

# An insight into e-Business developments in Croatia

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E-Leader Croatia, June 2011

*With use of materials owed to:*

Ranko Smokvina, Mario Kovač, Zoran Bohaček, Zoran Skočir, Boris  
Vrdoljak and *Ericsson Nikola Tesla d.d.*

# e-Health

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- Telemedicine
- Primary health care
- Pharmacies
- Hospital information systems
- Public health institutions
- Health insurance
- Pharmaceutical industry
- Research

# Telemedicine

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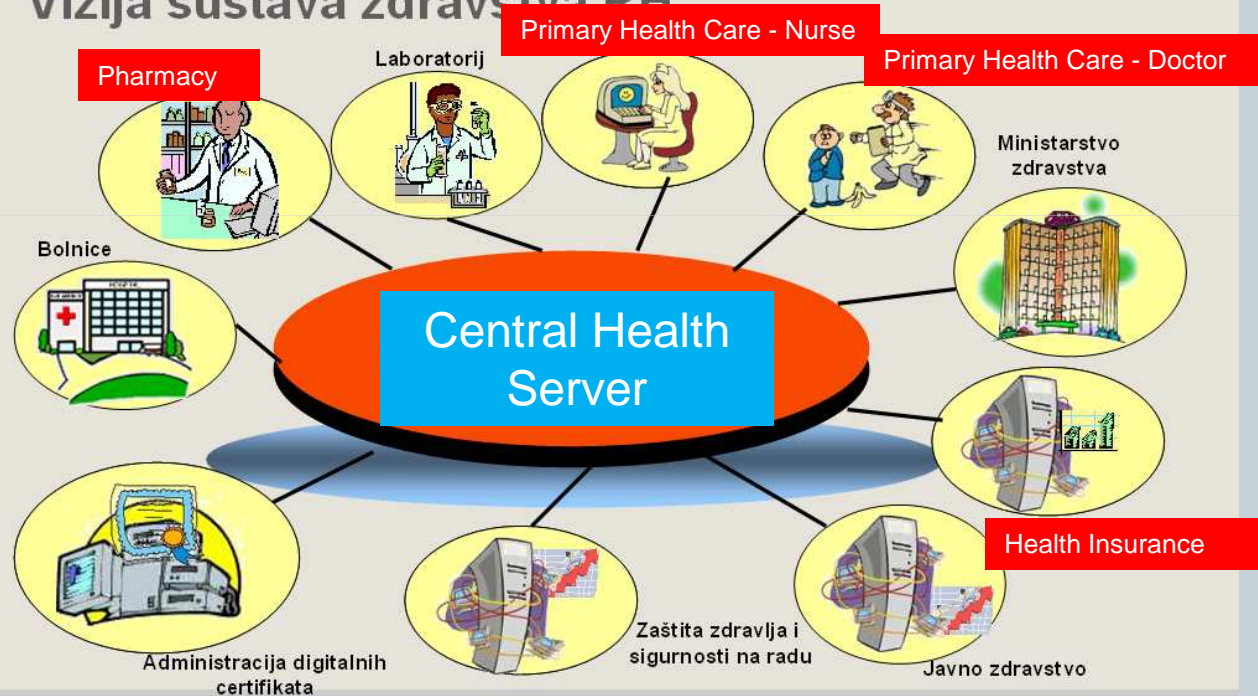
- Reason
  - Small country, but ...
  - Remote areas
    - Islands in the Adriatic sea – can get isolated
- Good expertise in central hospitals
- Relatively good telecommunications
  - Optical fibre
- Organisational issues
  - Who is responsible?
  - Who pays?

# Role of the Central Health Server

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ERICSSON

## Vizija sustava zdravstva PH

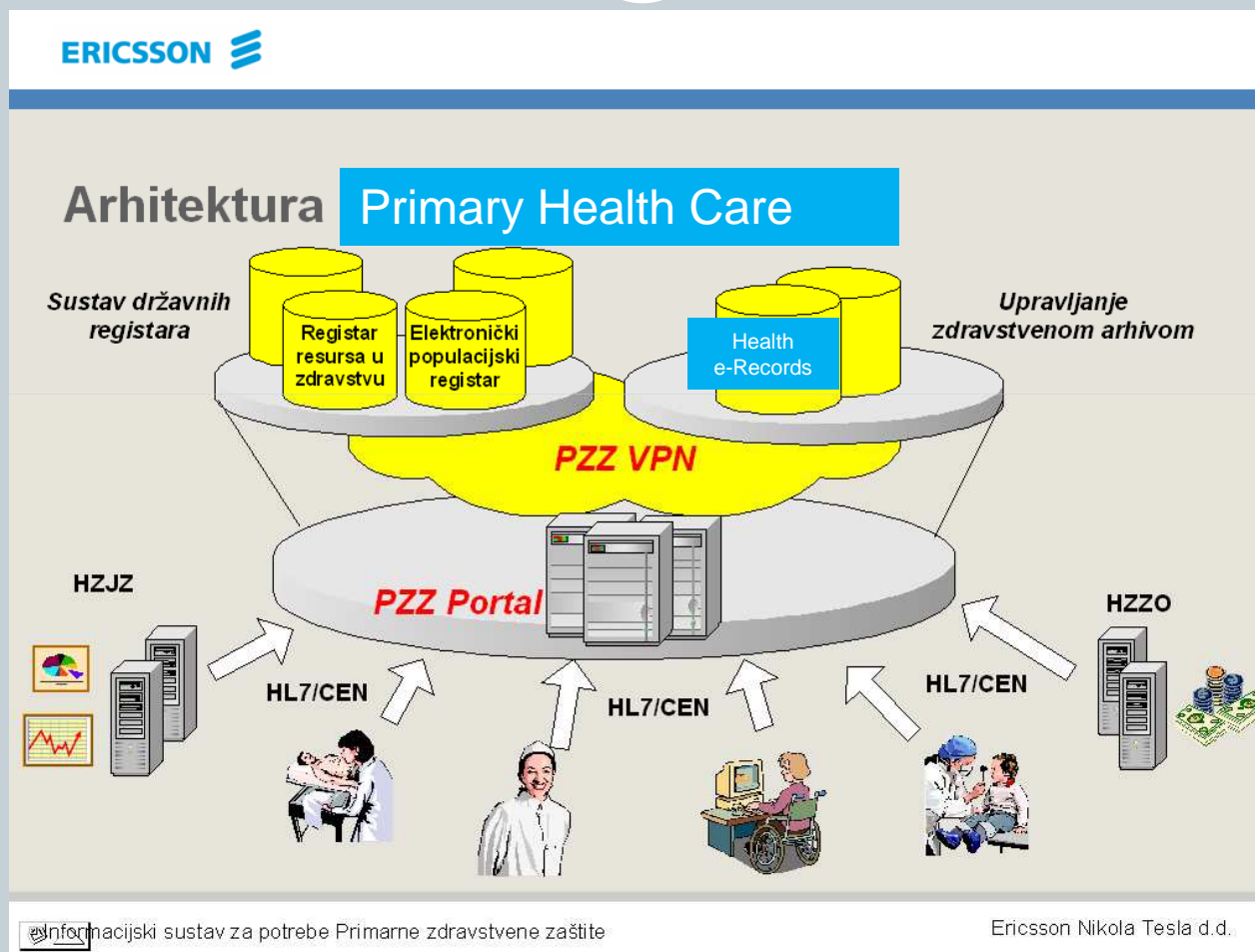


Informacijski sustav za potrebe Primarne zdravstvene zaštite

Ericsson Nikola Tesla d.d.

# Primary Health Care Architecture

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# Realised

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- **Primary health care**
  - Multiple SW providers
- **Central repository of Health e-Records**
  - XML database
  - Data warehouse should be the next step?
- **Issuing and acceptance of e-Recipes**
  - Implemented in whole country
  - Encouraging results

# e-Banking (Z. Bohaček)

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- **History**

- PC banking – since early '90-ies
- Phone banking
- Internet banking – end of '90-ies
- Transfer of payments among legal entities to banks – April 2002 – opened e-Banking as quick and convenient

- **Basic services**

- Payments
- Standing orders
- Funds transfers

- **Advanced services**

- Foreign currency transactions
- Long term deposits
- Investment funds
- Status checking

# Users of Internet banking in Croatia 2005-2008

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## Users

	31.12.05	31.12.06	31.12.07	31.12.08	31.03.09
Citizens	276.170	350.787	424.298	559.711	597.866
Companies	83.527	106.088	130.111	150.668	155.721

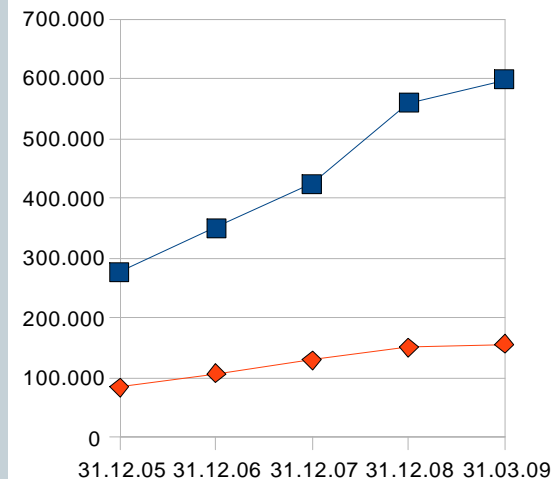
## Growth

**2006/2005 2007/2006 2008/2007**

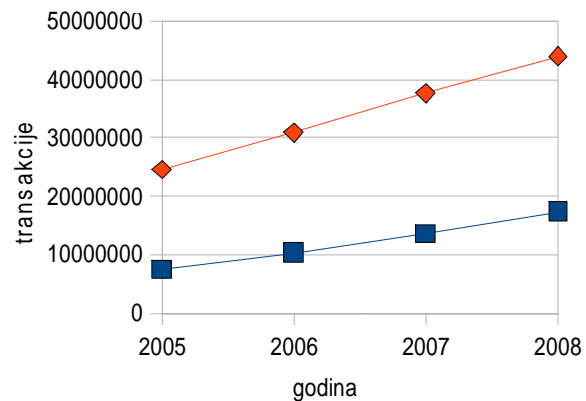
## Total

Citizens	27,0%	21,0%	31,9%	102,7%
Companies	27,0%	22,6%	15,8%	80,4%

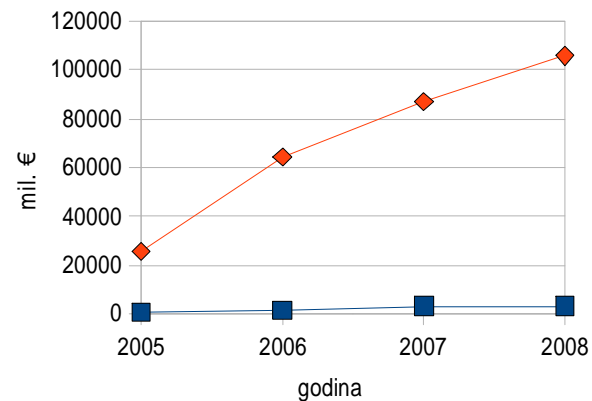
Number of users



Internet transactions



Internet transactions value





# e-Payment

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- Final but indispensable step in e-Business
- Major part computerised but often with manual data entry/edit
- e-Invoice is the most frequent and important e-Document

# e-Business in Croatian companies (1)

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- Requirements:

- profitable (low initial investment, short ROI time),
- modular,
- scalable,
- mutually compatible (according to standards applied)

# e-Business in Croatian companies (2)

## (B. Vrdoljak)

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A large corporation consisting of multiple companies.

- **Companies** use **own ERPs** and **the system** is **heterogeneous**,
- **The system** needs **connection** in a **unique, controlled** and **safe** way.
- e-Business is *de facto* in function with major co-operants

### Proposed solution:

- Within the system **OAGIS 8.0** standard,
- Possible transformation at input/output (BMS, UBL,...)
- B2B platform realised as **SOA architecture** (*Service Oriented Architecture*) using **ESB** (*Enterprise Service Bus*)
- **Expected migration to OAGIS 9.3**

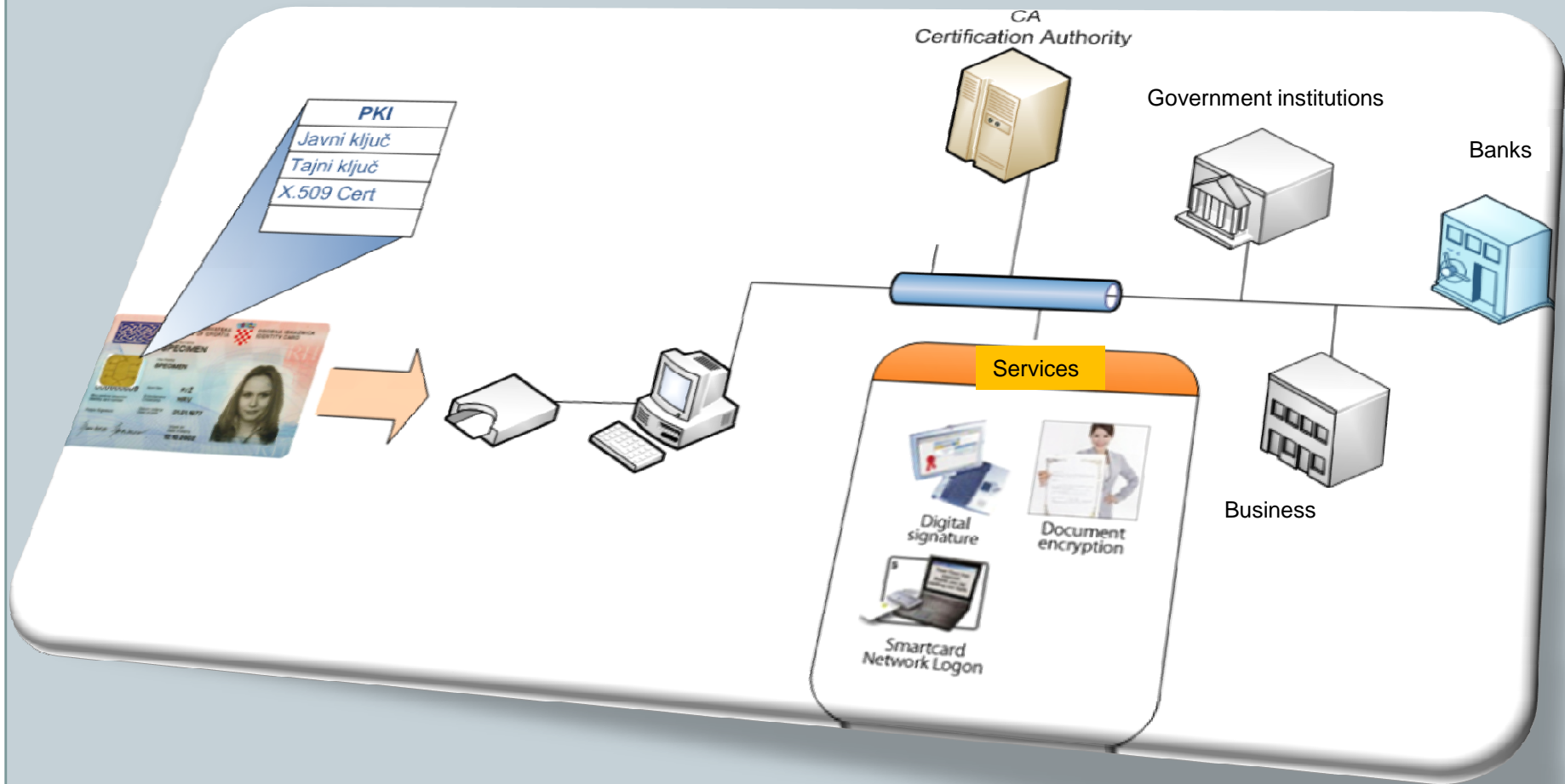
# Obstacles to e-Business

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- Legal regulations
  - Still require paper invoice
  - To be solved soon!
- Identification and authentication
  - In 2003 unique personal identification number abolished
  - Useless new ID cards issued
  - Since 2010 in use a personal identification number again
  - **New smart ID cards required**
- Government should enable/promote/require e-Communication with business and citizens (G2\*)

# Role of smart personal e-Documents (M. Kovač)

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# Functionality of e-ID

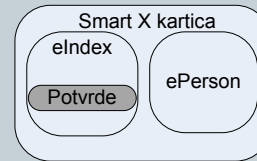
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Interface	Function	compulsory
contact (ISO 7816)	Digital signature	compulsory
	Authentication for access to NATIONAL e-Services	optional
	Authentication for access to INTERNATIONAL e-Services	compulsory
contactless (ISO 14443)	LDS applet (e-Passport), photo, 2 fingerprints	optional

# Application of e-Identity in higher education (1)

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## e-Certificate

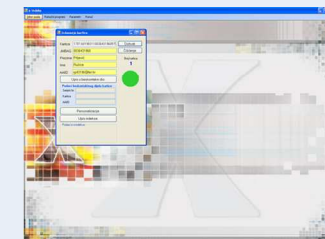


Biblioteka za komunikaciju sa SmartX karticama

- Operacije:
1. Dohvat/čitanje potvrda
  2. Dodavanje potvrda
  3. Promjena sadržaja potvrda
  4. Provjera valjanosti
  5. Brisanje potvrda

A screenshot of a web application interface titled "Aplikacija e-Indeks". It features a complex table with multiple columns and rows, containing various data points and filters.

Aplikacija e-Indeks



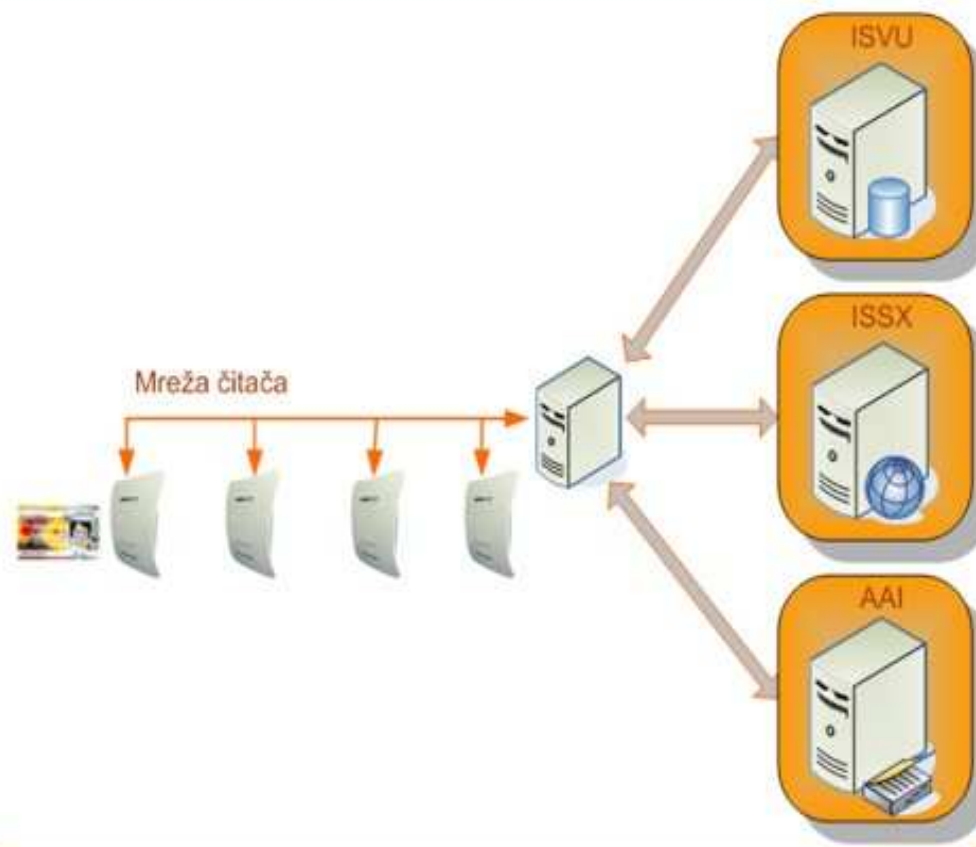
Aplikacija SXReferada

# Application of e-Identity in higher education (2)

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## Applications for students

Contactless...





# Application of e-Identity in higher education (3)

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## EXAMPLE: Electronic identity and transactions in higher education

e-Index

1. semestar (semestre) - Zimski (hibernium)					Studij: Temeljni dio studja zimski akademska godina 2000./2001. (anni schol.)			
Ime i prezime nastavnika (Nomen et cognomen magistris)	Naziv predmeta (Index professionum)	Ukupno sati (Quot horarum)			Nastavnik potvrđuje uredno izvršenje obaveza (Magister testatur officiorum praescriptorum exsecutionem)	Uspjeh na pojedinim ispitima (Singularium examinum eventus)	ECTS bodovi (ECTS puneta)	Potvrda o upisu i ovjeri semestra (Testimonium inscriptionis et semestris probato)
		predavanja (actionum)	vježbi (exercitationum)	seminara (seminatorum)				
Prof.dr.sc. V. Henč-Bartolić Prof.dr.sc. D. Blažković Prof.dr.sc. I. Ivančić Prof.dr.sc. M. Đurek Prof.dr.sc. N. Jurković Prof.dr.sc. S. Šušteršič Prof.dr.sc. T. Peko Prof.dr.sc. V. Čučić Prof.dr.sc. Z. Čučić Prof.dr.sc. B. Blažković Prof.dr.sc. S. Šušteršič	Linearna algebra	300	2	0	Priznat ispit	dovoljan (2) 21.09.2001 Prof.dr.sc. I. Ivančić	6.0	Upisan u zimski semestar ak. g. 2000./2001. kao 1. semestar studija <b>06.07.2000</b>
Prof.dr.sc. V. Čučić Prof.dr.sc. M. Đurek Prof.dr.sc. N. Jurković Prof.dr.sc. S. Šušteršič	Matematička analiza I	4	3	0		Upisati ponovo		
Prof.dr.sc. V. Henč-Bartolić Prof.dr.sc. T. Peko Prof.dr.sc. D. Horvat Prof.dr.sc. D. Horvat	Fizika I	3	3	0		dovoljan (2) 08.11.2001 Prof.dr.sc. V. Henč-Bartolić	7.0	
Prof.dr.sc. Z. Čučić Prof.dr.sc. S. Šušteršič Prof.dr.sc. S. Šušteršič Prof.dr.sc. S. Šušteršič	Osnove elektrotehnike I	3	3	0		dovoljan (2) 29.08.2001 Prof.dr.sc. B. Blažković	7.0	
Prof.dr.sc. M. Đurek	Primjena računala	1	2	0	Osloboden obaveze polaganja - 1. mesto na državnom natjecanju iz informatike	Obavljeno	3.0	
Pred. N. Jurković	Tjelesni odgoj I	0	2	0		Obavljeno	1.0	
								semestar-godinu ovjerava: (Semestre-annum probat.)
								Dekan (Decanus)

**Studij Elektrotehnike**

- 1. nastavna godina (2000/2001) ▶
- 1. nastavna godina (2001/2002) ▶
- 2. nastavna godina (2002/2003) ▶
- 2. nastavna godina (2003/2004) ▶
- 3. nastavna godina (2004/2005) ▶
- 4. nastavna godina (2005/2006) ▶

**Studij Računarstva**

- 3. nastavna godina (2004/2005) ▶
- 4. nastavna godina (2005/2006) ▶

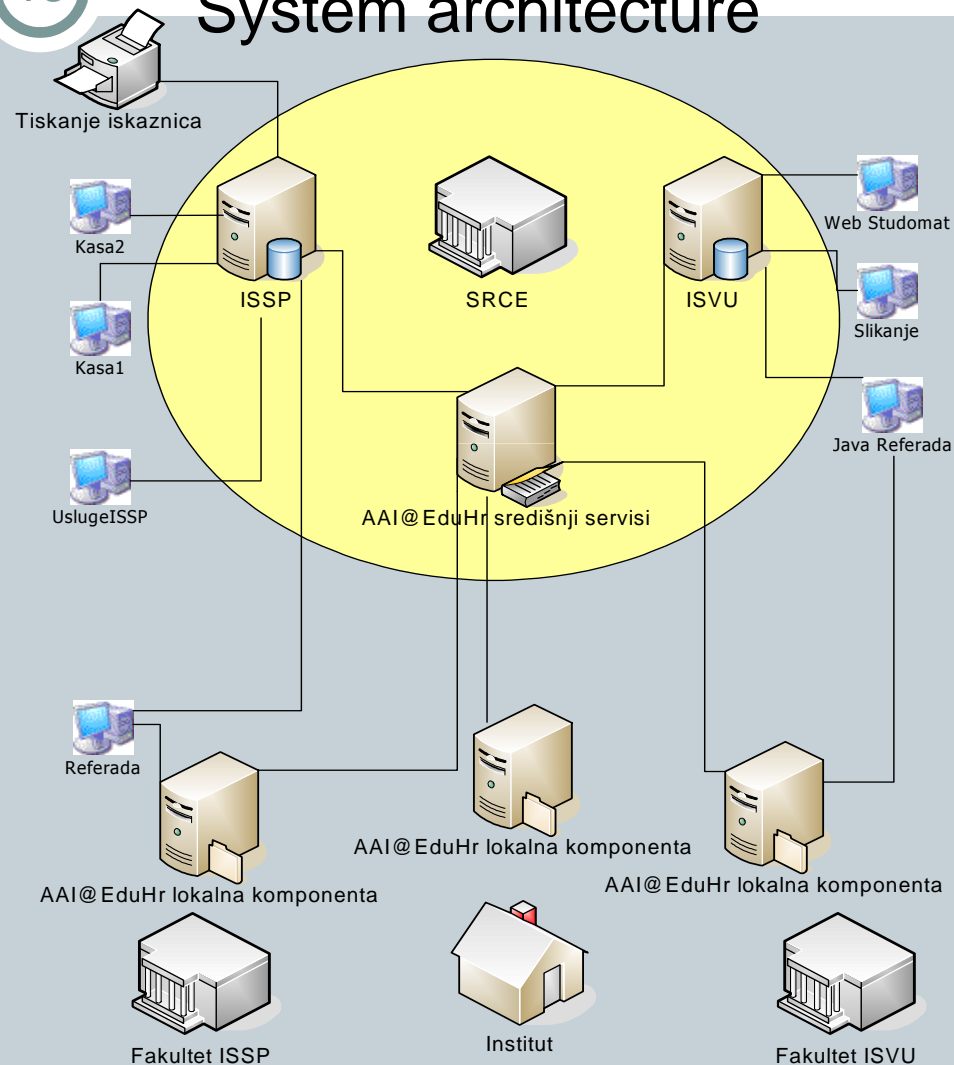
# Application of e-Identity in higher education (4)

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## System architecture

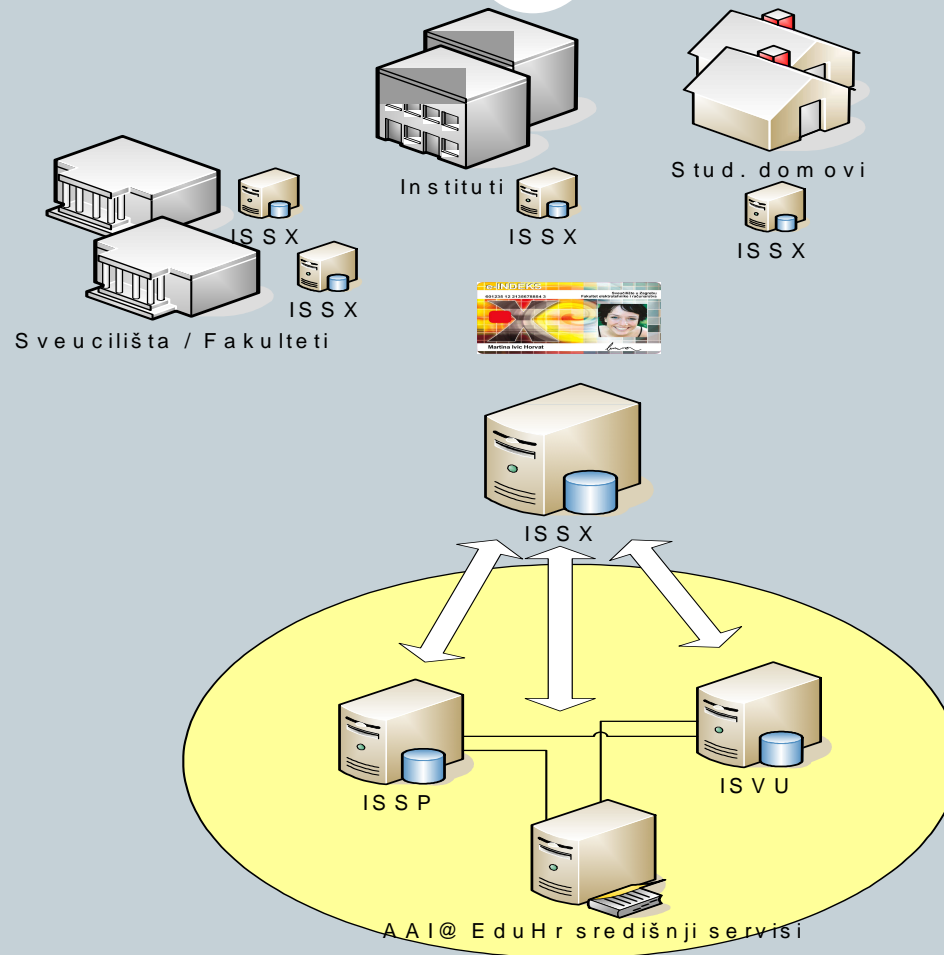
e-Index

POS with reader



# Application of e-Identity in higher education (5)

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# eID in Europe (R. Smokvina)

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## Existing eID in EU countries:

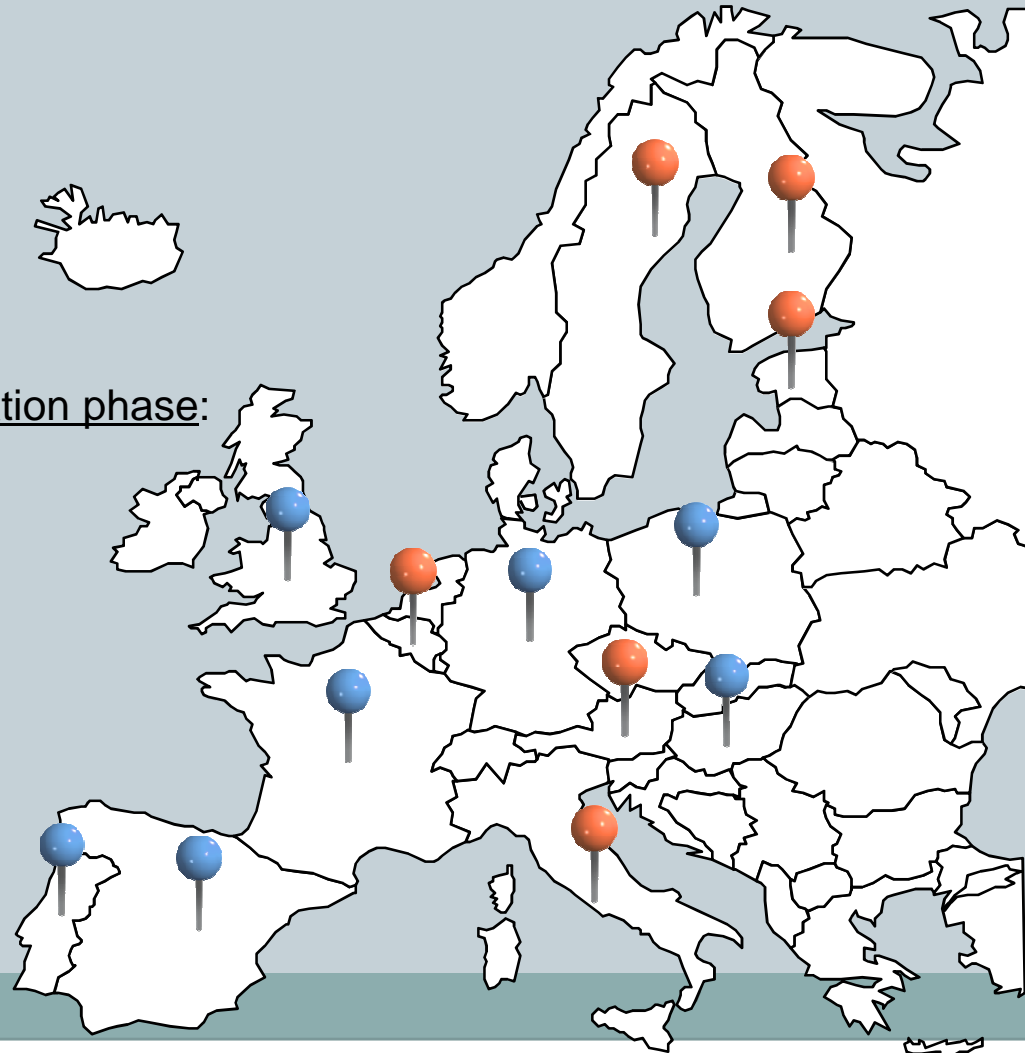
- Finland
- Estonia
- Belgium
- Austria
- Italy
- Sweden

 *Finished projects*

 *Projects in preparation phase*

## Projects in preparation phase:

- Germany
- France
- Portugal
- Spain
- Poland
- United Kingdom
- Hungary



# eID example from Belgium

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- **Interoperability problem**
  - Croatia cannot afford to follow all the standards
  - One cannot afford to wait until the *ultimate* standard!
  - eb-Providers
    - Supported by major companies
    - Enabling easy and convenient inclusion of SMEs into e-Business
- **Financial aspects**
  - Allegedly large savings
  - eb-Providers & PKI-Providers cannot charge more than the savings

# Other necessary measures

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- Government institutions to require e-Documents
  - To avoid reluctance towards some leading corporations
  - Helps in acceptance of e-Business
- Utilisation of available expertise and experience
- Achieving the critical mass of e-Business participants
- Management support for introduction of e-Business
- Information systems integration within companies
  - Necessary precondition for full benefit from e-Business
- Charging of services within e-Business to be acceptable for users
- **Introduction of smart personal identification cards**

# Future outlooks

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- Not only, nor principally the question of technology!
- Not only, nor principally material savings on paper, postage and data entry
- Information system does not end on the company's doorstep
- Quick & Accurate information:
  - CRM & SCM
  - Product oriented  $\Rightarrow$  Customer oriented
  - Lack of money  $\Rightarrow$  Lack of time
  - Sequential job completion  $\Rightarrow$  Multitasking
  - How to keep the customer?  $\Rightarrow$  How to win a customer?
  - ...
- **Complexity and requirements only grow!**
- **Good working examples are the best promotor!**