

FROM HOMO SAPIENS TO HOMO MOBILIS

“Digital technologies is not only a basic necessity for chemistry education it is a challenge for personalization of learning“

**10th European Conference on Research In Chemistry Education (ECRICE)
4th International Conference Research in Didactics of the Sciences (DidSci)**

B.Brestrenská, Krakow 2010





**It is a reality of the
Human Evolution
and
Technical Revolution**



Three Civilization Waves

Characteristic of Society	Time	Sources	Work/Tools
Primitive	1 000 000 years	Animals , seeds, fruits	Man-hunter/bow Women- counter/hands
1. Agrar	15 000 years	vesture, home animals	Agricultural workers and stockbreeders /soil
2. Industry	300 years	Fosil fuels, metals	Workers/machines
3. Information	40 years	information	Managers / ICT

Communication in Time

555 years - the first print book - Gutenberg (23.2.1455)

105 years - the first radiotelegraphy- J.Murgaš - 27.4.1905

46 years - the first network 4 computers - ARPANET - 29.10.1964

27 years -Internet -- (1.1.1983)

18 years - the first SMS



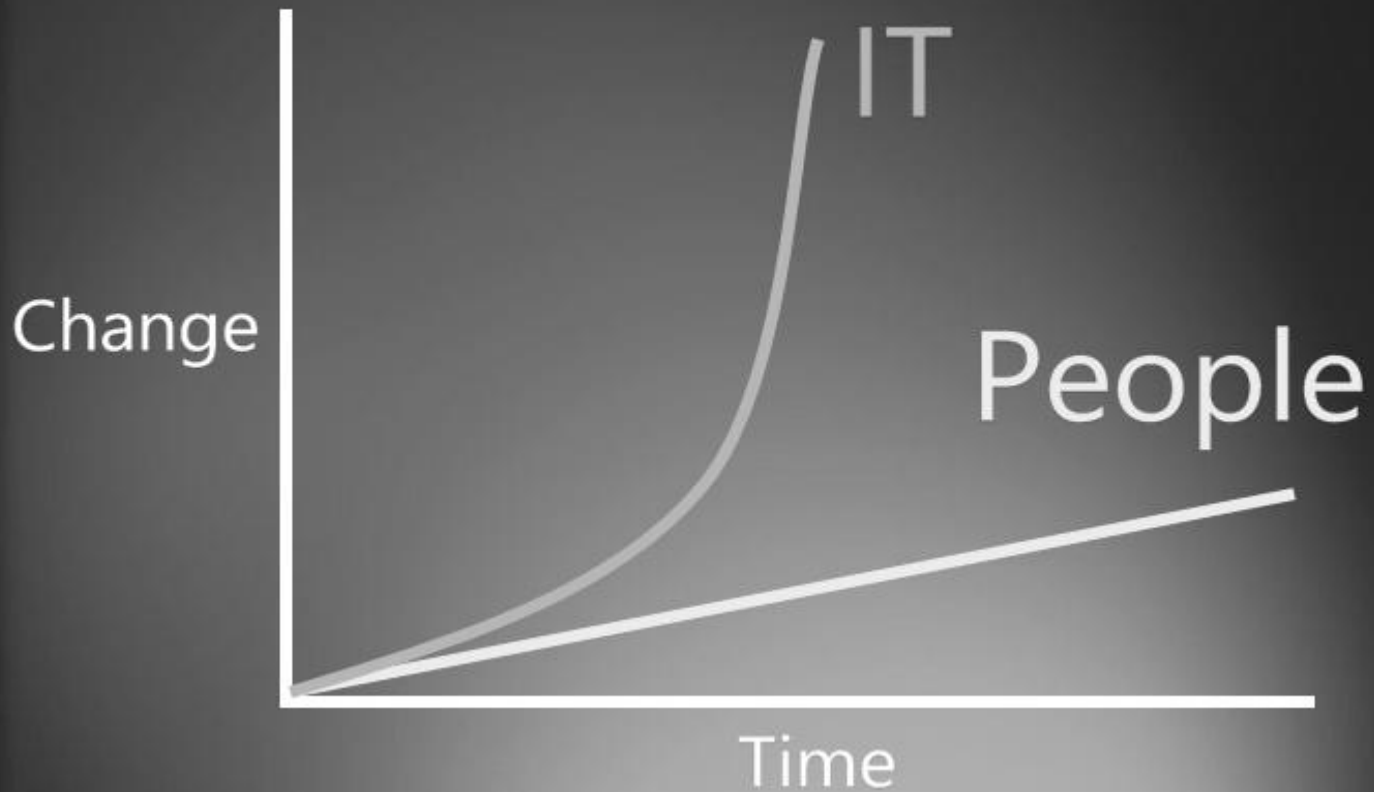
Communication
in Time

Communication in Time

People	Communication technologies
My Grand Mother 1898	Book, radio, telegraph
My Mother 1925	Book, radio , telephone, television
Me - 1955	Book, radio , telephone, television , PC, e-mail, web-cam, iPAQ, internet, 3G-mobile phone, IPT,

The Digital Paradoxes

Moore's Law & People



Education in Time

100 year back - who knows read and write - was educated person

60 years back - who had a high school - had a good economical position

**Education
in Time**



today the University study is not enough to have a good job

necessity for today is Life Long Learning

Education and Position

People	Education	Position
My Grand Mother 1898	High School	The high social position
My Mother 1925	High School	The good social position
Me - 1955	University	Is not enough for good position at the labour market in the 21st. Century - LLL

Education and Technologies in Time

Classroom Tech ... Through the Decades

1895



«1910:
The cutting edge?
The automatic
sharpener.

In 1895, blackboard and
chalk ruled. And most
places, it still does.



«A 1918 ad insisted "no teacher
can bear not to own a Columbia
Gramophone."

1940

"Our projector is so >>
easy even Johnny can
do it," said a 1957 ad.



36 INSTRUCTOR NOVEMBER/DECEMBER 2006

1975

«"A listening
center makes
reading group
the coolest,"
said a 1975 issue
of *Instructor*.

No more note- >>
books now that the
handheld tablet is
here. "This is the
future!" said our
reviewer.

2005

«"Computer learning has so much
potential. Students just love it!"
shouted the October 1985 issue.



From the industrial age to the knowledge age



Past the 19th – 20th Century

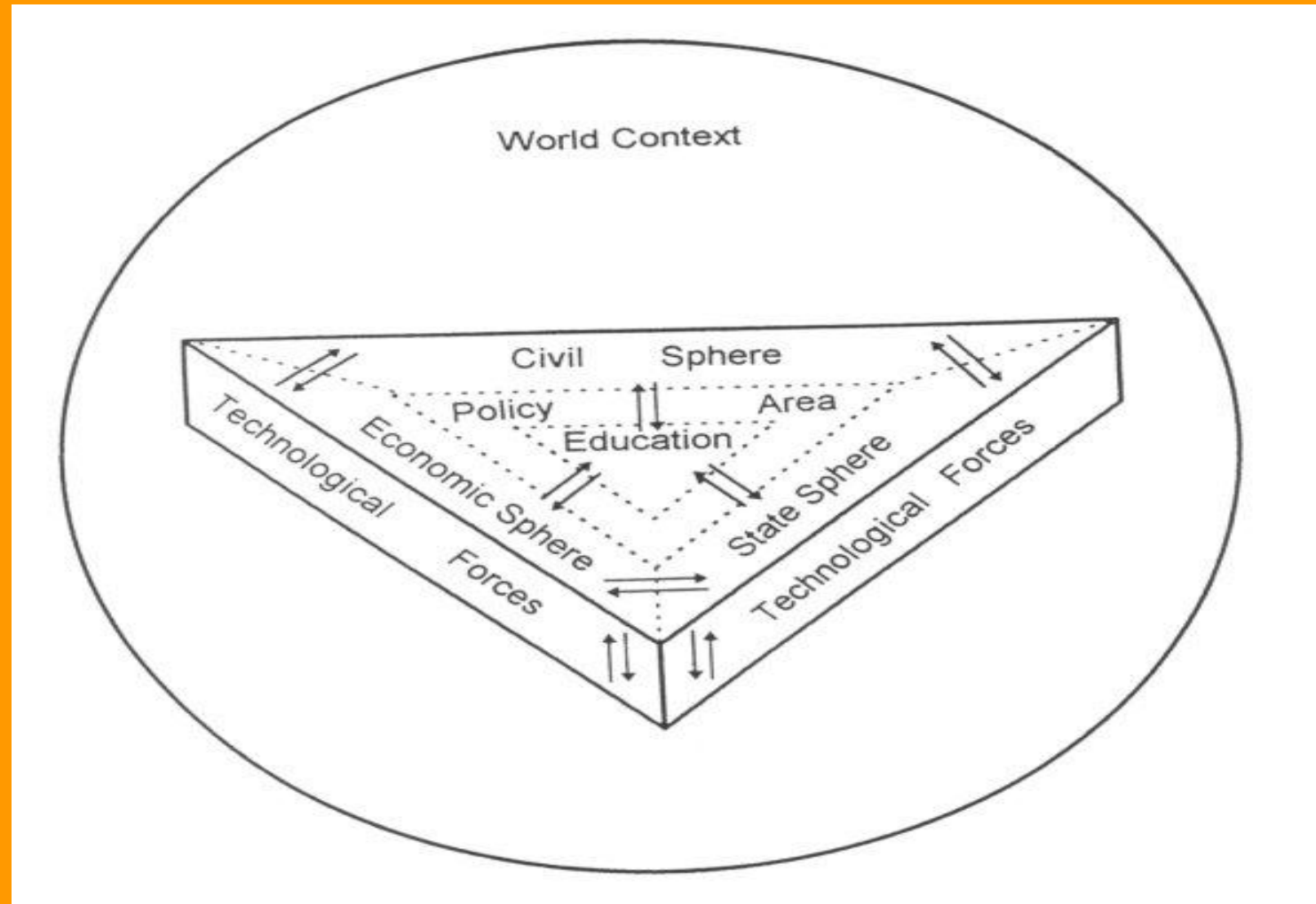


Present the 21st Century

Future - Our Vision ?

A model of Knowledge Society

Daun, H. (1998)



450 POLA
632-6412

HomoMobilis



and the School ????

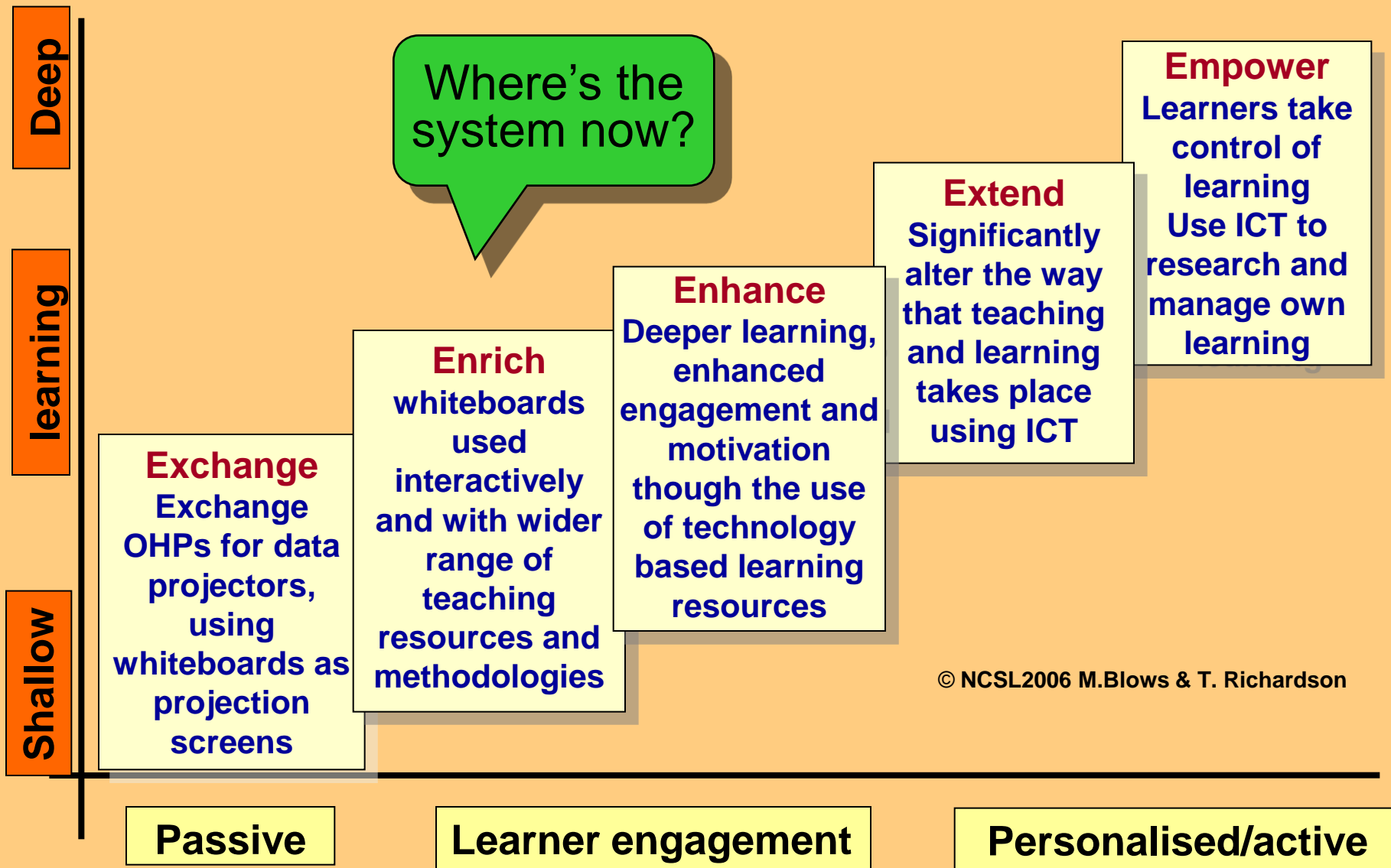
Based on an idea by Fred Cavazza, from Cisco Systems

The Delor's Report [2] analyses the process of education in many states and show how to change the process of education from teaching to learning.

It defines 4 basic education type:

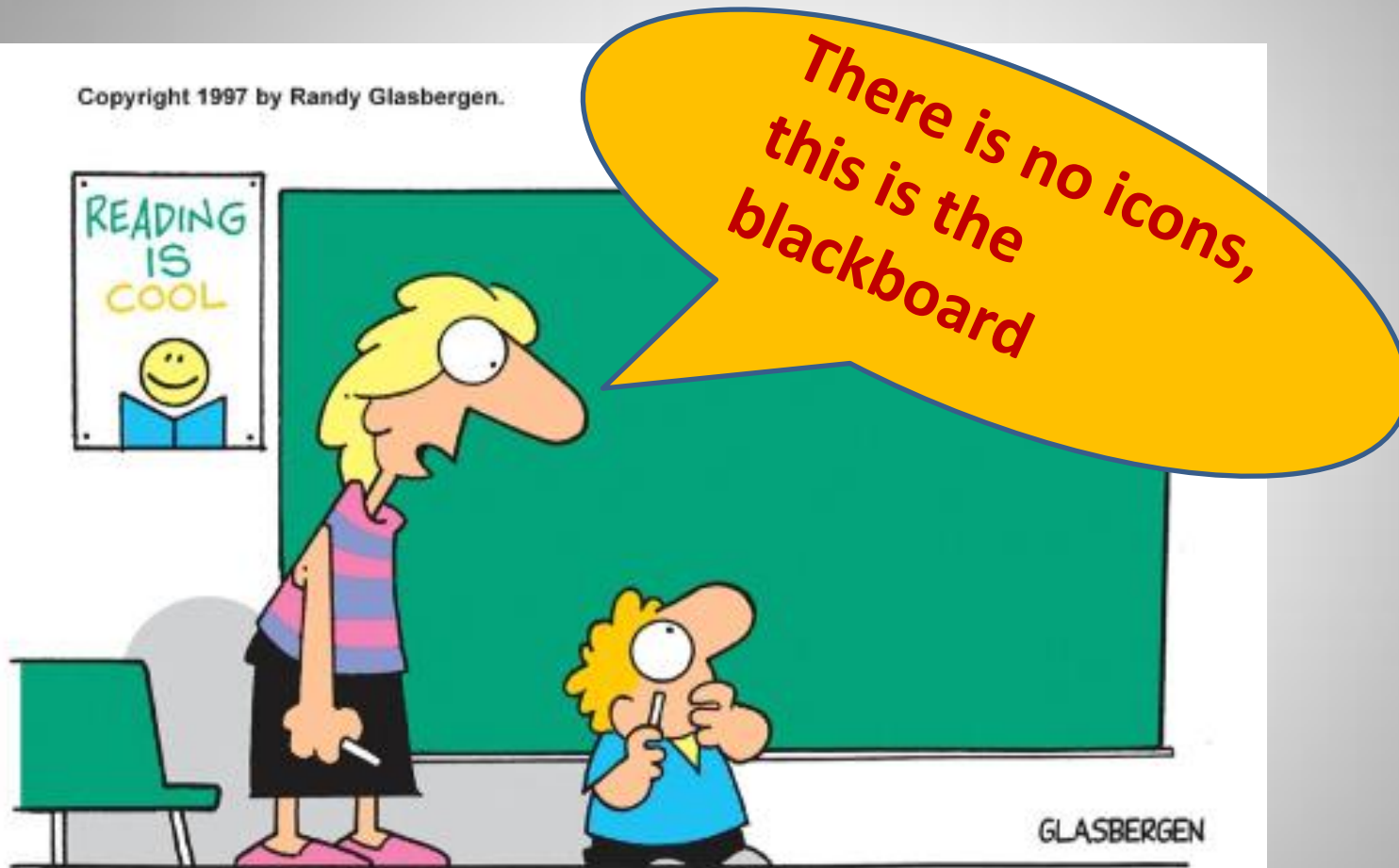
- learn to learn**
- learn to work**
- learn to collaborate with others**
- learn to know myself**

21st century learning and technology



Reality at School – 😊

Copyright 1997 by Randy Glasbergen.



Nie sú tam žiadne ikony. Toto je tabuľ'a.

Why we need the Modern School ?

Why new thinking about learning & teaching with ICT ?

- ❖ *'We are caught up in a social and economic revolution. To survive it we need a new conception of human resources.'*

Current approaches to education and training are hampered by ideas of intelligence and creativity that have wasted untold talent and ability.

*To develop these resources we need radically new strategies. We won't survive the future by simply doing better what we have done in the past.' (*Out of Our Minds: Learning to be Creative – Ken Robinson 2001*)*

- ❖ *'We are currently preparing students for jobs that don't yet exist, using technologies that haven't been invented in order to solve problems that we don't even know are problems yet' (*'Shift Happens' extract 2007*)*

How we can solve the education crisis ???

- Identify the main changes and necessity for Modern school
- Concentrate our research sources for new challenge in education in EU countries
- Research collaboration and join Projects for new methodology and didactic of Science for digital School
- Create the new profile for future chemistry teachers, new study programm at Universities – join project in EU..

Three Key Factors of Change in the School



National Strategy for School Reform



New Content and Management



New Knowledge and Skills

Slovakia School Reform

- It starts 1.9.2008
- The National Project for Modernization Education at Primary and High Schools

Technology infrastructure – digital content –
Teachers training

Digital Chemistry Content

- <http://www.ydp.eu/en/education/uc>
- http://www.universalcurriculum.com/Sample_lessons1/localplayer/page.html?sco=../Chemistry_US/uc_c5_l057.flo
- http://www.yteach.com/index.php/resources/star/e_sublimation_resublimation_evaporation_condensation_phase_melting_deposition_page_3.html
- http://www.yteach.com/index.php/search/results/Student_activity,0,0,2779,0,30,1,add,1.html

Some Examples

- <http://www.planetavedomosti.sk/hlavna-stranka.html>

Thank you for your attention

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- [3] UNESCO: *Information and Communication Technologies in Teacher Education*, Planning Guide, Division of Higher Education, UNESCO 2002
- [4] Belz, H., Siegrist, M.: *Klíčové kompetence a jejich rozvíjení. Východiska, metody, cvičení a hry*, Portál 2001, ISBN 80-7178-497-6
- [5] TopSoft, BSP s.r.o. *NOVA 5000*, Presentation, 2007
- [6] Muehlfeid J.: *Economical Impact of Innovation*. Presentation from Conference, Innovation day in Slovakia, 2007
- [7] <http://www.infovek.sk>
- [8] Brestenská B. and coll: The Annual Report InfoAge. API, Bratislava, 2006, pp. 68
- [9] Coll: The Final Report of Project of training the teachers for using the ICT in education. API, 2007, Bratislava, pp.57
- [10] <http://www.planetavedomosti.sk>