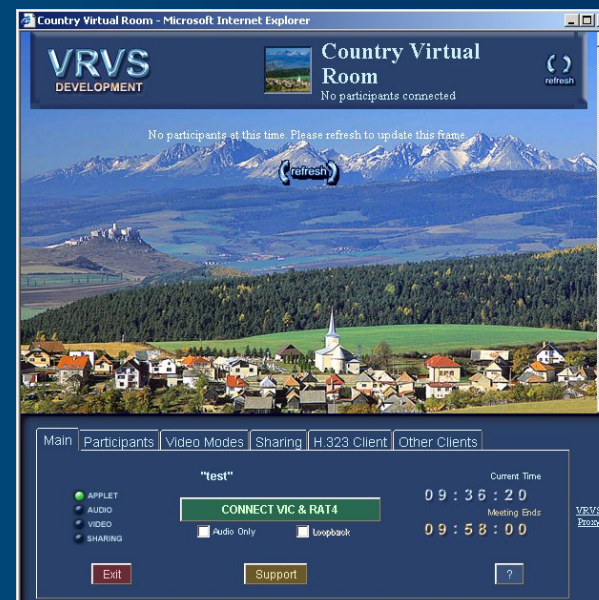


Information, Society Integrated Virtual GRID



Pavel Murin, Slovakia



KEGA

Ministry of Education, SR

International ICFA Workshop on

HEP Networking, Grid and Digital Divide Issues for Global e-Science

October 9-11, 2006, Cracow, Poland

Virtual Collaboration = sharing equipments, technology and human sources

Academy of Arts in Banská Bystrica	2004
University of Economics in Bratislava	2003
Catholic University in Ružomberok	2004
University of Prešov in Prešov	2002
Slovak University of Agriculture in Nitra	2004
Slovak University of Technology in Bratislava	2004
University of Technology in Košice	2001
University of Technology in Zvolen	2002
University of Trenčín in Trenčín	2003
University of Trnava in Trnava	2003
Comenius University in Bratislava	2000
University of Constantinus Philosopher in Nitra	2003
Matej Bel University in Banská Bystrica	2001
Pavel Jozef Šafárik University in Košice	1999
University of St. Cyril and Methodius in Trnava	2003
University of Veterinary Medicine in Košice	2004
Academy of Performing Arts in Bratislava	2004
Academy of Fine Arts and Design in Bratislava	2004
University of Žilina in Žilina	2001

Central project of Ministry of Education, SR

...started in 2003, budget 200 000 EUR/Year;

Implementation of intelligent digital technologies of new generation into education and organisation of research work



...coherent waves of activities across Slovakia...

Methodology of work

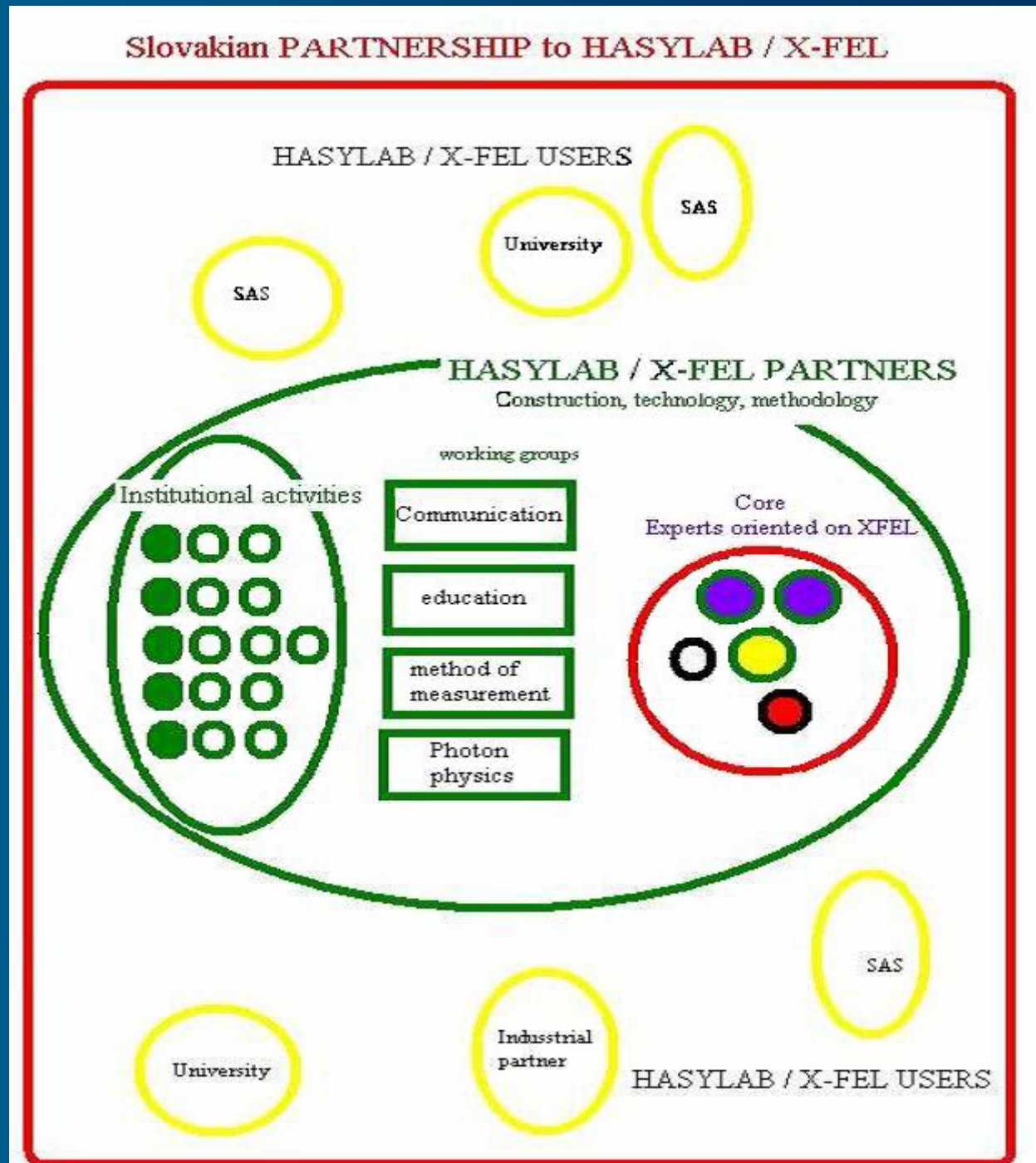
- problem definition
- looking for world leader
- creating a expert team to start a effective collaboration with world leader team
- creating a large dissemination team to correlate activities thru whole Slovakia

examples:

- Collaboration with CALTECH
- Collaboration with HASYLAB



Virtual Institute of Material Research





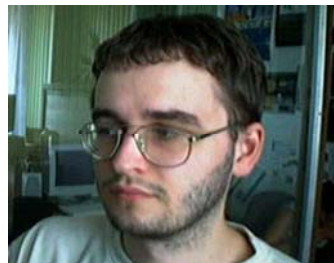
VRVS/EVO Caltech SK team



- The Slovak development Team is located at UPJŠ in Košice, Slovakia
- Developing/enhancing of user's applications for VRVS/EVO
- Videocodecs (H.261/H.263), VRVS client for PocketPC, desktop sharing, *OpenGL integration, videotranscoding, whiteboard,...*



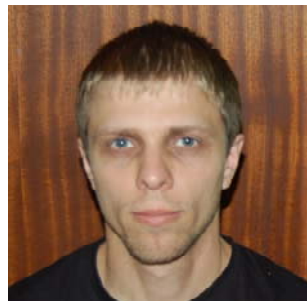
Ing. Pavel Farkaš, PhD.



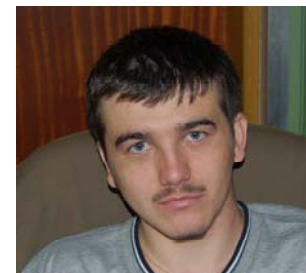
Ing. Michal Pauliny



Ing. Viktor Michalčin, PhD.



Mgr. Rastislav Adamek



Ing. Martin Harčár

- 2 members (Ing. Juraj Sučík and Ing. Marek Domaracký) are working in CERN



VRVS/EVO Caltech SK team

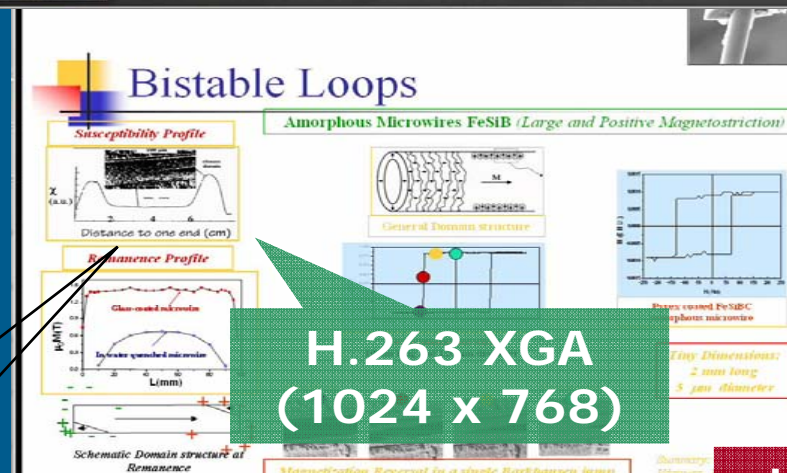


PocketVRVS



OpenGL displaying

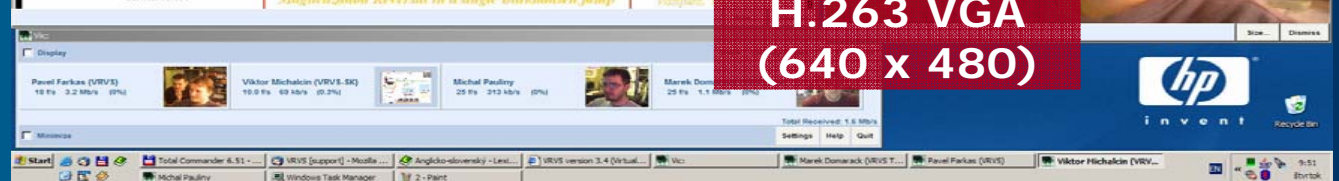
H.261 CIF
(352 x 288)



H.263 XGA
(1024 x 768)

H.263 VGA
(640 x 480)

Desktop sharing



Transfer Technology Laboratory at P.J. Safarik Univ. in Kosice

A. Dirner

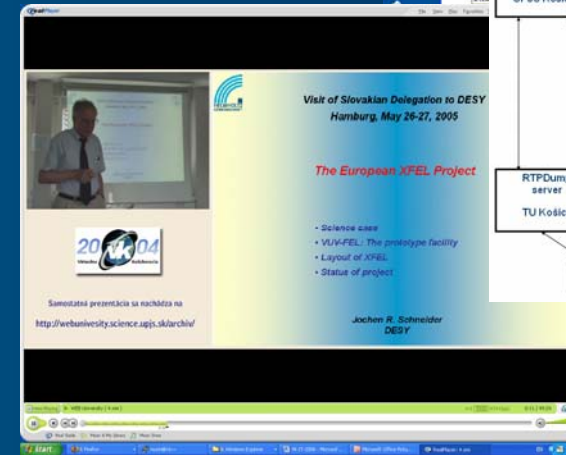
WEB university – multimedia Archive

Videostreaming server support



P. Murin, M. Domaracky

Portal of Virtual Services



M. Binas, S. Zavoda

Intelligent archive system

-A bridge between

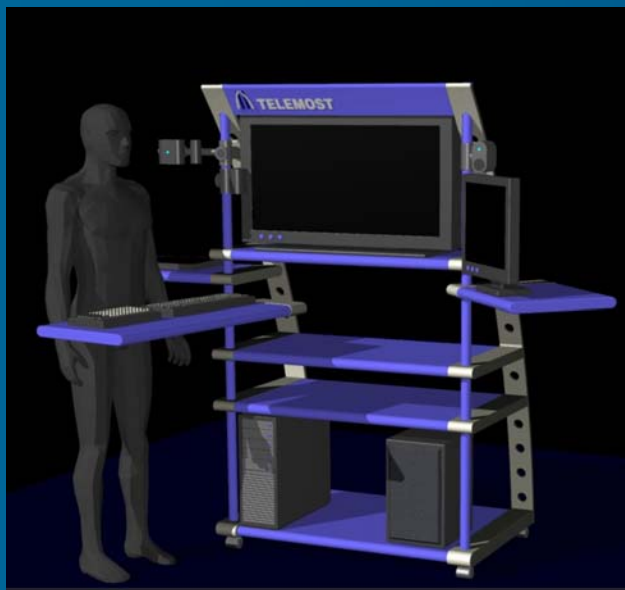
TU Kosice & UPJS Kosice



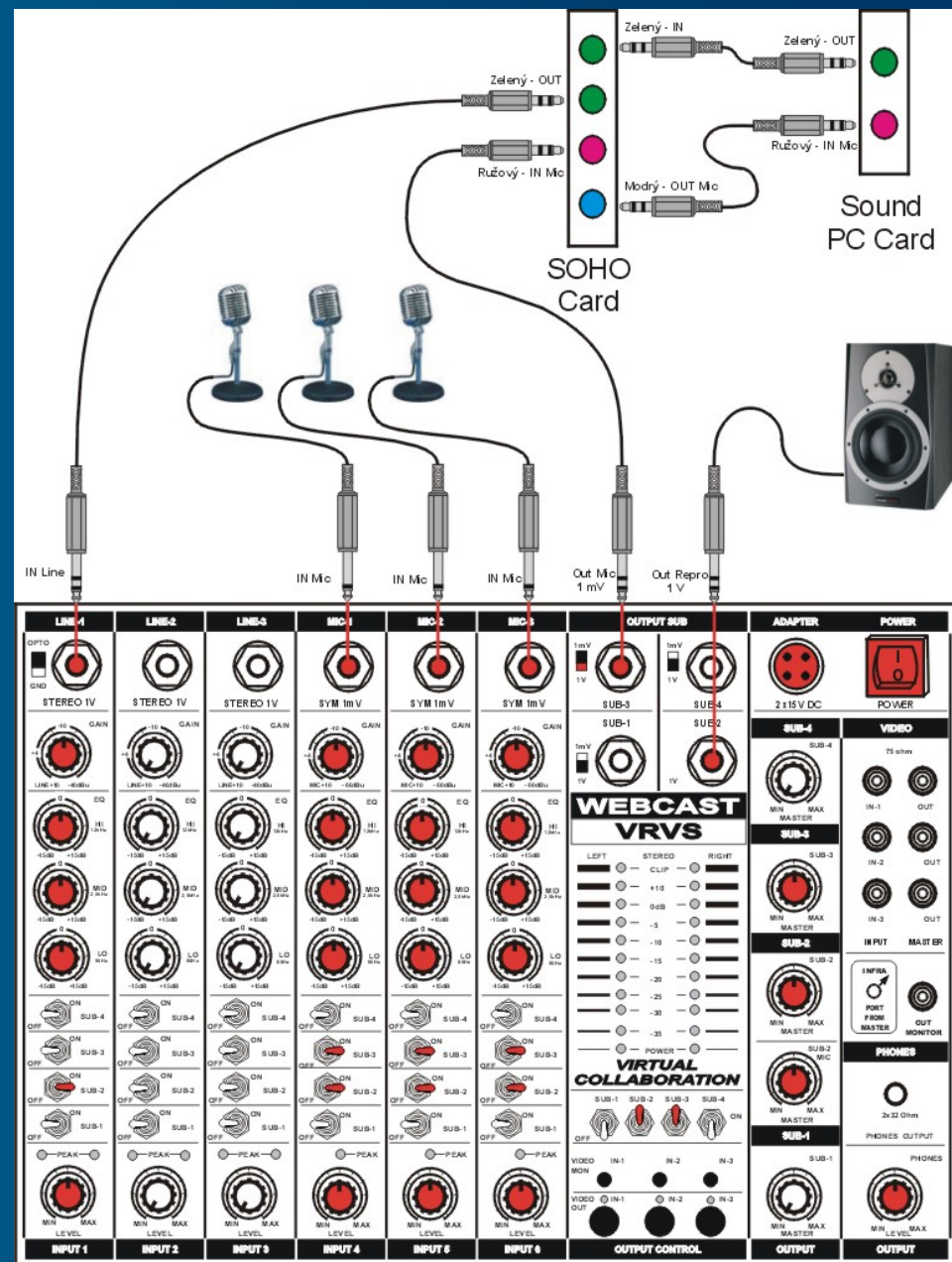
VK has very close contact with industry

Audio-video mixer

...how to implement echo cancellation card in a conference room...

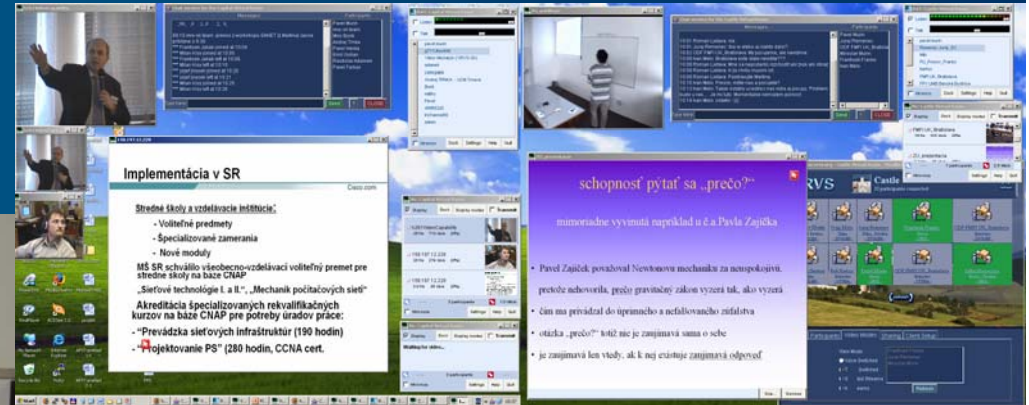


... new setup design ...



VK – technical service team

Bratislava



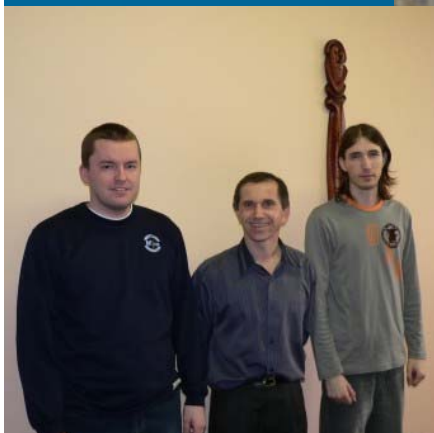
... how to enter 2 virtual session
at the same time...



New videoconference rooms at all universities

and at Ministry of Education

VK – Institutional teams

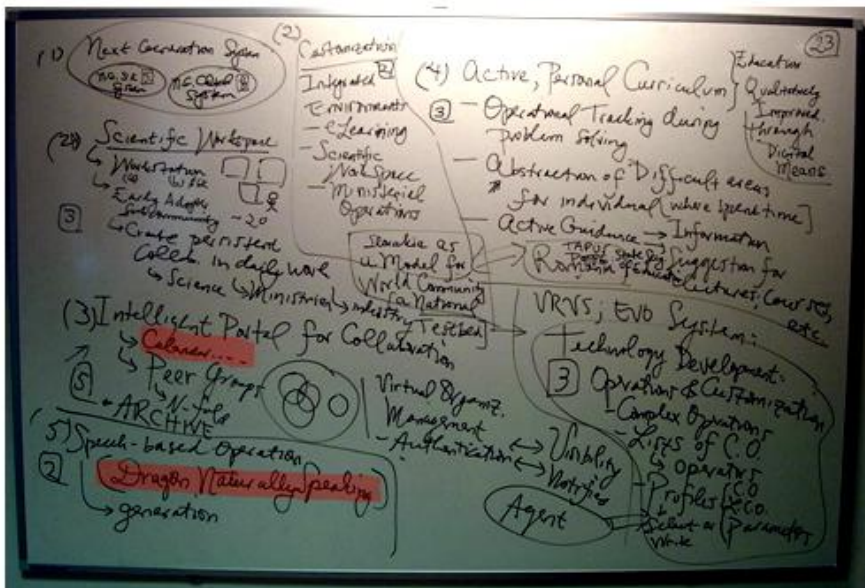


Direct contact: CALTECH & Ministry

July 2005



Slovakia as
a Model for
World Community
[a National
Testbed]



Košice, 13. marca 2005.

Profesor Harvey B. Newman, načrtol program spolupráce slovenských vedeckých tímov s Kalifornským technologickým inštitútom, Caltech, Pasadena, USA.

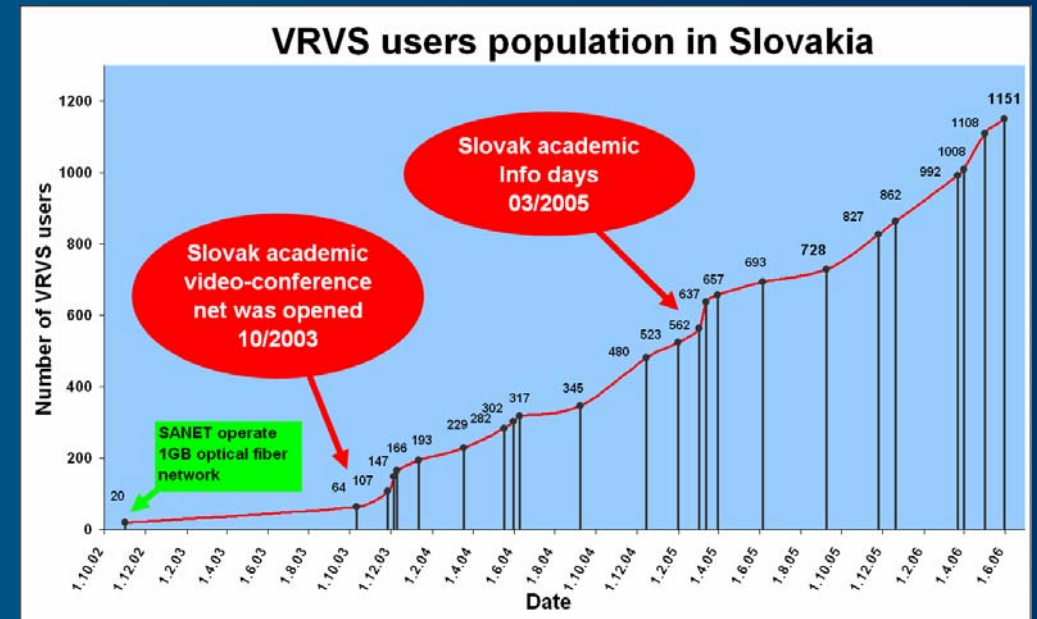
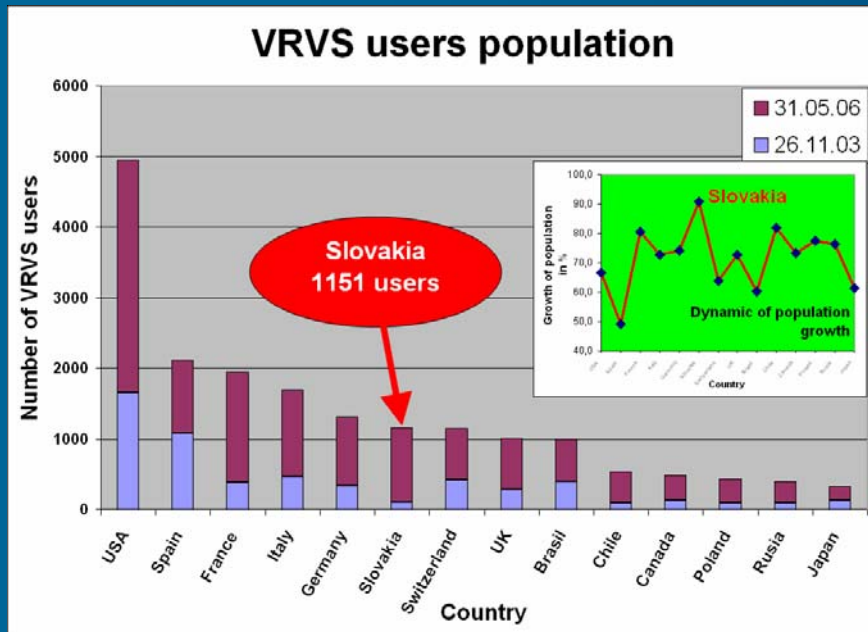
WEB oriented videoconferencing infrastructure for academic Slovakia (2003, September 11)



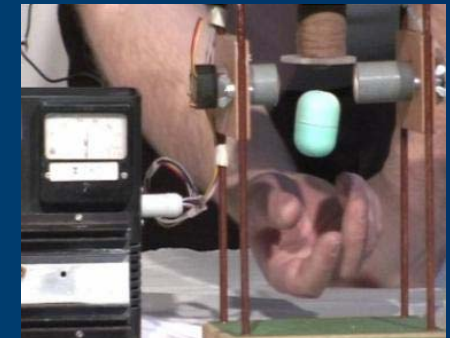
- 5 Virtual rooms
- 4 VRVS reflectors
- 1 EVO reflector
- Archive testbad
- VRVS-SK team

<http://vrvs.org>

Status of the project implementation, May 2006

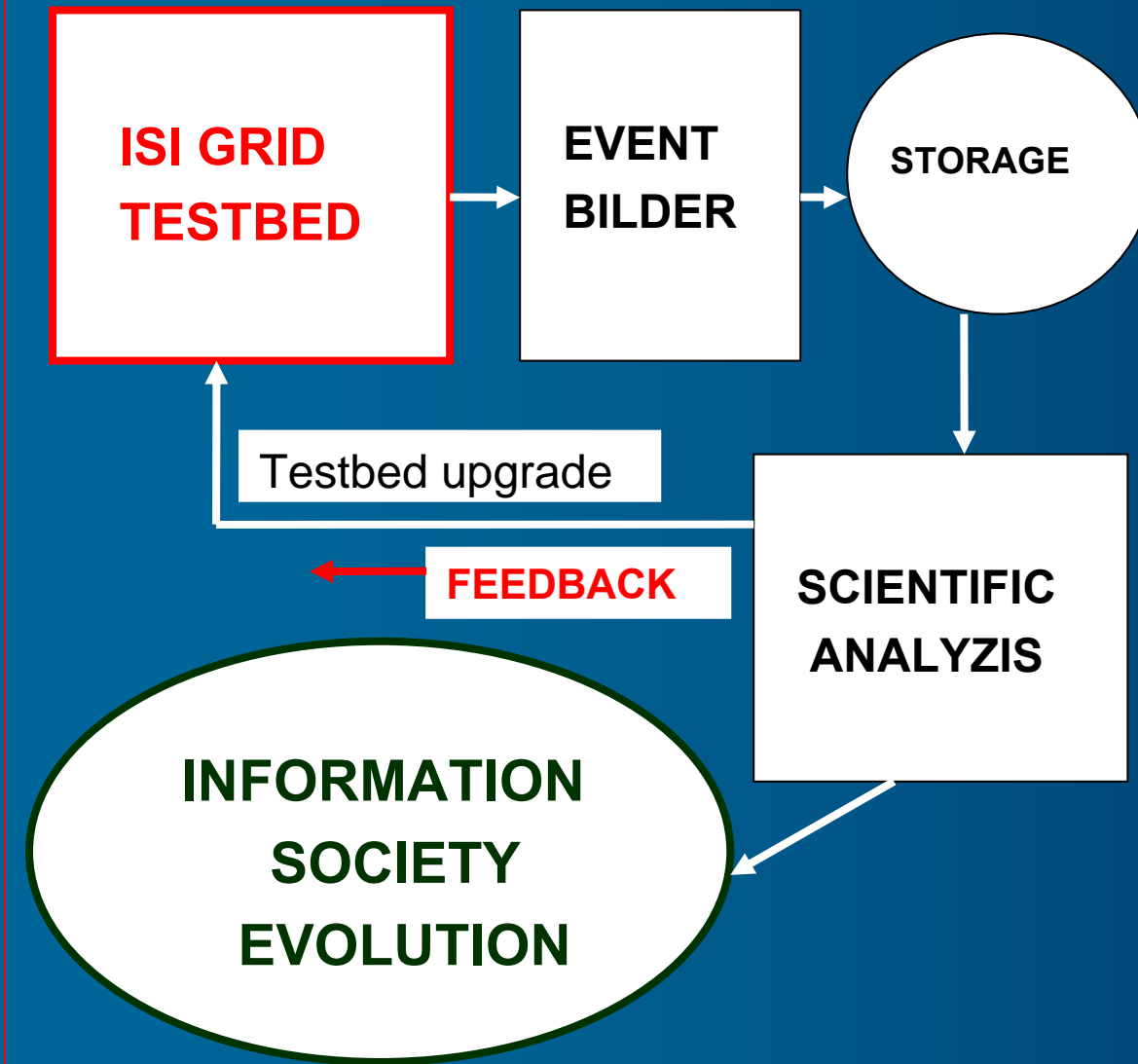


DIV - didactic internet broadcast.
... magnetic levitation ...



Physics masterclasses ...60 EU universities..

ISI GRID PROJECT AND ITS REALIZATION



Project is / will be implemented as a social experiment using methodology typical for HEP,

but, of course, accepting human ethics...

...we assume to build up the new equipment infrastructure as a process... where also social scientists are invited to optimize the future infrastructure...

ISI GRID LAYERS STRUCTURE

**T
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Portal of Virtual services

Subtrigger Subevent

Communication Grid System - EVO

Subtrigger Subevent

Archive Grid system - AVE

Subtrigger Subevent

Computational GRID System – EGEE

Subtrigger Subevent

Networking infrastructure - SANET

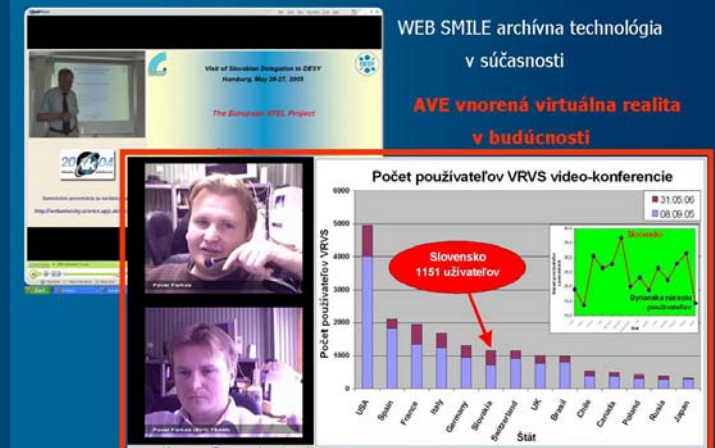
Subtrigger Subevent

Why ?

... request for a new services...

... to build up a scalable system, which will support a heterogenic and distributed systems...

Rozvoj archívnych technológií



SANET - Slovak Academic Network (May 2006)



SANET2 Network

- Fully based on dark fibre
 - Ethernet everywhere (LAN, MAN, WAN)
 - significant reduction of network complexity
 - much lower cost than routers with POS interfaces
 - easy and unified management
 - First part in production since Feb. 2002
-

International Connectivity

- Cross-border fibre to AT, CZ
 - IRU-like contracts for 10 years
 - maintenance provided by DF owner
 - CBF to PL, HU and UA planned
 - Peerings: 10 GE connection to SIX, VIX and NIX
 - Commodity IP transit (Sprint, GTS)
 - Connection to GEANT
-

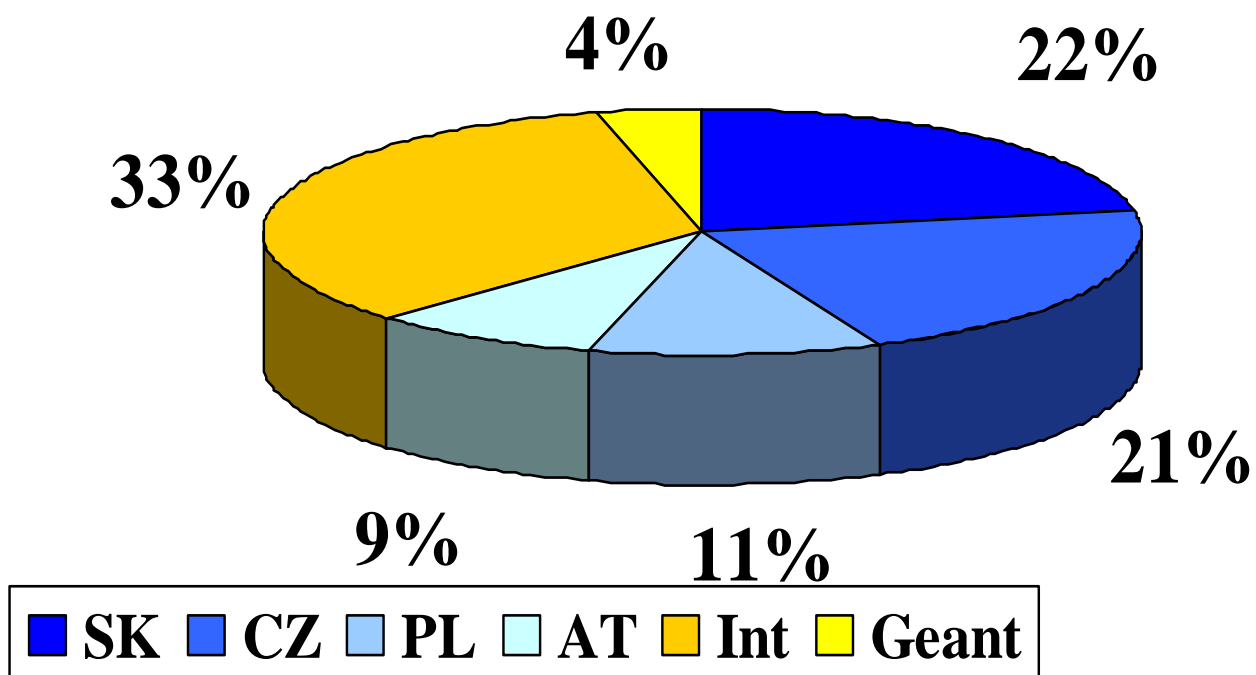
CBF Bratislava - Wien

- Gigabit ethernet in production since Aug. 2002
 - 108 km of G.652 fibre - chromatic dispersion too high for today's ZR XENPAKs
 - Changed the intercity part for G.655 fibre:
6 km of G.652 + 90 km of G.655 + 12 km of G.652
 - Connection from G.652 to G.655 had to be spliced
 - 10-gigabit ethernet in production since 26.1.2006
 - NIL solution, no amplifier nor DCM needed
-

CBF Bratislava - Brno

- 200 km of G.652 fibre
 - Gigabit ethernet in production since Apr. 2003
 - L2 switch used as signal repeater
 - not optimal if several lambdas need to be installed
 - CESNET developed and deployed NIL solution with CzechLight amplifiers providing 4 lambdas
 - 10-gigabit ethernet in production since 14.2.2006
-

External Traffic



National Backbone

- 1770 km of dark fibre
- 2 providers: Orange, Slovak Railways
- IRU-like contracts for 10 years
- Maintenance provided by DF owner



Metropolitan Networks

- Originally in 8 regional centres
 - Now also in other towns
 - Ducts + cables owned by SANET
 - upto 144 fibre strands per cable
 - maintenance outsourced to specialized company
 - Coordinated activities with other investors
 - significantly lower trenching costs
 - Cooperation with local governments
-

Backbone Equipment

- 16 x Catalyst 6509
 - 4 x 10 GE, 48 x GE, 48 x FE ports
 - 10 x Catalyst 3750/3550
 - 2 x GE, 24 x FE ports
 - Long reach optical transceivers
 - approx. 70 pieces in total
-

Research & Future Plans (2)

- 100-gigabit ethernet development
 - native next step for SANET without the need for additional technology
 - no change in overall network concept
 - with advanced modulation and 4 lambdas @ 12.5G reach over dark fibre might be similar to 10 GE
 - if ready in 2010, it will match SANET's upgrade cycle
-

ISI GRID LAYERS STRUCTURE

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Archive Grid system - AVE

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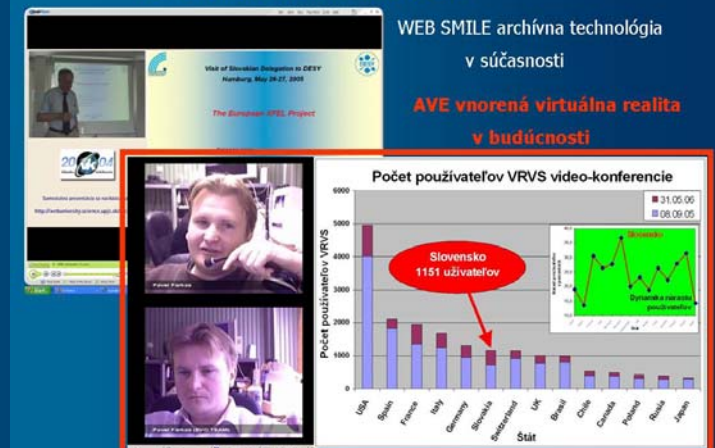
Subtrigger Subevent

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Rozvoj archívnych technológií



Grid Computing Infrastructure

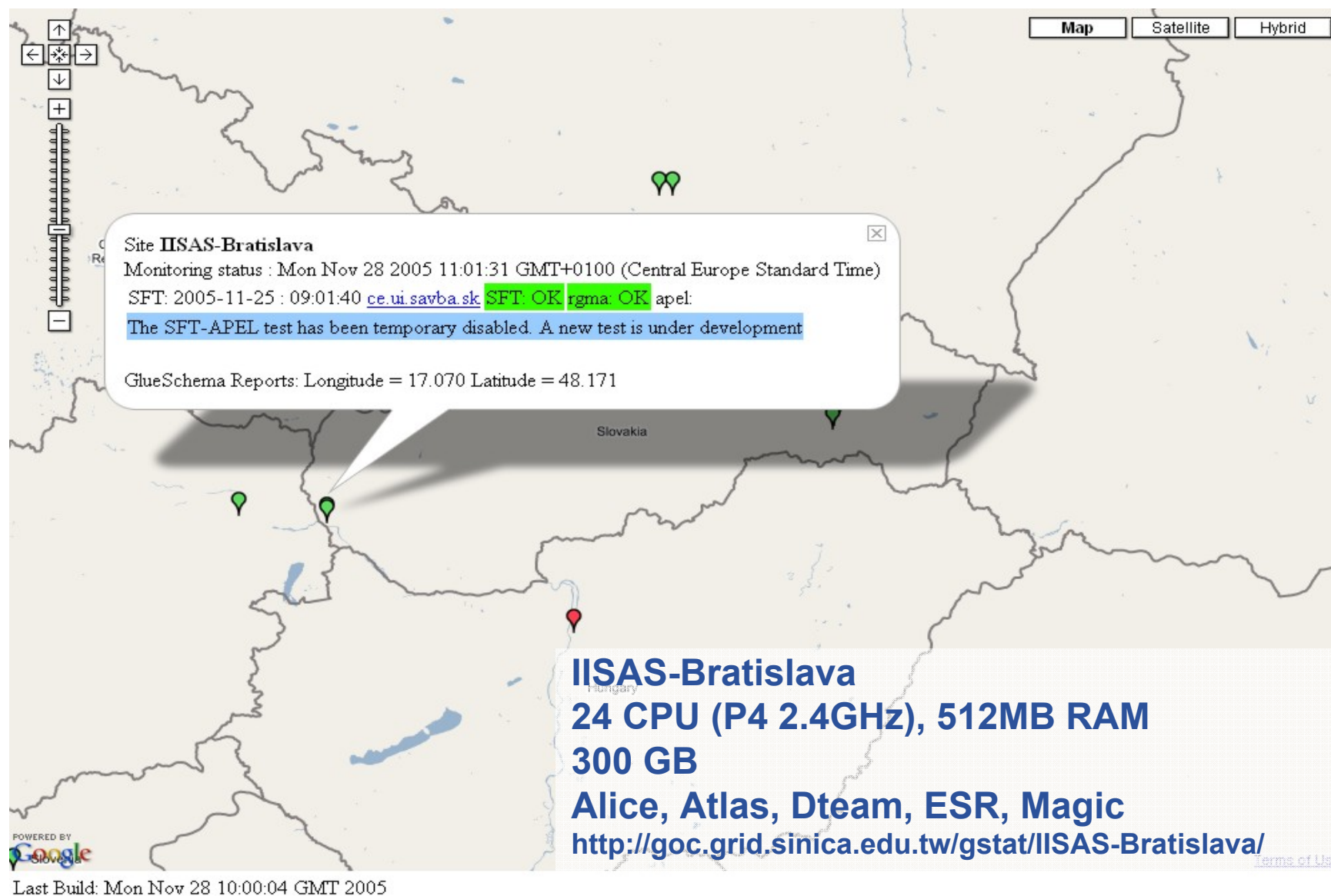
**Babik^(1,2,3), M., Bruncko⁽¹⁾, D., Daranyi^(2,3), T., Hluchy⁽²⁾, L.,
Pincak, R. ⁽¹⁾, Strizenec⁽¹⁾, P., Toth^(2,3), A., Zvada M.⁽¹⁾**

Institute of Experimental Physics, SAS, Kosice⁽¹⁾

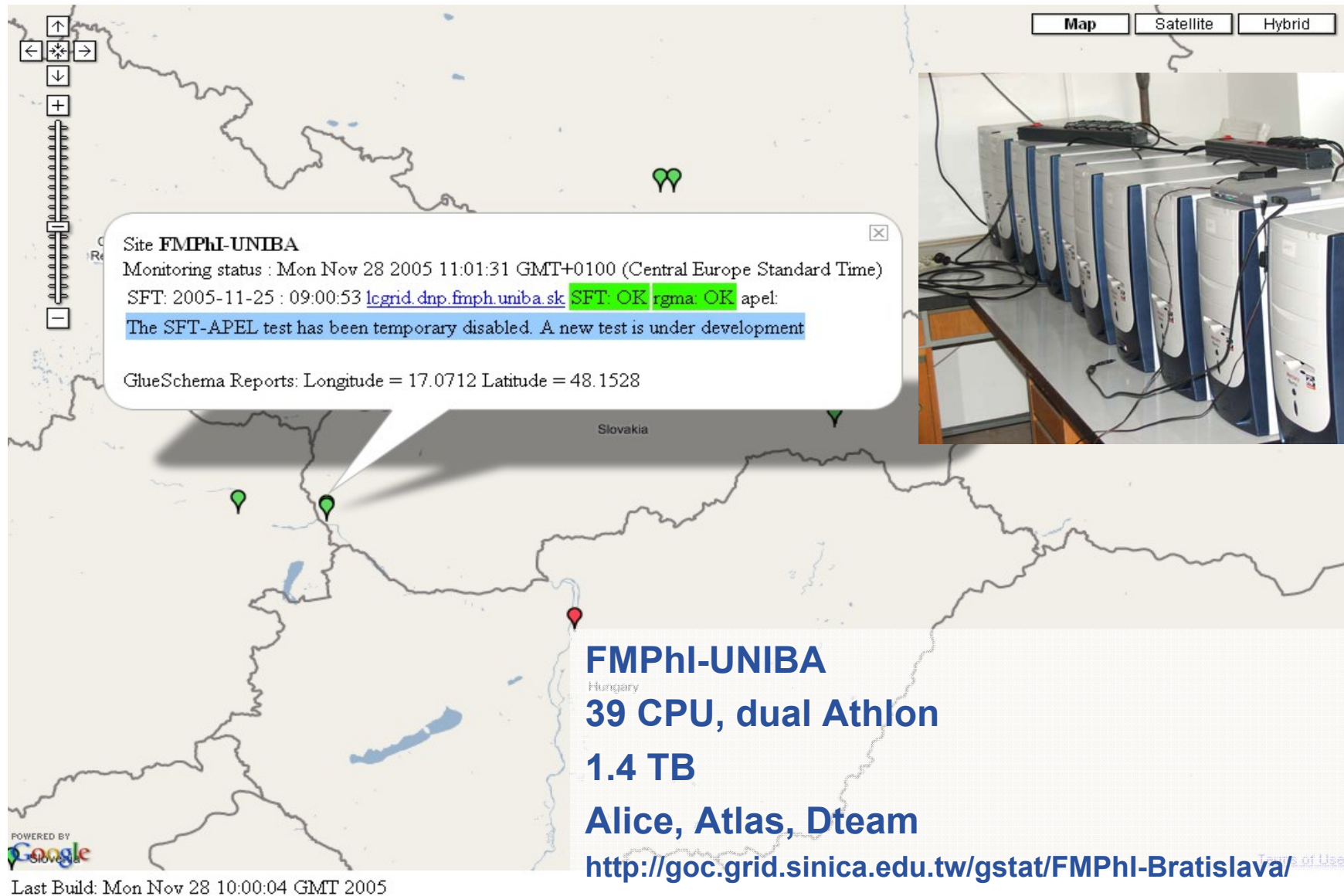
Institute of Informatics, SAS, Bratislava⁽²⁾

**Center for Intelligent Technologies, Technical University,
Kosice⁽³⁾**

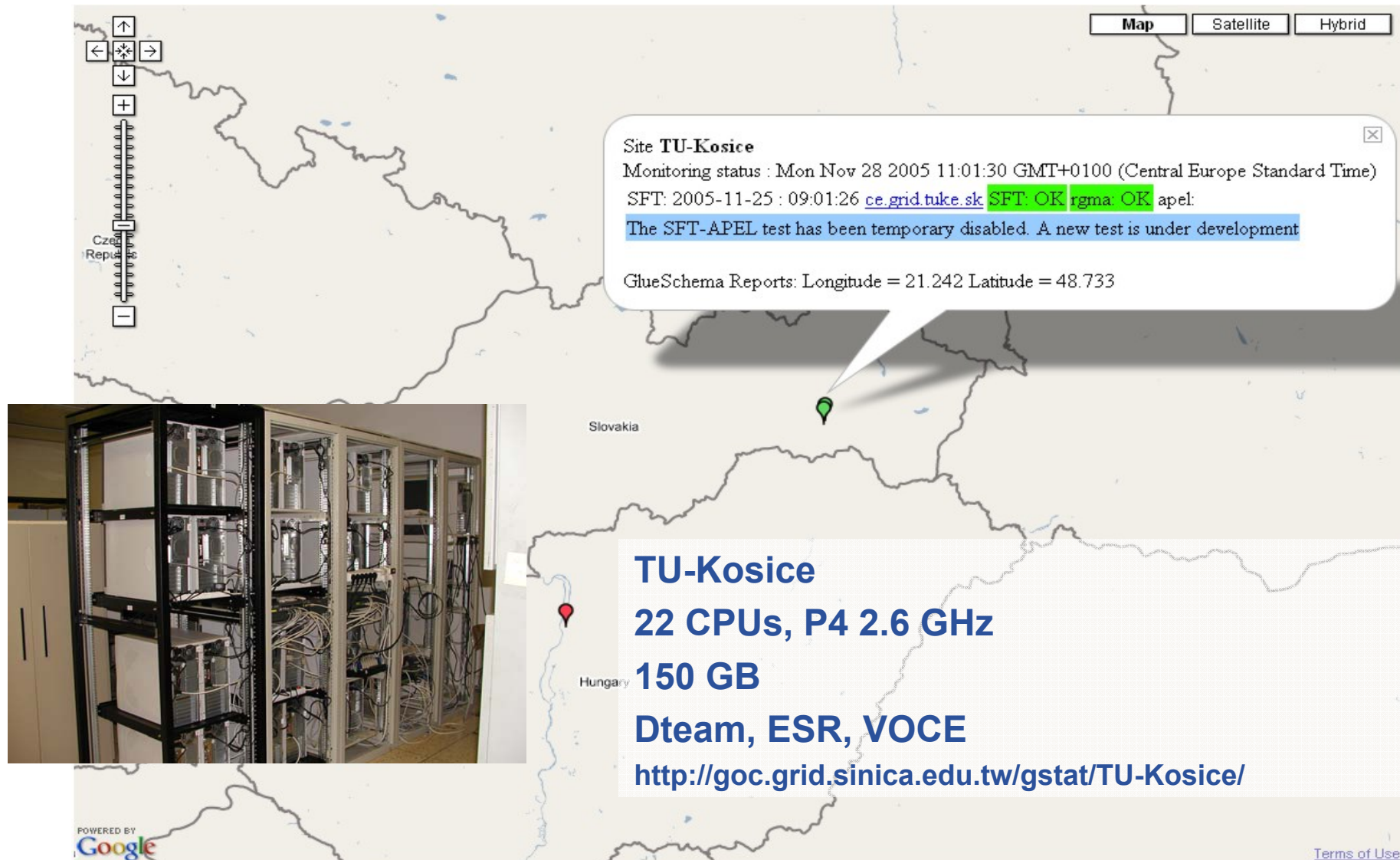
IISAS-Bratislava



FMPH-Bratislava



TU-Kosice



Last Build: Mon Nov 28 10:00:04 GMT 2005

IEPSAS-Kosice



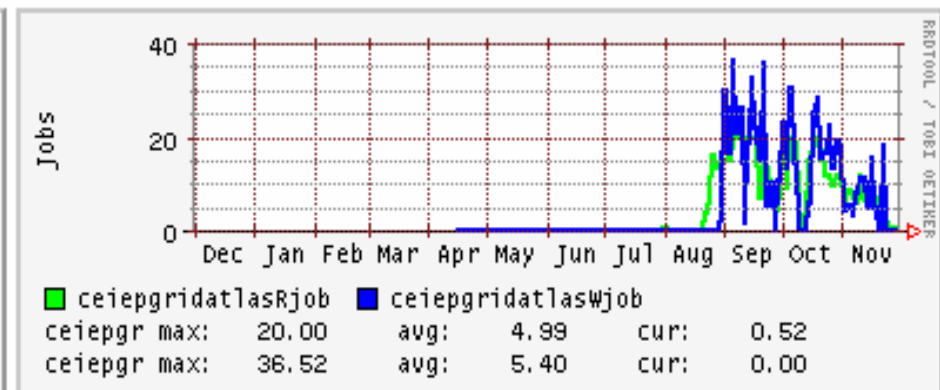
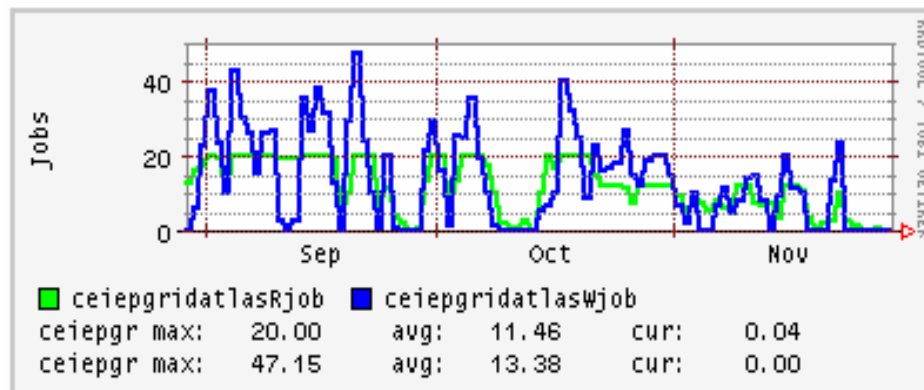
Last Build: Mon Nov 28 10:00:04 GMT 2005

Activities

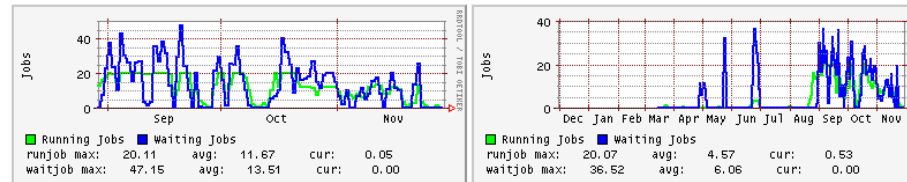
- **Existing IISAS activities in EGEE:**
- **Service Activities (SA)**
 - **Participating in the CE Regional Operating Center (ROC)**
 - **1st line operational support for the CE region (helpdesk)**
 - **Middleware deployment and support**
 - **Grid Services for infrastructure or VOs**
 - **Certification testbed**
 - **Training of system administrators**
- **Network Activities (NA)**
 - **End user training**
 - **Application developers training**
 - **Dissemination**
 - **Gridification of existing applications**

Atlas jobs

- MC simulations
- 1200 simulation jobs, 500 reconstruction jobs
- 450 GB produced



IEPSAS-Kosice overall



- **Future plans**
 - Hardware upgrade
 - Alice integration

- **Contacts:**

Marian.Babik@saske.sk

Jan.Astalos@savba.sk

ISI GRID LAYERS STRUCTURE

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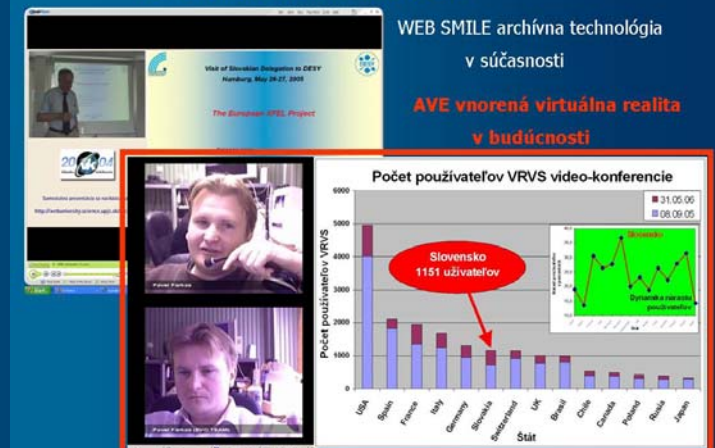
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Rozvoj archívnych technológií



Portal of the Virtual services <http://vk.upjs.sk>



HOME

05.10.2006 19:57:27

TOPICS

Private zone

Academic community - all topics

ARTICLES

Show all my articles

Show articles for 3 months

Show all articles

BRIEF NEWS

Show all my brief news

Show brief news for 3 months

Show all brief news

EVENTS

* 2006-10-05 | 09:00-19:00

Testy portálu virtuálnych služieb

* 2006-11-03 | 08:00-16:00

Distančné vzdelávanie - Poistná matematika

* 2006-10-06 | 08:00-16:00

Distančné vzdelávanie - Poistná matematika

* 2006-10-03 | 14:00-16:00

Porada VK

* 2006-09-28 | 9:30-17:00

ŠPORT A GLOBALIZÁCIA

Show all events

Academic calendar

Webuniveristy

VRVS

EVO

(c) VK 1999-2006

Search in articles

martin

Community members

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Webmail

Active community:

Academic community

My profile

Community

Topics

Brief news

Articles

Response

About us...

Contacts

Organisic structure

Statistics

Technologies

Manuals

October

Event will go on

Event is going on

Archive of events

Physics of Microcosm for Secondary School Students



The second year of the European project "Hands on Particle Physics - European Masterclasses for Secondary School Students" will be held on March 6 – 21, 2006. There will be participating more than 60 universities and research institutes from 18 European countries in it. The coordinator of the Project in Slovakia is Virtual Collaboration, concretely its members working at partners universities. >> **MORE**

33 | 2006-10-06 | Alexander Diner

Beyond Einstein 2006



"Beyond Einstein" – Virtual Collaboration invites students to an hour videostreaming broadcast on March 1, 2006 at 10:00, where twenty worldwide known physicist and experts will answer your e-mail questions. The meeting will be held in a videoconference room of the Faculty of Natural Sciences in Košice, Jesenná 5, VKM (room No 107).

29 | 2006-10-06 | Alexander Diner

Knowing each other



Knowing each other – 7 December 2005. European Week of Youth – Videoconference Košice – Krakow. Organisers: Centre of Leisure Time Activities, Hemerkova 28, Košice, Slovakia and Youth Centre of dr. Henryk Jordan, Krowderská 8, Krakow, Poland. 8, Krakow.

27 | 2006-09-05 | Ivan Kimak

Beyond Einstein at PF UPJŠ, Košice



"Beyond Einstein" - Virtual Collaboration, Institute of Physical Science, PF UPJŠ a Slovak Society of Physics in Košice invites you to follow the worldwide webcast from the building of GLOBE on 1 December 2005. Informal meeting of teachers and research workers with students will be held in premises of the Faculty of Natural Sciences in Košice.

26 | 2006-01-30 | Alexander Diner

Beyond Einstein



"Beyond Einstein" - the worldwide webcast from the building of the Exhibition Centre of Science and Innovations – the closing event of the World Year of Physics WYP2005. This outstanding internet webcast connected watchers from all over the world with world research centres, museums of science in all time zones within a period of 12 hours.

24 | 2006-01-30 | Alexander Diner

// ALL ARTICLES // ALL BRIEF NEWS

VIRTUAL COLLABORATION

* Academic calendar - 2006

- All branches

JAN FEB MAR APR MAY JUN JUL AUG SEP OKT NOV DEC

WHOLE YEAR

JANUARY	FEBRUARY	MAREC
Po Ut St Št Pi So Ne	Po Ut St Št Pi So Ne	Po Ut St Št Pi So Ne
2 3 4 5 6 7 8	6 7 8 9 10 11 12	6 7 8 9 10 11 12
9 10 11 12 13 14 15	13 14 15 16 17 18 19	13 14 15 16 17 18 19
16 17 18 19 20 21 22	20 21 22 23 24 25 26	20 21 22 23 24 25 26
23 24 25 26 27 28 29	27 28	27 28 29 30 31
30 31		
APRIL	MAY	JUN
Po Ut St Št Pi So Ne	Po Ut St Št Pi So Ne	Po Ut St Št Pi So Ne
3 4 5 6 7 8 9	1 2 3 4 5 6 7	5 6 7 8 9 10 11
10 11 12 13 14 15 16	8 9 10 11 12 13 14	12 13 14 15 16 17 18
17 18 19 20 21 22 23	15 16 17 18 19 20 21	19 20 21 22 23 24 25
24 25 26 27 28 29 30	22 23 24 25 26 27 28	26 27 28 29 30
	29 30 31	
JUL	AUGUST	SEPTEMBER
Po Ut St Št Pi So Ne	Po Ut St Št Pi So Ne	Po Ut St Št Pi So Ne
3 4 5 6 7 8 9	7 8 9 10 11 12 13	4 5 6 7 8 9 10
10 11 12 13 14 15 16	14 15 16 17 18 19 20	11 12 13 14 15 16 17
17 18 19 20 21 22 23	21 22 23 24 25 26 27	18 19 20 21 22 23 24
24 25 26 27 28 29 30	28 29 30 31	25 26 27 28 29 30
31		
OKTOBER	NOVEMBER	DECEMBER
Po Ut St Št Pi So Ne	Po Ut St Št Pi So Ne	Po Ut St Št Pi So Ne
2 3 4 5 6 7 8	6 7 8 9 10 11 12	4 5 6 7 8 9 10
9 10 11 12 13 14 15	13 14 15 16 17 18 19	11 12 13 14 15 16 17
16 17 18 19 20 21 22	20 21 22 23 24 25 26	18 19 20 21 22 23 24
23 24 25 26 27 28 29	27 28 29 30	25 26 27 28 29 30 31
30 31		



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WEBMASTER

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YEAR

2006

INSTITUTION

000 CODES

105 | 405 | 101

PRO. ORIENTATION

000 CODES

007 | 010 | 019

Add action

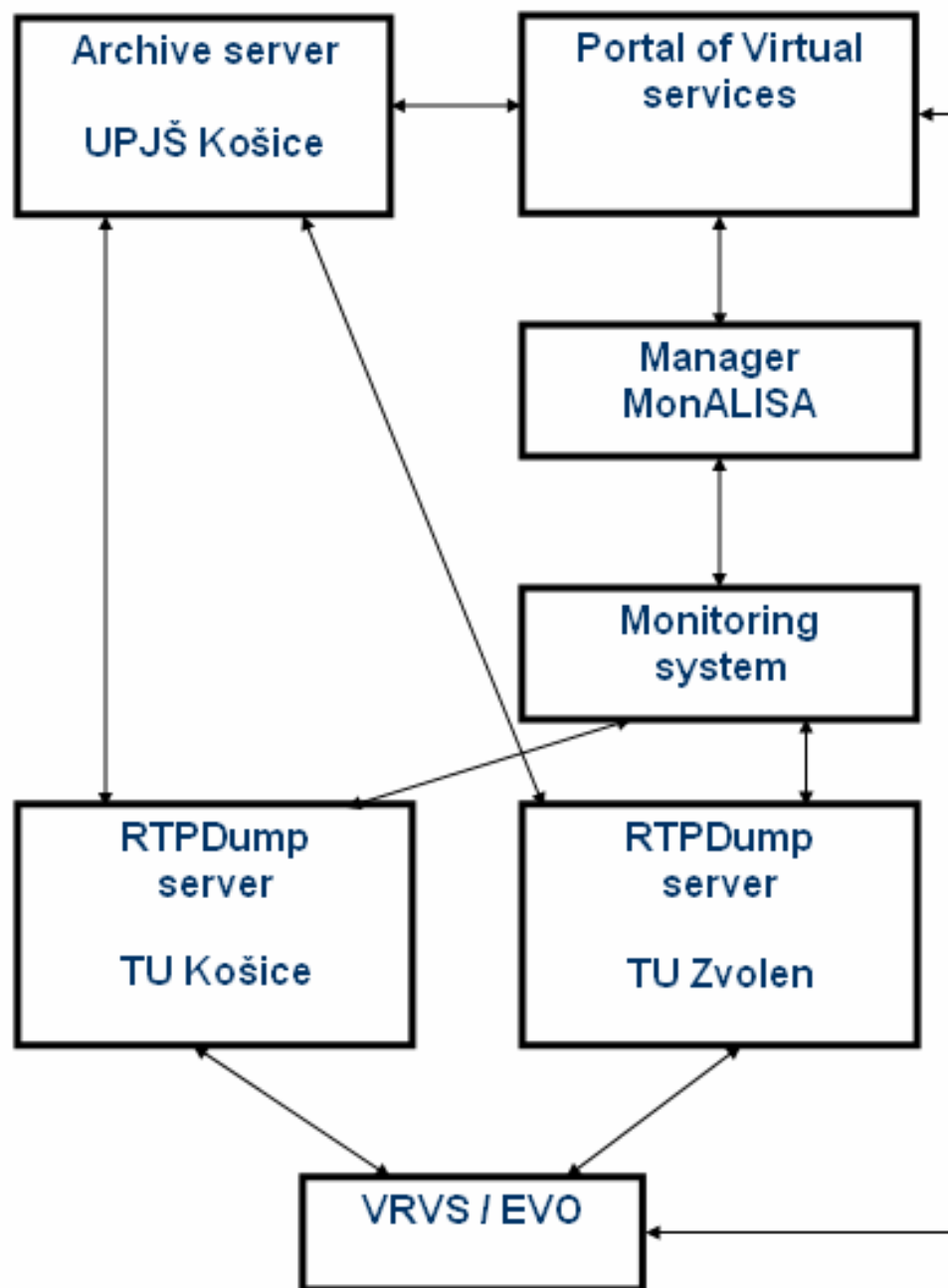
Adjust action

Participants

Lecturers

Responses

Logout

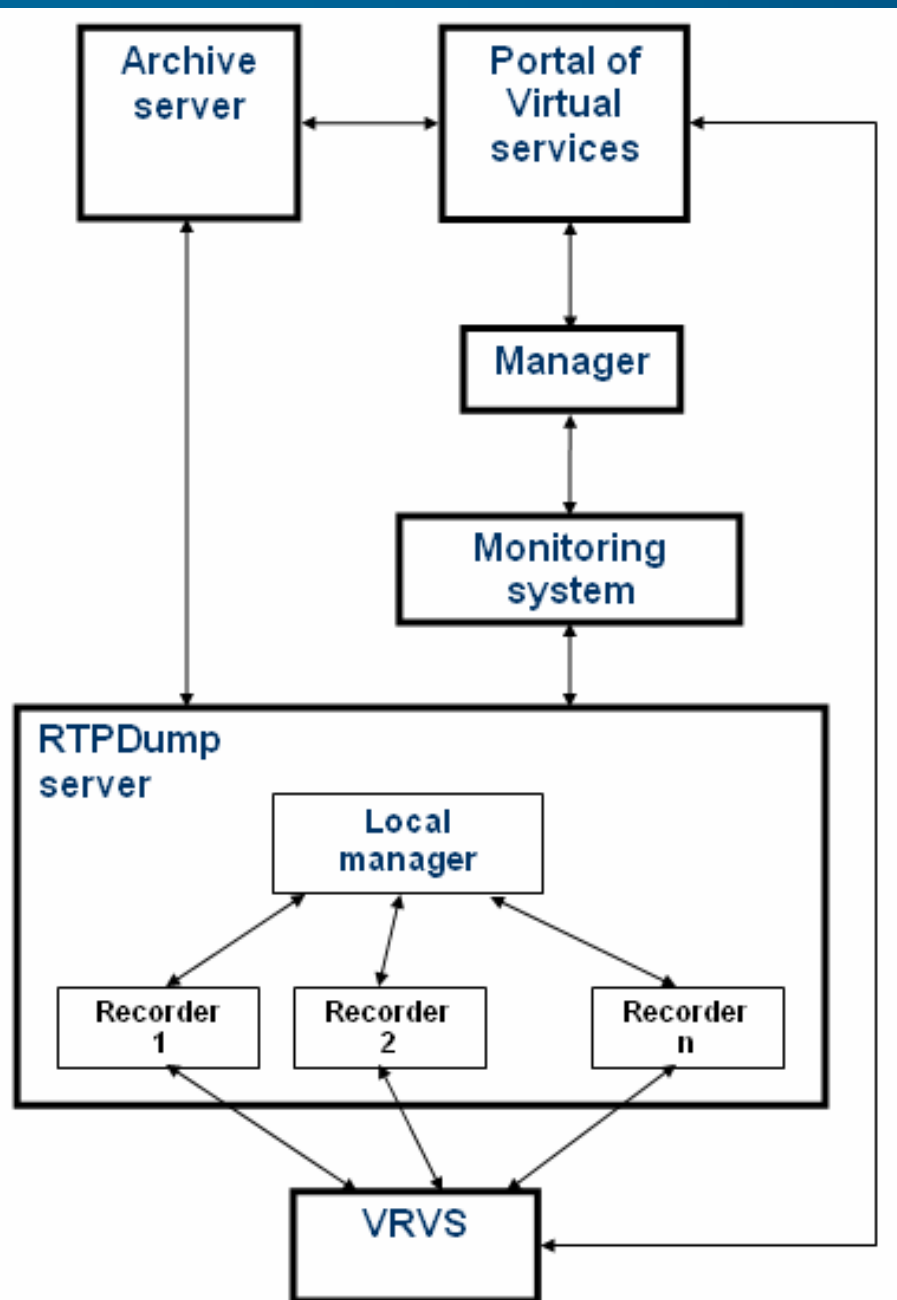


New archive system

-automatic dump of a
videoconference
session

-capacity: 30 events

Realization: December 2006

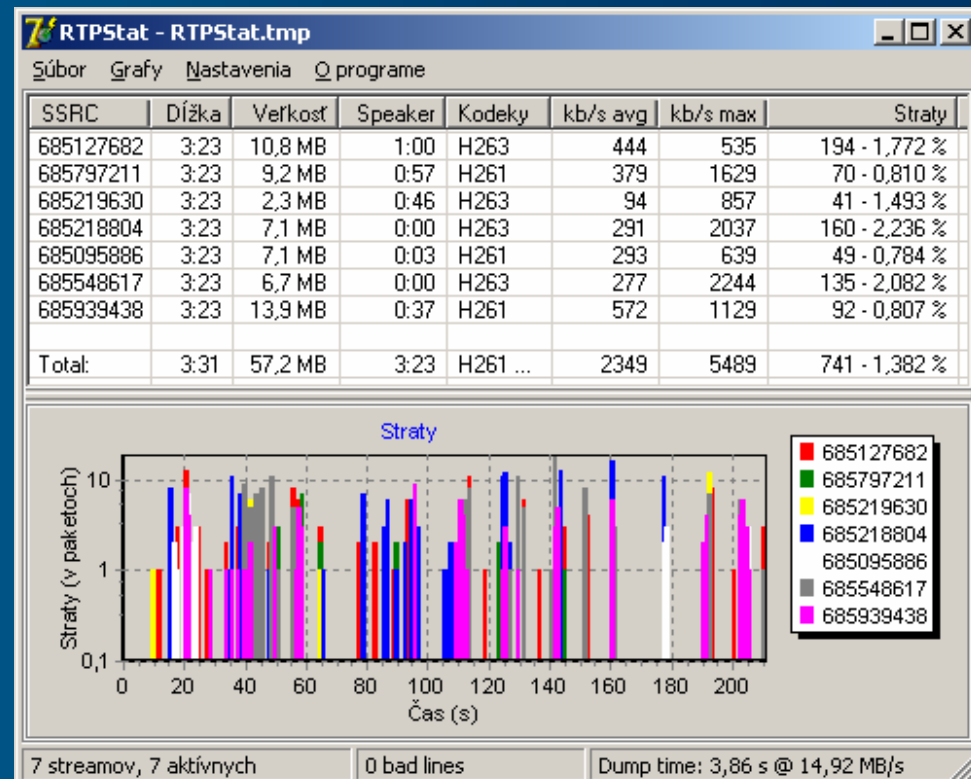
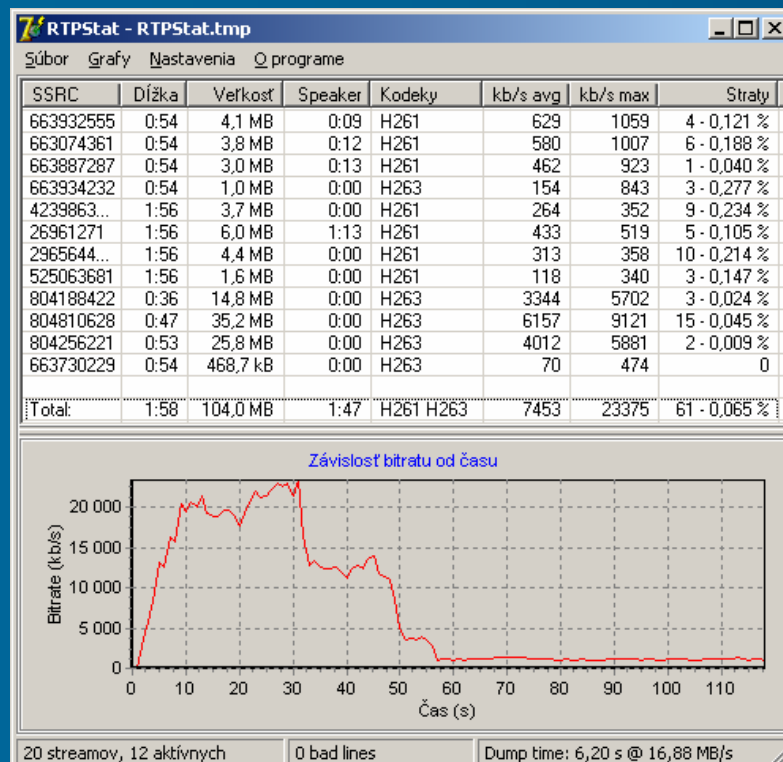


Archive Testbed

- To develop a monitoring system
- To test of performance of this kind of system

Monitoring and testing

No. of Record Processes	Max. Bitrate [Mbit/s]	CPU Load	Total Loss (relative)
1	23	10%	48 - 0,051 %
2	46	21%	20 - 0,021 % 24 - 0,026 %
3	69	29%	2260 - 2,406 % 2163 - 2,303 % 2278 - 2,425 %



No. of Record Processes	Maximal Bitrate [Mbit/s]	CPU Load	Total Loss (relative)	
			Video	Audio
1	5	5%	30 - 0,058%	0
2	10	5%	309 - 0,576%	0
			176 - 0,328%	0
5	15	11%	83 - 0,155%	0
			132 - 0,247%	0
			96 - 0,180%	0
			106 - 0,199%	0
			92 - 0,173%	0
10	45	79%	100 - 0,187%	4 - 0,020%
			100 - 0,187%	0
			130 - 0,242%	0
			83 - 0,155%	0
			72 - 0,134%	0
			117 - 0,218%	0
			137 - 0,256%	4 - 0,020%
			121 - 0,226%	3 - 0,015%
			105 - 0,196%	4 - 0,020%
			192 - 0,358%	3 - 0,015%
15	65	90%	293 - 0,546%	8 - 0,040%
			538 - 1,003%	0
			117 - 0,218%	0
			125 - 0,233%	0
			509 - 0,949%	0
			109 - 0,203%	0
			354 - 0,660%	11 - 0,055%
			323 - 0,602%	8 - 0,040%
			374 - 0,697%	10 - 0,050%
			232 - 0,433%	10 - 0,050%
			385 - 0,718%	10 - 0,050%
			741 - 1,382%	9 - 0,045%
			406 - 0,757%	9 - 0,045%
			308 - 0,574%	9 - 0,045%
			335 - 0,625%	9 - 0,045%

Test of capacity

1PC is able to dump about 15 parallel events. GOOD

Please enter our virtual world

<http://vk.upjs.sk>

Thanks

`murin@vk.upjs.sk`