIN)

- SNAIN Established since (2004)

  - Under the framework of ASARECA /RAIN

  - SNAIN National Steering committee under the leadership of the ARC – 13 members and general assembly

  - Recently incorporated under ASARECA/FARA-RAILS to cover all African countries

National and NGOs agricultural information networks and centers under SNAIN:

- Ministry of Agriculture and Irrigation
- National research institutions
- Agricultural Extension
- SAS Libraries Network
- Universities and higher education
- SALI
- SENAS
- Sudanese Knowledge Society (SKS) and others
- NGO, such as

  - FAO Khartoum Office Library
  - AOAD
  - AAAID
  - ITOCA
  - TEEAL

Twinning of Agricultural Information Systems Project

Consists of:

- ENAL
- ARC and Faculty of Agric. (UK)
- ICARDA (as coordinator and parties)

Objectives:

To carry out a model to:

- Improve the Agric. Development process
- Achieve socioeconomic development in the Nile Valley

Methodologies:

- Sharing available resources
- Development of Infrastructure capacity
- Training of Human Resources
  - Library experts
  - Academic staff
  - Researcher
  - Graduate Students
  - The use of effective information technology for Agric. R 4 D

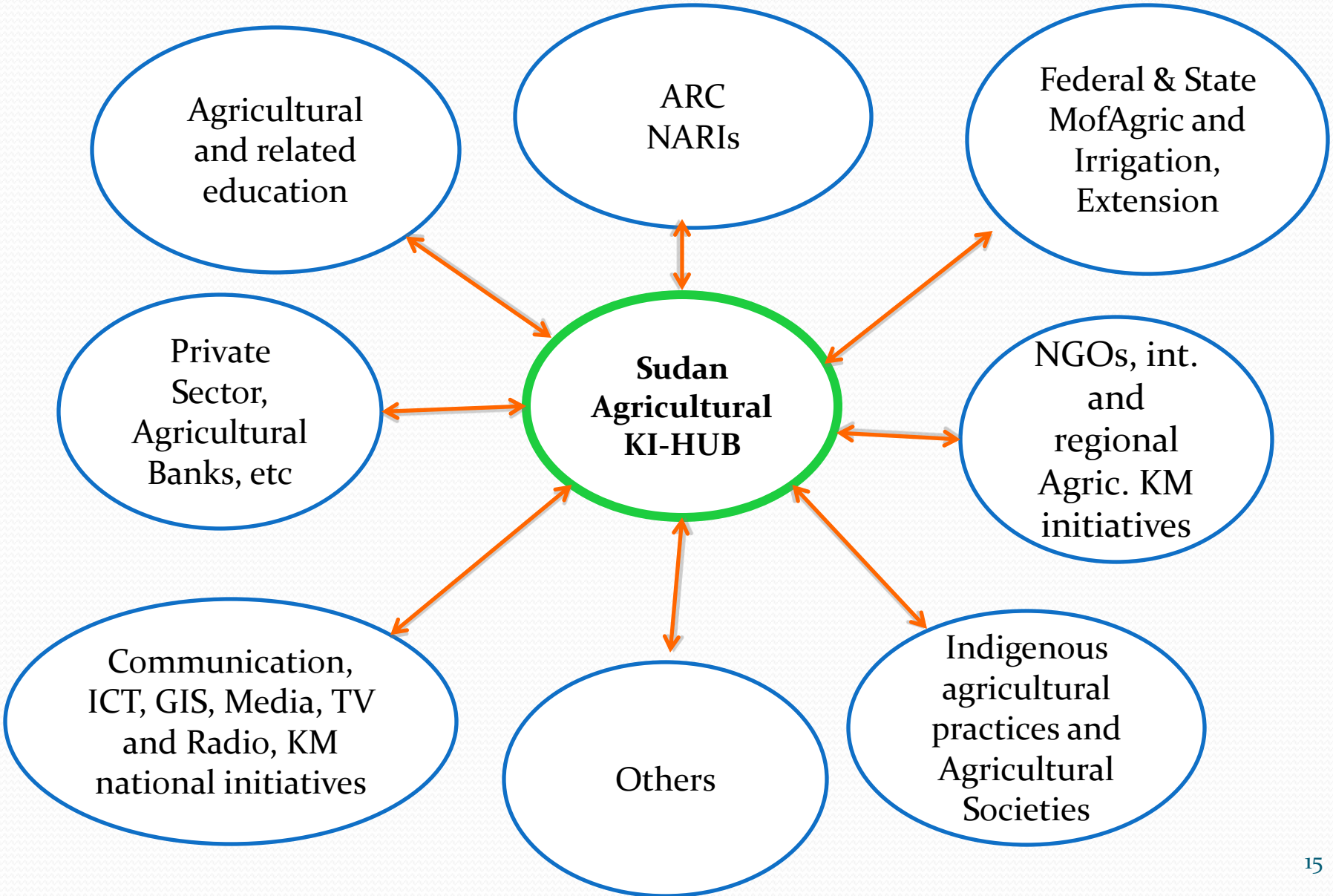
Outputs:

- Improved skills
- Development of infrastructure
- Establishing of electronic publishing unit
- Local Database
- ARC website, http://www.arcsudan.sd

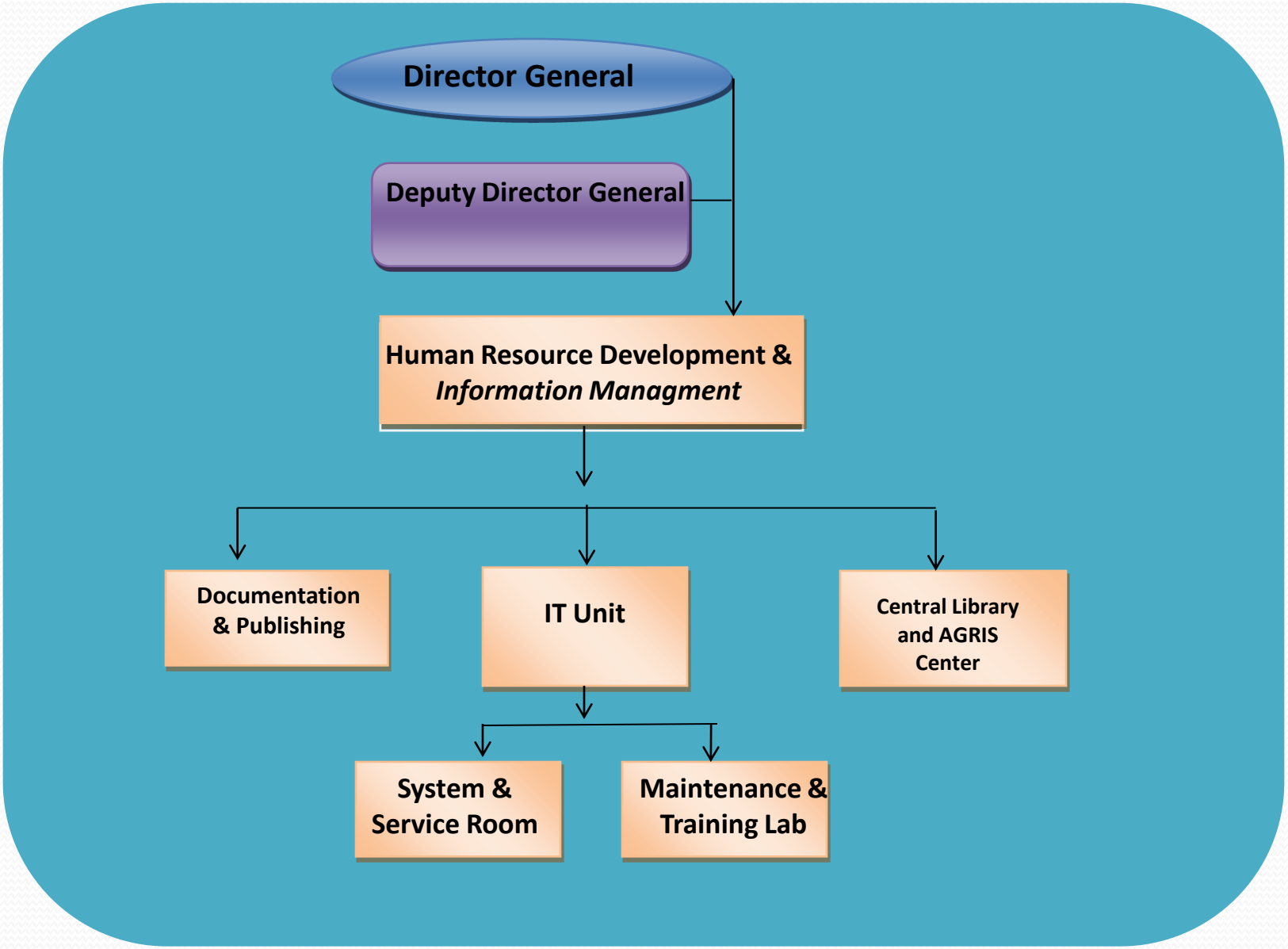
ASARECA/FARA-RAILS:

- The Regional Agricultural Information and Learning Systems (RAILS) is a project initiated by the Forum for Agricultural Research in Africa (FARA) in collaboration with the Sub-regional Organizations that includes ASARECA and the National Agricultural Research Systems (NARS)
- RAILS's aims to enhancing access, retrieval and use of agricultural information and technologies through learning from actual issues and rapidly changing environment.
- The objectives of eRAILS: The African Portal on Agriculture, www.erails.net, are to improves the access and contribution by African ARD Stakeholders in the global knowledge sharing and To consolidate national, sub-regional and continental ARD information systems to create an African platform for AIS that could contribute to the global AIS.

Proposed Sudan Agricultural KI under ASARECA KNOWLEDGE HUB (KI-HUB)



ARC IT and KM Hierarchy



IT Unit

Introduction:

As IT has become a major resource for fueling business innovation, and with IT optimization necessary to achieve the level of innovation demanded by CEOs, CIOs, today have more responsibility than ever to lead their organizations toward the next technological innovations. Their organizations rely on them not only to understand new technologies, but, perhaps more importantly, to understand how those technologies can be applied to support innovative business strategies.

ARC IT Unit

IT in Agricultural research Corporation, started in 2002 to help Researchers to enhance their work by:

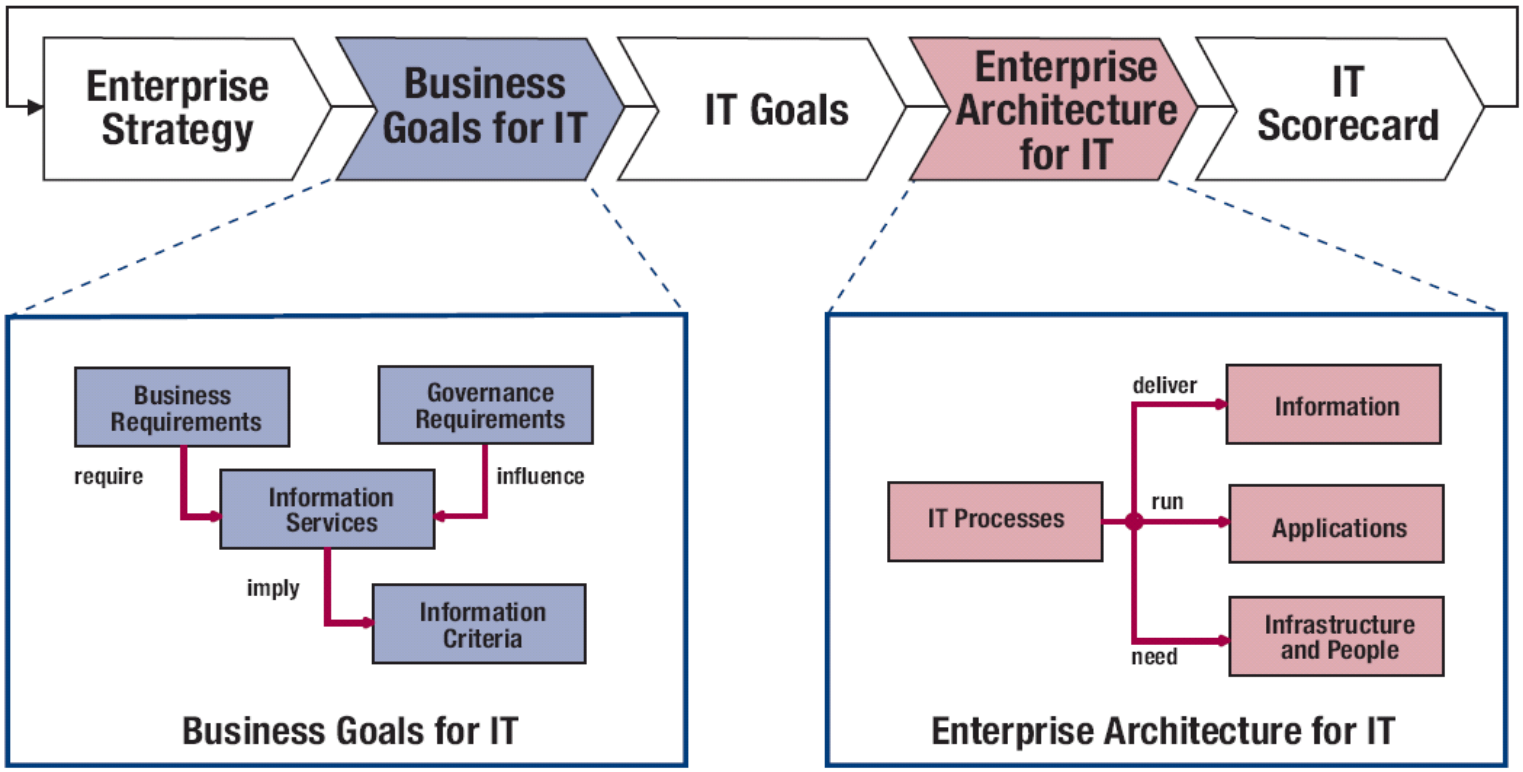
-accessing the internet & Email

-Sharing their information with others

-Using LAN & WAN for communicating to gather and to other researchers a round the world

Goals

The following diagram illustrates how the Enterprise Strategy leads to Business Goals for IT, IT Goals, Enterprise Architecture for IT which are ultimately measured by an IT Scorecard.



ARC IT Goals

The goals of the ARC Information Technology Department fit tightly with the Strategic Plan of the Agricultural research corporation. IT has identified below strategic goals.

-Build Strong Network (LANs & WAN).

-Enable Researchers Success.

-Support ARC Growth.

-Manage and Control Network resources.

-Maintain ARC Information security and Privacy.

IT Infrastructure

Definition - What does *IT Infrastructure* mean?
IT infrastructure refers to the composite hardware, software, network resources and services required for the existence, operation and management of an enterprise IT environment. It allows an organization to deliver IT solutions and services to its employees, partners and/or customers and is usual internal to an organization and deployed within owned facilities.

IT Infrastructure

Typically, a standard IT infrastructure is distributed according to the following components:

Hardware: Servers, computers, data centers, switches, hubs and routers, etc.

Software: Enterprise Resource Planning (ERP), customer relationship management (CRM), productivity applications and more.

Network: Network enablement, Internet connectivity, firewall and security.

Meatware: Although conflicting, human users, such as network administrators (NA), developers, designers and generic end users with access to any IT appliance or service are also part of an IT Infrastructure, specifically with the advent of user-centric IT service development.

ARC IT Infrastructure

Hardware:

- **Communication System:**
  - Fiber Optic
  - Frame Relay (standardized wide area network technology that specifies the physical and logical link layers of digital telecommunications channels using a packet switching methodology
- **Main server:**
  - Network management
  - Users Management
  - Store and retrieve information
  - Information security management
- **Backup Server**
  - Ready to use when the main server failed
- **Software:**
  - Windows 2003 server
  - ISA server(Internet Security Accelerator)

ARC IT Infrastructure

Networks & :

- **Main five LANs (Fiber Optic cables):**
  - Soil & water LAN
  - IT Maintenance & training Lab LAN
  - Crop protection Research center LAN
  - Cotton Research Section LAN
  - Horticultural Research Center Services
- **Services**
  - Internet & Mailing
  - File sharing
  - Resources sharing
  - Training (use of internet-MS office tools.)
- **Maintenance:**
  - Hardware & software maintenance (Computers, Printers, Scanners, Faxes, Networks)

IT Unit Needs To Achieve Goals

- Increase Internet Speed (more than 4 MHz)
- Improve Staff skills (Training, Courses, Workshops,)
- Providing Network Tools
- Genuine Software (operating systems & Antivirus)
- Increase workforce (Engineers, Technical, Technicians)
- motivate workers (Improve working conditions & work environment)

Challenges:

1. Limited access to handheld computers for the field workers including farmers, extension services, agricultural producers
2. Limited access to high speed and broadband internet speed
3. Difficulties during the establishments due to number factors
4. Wide digital gab between urban and rural areas
5. Lack of inter-sector coordination and collaboration between agricultural sectors
6. Lack of trusted databases
7. Resistance to change
8. Financial limitation

Conclusion and recommendations:

- Agricultural information and knowledge sharing is considered as important tool for sustainable development and food security.
- The rule of national, institutional and individual website and platforms to enhance access of agricultural information and knowledge sharing
- Encourage researcher to facilitate capturing, access and sharing of agricultural knowledge
- There is a great importance for national and inter-regional cooperation to support agricultural information and knowledge sharing to achieve the common goals and objective.
- Importance of national strategy for agricultural information and knowledge sharing for development
- Encourage researcher to facilitate capturing, access and sharing of agricultural knowledge
- Support ICT infrastructure
- There is a great need for specialized national training to familiarize the whole staff with knowledge sharing and training processes

Thank You

Any Question ?