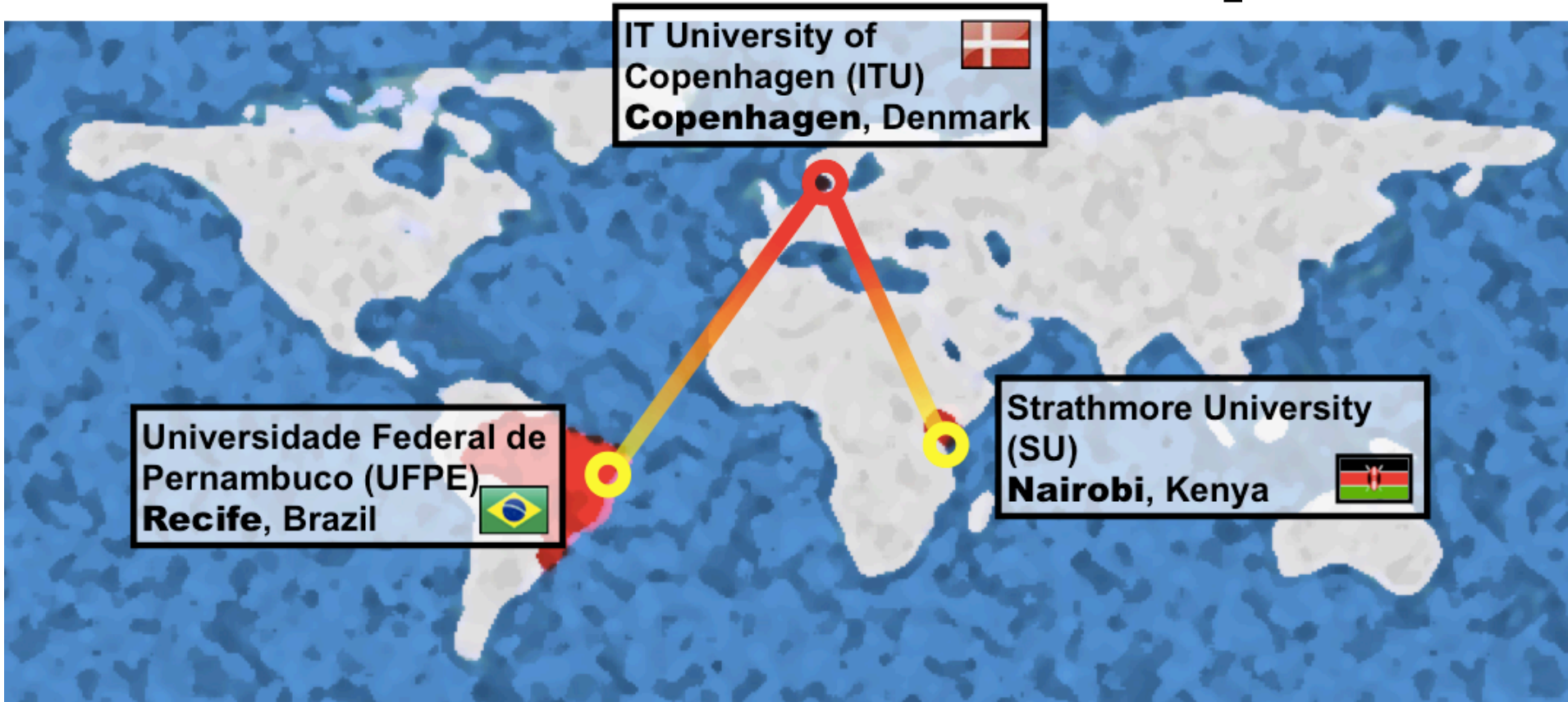


# GSD 2012: Global Software Development



IT University of  
Copenhagen (ITU)  
Copenhagen, Denmark



Universidade Federal de  
Pernambuco (UFPE)  
Recife, Brazil



Strathmore University  
(SU)  
Nairobi, Kenya



**Claus Brabrand**



( [brabrand@itu.dk](mailto:brabrand@itu.dk) )

Associate Professor, Ph.D.

( Programming, Logic, and Semantics )

 IT University of Copenhagen



ITU

IT-  
University  
of Copenhagen



Copenhagen,  
Denmark

# GSD Kick-off Agenda (Feb 1)

<b>When (Aud. 3)</b>	<b>What</b>	<b>Who</b>
13:00 - 13:20	Introduction to GSD	Claus
13:20 - 13:40	Tools for Collaboration	Rosalba
13:40 - 14:00	Audio/Video Tools	Yoo
14:00 - 14:15	--- pause ---	---
14:15 - 14:20	Revelation of Groups	Claus
14:20 - 15:00	Group Exercise	Student Groups
15:00 - 15:15	--- pause ---	---
15:15 - 16:00	Presentation of Projects	Supervisors
16:00	Q'n'A	---

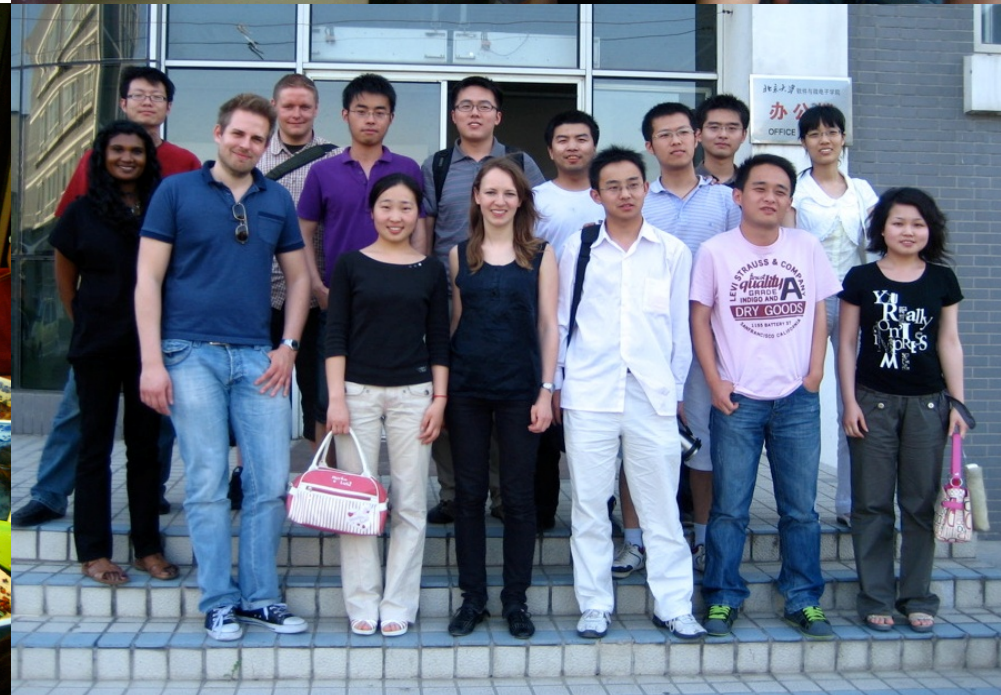
# GSD History

## Previous years:

- 3 years - projects with PKU/China
- 15 students/3 teams

## GSD 2011:

- 45 students /9 teams
- China, Kenya, Brazil
- Prerequisite course on collaboration



# Global Groups



**ITU**

**IT  
University of  
Copenhagen**



**Copenhagen,  
Denmark**

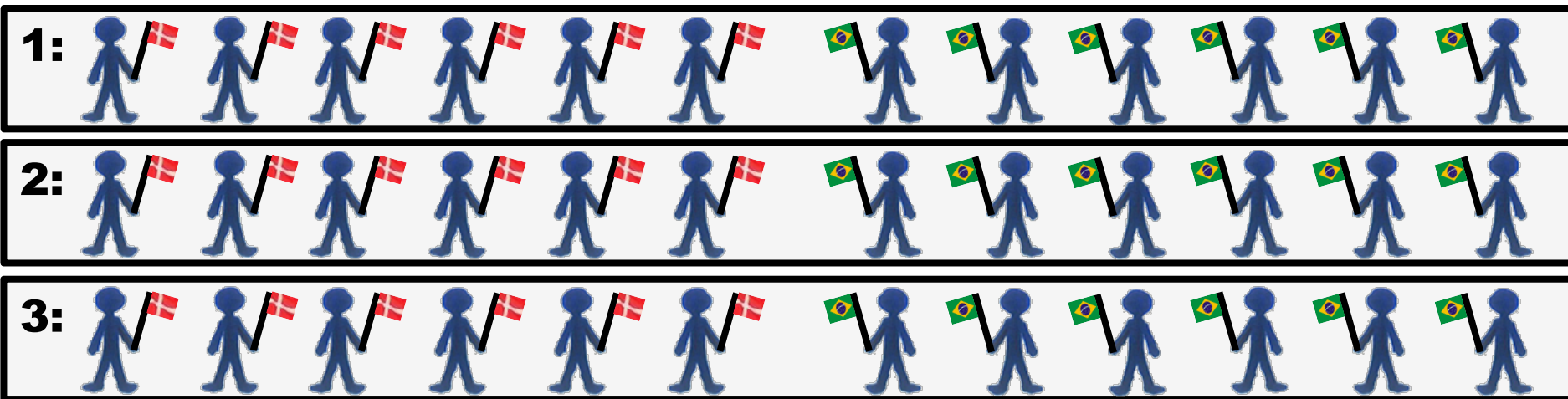


**Universidade  
Federal de  
Pernambuco**



**Recife,  
Brazil**

**UFPE**



**Claus Brabrand**

( `brabrand@itu.dk` )



**Associate Professor, Ph.D.**  
( Programming, Logic, and Semantics )  
**IT University of Copenhagen**



**Paulo Borba**

( `phmb@cin.ufpe.br` )



**Full Professor, Ph.D.**  
( Software Productivity Group )  
**Uni. Federal de Pernambuco**

# Global Collaboration



IT  
University of  
Copenhagen



**Copenhagen,  
Denmark**



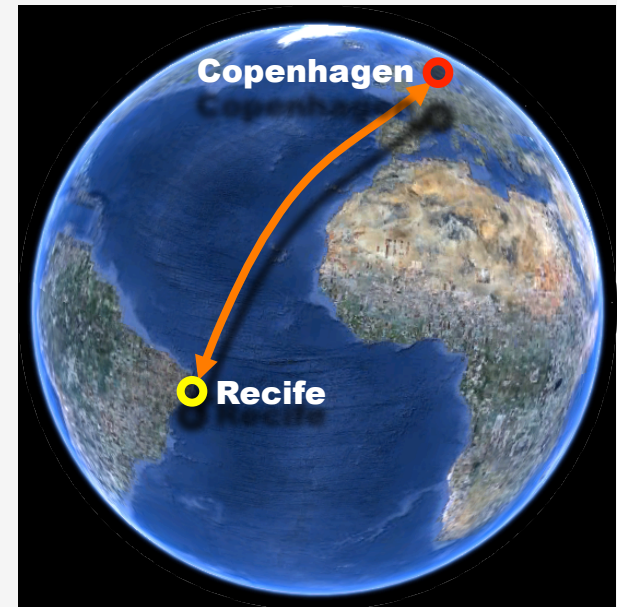
Universidade  
Federal de  
Pernambuco

**Recife,  
Brazil**



## Global collaboration across...:

- Continents ( South America )
- Distance ( 8,300 km )
- Time zones ( 4h summer, 5h winter )
- Language ( Portuguese )
- Culture ( Brazilian )
- Collaboration norms
- Educational traditions and structure



# Distance + Time Diff => IT

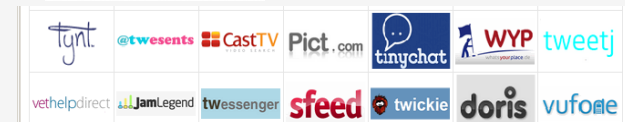
## ■ Technological challenges:

- Requires fast internet connection
- Good video conferencing facilities
- Collaboration Tools



## ■ Communication challenges:

- Language competences
- Communication competences
- Collaboration competences
- Coordination competences



### Help:

- **Rosalba & Yoo**
- **Dist Comm Course**
- **Supervisor(s)**

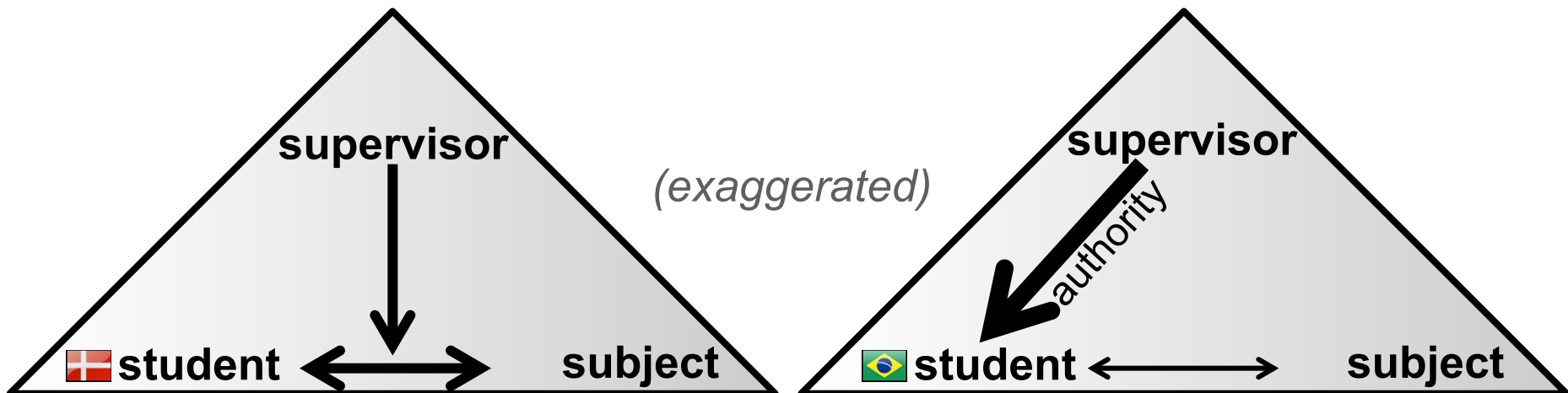
# Culture & Educational Traditions

## ■ Culture:

- E.g. a Danish deadline vs. a Brazilian "deadline"

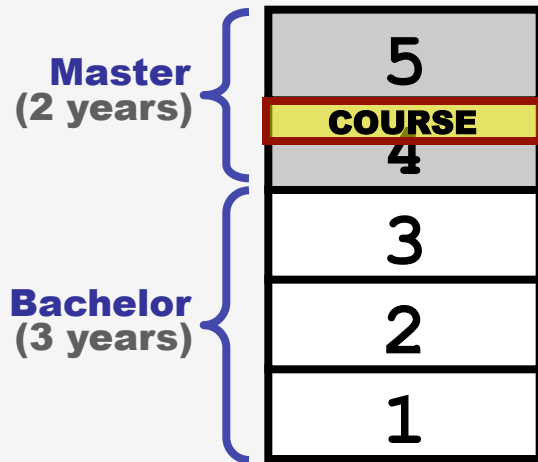
## ■ Educational Traditions:

- Fx.: Authority of the teacher:



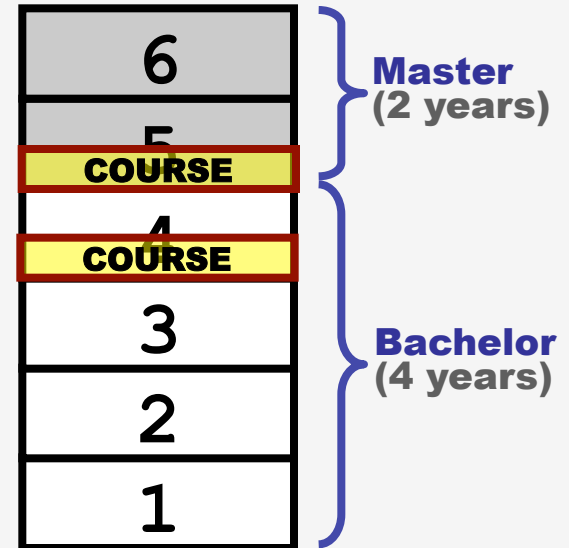
# Educational Structure

**ITU:**

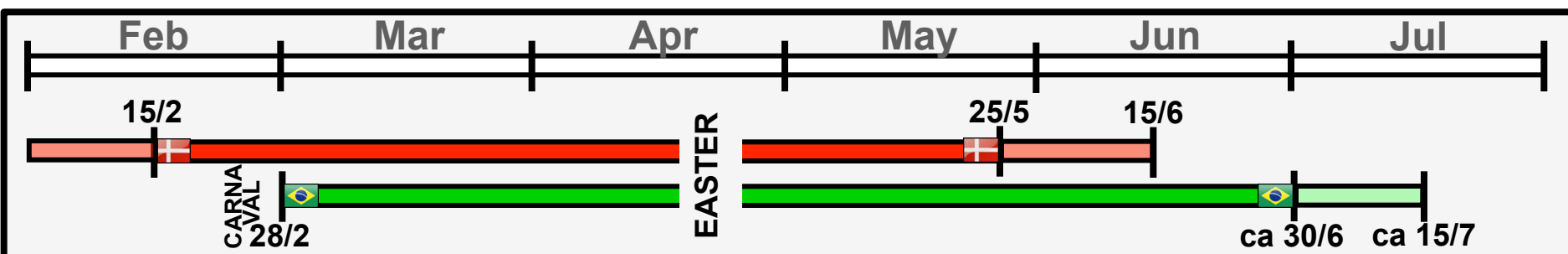


Long summer vacation (Jun/Jul/Aug)  
and short winter vacation (Dec/Jan)

**UFPE:**



Short "winter" vacation (Jul/Aug) and  
long summer vacation (Dec/Jan/Feb)



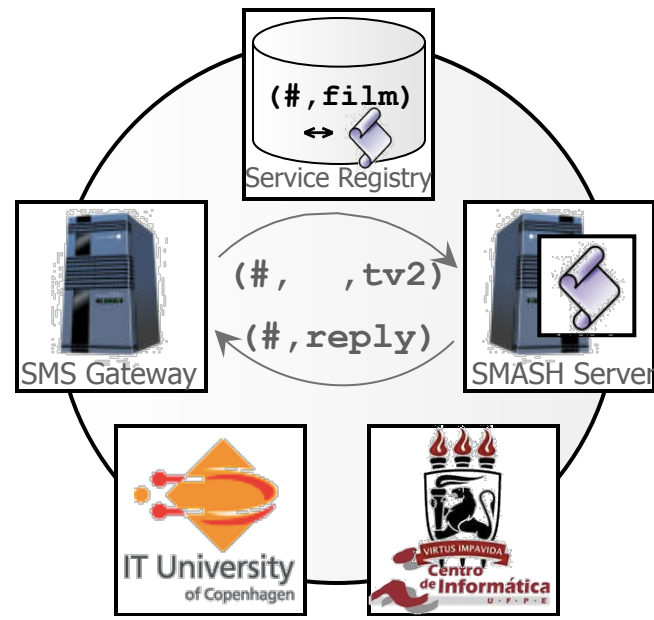


# **Project: Smash-Up Robots**

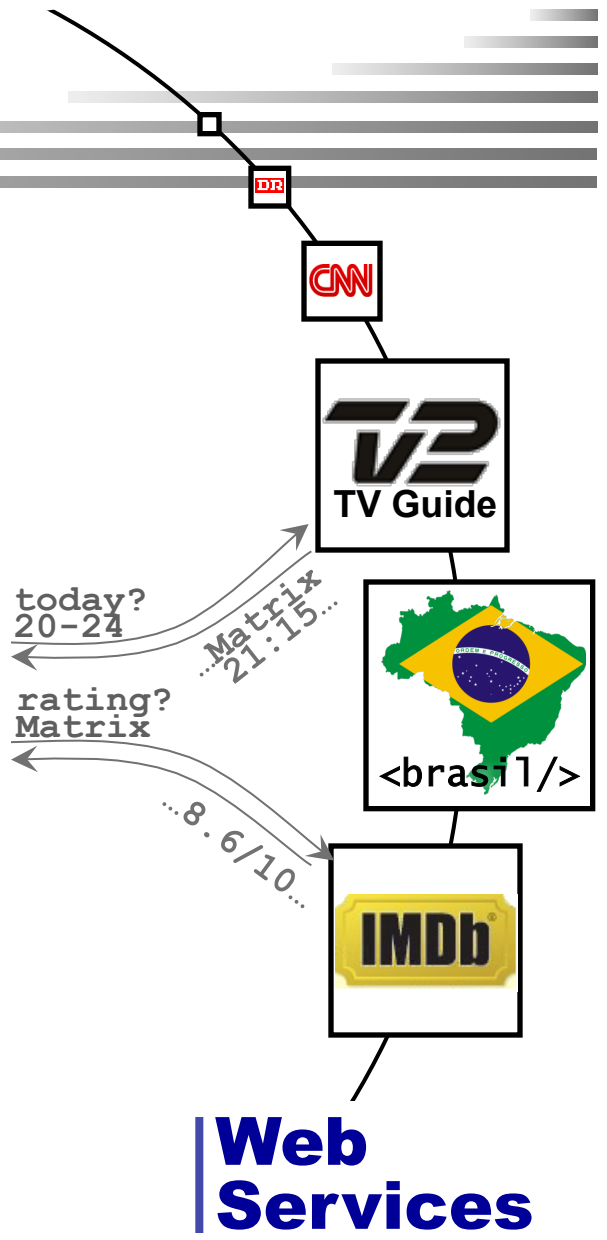
*GSD 2012:  
Denmark-Brazil*

# SMS-Based Web Robots

## Phone Users



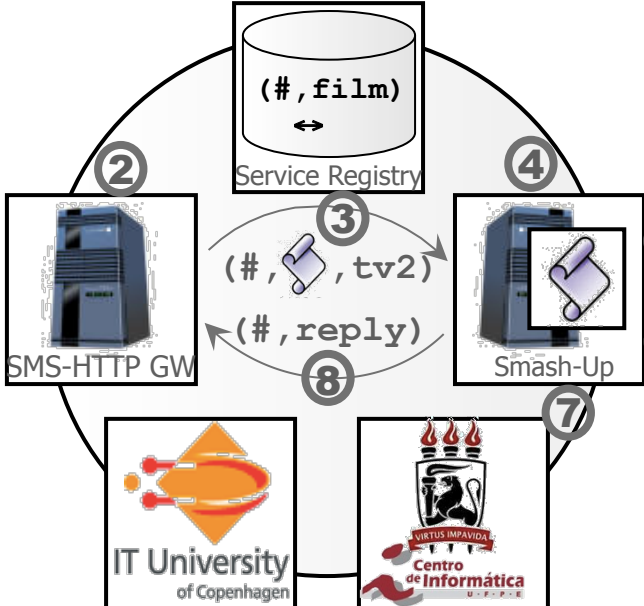
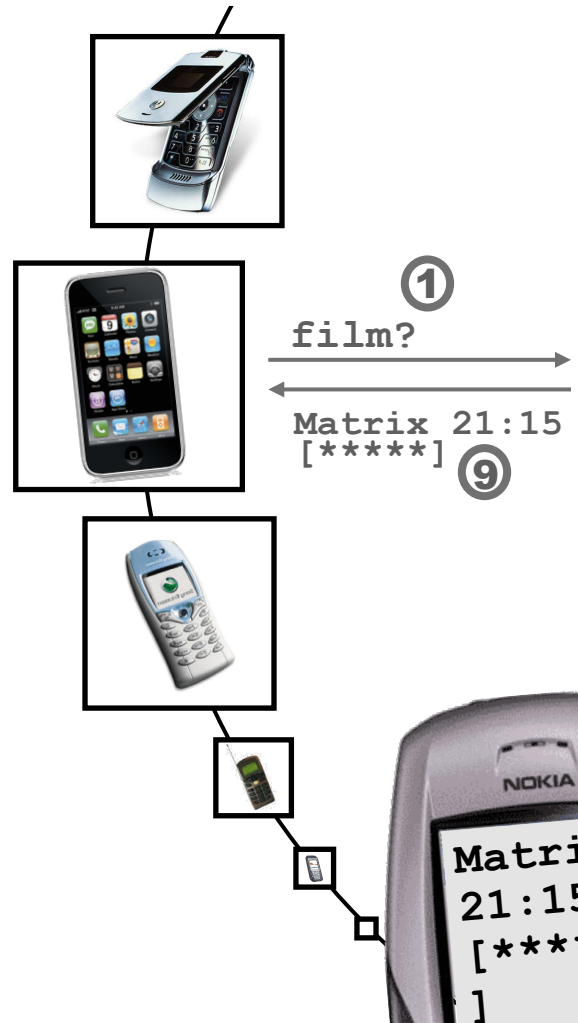
## Programmable SMASH Robots



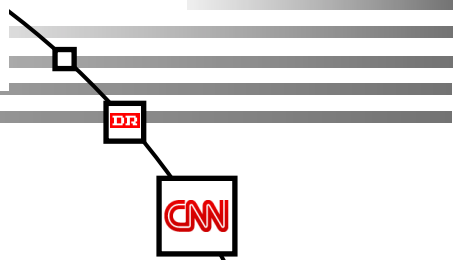
## Web Services

# SMS-Based Web Robots

## Phone Users



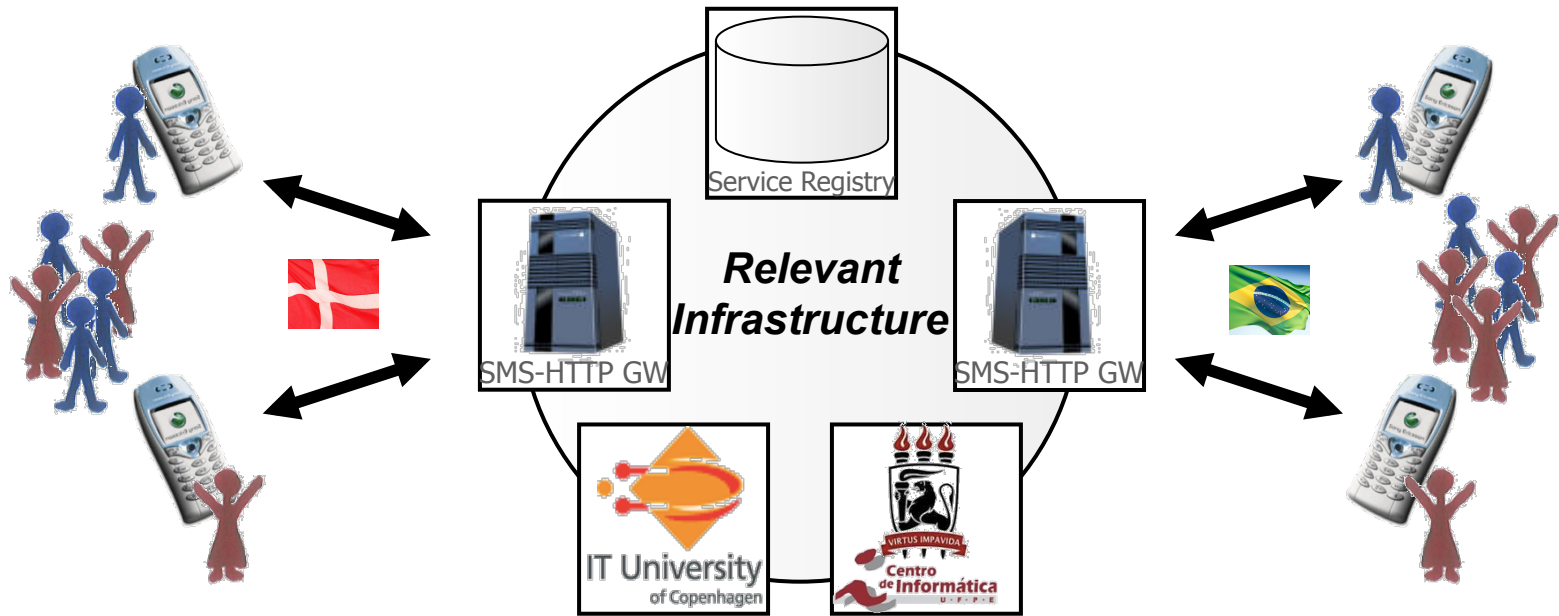
## Programmable SMASH Robots



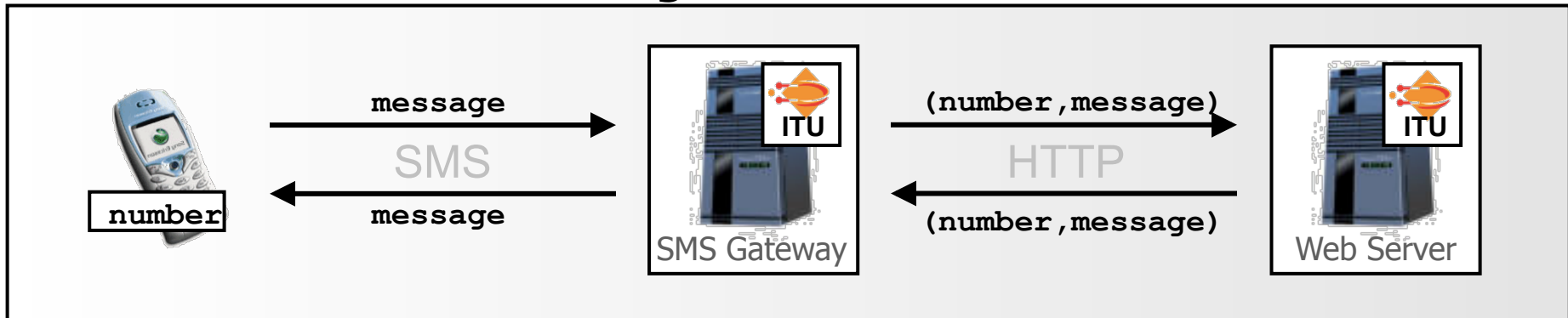
## Web Services

TV tonight?  
Matrix 21:15  
rating?Matrix  
Rating=8.6

# Communication (DK <--> BR)



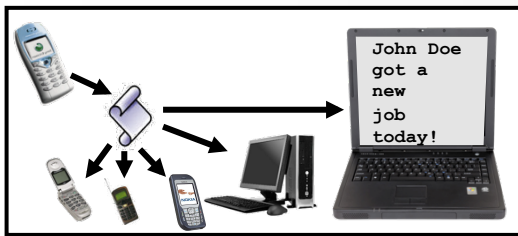
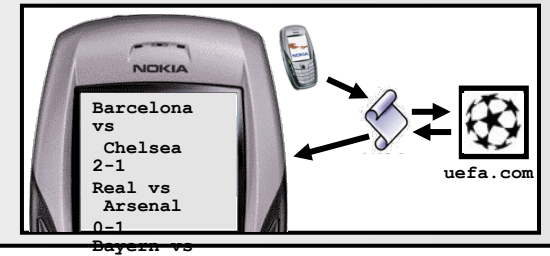
## SMS-HTTP Gateway:



# Example Smash-Up Services

- Return the essential information from a given Web page

- E.g. Champions League results:

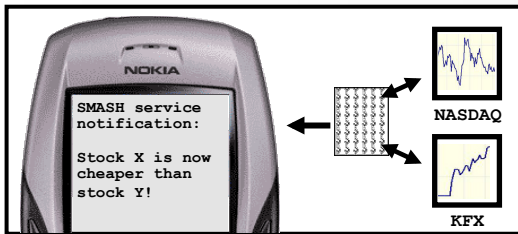
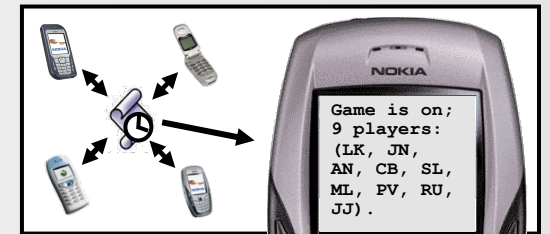


- Broadcast message to 5 people; 3 via SMS (during day) and 2 via email:

- E.g. Family infocast

- Arrange soccer game Sunday nights ("game is on" if there are at least 8 players):

- Coordinate players (Y/N) + broadcast match status:



- Monitor a Web pages and send a message when some situation arises:

- E.g. When stock X is cheaper than stock Y

# Project Specification

The goal of this project is to **design**, **develop**, and **deploy WEB SERVICE ROBOTS** (“programmable personal assistant(s)”) that function on top of the internet as it is.

The idea is that such programmable robots could then assist people in their everyday lives by **automatically** surfing web pages and web services, **automatically** extracting and submitting information, and **automatically** managing and coordinating various tasks. We expect that a lot of tasks could be automated and a lot of coordination taken care of by such services. Additionally, a lot of completely new things become possible.

The robots will interact with people **via SMS** which means that they will work for **everyone, everywhere, all the time**; even in developing countries where many people do not have access to the web, but often still have a cell phone!

This project will happen in collaboration with students from **UFPE** (Universidade Federal de Pernambuco) in **Recife, Brazil**. We hope that the services developed could later be deployed in Brazil. Such robots should be able to make a substantial difference for people there.

**Keywords:** Web-Data Extraction (web scraping), Automated Browsing, Web Services, Web 2.0, XML, Communication, Orchestration, Cell Phones, SMS.

# Calendar (see homepage)

## Kick-off & Related Work Survey

Danes only: Kick-off & Related Work Survey + Taxonomy of existing SMS-Based Services

(Brazilian Carnaval: Feb 17-22)

Feb 2012

Ma	Ti	On	To	Fr	Lø	Sø
		01	02	03	04	05
06	07	08	09	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26

## Smash-Up Toy Service

Brazilians and Danes agree on group constitution, social software usage, and start developing the toy service.

Feb/Mar 2012

Ma	Ti	On	To	Fr	Lø	Sø
27	28	29	01	02	03	04
05	06	07	08	09	10	11
12	13	14	15	16	17	18

## ■ Related Work Survey:

- Collection of existing SMS-Based Services
- => Turn these into a ***Taxonomy***
- => Describe / Explain / Reflect

# Intended Learning Outcomes

**Shared Intended Learning Outcomes** (research inspired)  
(i.e., exactly the same on the Brazilian side!)

## PRODUCT (70%):



- **Design** a couple of actual smash-up services; 25%
- **Implement** the designed services; 25%
- **Evaluate** the designed services; 10%
- **Relate** to existing solutions, frameworks, and services; 10%

## PROCESS (30%):



- **Develop** and **maintain** a plan for the collaboration; *and* 15%
- **Reflect** continually on the plan and the actual collaboration. 15%



# Relevant Aspects

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- **SMS-HTTP Gateway [using Kannel]:**
  - switch between (live use) real phone vs. (development use) mockup client
- **Web Data-Extraction (scraping) [Selenium 2.0, Firefox]:**
  - Xpath, regexps, robustness/stability?, full browser?
- **Service-User management?:**
  - phone book, services registered, directory?, subscription?, ...
- **Easy Service deployment:**
  - easy to add new services: infrastructure + easily plug in a service (API / subclass)
- **Communication/inteaction patterns:**
  - tell, ask, reply, correlation?, ...
- **Events?:**
  - proactive (timeout), reactive (initiation), ...
- **Context (esp. Locationing):**
  - (x,y)-coordinates non-intrusively via Facebook Places or use BlueTooth positioning (triangulate from nearest BlueTooth spots)

# Different kinds of Services

- Domain:
  - Private vs Public vs Company
- #Users:
  - 1-1 RPC vs N-N coordination/orchestration
- User profiles:
  - Mobile primary vs mobile only (Brazilian favelas)
- Service initiative:
  - Proactive (soccer arrange) vs Reactive (film service)

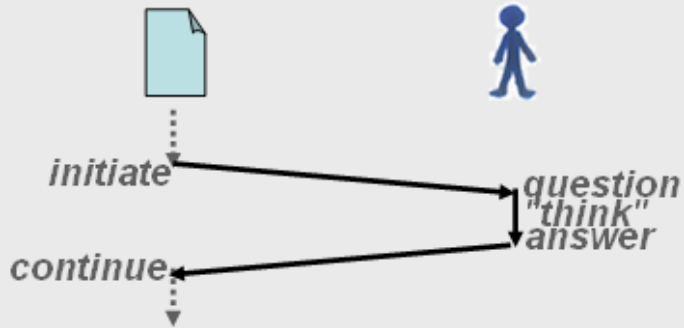
■ ...

## **Taxonomy of services:**

- good for comparing services
- good for developing framework/language/API
- good for learning about such services

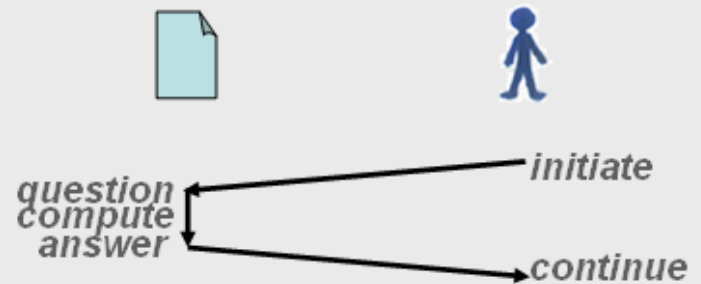
# Communication Patterns

## Proactive (ask):



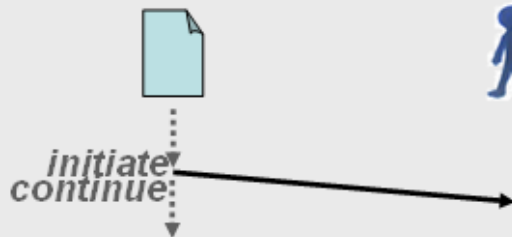
WSDL: "solicit-response"

## Reactive:



WSDL: "request-reply"

## Proactive (tell):



WSDL: "notification"

## Reactive (react):



WSDL: "one-way"

**Note:** We would like (hi-level) "ask", but we only have (low-level) "tell" + "react" so we have to **CORRELATE** tell+react in order to seamlessly provide "ask".

# Administrational Stuff

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- This is a project cluster (no lectures)
- Group work – manage your own time
- 15 ECTS – partner students may have less time
- Group reports + product
- Individual oral exams based on project report
- Exams do not involve partner groups
  
- Project base: A project agreement must be sent to the ITU Board of Studies **no later than 2 weeks after the start of the project period** (i.e., soon!)

**Enjoy the Course!**

# Student Comments

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## Challenges:

- *"The most challenging was to make sure that we both understood the project in the same way."*
- *"The time difference could be a bit challenging."*

## Lessons Learned:

- *"I have learned that you have to be explicit about everything you negotiate on skype, e-mail, etc."*
- *"I have learned that it is important that you establish some sort of relationship with the other part, other than just the business-related".*

## Video:

- ( <http://global.wikit.itu.dk/Knowledge+Sharing> )

# Group Exercise

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Choose a **time-keeper** and for each discussion point (cf. below); **write down** what you talk about and agree on:

- **Group members:** who are you? Name, background, study profile, etc.
- **Contact information:** exchange phone, e-mail, Skype, etc.
- **Meeting time:** Next meeting and weekly meeting times?
- **Roles:** within the Danish group - who has which competences?
- **Time plan:** what is the initial time plan for the project considering your assignment and the information you have about your partner students semester structure?
- **Collaboration management:** How do you plan to manage the collaboration within your group and with your global partners? (e.g. write a collaboration plan?)
- **Conflict resolution ITU group:** For the ITU group – write a list of work-norms and a list of social norms. How do you plan to sanction group members not following the norms? How do you plan to deal with conflicts internally in the ITU group?
- **Conflict resolution global team:** Write a list of possible types of conflicts you can imagine to have in the global team – as well as initial thought on handling such conflicts
- **The project:** The project you are assigned to - what are your initial thoughts and ideas?

**Note:** that you can not decide on things involving your partner group before you have spoken to them (e.g. choice of collaboration platform etc.)