Enschede
The Netherlands
www.itc.nl

INTERNATIONAL INSTITUTE FOR GEO-INFORMATION SCIENCE AND EARTH OBSERVATION
Presentation content

- What’s ITC all about
- Knowledge field: Geo-information Science and earth observation
- ITC’s core activities
  - Education
  - Research
  - Project services
- Partnerships
- Alumni
What’s ITC all about?

- Established in 1950
- Largest international institute for higher education in the Netherlands
- Autonomous organisation
- Under the aegis of the Minister for Development Cooperation and
- the Ministry of Education, Culture and Science of the Netherlands
Mission

- Provide international education through knowledge exchange
  - Capacity building
  - Institutional development
- For and in economically and technologically less developed countries
Key figures

- **Staff**
  - staff core activities: 143 fte
  - support staff core activities: 50 fte
  - general support staff: 64 fte
  - 26 nationalities

- **Students**
  - 600 p/year

- **PhD researchers**
  - 50

- **Alumni**
  - 17,883 mid-career professionals
  - 169 countries
Natural Resources Department (NRS)
ITC’s organisation chart
Facilities

- Well equipped building
  - Lecture rooms
  - MSc rooms
  - Auditorium
  - State-of-the-art computer facilities
  - Laboratory facilities
  - Restaurant
  - Library
- Lodging accommodation
  - Well furnished rooms or apartments
- Student support
  - Student affairs office
  - Medical facilities
  - Sports and social activities
  - Long-life e-mail accounts
Knowledge field:
Geo-information science and earth observation
Geo-information science and earth observation

- Combination of tools and methods for the
  - collection
  - storage and
  - processing

of geo-spatial data and for the dissemination and use of these data and of services based on these data
Focus on tools and methods and on application of these in:

- urban planning
- land administration
- disaster management
- strengthening civil society
- water management
- earth sciences
- environmental management and biodiversity
- food security
Earth observation

- Collect data about the earth’s surface and subsurface
- Based on aerospace survey techniques
  - Remote sensing, Aerial photography, Radar, Airborne electronic-scanning devices, Satellites
Geographical Information Systems

- Database used to
  - Store
  - Manipulate
  - Access
  - Transform
  - Study trend patterns
  - Examine environmental issues
  - Simulate outcome of project proposal or planning procedures
- Data collected through earth observation
Geo-information science and earth observation

DATA COLLECTION
- Satellite data
- Aerial data
- Digital maps
- Field measurements
- Tabular data

GIS
- Modelling
- Processing
- Synthesis
- Internet GIS
- Internet GIS

DISSEMINATION
- Web portals
ITC’s core activities

- **Education / training**
  - Degree programme
  - Diploma programme
  - Certificate programme

- **Research and Development**
  - Research projects
  - PhD studies
  - Visiting Scientists

50%

25%
- Project services 25%
  - Institutional development
  - Contract training
  - Contract research and development
  - Advisory services
Education at ITC

A multicultural environment
Target group

- Primarily mid-career professionals and scientists from developing countries
- Increasingly professionals from industrialised countries
ITC’s programmes and duration

Degree programme:
- Master 12 months
- Master of Science 18 months

Diploma programme:
- Postgraduate diploma 9 months
- Diploma 9 months

Language of instruction is English
Certificate programme:
- Short courses
- Modules
- Refresher courses (on-site)
- Tailor-made courses
- Distance courses

3, 6, 9 and 12 weeks
3 weeks
1 - 2 weeks
1 week - 8 months
6 weeks

Language of instruction is English
## Entry levels

<table>
<thead>
<tr>
<th>Programme</th>
<th>Entry level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSc degree</td>
<td>BSc</td>
</tr>
<tr>
<td>Master degree</td>
<td>BSc</td>
</tr>
<tr>
<td>Postgraduate diploma</td>
<td>BSc</td>
</tr>
<tr>
<td>Diploma</td>
<td>Sec. school</td>
</tr>
<tr>
<td>Certificate courses</td>
<td>Sec. school</td>
</tr>
</tbody>
</table>
Overview of MSc, Master and PGD programmes

Blocks and modules

- **MSc**: 18 months, 4 blocks
  - Core modules
  - Specialization modules
  - Research profile modules
  - MSc thesis

- **Master**: 12 months, 3 blocks
  - Core modules
  - Application/specialization modules
  - Group and individual final assignments

- **PGD**: 9 months, first two blocks of MSc programme
Courses in the degree and diploma programmes:

Geo-information Science and Earth observation for:

- Applied Earth Sciences
- Geoinformatics
- Geo-information Management
- Land Administration
- Natural Resources Management
- Urban Planning and Management
- Water Resources and Environmental Management
Applied Earth Sciences (AES)

- Fields of interest:
  - Geo-hazards
  - Geo-engineering
  - Earth Resource Exploration
  - Earth Science Data Provision

- Programmes:
  - MSc degree
  - Postgraduate diploma
  - Certificate
Geoinformatics (GFM)

- Fields of interest:
  - Remote Sensing
  - Digital Photogrammetry
  - Spatial Databases
  - Geographical Information Systems
  - Cartography and Geo-visualisation
  - Spatial Data Infrastructure

- Programmes:
  - MSc degree
  - Master degree
  - Diploma
  - Certificate
Geo-information Management (GIM)

- Fields of interest
  - Cadastre
  - Land Administration
  - National Mapping Organisations
  - Geo-Data Infrastructure (GDI)
  - Earth Sciences Organisations (in collaboration with the AES programme)
  - Rural and Natural Resources Planning and Management
  - Urban Planning and Management
  - Hydrological Organisations

- Programmes:
  - MSc degree
  - Master degree
  - Certificate
Land Administration (LA)

- Fields of interest
  - Concepts of land policy and land management
  - Land administration systems
  - Process design, simulation and management of workflows
  - Adjudication, cadastral and social tenure mapping
  - Value assessment and land use classification
  - Business administration, planning and control, financial management
  - Modelling of data, processes, stakeholder analysis, community participation etc.

- Programmes:
  - MSc degree
  - Postgraduate diploma
  - Certificate
Natural Resources Management (NRM)

- **Fields of interest:**
  - Geo-information for Biodiversity Conservation
  - Forestry for Sustainable Development
  - Sustainable Agriculture
  - Soil Information Systems for Sustainable Land Management
  - Environmental System Analysis and Management
  - Planning and Coordination in Natural Resources Management

- **Programmes:**
  - MSc degree
  - Master degree
  - Certificate
Urban Planning and Management (UPM)

- **Fields of interest:**
  - Urban poverty and slum reduction
  - Urban transport
  - Infrastructure and public services
  - Hazards, disaster preparedness and mitigation
  - Urban environmental planning
  - Land use and land tenure
  - Participatory GIS
  - Spatial planning and decision support systems

- **Programmes:**
  - MSc degree
  - Postgraduate diploma
  - Certificate
Water Resources and Environmental Geoscience (WREM)

- **Fields of interest:**
  - Groundwater Assessment and Modelling
  - Integrated Watershed Modelling and Management
  - Water Resources Studies for Food Production (MSc course only)
  - Water Engineering Management (MSc course only)

- **Programmes:**
  - MSc degree
  - Postgraduate diploma
  - Certificate
ITC’s degree programmes are legally recognised in the Netherlands and are accredited by the Netherlands Flemish Accreditation Organisation (NVAO)
Joint courses

- To address the increasing demand for flexibility in academic degree courses, ITC has entered into partnership with reputable qualified educational organisations in several countries.

- Target 2010:
  - 20 locations
  - 350 students / 3,500 student months
Education partnerships

- Outside Europe
  - Already implemented in Bolivia, China, the Philippines, India, Iran, Nigeria, Ghana, Tanzania and Mexico

- With European institutes
  - Two MSc programmes have been implemented:
    - GEM: with Southampton University (UK), Lund University (Sweden) and Warsaw University (Poland)
      Supported by the EU Erasmus Mundus programme
    - GIMA: with Delft University of Technology, Utrecht University and Wageningen University and Research Centre
Joint course

Example: Kumasi, Ghana - KNUST

- MSc degree course GIS for Natural Resource Management with the Kwame Nkrumah University of Science and Technology
- Six months in Enschede and 12 months in Kumasi
Seeking the source

Fellowships
- Netherlands Fellowship Programme
- European Union: Erasmus Mundus
- European Union: Alβan programme
- United Nations agencies
- Joint Japan World Bank Scholarship Programme
- International Fellowships Programme Ford Foundation
- The Huygens Programme
- STUNED Scholarship Programme
Course participants 1950-2005
Origin of ITC students

America 11%
Europe 15%
Africa 31%
Asia 42%
Australia & Oceania 1%

Asia 7,495
Africa 5,479
Europe 2,724
America 1,922
Australia & Oceania 174

Total Students 1950-2005: 17,883
Total Countries 1950-2005: 169
Research at ITC
Research

Objective:
- Discovery of new knowledge, support high-quality education and capacity building

Through:
- Research programme
- Graduate (PhD) programme
- Visiting scientists
- Joint research partnership agreements
Research spearheads

- Geo-information science and earth observation for
  - strengthening civil society
  - multifunctional use of space
  - natural disasters and environment
  - food and water security
  - monitoring global change
PhD researchers registered at ITC
## Number of academic publications

<table>
<thead>
<tr>
<th>Type of publication</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISI journals</td>
<td>37</td>
<td>63</td>
</tr>
<tr>
<td>Other peer-reviewed journals</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>Chapters in books</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Books/monographs</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>PhD theses</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>81</strong></td>
<td><strong>106</strong></td>
</tr>
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</table>
Project services at ITC
Project services

- Advisory services
- Institutional development projects
- Contract training
- Contract research and development
Numerical indicators per component

Number of projects

<table>
<thead>
<tr>
<th>Year</th>
<th>Institutional development projects</th>
<th>Advisory services</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>14</td>
<td>28</td>
</tr>
<tr>
<td>2005</td>
<td>8</td>
<td>31</td>
</tr>
</tbody>
</table>

Legend:
- Yellow: Institutional development projects
- Light orange: Advisory services
Land Administration Project Guatemala

- Development of teaching and research capacities in Land Administration with the Faculty of Agronomy (FAUSAC), University of San Carlos, Guatemala
- In partnership with Kadaster, DHV and Maastricht School of Management
Land Administration project

- First phase is 3 years, started in 2004
- Co-funded by Netherlands Program for Institutional Strengthening (NPT)
- Activities focus at:
  - Training of trainers
  - Development of graduate program in Land Administration at FAUSAC
  - Improvement of library and computer facilities
  - Development of research program
Partnerships

- in the framework of institutional development
- to address the increasing demand for flexibility in academic degree courses
- with research partners who contribute complementary scientific expertise
Education partnerships

- Outside Europe
  - Already implemented in Bolivia, China, the Philippines, India, Iran, Nigeria, Ghana, Tanzania, Mexico, Kenya and Indonesia

- With European institutes
  - Two MSc programmes have been implemented:
    - GEM: with Southampton University (UK), Lund University (Sweden) and Warsaw University (Poland)
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GI-NET

- The establishment of a network of international partners called the “Geo-Information Network for Education and Training”
- The network is active in research and development, as well as in education, training and advisory services.
The UNU and ITC entered into an agreement appointing ITC as an Associated Institution of the UNU

UNU-ITC Cooperation is directed at developing and carrying out a joint programme on Capacity Building in Disaster Management and in Land Administration

Programme activities are accommodated in two schools:
- School for Disaster Geo-Information Management (DGIM)
- School for Land Administration Studies
Alumni support

- E-mail box
- News letter
- Alumni web pages
- Refresher courses

- ITC News
- Library services
- Associations
- Events
Extensions to the IDV by NRS/Unidata

- **Generic satellite imagery functions:**
  - Satellite-sun-terrain triangulations functions
  - Atmospheric correction functions
  - Surface temperature under clouds

- **Near real-time food production level estimation at regional scale:**
  - Numerical crop growth simulation module as “jython display control”

- See [http://adde.itc.nl](http://adde.itc.nl) for JAVA Docs and JAVA Webstart links to the ITC-IDV
Extensions to McIDAS by NRS/Unidata

- Compress data at server side to limit storage requirements
- Allows serving of wavelet compressed Meteosat Second Generation
- Allow PNG-compressed McIDAS AREAs to be served through ADDE
Extensions to THREDDS by NRS/Unidata

- ITC has added crawlableData to THREDDS
- Catalogs data served by remote servers
- Restores a sense of “ownership”, despite the data won't sit on your own server
- See http://x6.itc.nl:8080/thredds/dodsC/dodsC/catalog.xml
The end
Thank you!