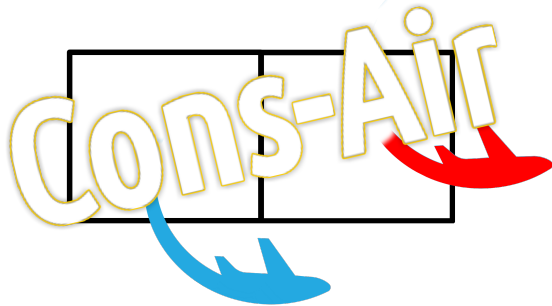


Group 4 present

Project Cons-Air Booking System:

Motherforking Threads On This Motherforking Plane



Operating systems and process oriented programming (1DT096)

Grupp 4

Andreas Rubensson

Carl Wingårdh

Erik Österberg

Lucas Arnström

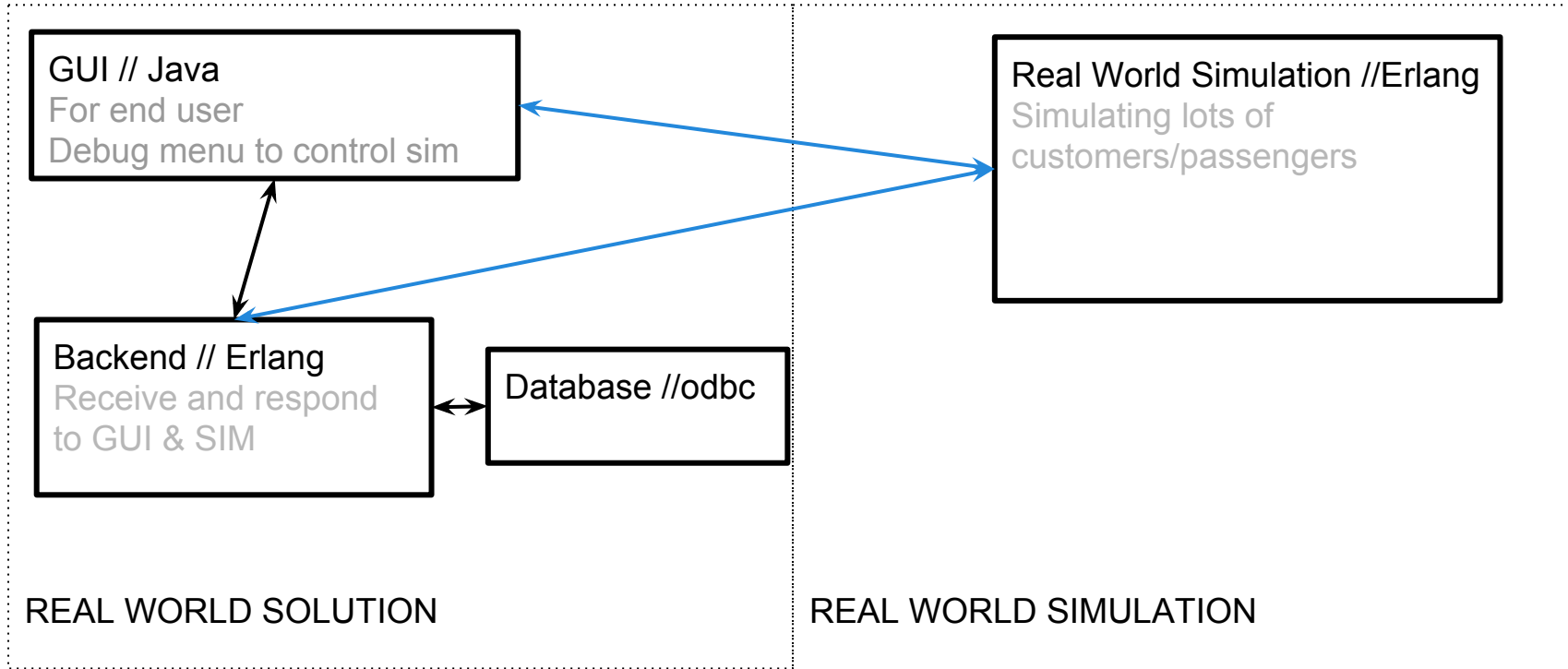
Oskar Ahlberg

Jin Wen Ting

Airline Booking Service

- Solving the real life issue of thousands of passengers booking flights at the same time
- Creating a back-end which can handle a large simultaneous load
- Creating a front-end which is intuitive

General Project Architecture



General Project Architecture

REAL LIFE SIM // ERLANG

Simulation

- Lots of flights per day
- Lots of passengers trying to book simultaneously
- Potential extension: Connecting flights
- Potential extension: Disasters

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BACK END // ERLANG

Booking Database

- Concurrently handle passengers
- Flight Database
- Potential extension: Calculating possible transferring routes
- Potential extension: Disaster proofing and contingency planning

FRONT END // JAVA

GUI

- Simple GUI for manual use of booking database
- Simulation Debug Menu

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General Project Architecture

- Abstraction defined early in the project
- Focus on back-end and database, then move on to other parts

General Project Architecture

Multilingual communication

- Erlang and Java
 - Functional vs. Imperative
 - Java will call Erlang functions and receive answers
 - We will need to learn this

Concurrency

- Processes in Erlang
- Multithread in Java

Booking Database

- Concurrently handle passengers
- Efficiency and time complexity
- SQL, or other database solution
- PE: Disaster proofing
- PE: Encryption of sensitive payment data

GUI

- Java
- Cool and pretty
- Real time updates
 - Flight map, plane seating chart
- Debug menu
 - Real time updates of load and dev statistics

Simulation

Simulating the thousands of passengers

- Multi-process, one process for each passenger, trying frantically to book a flight.
 - Wants
 - Class preference
 - Seat preference
 - Groups (families, friends, sports teams?)
 - Sitting next to babies (Nobody wants that)
 - Needs
 - Destination
 - PE: Medical anomalies (wheelchairs, very long, too fat for one chair)

Project Management and Work Structure

- Weekly update meetings
- Daily get-togethers
 - Working in group
 - > Less slacking
 - > Understanding what the others are doing (less of “just letting them solve their own problems”)
- Pairs
- Divide and Conquer
- Trello, Git, Google Docs and Overleaf

Goals

- Learn more in-depth erlang
- Multilingual programming
- Real life problem practice
- Project work as a team
- Learn more about group synergy

Tools

- Git
- Trello
- Erlang: Emacs/Vim, Java: IDE to be decided
- Erlang: EUnit, Java: jUnit, Simulation
- Make
- Documentation
 - Edoc
 - Javadoc

Challenges

- Multilingual communication
- Efficient multiprocessing
- Reliance under heavy load
- Work division and group management
- Different kinds of persons booking flights