

## **International Training Workshop on Earth Sciences**

**Oct. 28th~Nov. 1st, 2013, Taipei**

**To explore Geological Environment and  
Apply Technology for Hazard Mitigation**



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# Topics to present

- Personal Information
- Duties and Responsibilities
- Hazard Mitigation Activities
- Job-related plans in Disaster Reduction
- DSS for Landslide Risk Management

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- PhD, Environmental Informatics, University of Science, Vietnam National University - HCM City.
- Environmental Informatics Department - Faculty of Environmental Science, Vietnam National University - HCM City (**Lecturer, Head of Environmental Informatics Department**)
- Institute for Computational Science and Technology at HCM City (**Researcher - Collaborator**)

# Topics to present

- Personal Information
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## 1. As a Lecturer

- To teach at undergraduate and graduate level in Earth Sciences including Disaster Risk Reduction: landslide modeling, flood modeling, decision support system and early warning system to mitigate damages caused by climate change.
- To carry out research and produce publications, or other research outputs.
- To supervise or assist with supervision of undergraduate, graduate (Masters) students.
- To contribute to the development, planning and implementation of a high quality curriculum.

## 1. As a Lecturer

- To assist in the development of learning materials, preparing schemes of work and maintaining records to monitor student progress, achievement and attendance.
- To participate in the development, administration and marking of exams and other assessments.

## **2. As a Researcher and Head of Environmental Informatics Department**

- To obtain research funding support.
- To engage with the broader scholarly and professional communities.
- To participate in departmental and faculty seminars aimed at sharing research outcomes and building interdisciplinary collaboration within and outside the department.
- To participate in the administration of the department's programs of study and other activities as requested.

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- Personal Information
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- Study the land-sea interaction and the impacts to the coastal ecology in the Southern Vietnam
- Research problems about how climate change impacts HoChiMinh city
- Find out problems caused by climate change to which Can Tho province should prepare to adapt
- Research the decision support system in integrated water resources management in Dong Nai river
- Study to develop a tool in mobile devices to manage the data for the decision support system in integrated water resources management

- Assessment of the surface temperature by using remote sensing and developing the GIS-based decision support system for green space planning in Ho Chi Minh City
- Building the Decision Support System to adapt to the sea level rise for coastal provinces in the Southeastern Vietnam to support the management of coastal zone for sustainable development

- Study to develop the flood predicting and early warning system for Ho Chi Minh City
- Developing the landslide early warning system and decision support system for Ho Chi Minh City
- Developing the Climate Change Database Integrated Management System to support the Disaster Preparedness, Mitigation and Relief.

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- **Job-related plans in Disaster Reduction**
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- I want to be specialized in studying environmental problems as well as applying Information Technology to Disaster Risk Reduction and Emergency Preparedness: **Modeling in Environment, GIS-Remote sensing, Database, Applications on Disaster Risk Reduction.**

## 1. Modeling in Environment

- Research the Geological Environment and Disaster Risk Reduction: use models and build models to compute, predict and simulate the Landslide, Urban Flood,...
- Climate change impacts the environment and how to adapt to the problems.

## 2. GIS - Remote Sensing

- GIS technology and Spatial Data Mining to make decisions for Mitigating Risks by providing answers for these questions:
  - + Where is the nearest hospital?
  - + Which route is better for the relief supplies' transportation?
  - + Which route is the best for escaping out of the damaged area?
  - + ...
- Applying remote sensing for Hazard Mapping: changes in shore lines, shore erosion, landslide, flood,s...

### 3. Database

- Software development for Disaster Management in Application GIS, Web GIS, Mobile GIS.

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## 4. Applications on Disaster Risk Reduction

- Landslide, Urban Flood Management and Decision Support System
- Early Warning System for Landslide, Flash Flood
- GIS-Models-Decision Support System Integration for Disaster Preparedness, Mitigation and Relief to support the Management for sustainable development

# Topics to present

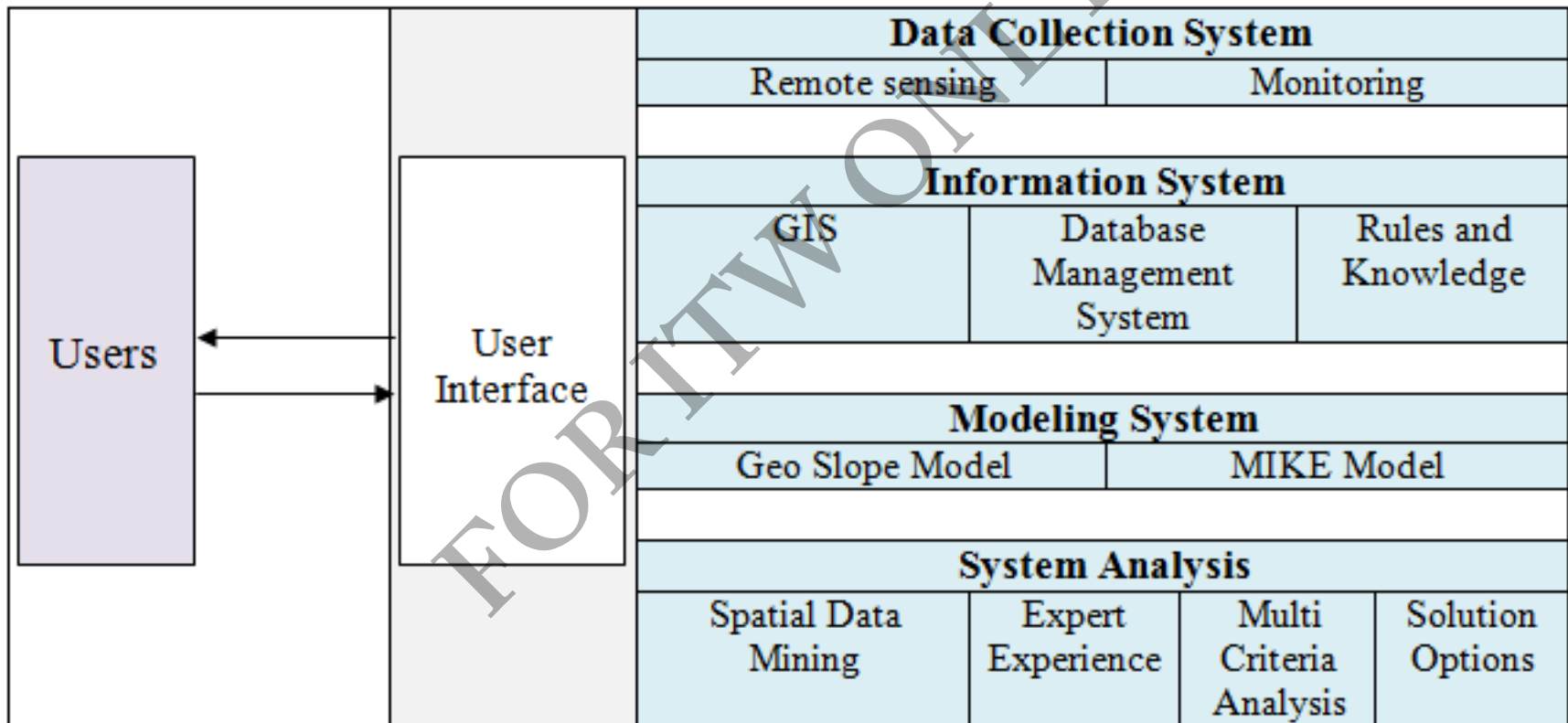
- Personal Information
- Duties and Responsibilities
- Hazard Mitigation Activities
- Job-related plans in Disaster Reduction
- **DSS for Landslide Risk Management**



- Landslide is one of the most serious problems in urban development in Ho Chi Minh City.
- It impacts on many factors: economy, transportation, environment, life, construction,...

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## DSS for Landslide Risk management Framework



## 1. Data Collection System

- Remote sensing: satellite images are used for hazard analysing and mapping
- Monitoring: collect data in monitoring stations; develop tools to collect data and to build maps automatically by mobile devices - iPhone, Android

## 2. Information System

- Hazard maps constructed from remote sensing and modeling for regional landslide-hazard evaluation.
- Database Management System: manage the all data of the system.
- Rules and Knowledge: rules of stakeholders and information related to landslide are very important in the system.

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### 3. Modeling System

- Geo Slope Model:

*To analyse slumps and debris slides to evaluate site-specific slope-stability conditions.*

- MIKE Model

*To simulate the hydraulic regime of flow, accretion, bed erosion, bank erosion and long-term forecasts of these events.*

*After that, hazard mapping is implemented.*

## 4. System Analysis

- Spatial Data Mining
- Expert Experience
- Multi Criteria Analysis
- Solution options

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## 4. System Analysis

### Spatial Data Mining

- GIS technology and Spatial Data Mining to make decisions for Landslide Risk Management by providing answers for these questions:
  - + Where is the nearest hospital?
  - + Which route is better for the relief supplies' transportation?
  - + Which route is the best for escaping out of the damaged area?
  - + Which places are suitable for establishing new school, hospital, super market,...
  - + ...

## 4. System Analysis

### Expert Experience

- Stakeholders discuss and provide reasonable solutions in Landslide Management for the DSS.

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## 4. System Analysis

### Multi Criteria Analysis

- GIS-based Multi Criteria Analysis and Expert Experiences are useful for the planning and execution of evacuation and rescue operations related to landslide.

## 4. System Analysis

### Solution Options

- DSS provides the solutions corresponding to the multi criteria analysis for:
  - + Emergency planning and evacuation
  - + Development of strategic landslide risk management plans

DSS for Landslide Risk Management helps to  
**reduce conflict** between economy,  
transportation, environment, life,  
construction,...

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- Hope to have a chance to show you the results of these projects and receive feedbacks on these to make them better.
- Hope to make a lot of collaborations between us on doing research such as staff exchange programs.

Thank you  
for your  
attention

