Alternatives@UPB

Ciprian DOBRE

Adevarul...

- ICT-ul e un domeniu deosebit de dinamic...
- Multe companii doresc sa va angajeze cand sunteti *tineri...*
- Va specializati pe un tip de proiecte / profil, lucrati 8-10 ore pe zi...
- si imbatraniti in campul muncii... cu cat timpul trece, cu atat deveniti mai putin competitivi
- Cei (mai) tineri vor veni din urma, ei cer mai putini bani, ei au mai multa energie (de munca), ei se invata (poate) mai repede cu schimbarile tehnologice...

In domeniul nostru (ICT), varsta reala de pensionare e undeva in jurul valorii de 34 (de ani)

... dar ce inseamna asta?

- Inseamna ca dupa varsta de 34 de ani
  - Sunteti din ce in ce mai putin „cautati” pe piata muncii
  - Acceptati ceea ce vi se ofera (sper sa nu faceti asta)
- Incercati sa ramaneti *competitivi*
  - Cum? *From research to your own company* (puteti face ceva prin care sa va controlati propriul destin)
  - Invatati, invatati, si... Iar invatati
  - Facultatea nu se termina odata cu anul IV, nu se termina odata cu anul II de Master... tot timpul se intampla ceva in ICT, tot timpul apar transformari tehnologice, lucruri noi...
    - Quantum computing? AI/Deep Learning/Cognitive computing? 6G? Cine stie ce aduce viitorul...

Scop și motivație

- *Disclaimer: Următoarea prezentare se bazează pe experiența personală!*
- Tot ce faceți, tot efortul din facultate, conduce către inevitabila întrebare la final: NOW WHAT?

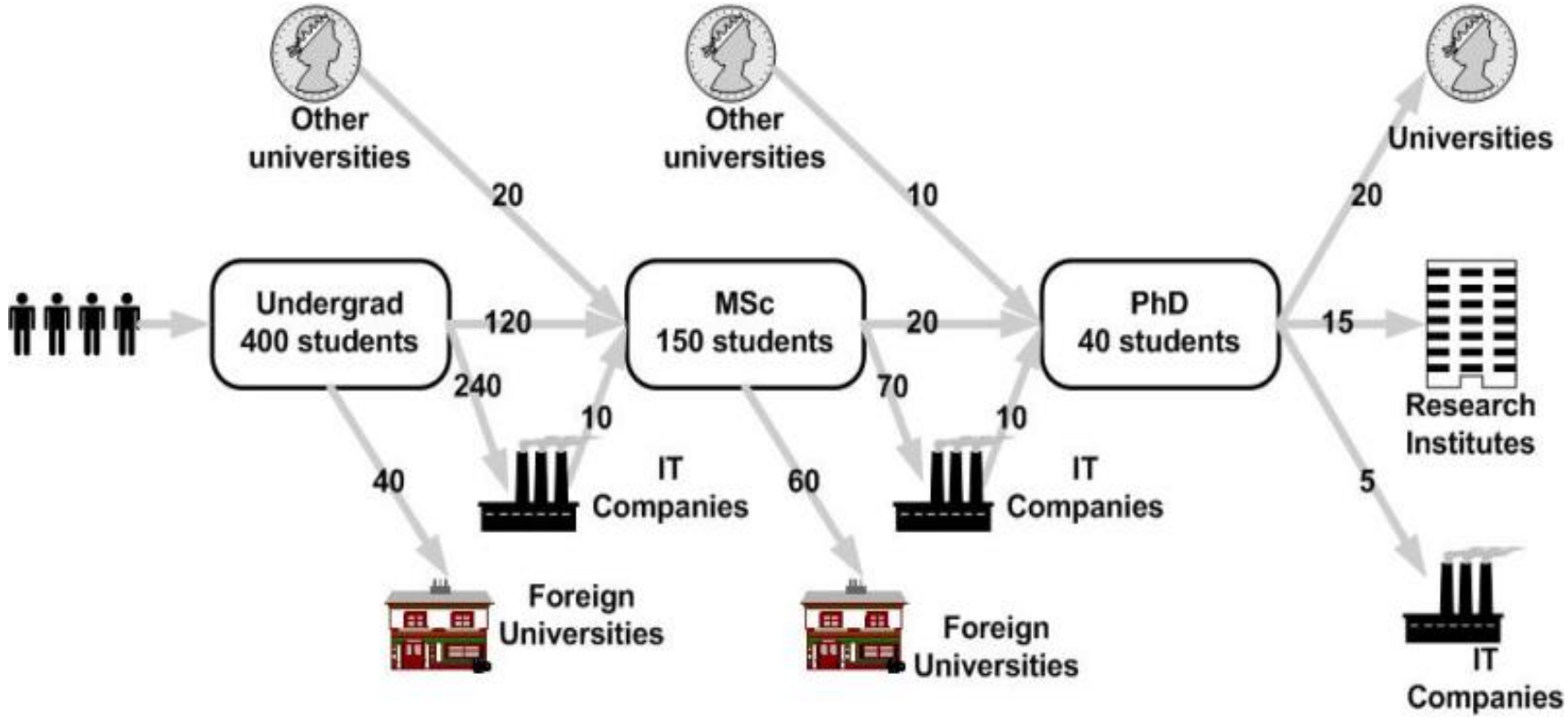
Alternative

Companii IT? Programatori, Manageri…
Cercetare: R&D, Carieră universitară (Master, PhD)

Următoarea prezentare reprezintă o părere pur personală… și nesubiectivă ☺

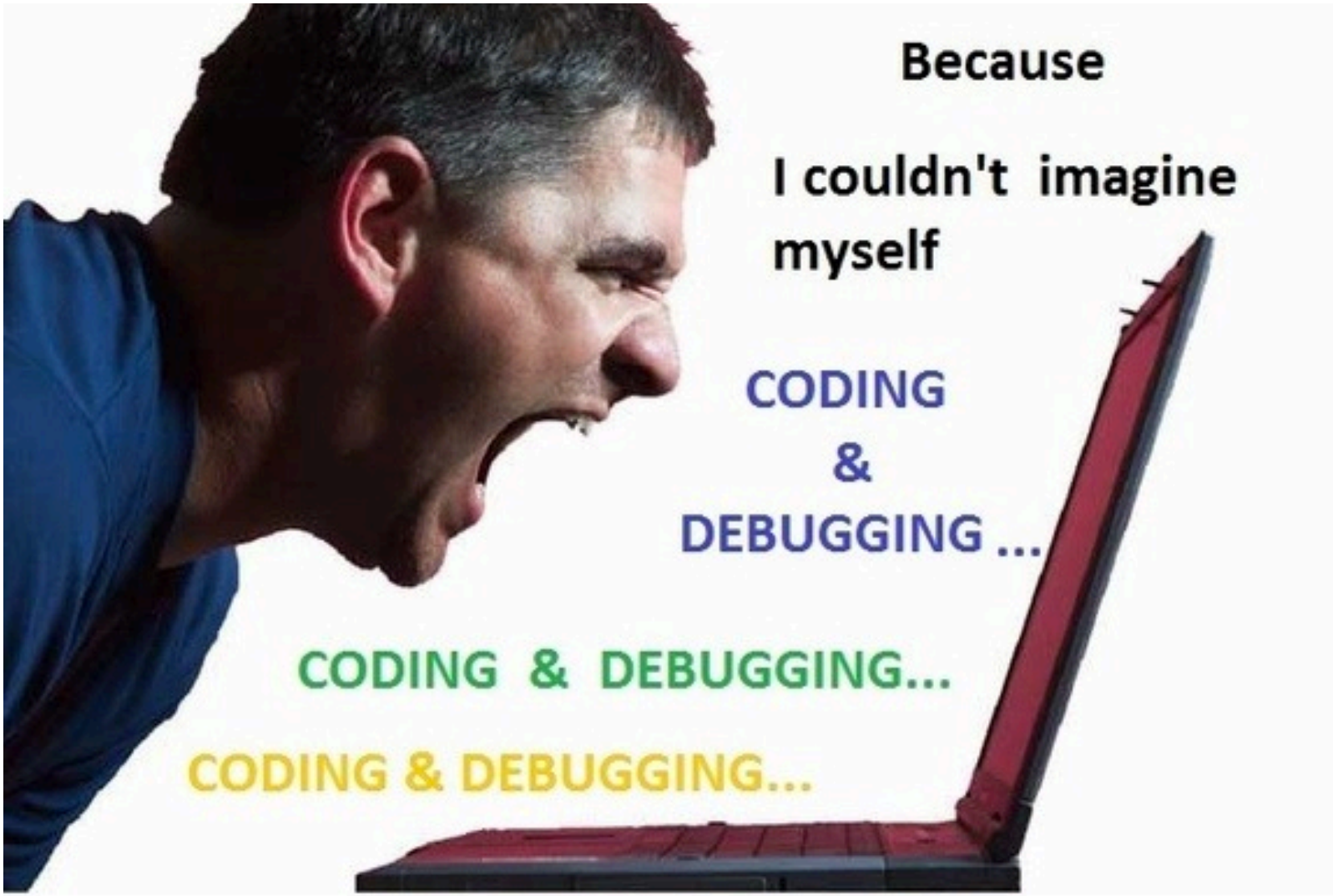
Every single day you make a choice.
-zzz-
GENILDO

Decizii către o carieră…



La care aș mai adăuga: Cercetare – Inovare – Antreprenoriat

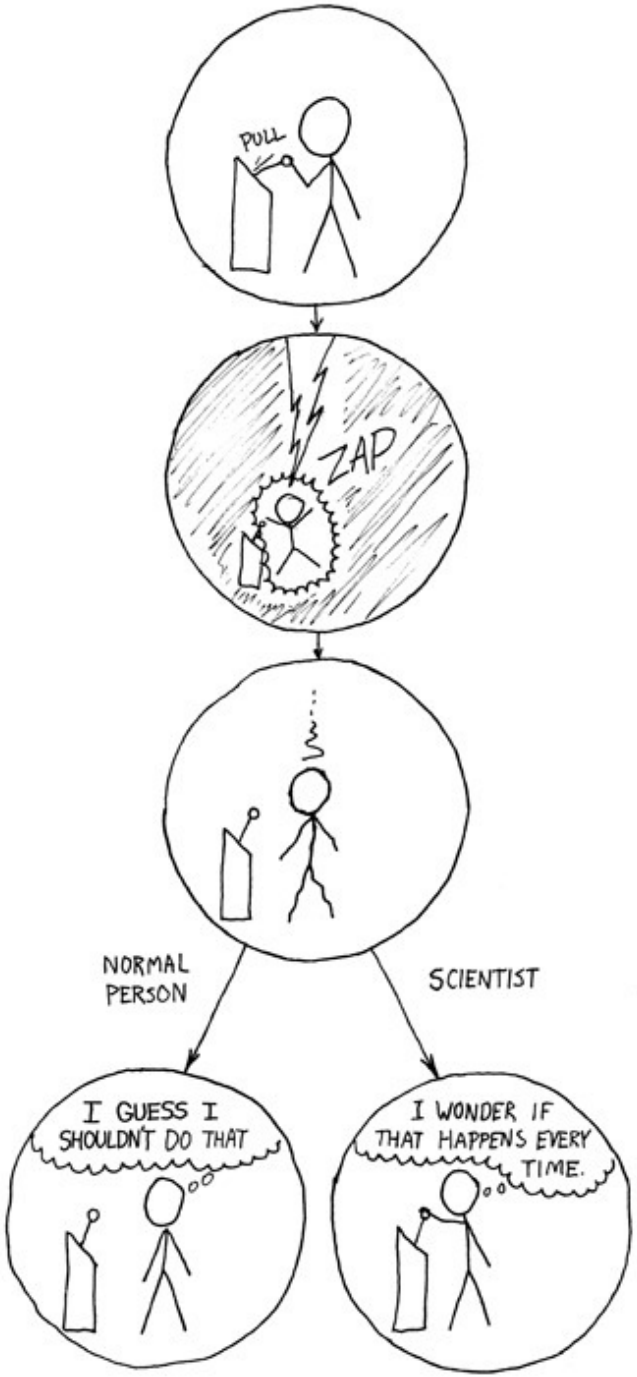
Un sfat: asta e momentul in care trebuie sa dovediti performanta! Media si ceea ce faceti/dovediti in facultate ***conteaza****:* la admitere la Master/PhD, in tara sau in strainatate, in alegerea unui proiect, etc.



CODING & DEBUGGING... CODING & DEBUGGING... CODING & DEBUGGING... CODING & DEBUGGING... CODING & DEBUGGING... CODING & DEBUGGING... CODING & DEBUGGING... CODING & DEBUGGING... CODING & DEBUGGING... CODING & DEBUGGING... .....

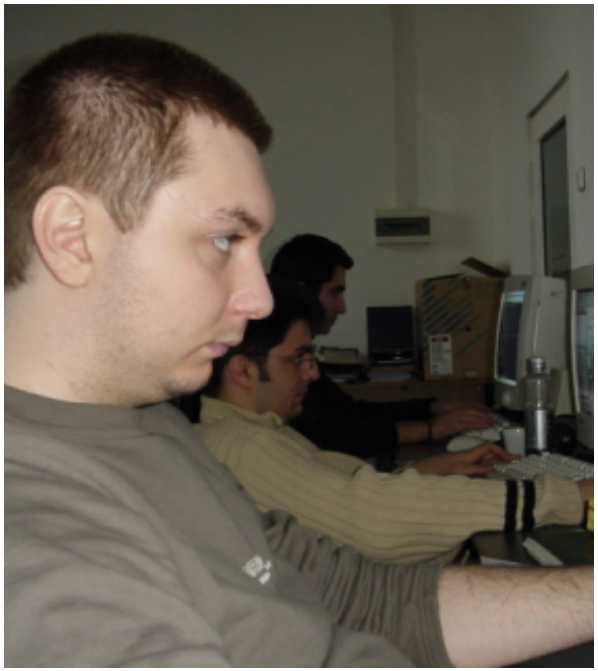
ALL MY LIFE ..... FOREVER... .....

But what is research?



O sa va povestesc un pic despre... Cercetare

9GAG is your best source of fun.



Research… It all starts with you…

Cum *eu* am început...

- 2003: UPB, C3 (”normal” student)
- 2003 – joining a RESEARCH group on the LHC distributed systems
  - Well, it didn’t sound much research, more like having fun developing stuff
- 2008: UPB - „Tehnici Avansate de Simulare pentru Sisteme Grid”
  - Rezultate: MONARC, MonALISA, LISA, FDT, DEPSYS, PEGAF, SEE-GRID, EGEE, e-CAESAR, VNSim, CAPIM
- Colaborator CERN, Caltech, Rutgers, INRIA, …
  - 2003-2008: Caltech PhD Performance Scholarship.
  - 2007-2008: Oracle Award. PhD Performance Scholarship.
- 2006: Innovations in Networking Award during the CENIC 2006 conference for High Performance Applications.
- 2008: Innovations in Networking Award for Experimental/Development Applications presented by the Corporation for Education Network Initiatives (CENIC) in California, in recognition of outstanding contribution in making possible the Ultralight project.

Website: https://cipsm.hpc.pub.ro
Facebook: http://www.facebook.com/ciprian.dobre

Si da, stiu ce vorbesc, am lucrat si eu inca din anii de Facultate... ☺

Urmează anul III - IV

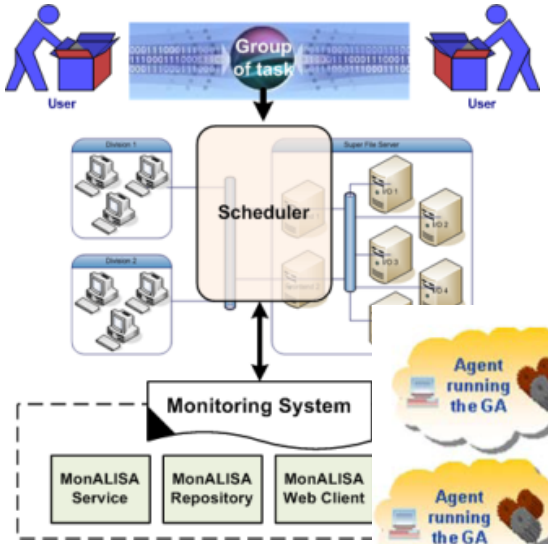
- Internship într-o companie versus universitate
- Păstrați opțiuni:
  - Companie – Master – PhD
  - Master – Companie
  - Master – Carieră în cercetare
- Dacă decideți asupra unui master în UPB… dar și în afară… există echipe puternice de cercetare în facultatea noastră, cu rezultate deosebite
- Câteva exemple…

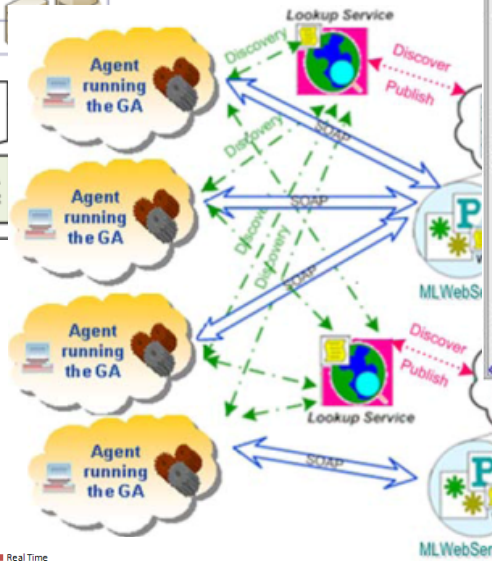
Research Groups

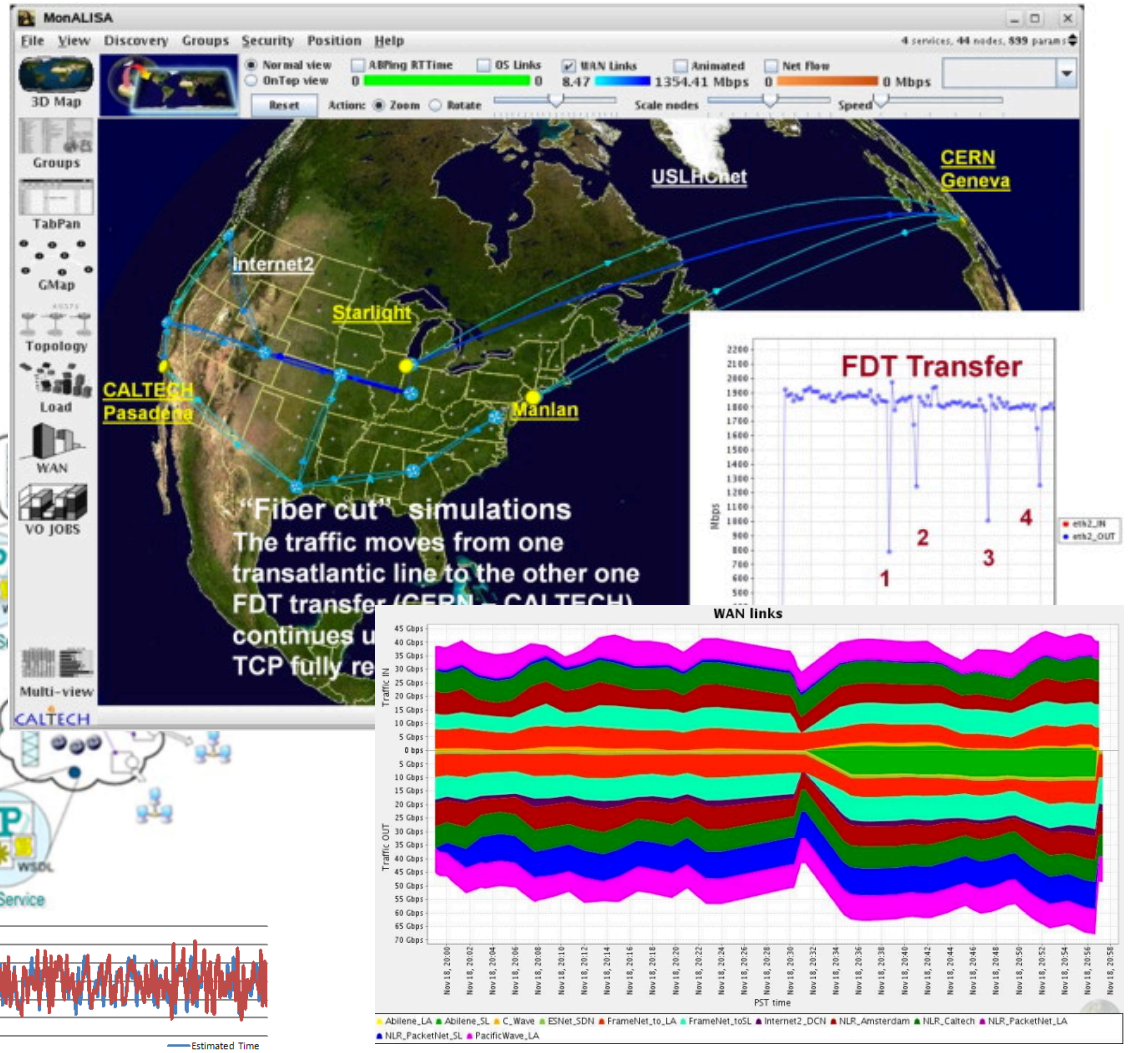
- Distributed Systems: Cloud, P2P, Grids, Mobile
  - C. Dobre, F. Pop, N. Tapus, E. Slusanschi,
- Mobile Systems:
  - C. Dobre, R. Ciobanu, R. Marin
- IoT:
  - C. Dobre, R. Ciobanu, A. Radovici, D. Rosner
- Computer Networks
  - C. Raiciu, D. Niculescu, R. Rughinis
- SO & Security
  - R. Deaconescu
- Collaborative Knowledge Development
  - S.Trausan-Matu, V. Posea, T. Rebedea, C. Chiru
- Artificial Intelligence and Multi Agent Systems
  - A. Florea, M. Leordeanu, I. Mocanu

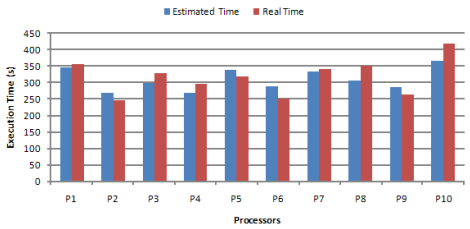
Disclaimer: sigur am uitat atat de multa lume din lista aceasta, in realitate suntem mult mai multi in Departament ☺

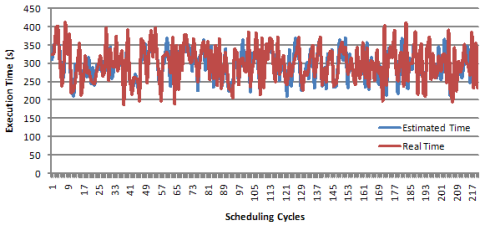
It all started with… MonALISA



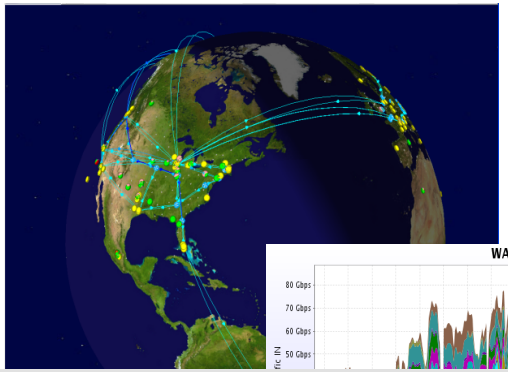


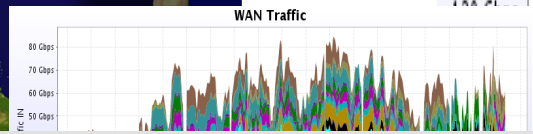


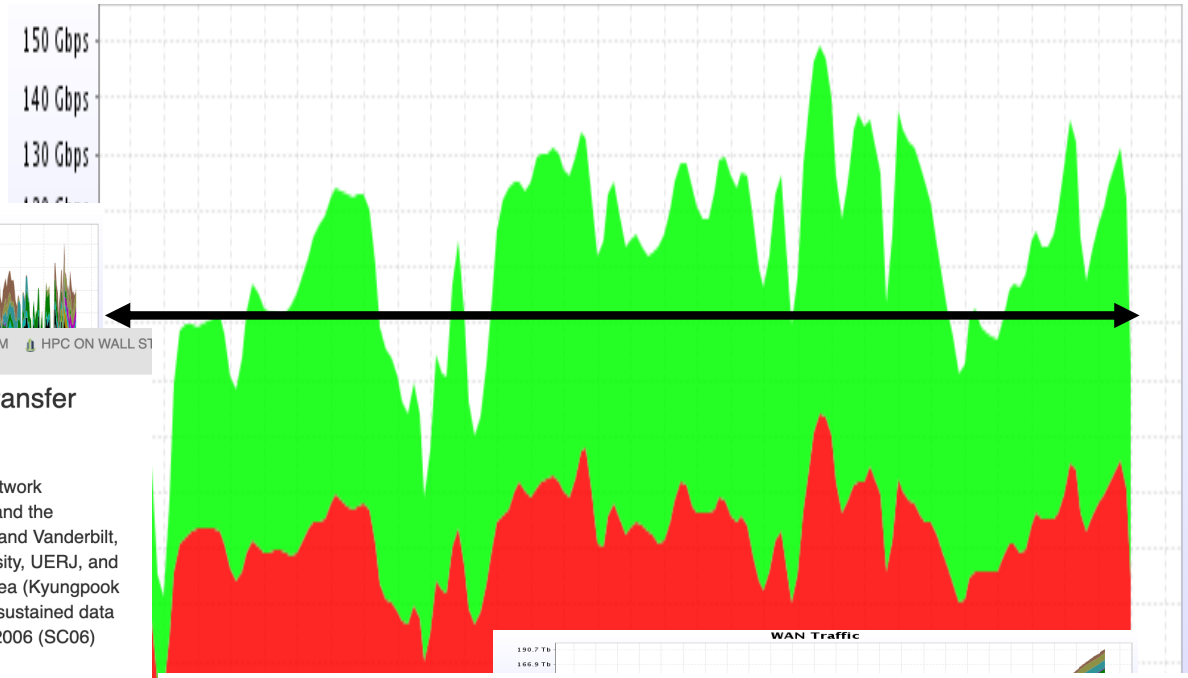




Bandwidth Challenges SC2005-2010







TABOR NETWORK: DATANAMI ENTERPRISEAI HPCWIRE JAPAN ADVANCED SCALE FORUM HPC ON WALL ST

HPCwire

Since 1987 - Covering the Fastest Computers in the World and the People Who Run Them

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Physicists Set Record for Network Data Transfer

By Nicole Hemsoth
December 15, 2006

An international team of physicists, computer scientists, and network engineers led by the California Institute of Technology, CERN, and the University of Michigan and partners at the University of Florida and Vanderbilt, as well as participants from Brazil (Rio de Janeiro State University, UERJ, and the State Universities of São Paulo, USP and UNESP) and Korea (Kyungpook National University, KISTI) joined forces to set new records for sustained data transfer between storage systems during the Supercomputing 2006 (SC06) Bandwidth Challenge (BWC).

The high-energy physics team's demonstration of "High Speed Data Gathering, Distribution and Analysis for Physics Discoveries at the Large Hadron Collider" achieved a peak throughput of 17.77 gigabits per second (Gbps) between clusters of servers at the show floor and at Caltech. Following the rules set for the SC06 Bandwidth Challenge, the team used a single 10-Gbps link provided by National Lambda Rail that carried data in both directions. Sustained throughput throughout the night prior to the bandwidth challenge exceeded 16 Gbps (or two gigabytes per second) using just 10 pairs of small servers sending data at nine Gbps to Caltech from Tampa, and eight pairs of servers sending seven Gbps of data in the reverse direction.

Home / About / News / World Network Speed Record Shattered for Third Consecutive Year

World Network Speed Record Shattered for Third Consecutive Year

December 06, 2005

Caltech, SLAC, Fermilab, CERN, Michigan, Florida, Brookhaven, Vanderbilt and Partners in the UK, Brazil, Korea and Japan Set 131.6 Gigabit Per Second Mark During the SuperComputing 2005 Bandwidth Challenge

SEATTLE, Wash.—An international team of scientists and engineers for the third consecutive year has smashed the network speed record, moving data along at an average rate of 100 gigabits per second (Gbps) for several hours at a time. A rate of 100 Gbps is sufficient for transmitting five feature-length DVD movies on the Internet from one location to another in a single second.

Subscribe

Caltech Matters >

Home / About / News / Internet Speed Quadrupled by International Team During 2004 Bandwidth Challenge

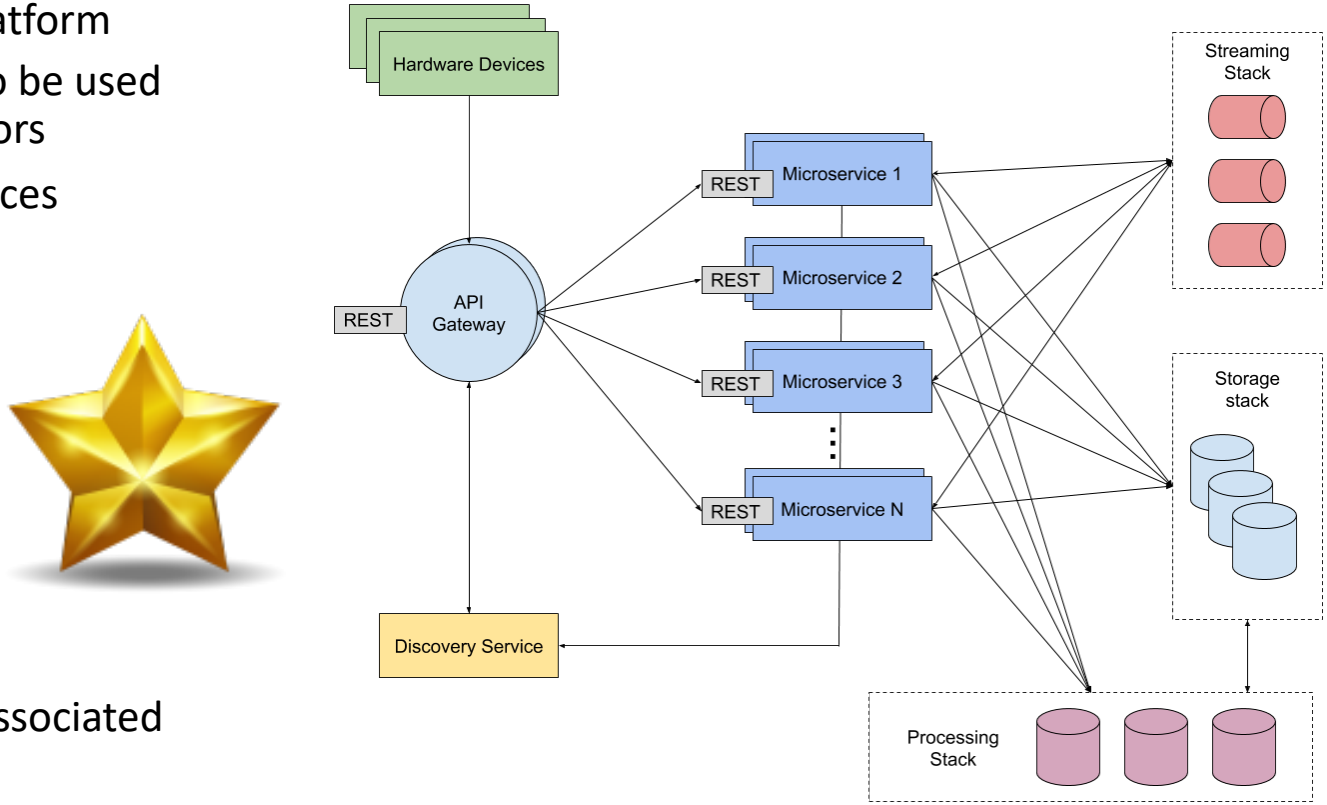
Internet Speed Quadrupled by Intern During 2004 Bandwidth Challenge

November 24, 2004

PITTSBURGH, Pa.--For the second consecutive year, the "High Energy Physics" team of physicists, computer scientists, and network engineers have won the Supercomputing Bandwidth Challenge with a sustained data transfer of 101 gigabits per second (Gbps) between Pittsburgh and Los Angeles. This

NETIoT

- **NETIoT** – a versatile IoT platform integrating sensors and applications
  - We aim to provide:
    - pre-configured hardware devices, compatible with the platform
    - already built services to be used with the available sensors
    - ability to add new services



- **hpaPaaS** – High-Productivity Application Platform as a Service
- Relieving users of burdens associated with IoT solutions setup

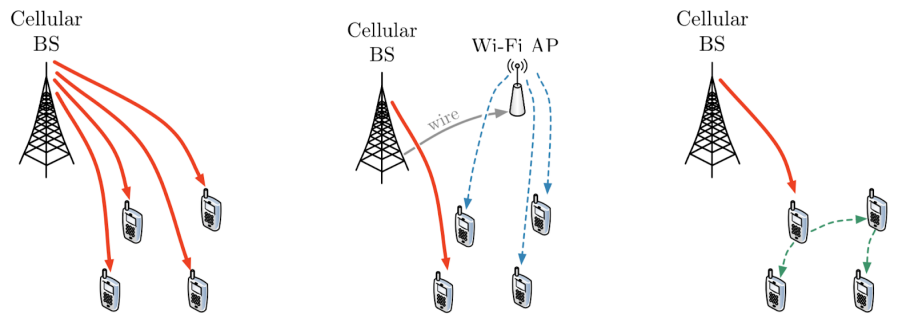
Ex: Bucharest-wide Air Pollution Monitoring

- Air pollution – biggest health risk in Europe
- Respiratory and cardiovascular diseases and cancer; impacts on fertility, pregnancy, neonates and children
- Bucharest case:
  - Levels of pollutants above the maximum limit regulated by the EU
  - Eight technologically outdated monitoring stations

Da, asta ruleaza in PRECIS

Aplicatii mobile...

- Data/computation offloading, distributed social networks, e-Post-it
- New applications of interest
  - Data sharing: tile sharing, smart taxi, crowded environments, disaster management
  - Sensor sharing: GPS in the bus
  - Computation sharing (i.e., crowd computing): HYCCUPS
  - Network sharing: e.g., roaming net sharing
- MONROE project
  - enable fast and secure networking through multiple available network interfaces (Wi-Fi, 4G, satellite, etc.)
  - choose the most suitable interface (or interfaces) based on requirements



(a) Infrastructure only. (b) AP-based offloading. (c) Terminal-to-terminal offloading.

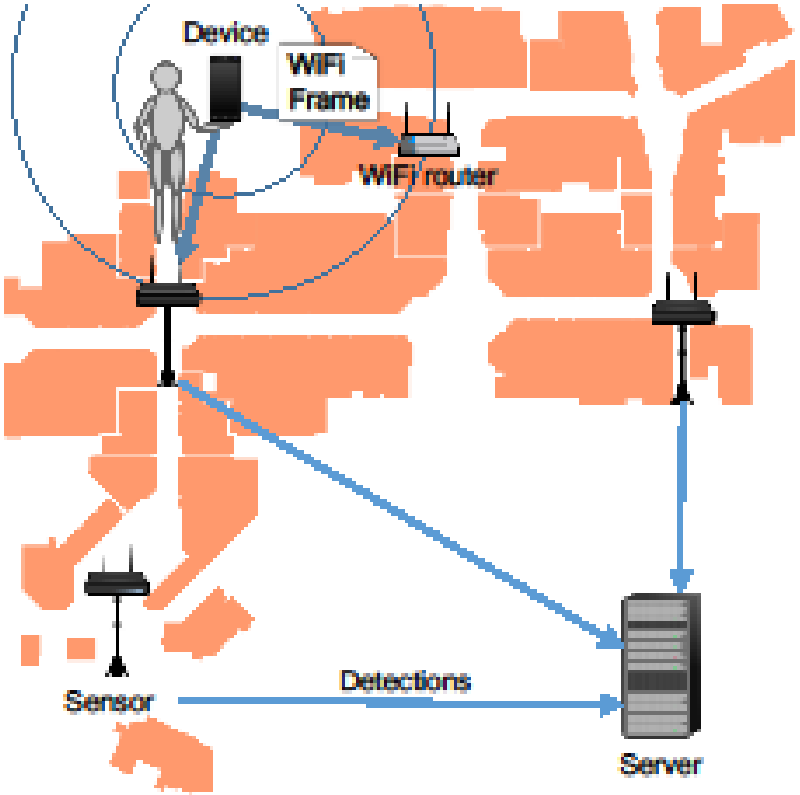
Aplicatii pentru traffic problems !

Are there solutions?

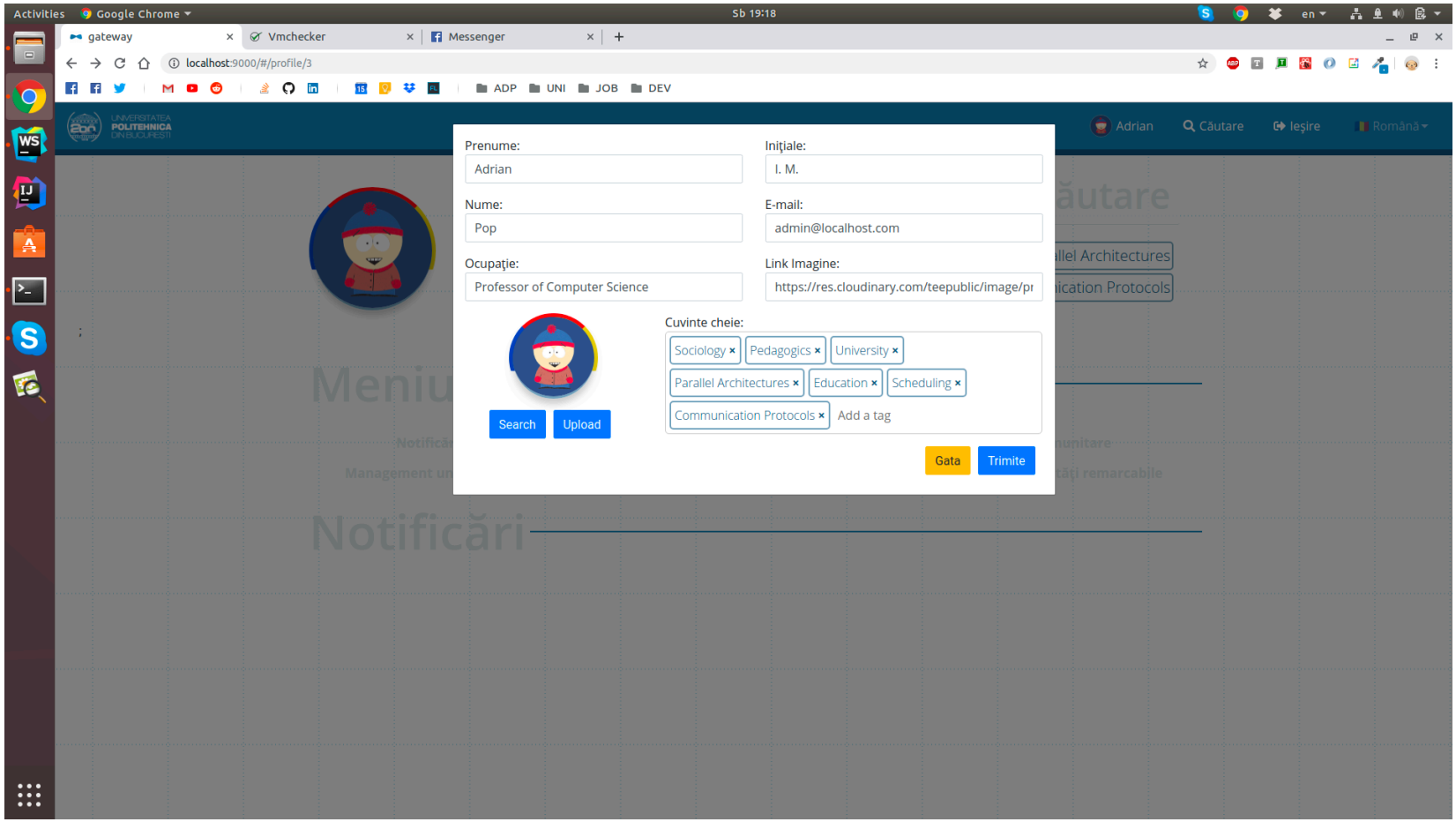
Aplicatii pentru persoane varstnice: vINCI

- Enhance older adults' active ageing and their quality of life through technology
- Developing an IoT-based eco-system to deliver non-intrusive monitoring and care support for older adults
- Data is sensed from sensors (e.g., detecting physical and social activity) and wearable devices (e.g., smart watch, smart clothing/shoes)
- IoT endpoints furnish standards-driven communication protocols combined with sophisticated data aggregation and analytics techniques
- Targets as primary end-users older adults aged 65+
- Secondary end-users are the caregivers targeted in vINCI:
  - relatives and informal carers
  - professional caregivers;
  - tertiary end-users are stakeholders such as medical doctors, physiotherapists, social services

… and crowd monitoring / WiFi tracking

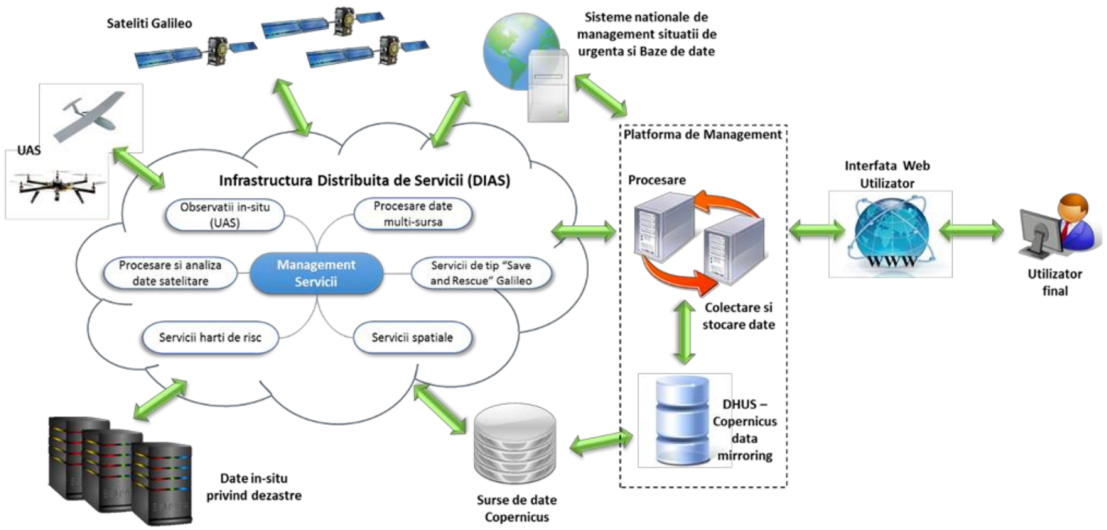


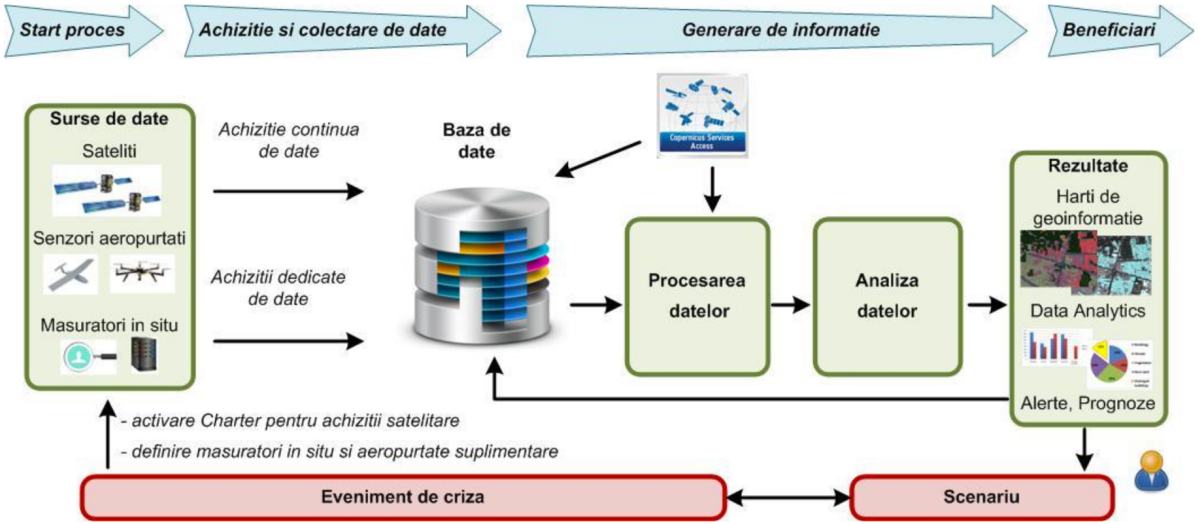
...and analysis of research data



Demo...

SPERO – Space technologies used in the management of disasters and major crises, manifested at local, national and regional levels





Scientific and research collaborations

Retrospectiva....

- De ce v-am aratat toate astea?
- Incercati sa ramaneti *competitivi*
- Nu tratati proiectul de licenta lightly
  - Faceti ceva care sa conteze (da, ce v-am aratat au inceput ca si *proiecte de licenta)*
  - Faceti ceva care sa dovedeasca ce puteti
  - Faceti ceva din care sa invatati
  - Faceti ceva alaturi de colective, *furati meserie*
  - Ramaneti aproape de Facultate...

Urmeaza practica, de ce sa nu incepeti proiectul de licenta deja de la Practica??

Fiți competitivi pe piața muncii…

http://www.payscale.com/research/US/Job=Researcher,_Scientific/Salary

Q&A

Thank you!

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