
Software Engineering in Croatia

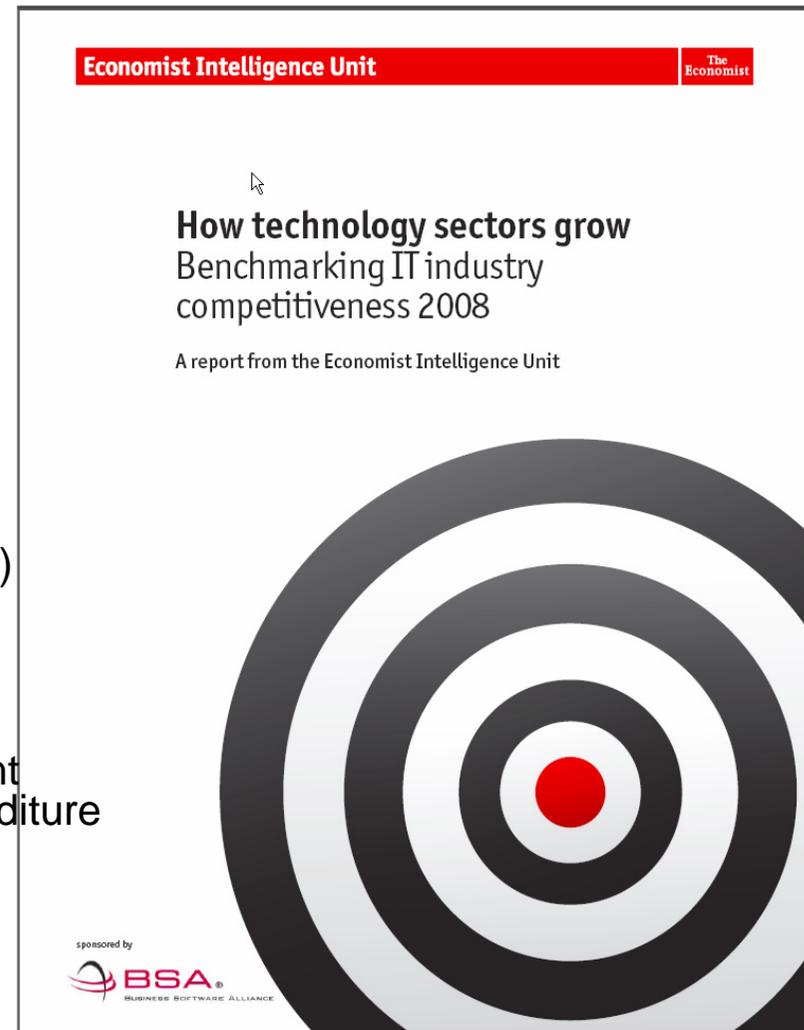
Towards the skills-based society?

Parole, parole, parole

- ~~Knowledge~~ Skills based society – what does it mean?
- **Skill** – the ability to do something well
- **Knowledge** – the body of truths or facts accumulated in the course of time
- **Education** - the act or process of imparting or acquiring general knowledge, developing the powers of reasoning and judgment, and generally of preparing oneself or others intellectually for mature life

The Economist: EIU Report 2008

- 66 countries ranked according to 6 main categories:
 1. Business environment
 2. IT infrastructure
 3. **Human capital**
 - 25% no. of students, 60% educational system capacity (technical + soft skills)
 4. Legal environment
 5. **R&D environment**
 - 65% no. of IT patents, 10% government expenditure, 10% private sector expenditure
 6. Support for IT industry development



Croatia's EIU ranking

	Overall index score	Business environment	IT infrastructure	Human capital	Legal environment	R&D environment	Support for IT industry development
Category weight		10%	20%	20%	10%	25%	15%
United States	74.6	98.0	89.2	94.5	92.0	23.7	86.4
Taiwan	69.2	87.6	52.0	73.1	70.0	74.3	65.3
United Kingdom	67.2	94.3	81.4	78.5	85.0	16.4	87.8
Sweden	66.0	91.0	86.7	64.3	81.5	26.0	80.2
Denmark	65.2	94.7	83.4	64.0	87.0	18.5	86.0
Canada	64.4	89.0	87.2	71.6	82.0	10.1	86.4
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Turkey	32.4	77.6	6.5	44.8	57.5	0.2	57.2
Romania	32.3	67.0	12.1	48.2	56.0	0.6	52.1
Saudi Arabia	32.3	69.6	11.2	43.5	45.5	0.8	64.4
41. Croatia	31.6	55.6	3.2	51.9	62.0	2.4	54.6
Thailand	31.5	78.0	6.0	43.4	43.5	0.2	62.7
Brazil	31.0	66.0	13.4	38.6	46.0	1.0	61.3
Mexico	30.7	62.6	11.3	37.9	54.5	0.5	60.3
Bulgaria	30.2	61.3	6.8	47.4	56.0	1.1	49.3

What should we do to improve in those two areas?
 What should we do to increase IT share in GDP?

State of IT sector in Croatia

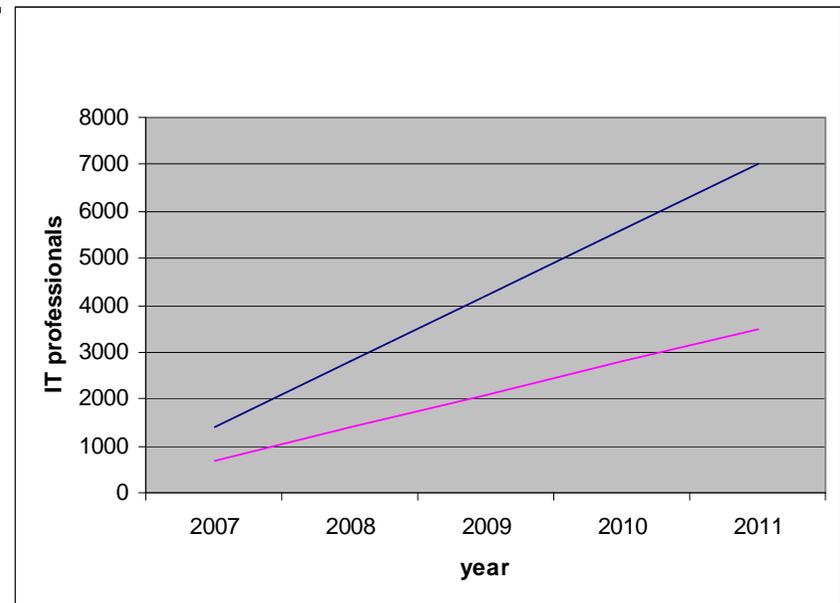
- Large number of all-round small companies
- Strong orientation towards IT services, very small number of SW products
- Customization much more frequent than development
- Government as the main customer (~40%) on the IT services market
- Level of IT penetration in public services still rather low
- IT service expenditure 2,3 % GDP (world average 2,5%)

IT services vs. IT products

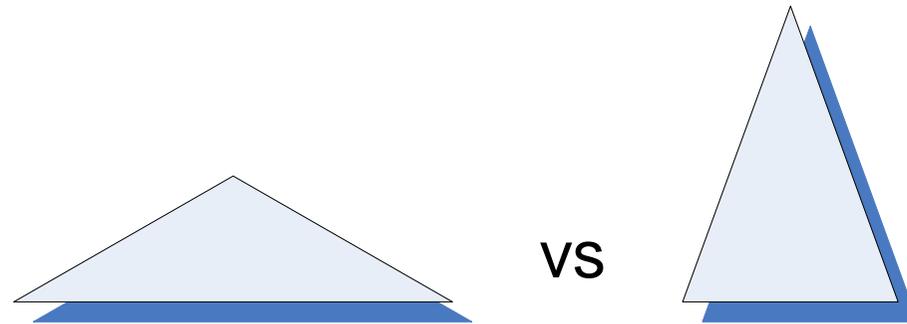
- Business models significantly differ
- IT Services
 - require medium-to-large companies (especially if targeting serious outsourcing jobs)
 - require more IT personnel, their high quality not crucial
 - research component not emphasized, no patents
 - income proportional to the number of employees
- IT products
 - being a small company/startup/spin-off is not a disadvantage
 - require (a smaller number of) high quality IT staff
 - research component very important, resulting patents
 - income proportional to product quality

IT staff supply/demand in Croatia

- IDC (2007): 7000 new IT jobs by 2011.
- Croatian HE produces max 700/year
 - Romania 8.000/year, Ukraine 30.000/year)
- Decrease of enrolment on technical studies is a fact
- Large financial institutions already outsource jobs to Far east
- NCC recommendation: double the number of educated IT staff in 3 years!
 - who should educate them?
 - should we consciously trade quality for quantity?



Higher education – shaping the triangle



- Triangle surface – inherently limited and inert HE resources, cannot be quickly expanded
- Which HE triangle shape do we prefer: “populistic” or “elitistic”?
- Which triangle Bologna process encourages?

Industry pressure towards HE

- Lowering costs of entry-level staff training
 - encourage incorporation of soft-skill courses in SE curricula
 - prefer endowing students with very practical skills (certificates?) to general, more theoretical knowledge
- Are those issues in line with the overall demand for flexible workforce?
 - what are the resources available for meaningful soft-skills training in the university setting (group sizes)?
 - do we provide our students with a sound theoretical base i.e. educate them (+ abstraction & generalization “IT meta-skills”)?
 - do we re-educate our employees or do we just replace them?

Prospects ?

- Lack of (quality) IT personnel will remain constant
- Steady and large demand for IT services from public sector and private companies
- Customization will be favored to development
- There will be no strong pressure for export
- Export will be mostly restricted on regionally-provided IT services
- Technical level of local IT (SE) will remain rather low, number of products and patents also low
- Skilled coder or system administrator will be (remain?) valued more than a PhD

Prove that I am wrong !

(if you can)
