



MTAT.03.229

Enterprise System Integration

Lecture 1: Introduction

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Course Objective

The objective of this course is to introduce the principles and methods of software architecture in an enterprise environment.

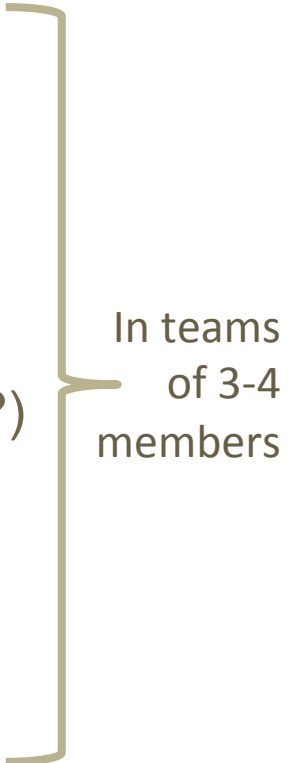
The course introduces modern approaches to enterprise system integration, with an emphasis on service-oriented architectures.

In addition to technical aspects, the course covers organizational aspects of enterprise system integration, including architecture governance and Business-IT alignment.

Structure of the Course

- Lectures (Mondays, weeks 1-14)
- Labs (Monday or Thursday, weeks 1,3-14)
- Project (weeks 5-15)
 - Presentation on 15 Dec.
 - Report due on 19 Dec.
- See details on the Wiki pages:
 - <https://courses.cs.ut.ee/2014/esi>
- **Make sure you check the message board!**

Grading

- Assignments: 25 points
 - Project: 25 points
 - 15 points for the product
 - Soundness of design and architectural choices
 - Scope of the solution (how much was implemented?)
 - Degree of heterogeneity of the system
 - Functional correctness/validation (does it work?)
 - 5 points for written documentation
 - 5 points for presentation
 - Exam: 50 points
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- In teams of 3-4 members

People

- Luciano García-Bañuelos <luciano.garcia at ut.ee>
 - Architectural Principles and Patterns, Middleware
- Marlon Dumas <marlon.dumas at ut.ee>
 - API Design
- Abel Armas <abel.armas at ut.ee>
 - Practice sessions

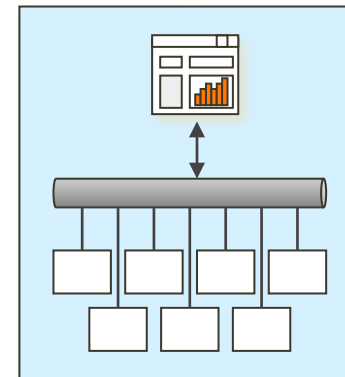
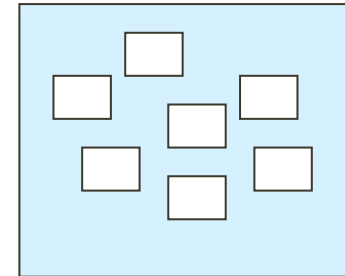
Part I

PROBLEM AND INTRODUCTORY SCENARIO

The problem at glance

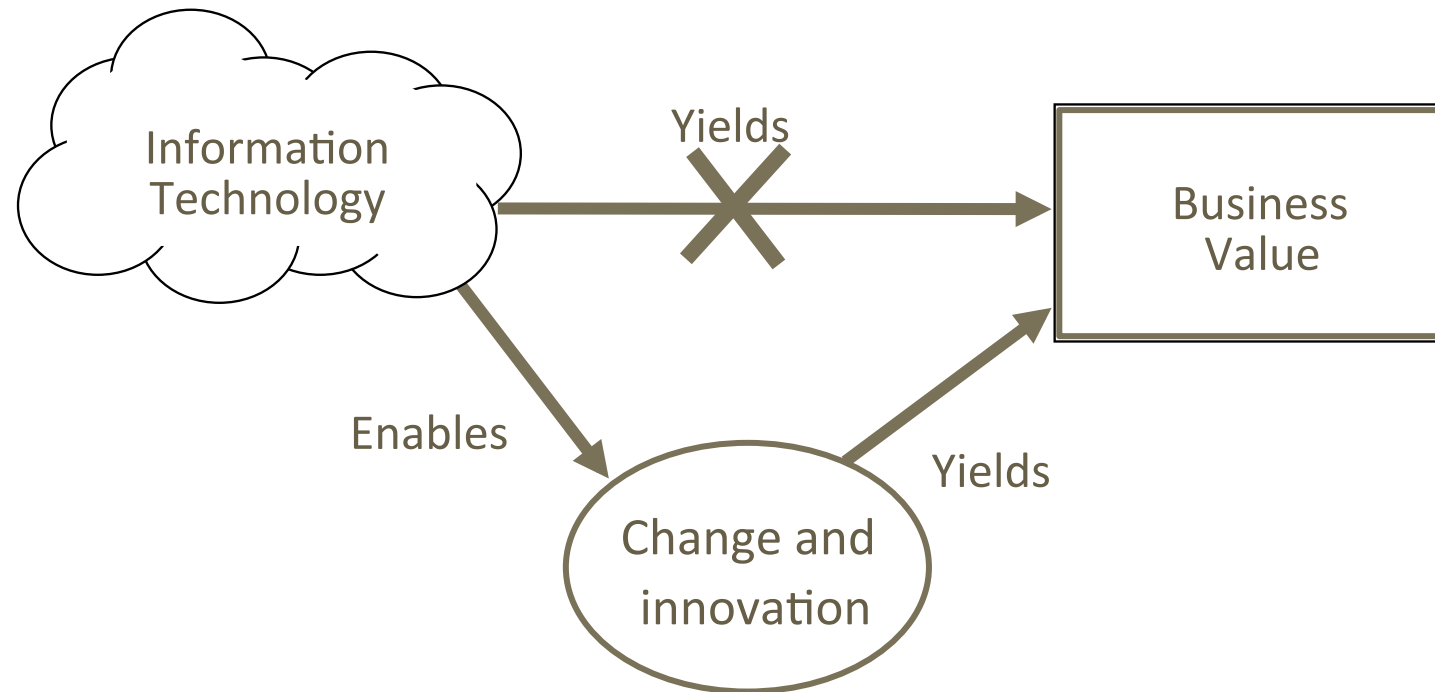
- Users want to execute business functions that span multiple applications
- Requires disparate applications to be connected to a common integration solution
- However:
 - Networks are slow
 - Networks are unreliable
 - No two applications are alike
 - Change is inevitable

Isolated Systems



Unified Access

Why change is important?



Enterprise system scenario

Information system of a small hotel

Three functional areas:

- Guest management: reservations, check-in (including room assignment), charges to room (e.g., room service), check-out, closing of bill
 - Keeping track of room availability, status – how many rooms still available for a given night, forecasting how many guests will stay beyond their reservation, forecasting occupancy of hotel at a future date
 - Scheduling room cleaning & maintenance: managing maid & maintenance staff, cleaning rooms after late check-out
- Can you see dependencies across functional areas?

Enterprise system scenario

Change # 1: A restaurant is opened for hotel guests and external customers:

- External customer pays for meal directly
 - Hotel guest has option to pay for meal directly or charge to room
 - In either case, hotel likes to keep a record of the guest eating in the restaurant, if guest is willing to reveal his room number
 - Restaurant offers breakfast for guests
- ➔ Restaurant billing system has touch-points with hotel guest system

Enterprise system scenario

Change # 2: A loyalty program is introduced:

- Set up new system to keep track of customers who are in loyalty program
- Loyalty program has multiple touch-points with hotel system and restaurant system, e.g.,
 - At reservation time, inquiring if customer is a member of loyalty program, offering promotions, giving priority for room allocation to loyalty club members
 - At check-in, inquire if customer is in loyalty program, if not offer sign-up, if yes offer better room
 - Offer discounts at restaurant
 - Offer discounts on other services at check-out and record length of stay and points earned

Enterprise system scenario

Change # 3: Hotel is bought out by a franchise:

- Reservations can be made either through the franchise system or by calling the hotel
 - Room availability have to deal with this dual sourcing
 - Forecasting & pricing outsourced to franchise's system
- Loyalty program merged into franchise's program
 - Hotel no longer operates the loyalty program, but must interoperate with loyalty program system of franchise
 - Benefits of existing loyal customer must be honored
 - The franchise loyalty program gives points for all expenses paid, whereas the original loyalty program looked only at nights stayed in hotel
- Room cleaning/maintenance still managed locally