YSOFT®

Day with industrial partners

About me

- 2000 – 2005 Faculty of Applied Mathematics and Informatics, Ivan Franko National University of Lviv (Mgr.)

- 2005 – 2012 Faculty of Informatics, Masaryk University (Mgr. and Ph.D.)

- 2012 Researcher and coordinator of cooperation with academia at Y Soft

- linkedin.com/in/AndriyStetsko
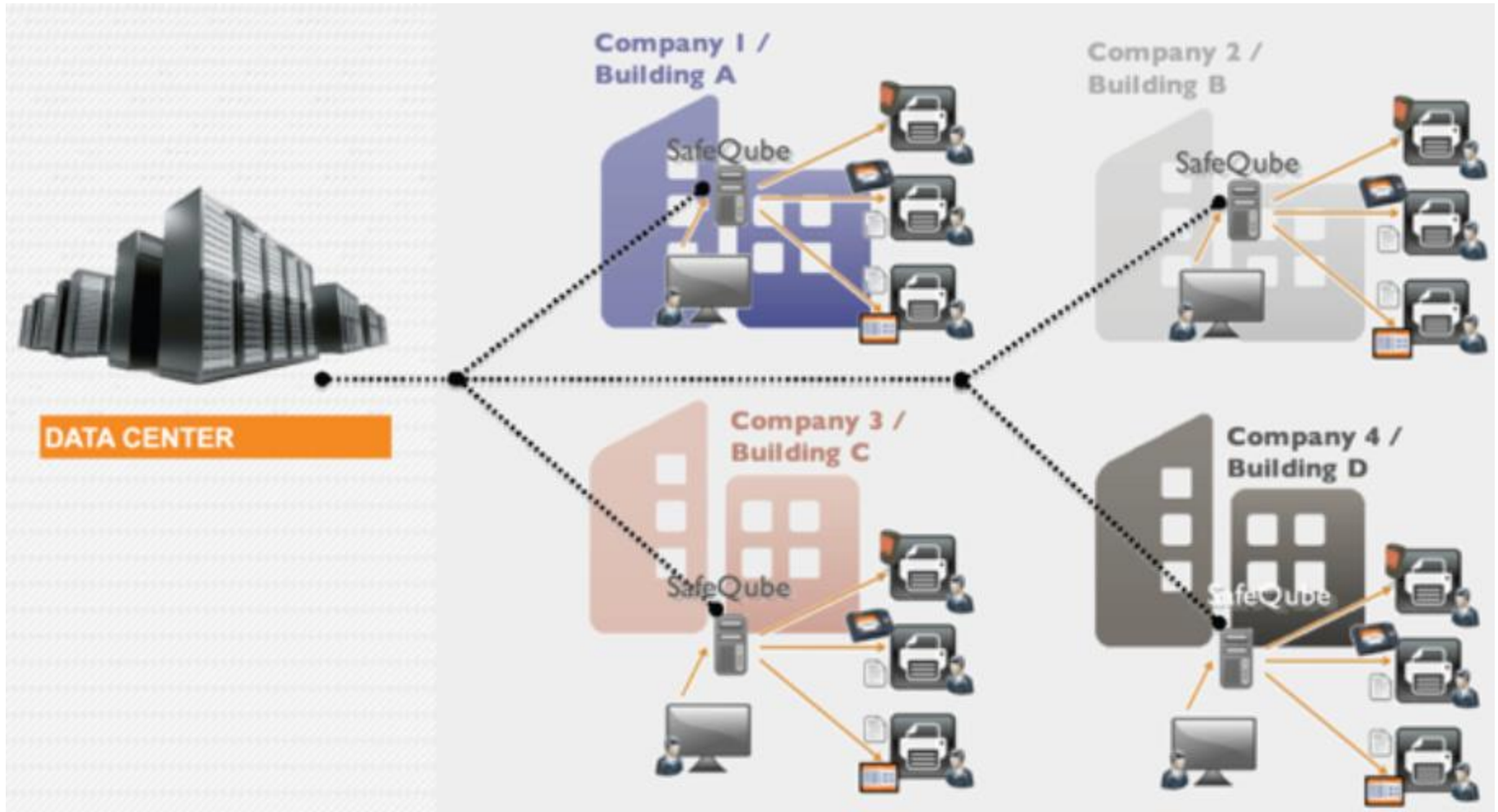
Presentation

- **Is about**
  - Y Soft SafeQ
  - Research areas interesting for Y Soft
  - Examples of cooperation with other students
  - Information how you can get involved

- **Is not about**
  - Our history & our Brno Headquarter
  - Our branches all over the world
  - Number of our well known and well established partners
  - Large number of our customers

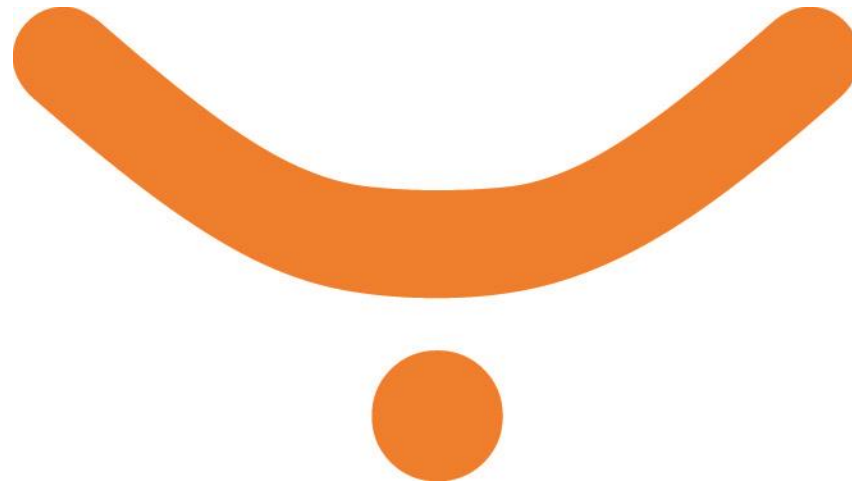http://www.ysoft.com/

About YSoft SafeQ

About YSoft SafeQ (cont.)

- Hundreds of servers
  - Distributed over different countries
- Thousands of printers
- Tens of thousands of users
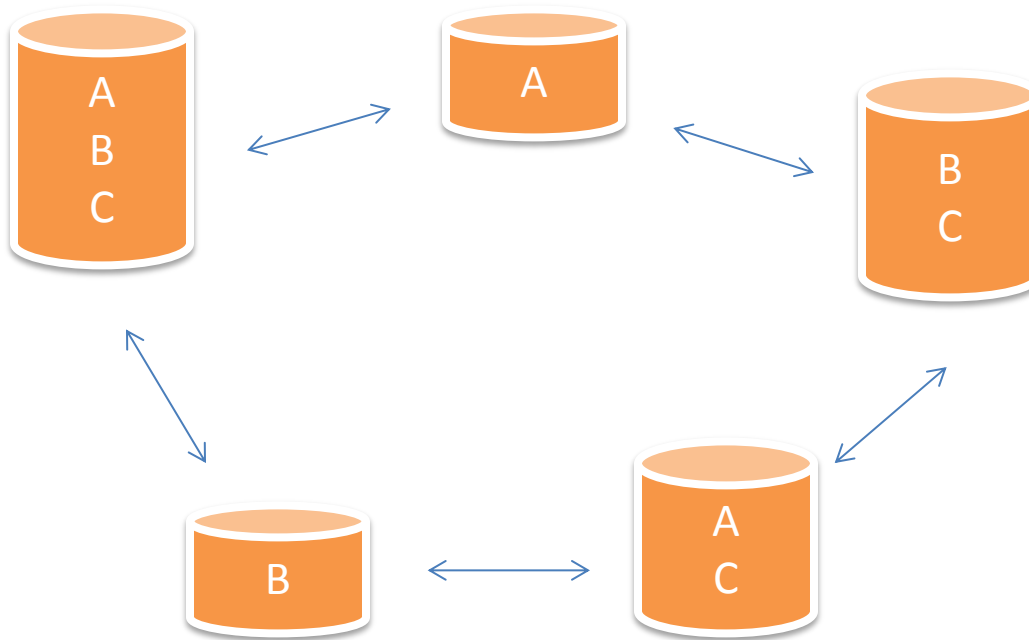- Several millions of printed jobs per month

About YSoft SafeQ (cont.)

- How to ensure high availability?

- How to make it more efficient?

- How to make it more scalable?

- How to make it robust?

- How to make it secure?

- How to test it before deployment?

Research Areas &
Examples of Cooperation

Distributed DB

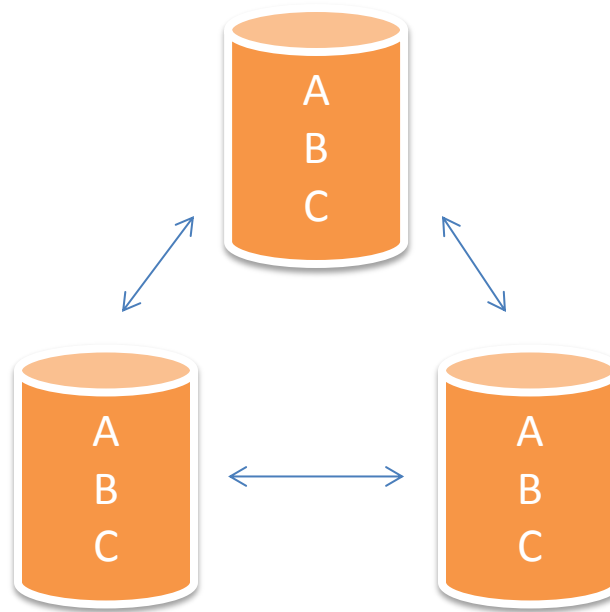- Availability
- Fault tolerance

CAP theorem

It is not possible for a distributed DB to simultaneously provide **consistency**, **availability** and **partition tolerance** guarantees

Traditional (distributed) DB

- **A**tomicity
- **C**onsistency
- **I**solation
- **D**urability

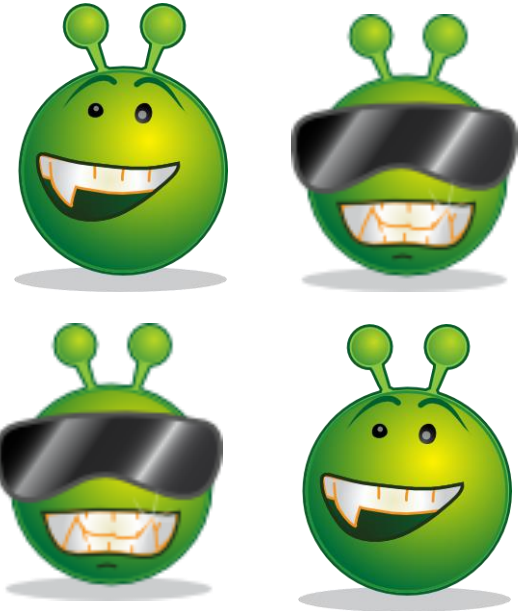**Low R/W availability**

New (distributed) DB

- Trade-off between Availability and Consistency
- Fault tolerance is usually "switched on"
- Amazon
- LinkedIn
- …

Riak NoSQL DB

- Study of documentation and source codes
  - Consistent Hashing, Eventual Consistency, Vector Clocks
- Analysis and verification of its key properties
  - Does DB return consistent data?
  - How long does it take to return consistent data?
  - How long does it take to write data?
  - How long does it take to read data?
- Analysis and evaluation of border and rare cases
- How different setting influence its key properties?
- Find trade-off between **C** and **A** for our purposes

Riak NoSQL DB

- Who is involved?
  - Developers from Y Soft
  - **Part-timer student**
  - New student (starts in July)

- We will not restrict ourselves to Riak only

- Do you want to experiment with distributed DB within scope of your thesis? Tell us!

Distributed Systems

- Defended BT: Indexing and Searching in Hybrid Peer-to-Peer Networks
  - Funded student position

- Running MT: Locking in distributed environment of YSoft SafeQ printing solution
  - Paxos, Raft, …

- Open MT: **Distributed processing of printing jobs using Akka**

- If you want to experiment with some system for distributed storage, processing or message passing in your thesis, let us know!

Security

- Defended MT: Implementation of payment protocol on smartcards (NFC-enabled mobile phone)

- Running BT: Tools for static and dynamic code analysis
  - FindBugs, FxCop

- If you want to experiment with penetration tools, vulnerability assessing, password guessing tools within your thesis, let us know!
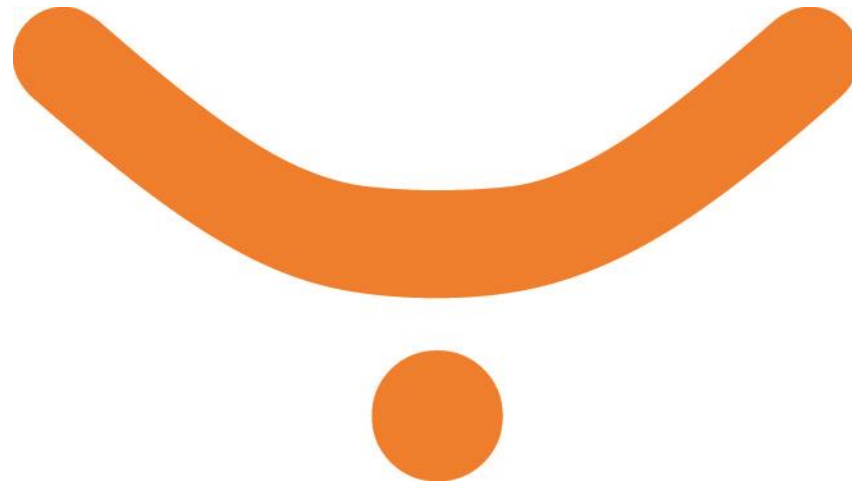
Testing

- Defended BT: Configuration tool for stress testing of the YSoft SafeQ print management solution

- Running BT: Adding support of IPP to YSoft Virtual Printer tool
    - Student got proposal of part-time job

- Open BT: **Load balancing using HAProxy**

Linux related

- Defended BT: Implementation of a native Mac OS X YSoft SafeQ printing client
  - Part-time job

- Defended MT: Porting of YSoft SafeQ Device server for Linux environment
  - Part-time job
  - Full-time job after defense

- Open MT: **Linux client for Y Soft SafeQ**

How you can get involved?

Competition for talented students

- Intended for 1st and 2nd year bachelor students
- Student will be involved in one of research laboratories at Faculty
- Regular financial reward
- This year, we will sponsor one position (congratulation to Martin Šalata)
- If you are hardworking and willing to study, go for that!

Bachelor or master theses

- List of available topics at: http://ysoft.com/O-nas/University-Relations/For-MU-Students
- Currently, 7 available topics (5 bachelor and 2 master theses)
- 3 bachelor and 7 master theses are occupied
- Some of them came in package with a part-time job at Y Soft
- Follow our pages, contact me personally or by e-mail

Thank you for your attention
Visit us at our stall

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