IBM/ITK/Business Partner
Enterprise Computing Systems
Program Status Briefing

(The sixth meeting on ITK/ISU Enterprise Computing Systems)
Presented By
ECS Program Team
School of Information Technology
College of Applied Science and Technology
Illinois State University
10:30 am IBM at Bloomington – 09/28/2007
Major Announcement !?

PROGRAM CHANGE

- **Name of the Program**
  - Enterprise Systems Computing (ESC) is History
  - However, The Story Continues

- **New Name of the Program**
  - Enterprise Computing Systems (ECS)
  - Reflects the Study of the Computing Systems used by Enterprise
Agenda

- New ECS Faculty
- ECS Program Summary
- ECS Progress Update – Since 03/23/2007
- Planning For the Future
- ITK Students in Working
- Upcoming ECS Events and Activities
- Round Table Open Forum
New ECS Faculty – Dr. Kyoungwon Suh

- Ph.D. in Computer Science
  University of Massachusetts, Amherst
- M.S. in Computer Science
  Rutgers University
- M.S. in Computer Engineering
  Seoul National University, Korea
- B.S. in Computer Engineering
  Seoul National University, Korea
ECS Summary – The ECS at ISU

- **Motivation and ECS Program Initiation**
  - Started in early 2005
  - Requested by local companies
  - Conformed to IBM’s global strategy
  - Supported by IBM – Academic Initiative, System z

- **Actions and Feedback**
  - Contacted and met with local & regional corporation representatives
  - Became acquainted with the equipment and education/training material
  - Compiled the required skill set needed
  - Created the curriculum – based upon both academic and industrial needs

- **The Virtuous Circle – Academia, Business, and Manufacture**
  
  New technologies create better products and lead to new applications; new applications drive new markets and stimulates new companies; and companies lead to higher competition and thus greater demand for still better technologies.
ECS Summary – The Collaboration

Training/Education
- Basic Skill Sets
- Computing Fundamentals
- Business Operations
- Hands-on Experience
- Analysis and Troubleshooting

Research/Development
- Internet and Internetworking
- Pervasive/Ubiquity Computing
- New Computing Paradigms
- Advanced New Technologies
- System Infrastructure

Collaboration Among Stakeholders

Academic Institutions
- Training
- Education
- Research

Integration Performance Testing
- System Architectural Design
- Component and Network Testing
- Benchmark Testing

Hardware Manufacturers
- Research
- Design

Business and Software Companies
- Operation
- Development

Streamline both software and hardware production
ECS Summary – Goals and Objectives

- **Minimize the Impact and Maximize the Benefit**
  - Utilized the existing courses with no or minor adjustment
  - Shared resources with IBM and local industries
  - Adopted a Just-In-Time approach for first year graduate students
  - Shared cross-disciplinary resources among existing programs

- **High Quality Education and Advanced Study**
  - Produce well educated students capable of working as second and/or third tier computer systems analysts
  - Focusing not only for the technology of today, but also for the future
  - Prepare and lead to advanced development technology
**ECS Summary – A 5.1 Educational Approach**

- **Intro**: ITK160 (3), MAT 104 (4)
- **Basic Programming**: ITK168 (4), ITK179 (3)
- **Computer System**: ITK272 (4), ITK383 (3)
- **ECS Base**: ITK261 (3), ITK330 (3), ITK331 (3)
- **ECS Advanced**: ITK378 (3), ITK279 (3), ITK392 (3)
- **Graduate**: ITK394 (3)

- **Enterprise System Architecture/Analyst sequence**
- **Business Application System Integration sequence**
- **ECS core courses**
- **Major ECS related electives**

Course descriptions can be found at http://itk.ilstu.edu; ITKxxx is a deficiency course for professionals.

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### ECS Summary – The Curriculum

#### ECS Degree Sequence Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ITK 330</td>
<td>Introduction to Enterprise Computing Systems</td>
</tr>
<tr>
<td>Elect 3 from 4 courses</td>
<td>ITK272 – COBOL as a Second Language</td>
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<td></td>
<td>ITK279 – Algorithms and Data Structure</td>
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<td></td>
<td>ITK372 – External Data Structures</td>
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<td></td>
<td>ITK378 – Database Processing</td>
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<tr>
<td>ITK331</td>
<td>Operating, Data Communications, Networking, and Security of Enterprise Computing Systems</td>
</tr>
<tr>
<td>ITK332</td>
<td>Advanced Enterprise Computing Systems</td>
</tr>
<tr>
<td>Elect 1 from 2 courses</td>
<td>ITK392 – Enterprise System Integration And Application Development</td>
</tr>
<tr>
<td></td>
<td>ITK394 – Enterprise System Architecture, Performance Analysis, and Server Structure</td>
</tr>
</tbody>
</table>
## ECS Summary – Curriculum (cont)

The Descriptions of Five ECS Courses

<table>
<thead>
<tr>
<th>Course No</th>
<th>Course Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITK 330</td>
<td>Introduction to the mainframe enterprise computing systems, organizations, architectures, operating systems, networking, hardware and software utilities, and applications.</td>
</tr>
<tr>
<td>ITK 331</td>
<td>Mainframe Operating Systems, process communications, networking, protocols, enterprise system clustering, front/back-end hardware/software component connections, administrations, and security</td>
</tr>
<tr>
<td>ITK 332</td>
<td>Enterprise system programming, application development/integration, performance analysis/improvement, workload/resource management, database and information management, and system security enhancement.</td>
</tr>
<tr>
<td>ITK 392</td>
<td>Capstone course for IS major, including business applications, systems integration, enterprise business decisions, systems administration, and systems deployment life cycle.</td>
</tr>
<tr>
<td>ITK 394</td>
<td>Capstone course for CS major, including enterprise system architectures, hardware/software design, performance analysis/evaluation and improvement, and server construction.</td>
</tr>
</tbody>
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ECS Progress – Teaching

**Spring 2007**
  - Guest Lectures – 03/26/2007 and 04/18/2007
  - Data Center Education/Study Trips – 04/14/2007
  - IBM Mastery Exam – 03/24/2007 (all 13 students will participate)
- Core Courses – ITK 378, ITK 372, ITK 383

**Fall 2007**
- Major Course – Introduction to Enterprise Computing Systems
  - Guest Lecture – 10/24/2007
  - Data Center Education/Study Trip – 11/10/2007
  - IBM Mainframe Contest – starting from 10/01/2007
  - Z890 System Installation as an Example for Education
- Core Courses – ITK 272, ITK 372, ITK 279, ITK 363
ECS Progress – Course/Program Development

- **Spring 2007**
  - Capstone Course Proposals were Approved by ITK Curriculum Committee
    - ITK 392, Enterprise Systems Integration and Application Development
    - ITK 394, Enterprise Systems Architecture, Performance Analysis, and Server Structure
  - Sequence Proposals were Approved by ITK Curriculum Committee
    - ECS Computer Science Sequence
    - ECS Information Systems Sequence

- **Fall 2007**
  - All Courses were Approved by College Curriculum Committee
    - Five New ECS Courses: ITK 330, 331, 332, 392, and 394
    - One Revised Course: ITK 225
  - Two New Sequences were Approved by College Curriculum Committee
    - Enterprise Computing Engineering for Computer Science Program
    - Integration of Enterprise Systems for Information Systems Program
Planning For the Future – Advanced Courses

- **System Programming and Administration in ECS**
  - Control Sequence, System Software Debugging
  - Middleware Implementation
  - Capacity Planning, Performance Evaluation and Tuning
  - Resource and User Account Management

- **Large Scale ECS Software Engineering**

- **Integrated ECS System Architecture**

- **Open System in Integrated Large-scale ECS**
Planning For the Future – Graduate and Professional

- **Academia v.s. Industry**
  - Different environment, different culture
  - Fundamentals are essential, practicality counts too

- **Different Aspects of Learning and Education**
  - Work on mixed approach
  - Learn through discussion and interaction

- **Various Goals and Agenda**
Planning For the Future – Alliance with Others

- Community Colleges

- Other Universities and Educational Institutes
Planning For the Future – Promotion

▪ Research and Development
  – Publications
    • *Practical Planning and Implementation Strategies of New Sequence, concentration, or Major Program for the Computer Science* -- 3rd International Conference on Computer Science and Information Systems
    • *A Study of Mainframe Computing System to a Degree Program* -- International Conference on FECS 2007
    • *Solving the Demand Problems of Integrated Large-Scale Enterprise Systems Professionals* – submit to ACM SIGCSE 2008
  – Research and Development Oriented Study
    • Graduate Sequence
      – Planned courses for graduate degree
      – Driven by ITK graduate students
    • Professional Sequence
      – Meet the needs for professional
      – Possible pursuing degree
Planning For the Future – Promotion (cont)

- **Student Club**
  - ECS Student Club at ISU – Good Idea, In Planning
  - Initiated by ITK Graduate Students
  - Establish Tight Alliance Among Graduates
  - Help New Comer Get Ready for the Integrated Large-scale ECS

- **Networking with Others**

- **Web – The Best Friends for Communication**
  - ECS Home Page – Content and Design
  - ECS Logo
ITK ECS Students in Working

- IBM Co-op 2007 (right)
  Troy D. Crutcher (right) Accepted offer in z/OS Build and Installation in the IBM System and Technology Group

- John Deere ITK Tier One Interns (below)
  Alexander Wheeler, Joe Ksiazek, and Nathan Solis

- Citigroup Summer Internship 2007 (right)
  Nilanshu Dharma, Sudhir Adhikari, and Yan Cui
Upcoming ECS Activities

- **z890 System Installation and Implementation (Scheduled)**
  - October 5th – Hosting Facility Completion
  - October 12th – Hardware Installation
  - Week of October 15th – Configuration and Software Installation
  - The First Week of November – Ribbon Cutting

- **Tier 2 John Deere Internship Program with AIS – Coming Soon**

- **Two New Sequences – After pass UCC, will appear in Fall 2008**

- **New Graduate Pilot Course**
  - System Programming and Administration in ECS – Spring 2008

- **Graduate and Professional Sequences – Planning**

- **ITK 332, Advanced Enterprise Computing System, Development**
  - Will be Delivered in Fall 2009

- **Composing Class Notes/Text Book**
The More Intelligent Effort We Contribute, The Better Result We Will Have

- **Words from ITK Intern Students**
  - John Deere
  - Citigroup

- **Round Table Discussion**
  - Suggestions for Future Direction
  - R/D Opportunities
  - Others
We Work Together
To Make Tomorrow A Better Day

Thank You Very Much

From
ECS Program Team
School of Information Technology
College of Applied Science and Technology
Illinois State University

To Be Continued