Information engineering and services for the urban environment
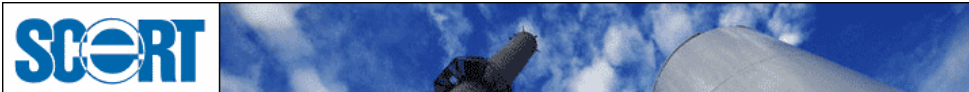
Kostas Karatzas

Informatics Applications and Systems Group
Dept. of Mechanical Engineering
Aristotle University of Thessaloniki
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6-7 July 2006

Who am I….

- Name: Kostas Karatzas
- Age: 38; Married? Yes, (3 children)
- Nationality: Greek
- University Education:
  - Diploma and PhD in Mechanical Engineering, AUTh
- Academic Positions:
  - Visiting Professor at the Dept. of Engineering and Management of Energy Sources of AUTh (2000-4
  - **Assistant Professor at the Dept. of Mechanical Engineering, AUTh, for Applications of Informatics Systems for Engineers (2004-today).**

Where do I come from: AUTh

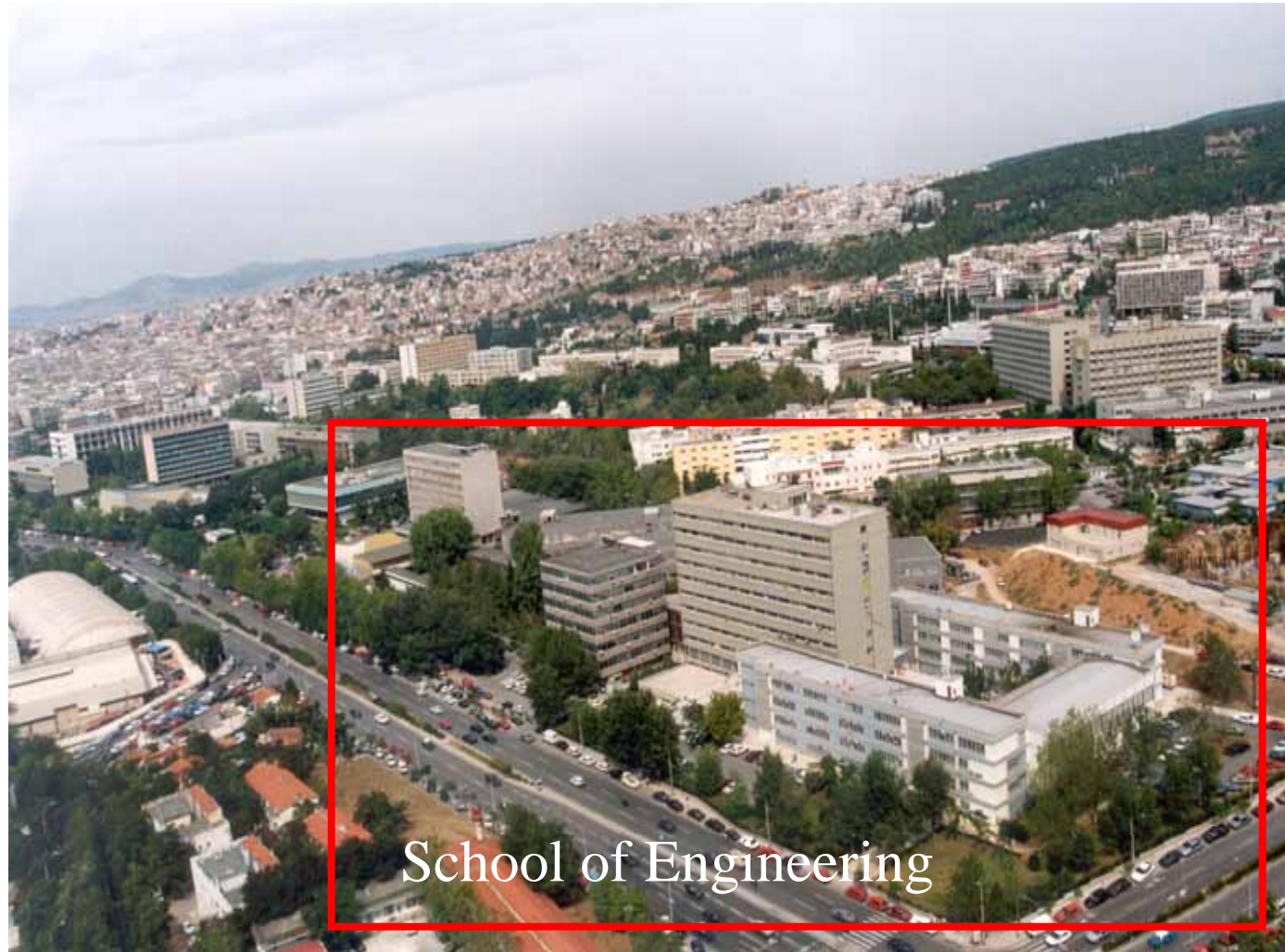# Aristotle University of Thessaloniki: History and Statistics

The Aristotle University of Thessaloniki was founded in **1925** in **Macedonia**, **Greece**

It comprised five Schools: Theology, Philosophy (1926), Political and Economic Sciences (1929), Natural Sciences (1927) and Medicine.

In 2000 the main campus extends over an area of **137 acres** and consists of eight Schools: Theology, Philosophy, Law and Economics, Natural Sciences, Agricultural and Veterinary Sciences, Medical and Pharmaceutical Sciences, Engineering, and Arts.

The number of students is **85.000**, the teaching and research staff is **2.650** and the special technical personnel is **1.470** in 52 Departments.

AUTh: School of Engineering

School of Engineering

AUTh: School of Engineering

Six self-administered **Departments** of Engineering studies - Civil, Architecture, Rural and Surveying, Mechanical, Electrical and Chemical.

The **Department of Mechanical Engineering** emerged in **1976** from the split of the then united Department of Mechanical and Electrical Engineering, which was founded in **1972**.

The Department has **30+** full time faculty members and a smaller number of teaching associates. The teaching and research functions are supported by administrative, technical and secretarial personnel. The School devotes a large amount of time to interaction with the **1300** students of the Department, both individually and in groups.

Mechanical Engineering Department AUTh, School of Engineering

The Department offers **three degrees**:
- Diploma in Mechanical Engineering
- M.Sc. in Management of Production Systems
- Ph.D. in Mechanical Engineering.

The Diploma is a **five-year degree** and is designed to provide training in the traditional fields of Mechanical and Industrial Engineering, with specialization in an area of the student's choice. The overall study is organized into **10** semesters.

In addition to the educational functions, the Department is dedicated to the promotion of numerous research activities.

Mechanical Engineering Department AUTh, School of Engineering

The Department is organized into three **Divisions**:

• **Design and Construction Division:** areas of structure and mechanics of materials, oscillations and dynamics, tribology, product design, machine design, manufacturing technology and metrology.

• **Energy Division:** thermodynamics, heat and mass transfer, combustion, fluid mechanics, process equipment design and environmental protection technology.

• **Industrial Management Division:** statistics, operations research and the industrial engineering and business administration areas of production and operations management, quality assurance reliability and maintenance, engineering economics, organizational design, control and management.

Informatics Systems & Applications Group

Personnel

ISAG Personnel

- Kostas Karatzas (Asst. Prof., Dr.Eng.)
- Asteris Masouras (Dipl. Math.)
- Athina Kaprara (Dipl. El. & Comp. Eng., MSc. Med. Inf.
- Tassos Bassoukos (Programmer)

Collaborators

- One Programmer and one Mathematician

External Collaborators

- Dimitrios Kordas PhD, MSc (in Psychology)

Expertise (1/2)

- State-of-the-art surveys, user requirements elicitation, software evaluation, technology assessment and impact studies
- software development, integration, testing and evaluation in remote collaboration with project partners
- Object Oriented analysis, design and development of web and mobile applications in Java and Apache server-side Java API's, PHP and Perl
- Authoring and maintenance of technical documentation and project deliverables
- Software localization work

Expertise

- Evaluation, utilization and development of Free - Open Source Software (FOSS) components and Java APIs towards the implementation of mobile and web-based public sector information services as well as content management systems and productivity environments (CMS/CSCW)

- Mathematical Modeling and Investigation for Ecological/Earth sciences

- Theoretical and applied work in Environmental Informatics

Technologies employed and developed

- Informatics and telecommunications systems for
  - information dissemination and management
  - analysis, design and implementation, with special focus on the environmental sector
- Web-based, cross platform, multi-tiered, database independent applications
  - based on modular FOSS - Java technologies (i.e. Velocity, Turbine, Torque)
- Mobile application development
  - Lightweight sites for PDA's
  - Mobile phone applications (J2ME)

Technologies employed and developed

- Utilization and development of Software for
  - Database back-ends
  - Web servers
  - Application development
  - Project Management
  - Electronic Office
- Modular web-based information systems for
  - supporting project management activities (mailing lists, file managers, document authoring and proofing-CMS, issue tracking, messaging etc.)
  - design and implementation of software components
  - co-ordination of remote teams in software engineering
  - blogging
  - automatic categorization of information based on a hierarchical category classification system.

Current projects

 Towards the MAturation of Information Technology USability Evaluation. COST action 294 (2005-2009, http://www.cost294.org/

TOWNTOLOGY: Urban Ontologies for an improved communication in urban civil engineering projects. COST action C21 (2005-2009, http://www.towntology.net/)

Innovative methods for management of school buildings with the aid of internet technology and web services, (2005-2006, http://isbeem.meng.auth.gr)

Other current activities

- Providing expertise and consulting to the European Environment Agency concerning on-line, internet base air quality information providence (OzoneWeb, Neighbourhood project)

- Consultancy for the Government of Cyprus (for web based information services concerning AQ for citizens)

- Thessaloniki, Greece (personalised electronic information services concerning air quality, on the basis of internet and mobile phones, project in negotiation phase)

And what about you?

- Study background?
- Working experience?
- Future plans – "expectations"?
- Other?