GIS FOR EARTH RESOURCE PLANNING AND MANAGEMENT

Kenyatta University Experience with Esri Site License
Esri Site Licence, the Case of KU

ESRI 2nd Education Users conference
University of Dar Es Salaam 20-21st Nov 2014
Theme:

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Esri Site Licence, the Case of KU

• Kenyatta University’s Strategy in getting ESRI Support with ArcGIS Campus-wide licence & implementation process

• **Important dates:**
  – **Nov. 2011**, Esri announces 100 Africa Universities
  – **Feb. 2012**, attention on programme - Mr. Hansert, DAAD Director - Prof Dr. Shultze of Uni. Karlsruhe (MMUST)
  – **March 2012**, conversation with Esri EA (draft MoU, MoU Committee, School of Env. Studies)
  – **May 2012**, Visit to KU by Dr M. Gould, Esri Education
  – **June 2012**, MoU tabled and signed
  – **July 2012**, KU requested to provide an evaluation of computing, networking, & human capacity based on ArcGIS 10.1 Server Licence Requirements
- **Sept 2012**, Full brief and justification to VC
- **Jan. 2013**, KU bought adequate Server Space = 1.2m
- **11th April 2013**, Esri Site licence received, installed & launched in colourful ceremony (stakeholder) for campus-wide access - **software accessible a challenge**
• Feb 2013, 1st planning meeting of 1st Esri EA Education User Conference (August 2013 proposed, later 16-18 Sept 2014 implemented)

• Jan. 2014, KU jump-started recruitment of ArcGIS Interns to support ArcGIS training - ICIPE-CERNVEC Project Funding

• May 2014, VC consents to request & recruitment of two interns for 6 months is made: Solomon June 2014, Gakobo July 2014

VC, Prof O. Mugenda Address 1st Esri EA Education Users conference at KU-BSSC

Kerski & Gould address staff & students of School of Env. Studies at AVU Hall
CERNVec (http://www.icipe.org/cernvec/) Trainees on Disease Mapping

• 17th – 21st Feb. 2014: Workshop GIS applications in Hydrology and Water Resources Management (BOKU Univ. of Austria & School of Eng. & Tech. – CIT Lab)

• 24th – 27th March 2014: Workshop GIS & Remote Sensing for disease & landscape dynamics mapping CERNVec and KU, KU-BSSC Lab
JUNE 2014 Defining Moment for KU

11th – 13th June 2014

1st Session ArcGIS Training at School of Env. Studies Lab EF3 (18 Staff members)

Students in ArcGIS Training Session in the School of Env. Studies Lab EF3.

Mr Gakobo one of the ArcGIS Interns in a training session
What is GIS? COMPONENTS OF GIS

• From an organizational point of view, GIS system consists of 4 components
• As a tool, GIS uses computer hardware and software to capture, retrieve, manage, manipulate, display and output data (done by individuals of various capacities within institutions)

ORGANIZATIONS & PEOPLE

DATA

SOFTWARE

HARDWARE

Computers, printers, Digitizers, plotters

Spatial management packages

From many sources for research, science and Application

CIT, network, software, Scientist app. developers, users
DEFINING GIS: THE MODEL/PROCESS

GIS: A special-purpose database with a common spatial coordinate system as the primary means of reference.

Real world features, objects & phenomena.

Data input, from maps, aerial photos, satellites, surveys, and other sources.

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Data storage, retrieval, query, transformation, analysis, modeling.

Data output, such as maps, reports, & plans.

Data sharing (metadata, data clearinghouse, CD/DVD, Web GIS).
GIS SYSTEM DIAGRAM

GEOGRAPHIC INFORMATION SYSTEM (Data Processing)

INPUTS
- Maps
- Tabular Data
- Field Survey Data
- Digital Archives
- Remote Sensing Data
- Other GIS Data

DATA BASE MANAGEMENT
- Capture
- Encode
- Edit
- Store and Retrieve
- Manipulate and Analysis
- Display and Report

OUTPUTS
- Textural Reports
- Maps
- Photographic Products
- Statistics and Tables
- Data from other GIS
- Data for other Digital base
- Data for Models

USERS REQUIREMENTS
GIS-INTUITIVE DESCRIPTION

- A map with a **database** behind it
- A **database** is composed of several (a number) of **data planes or layers or data elements**
- A **virtual** representation of the **Real World**
- **Data elements are combined to yield data interpretations**
  - *queried to support on-going operations*
  - *analyzed and summarized to support strategic decision making and policy formulation*
The amount of data involved is vast, and the variety of location, topic and format wide.

All earth resources, problems can be reduced to answering one or the other of the two questions.

1. Finding locations with specified properties (where is? – spatial)

2. Finding the properties in/of specified locations (what is there? – attribute)

Leading to applications in various all areas (earth resources, development activities, impacts of resources use and activities)
The selection tools ordinarily make hand-edged selections, as if the selections were cut with a razor-sharp knife. Thus, when selections made with these tools are cut or pasted into an image, the individual pixels along the border can be seen very clearly. This often results in an image that appears unnatural. By defining a feather edge around a selection, you can cut and paste the selection without making it stand out dramatically from its surroundings. In this section you will define a feather edge, or border, around a lassoed selection using the Lasso Options dialog box. Note that you can also define a feather edge for rectangular and elliptical marquee selections using the Feather command in the Select menu.
Kenyatta University’s GIS Platform
Training & Administration

• **Prof. Simon M. Onywere** – Overall coordination
• **Solomon Mwenda** – Training; ICIPE CERNVec Internship to KU up to Oct. 2014; KU 2 year contract
• **Anthony Gakobo** – Training; ICIPE CERNVec Internship to KU up to 6\textsuperscript{th} Dec. 2014
  – Requested recruitment to KU VC as Tutorial fellow
• **Peter Mwirigi** – Administrative support Services (registration, invitation and analysis of training evaluation)
• **ESRI Linkage**
  o **Mr John Njenga** - ESRI Eastern Africa
  o **Dr Michael Gould** – ESRI Education Section

**KU Admin:** VC, DVC (Academic), DVC (RIO), Director ICT, Deans of Schools (14), Heads of Departments (>70)
Computer facilities with ArcGIS
• Post Modern Library Research Computer lab (practice) which also host the Esri E-books: http://www.esri.com/esri-news/publications/ebooks
• KU Students Computer Centre lab (practice)
• Geography Computer Lab (Postgraduate Training)
• Hospitality & Tourism Computer (Postgraduate Training)
GIS Webpage & KU Geographic portal

- Access to ESRI online ESRI E-books
- Portal for KU Map Stories via Esri online
- Campus Map stories
- KU Change Detection
http://kuniversity.maps.arcgis.com/home/webmap/viewer.html?webmap=95ef9d489410401f8c82fc3b15921abe
Strengthening GIS Training? Some challenges

1. Currently active lab for teaching are:
   1. Environmental lab, EF3 30 computers
   2. Engineering Lab 52 computers - challenge using them (Number of students far out way capacity of facilities)

2. KU Consider setting up dedicated GIS teaching Labs – KU prefer to factoring in a laptop requirement of students joining KU

3. Leveraging Teaching and Research on GIS – ESRI offsite licenses (3000) for laptop Installation (59 installed) Number of courses requiring GIS high

4. Lack ENVI Remote sensing software

5. Lack of Tremble GPS units for training & field data collection

6. Kenvision Techniks Ltd training on a Certificate Course in GIS at KU-BSSC (15th-19th Sept. 2014) - Violating ESRI Site licence agreement
Full Brief to VC – 21st Oct. 2014

KU GIS Team brief VC in her office & present KU Map to her.

She Propose:

• Putting together the KU Master Plan
• Posting map on KU Website for student use
• Posting map on walls of the new KU Campanile
Some thoughts: Leviticus 26: 3-4 – If you walk in my statutes and keep my Commandments; Then I will give you rain in due season & the land shall yield her increase & the trees of the field their fruit.

Remember:
- If you do not like what you are doing, then don’t do it!
- Everything you do or do not do affects the World
- If you are not sitting on the edge you are space
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- Esri & Esri Eastern Africa
- ICIPE Cernvec
- Kenyatta University
- KU-GIS Team

Asante sana!
God Bless You

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