A Survey of Grid Knowledge and Grid Perception in the Public Sector
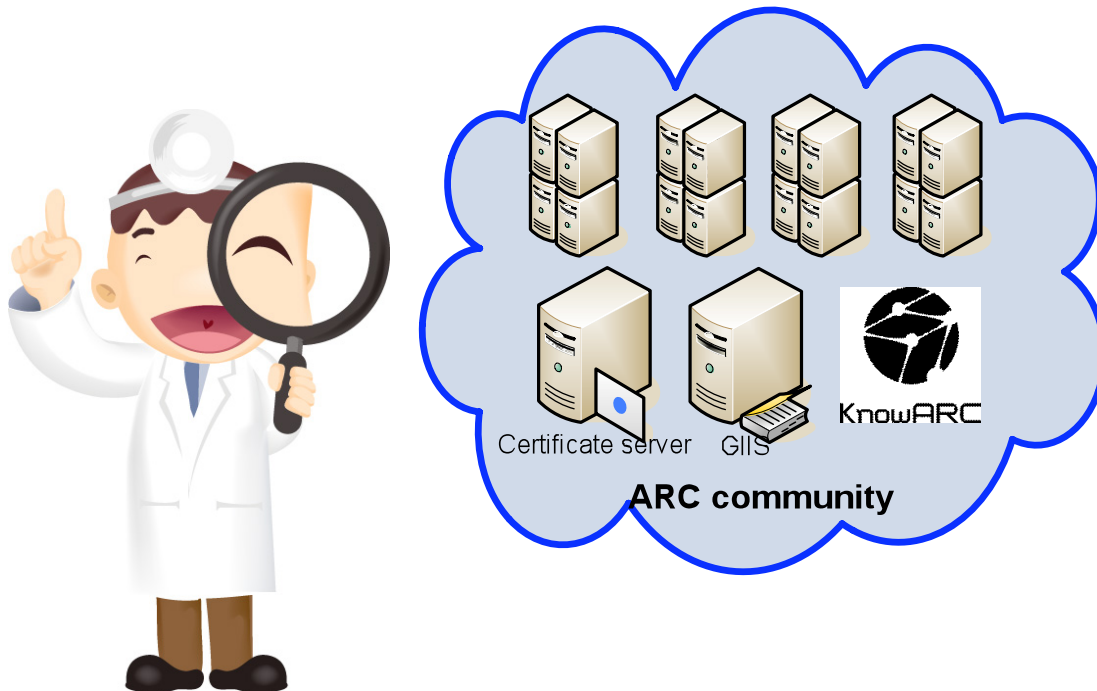
HealthGrid 2010

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Certificate server   GIIS   KnowARC

ARC community

UNIVERSITÉ DE GENÈVE

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- Motivation

- Survey design & interviewees

- Results & Interpretation

- Conclusions

Motivation

- Medical digital data increase rapidly
  - Analysis requires computing power
- Existing Grid infrastructures can fulfil this need
- Little used in clinical environments or in public service sector offices
- Survey was made to gain a better understanding of :
  - The current situation and needs
  - The perception of the decision makers on Grids
  - The obstacles for Grid deployment
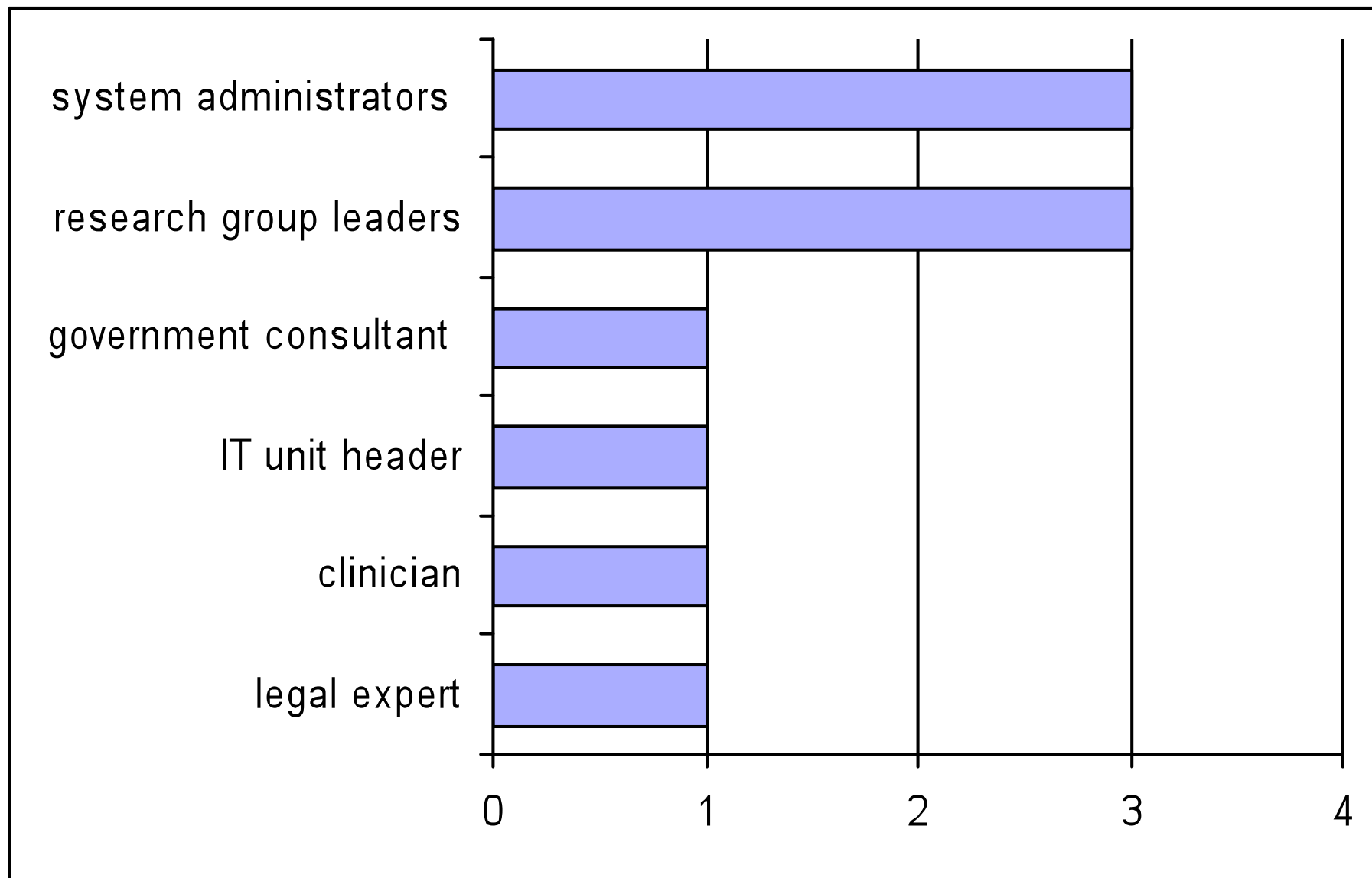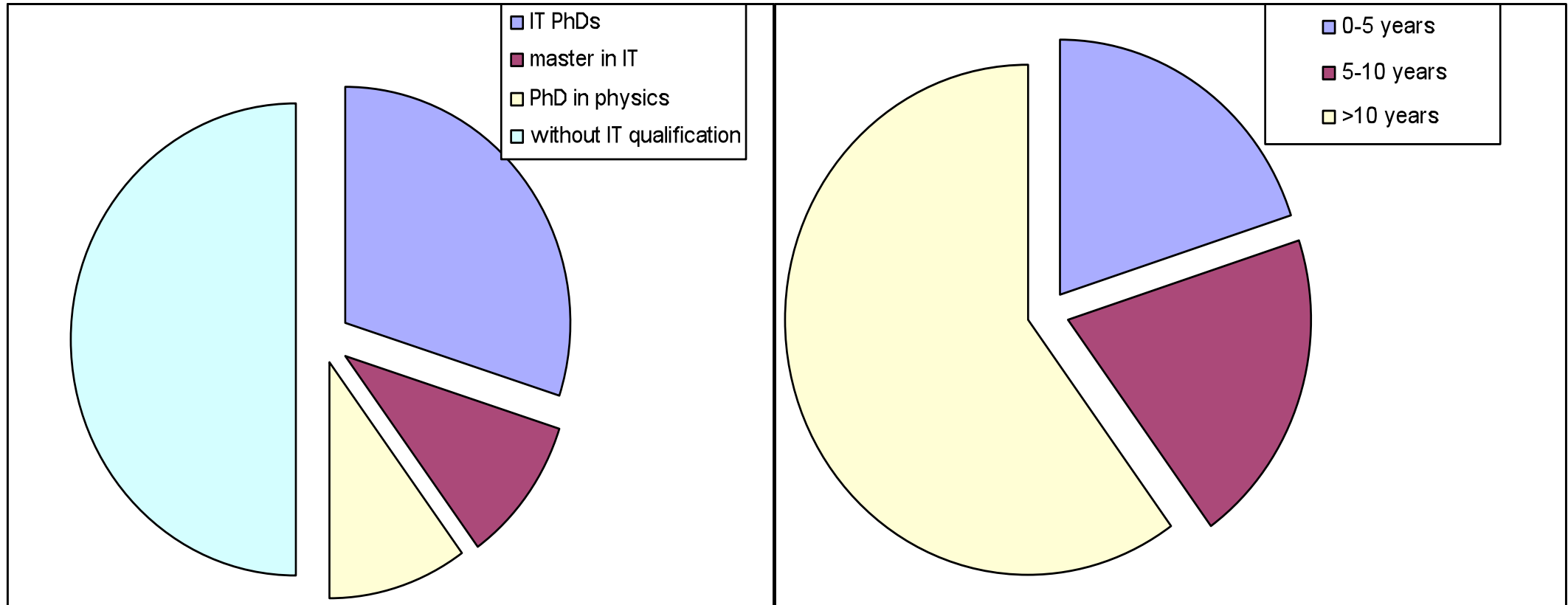
IT qualification

IT professional experience

- ## Professional interests:
  - ### High level users
    - Short-term resource availability
    - Possible Overhead
    - Benefits for projects
  - ### System experts (or administrators)
    - Robustness of new technology
    - Interoperability with existing systems
  - ### Decision makers
    - Technical trends
    - Validation for new technologies

- ## Survey design:
  - ### Users
    - Application needs
  - ### System experts (or administrators)
    - Existing systems
    - Constraints
  - ### Decision makers
    - IT strategies
    - Validation for new technologies
- ## 30 minutes to 1,5h
- ## Face to faace interview, answers recorded and interpreted

Results & intepretations

Strategies

- IT budget:
  - Hospitals: ~100 mio CHF, ~3% of total budget
  - Government: ~187 mio CHF, ~1.2% of the total budget.
- Validation of technologies :
  - Bottom-up validation (Universities: quick adoption)
    - Depends on project needs (funding)
    - Initiated by researches
  - Top-down validation (Government)
    - Consultants survey new technologies and give propositions
    - Out-sourcing the development
  - Cross validation (Hospitals: neither early nor late adoption)
    - System admins validations together with end users

Hardware and its configuration

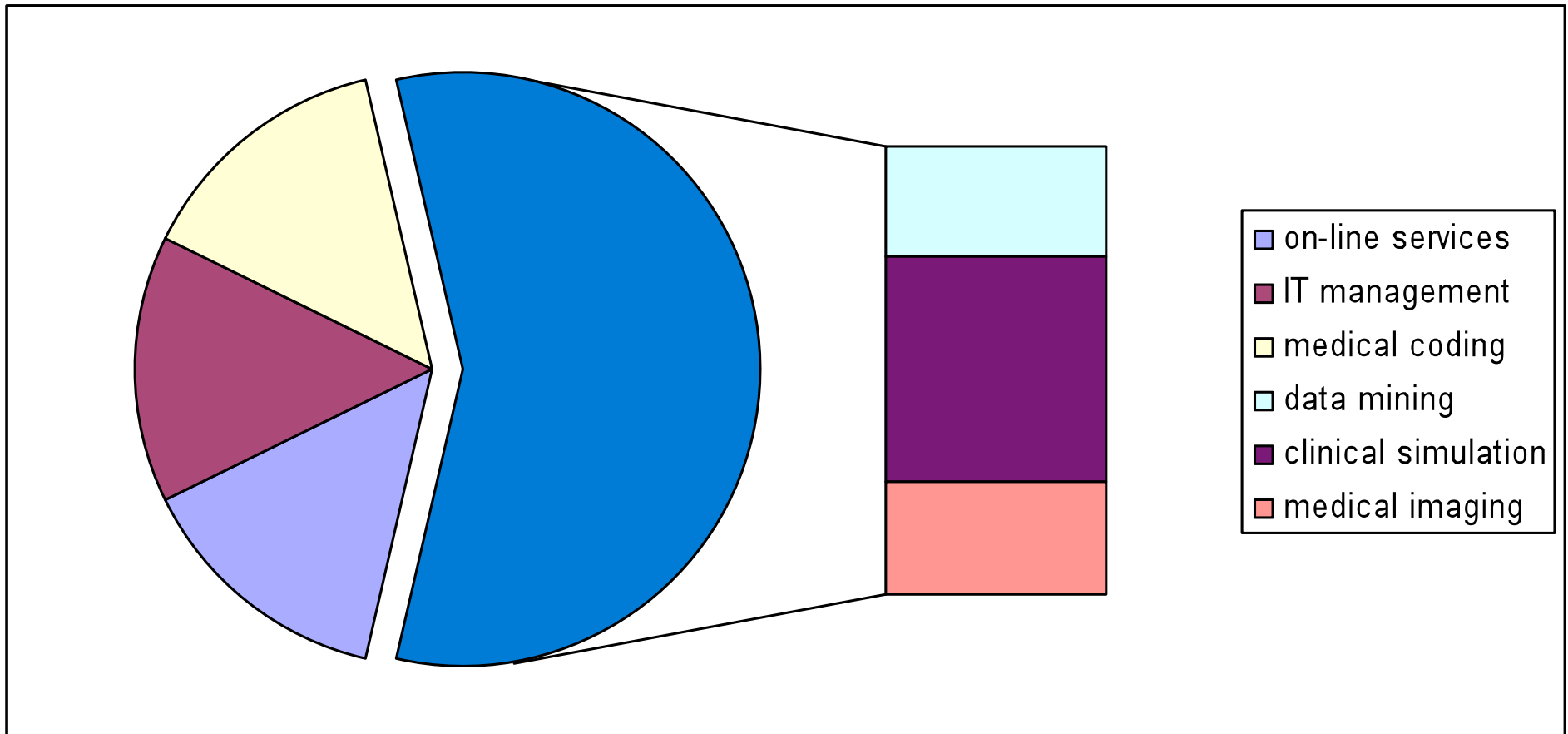| Questions	Universities	Hospitals
Nb of PCs	>5'000 PC	~8'000 PCs
Nb of servers	~150	>200
PC configuration	2-core CPU 1GB RAM	2-core CPU 1GB RAM
Server config.	variable: standard 2-core CPU 2~4G RAM	1~32CPU 1~32GB RAM
OS for PCs	70% Windows XP, 30% MAC	Mainly Windows XP, a few MAC
OS for servers	Solaris, MAC, Linux	Suse Linux, Solaris
PC renewal cycle	3~5 years	3 years
Servers renewal cycle	5~10 years	5~8 years

- PCs (resource target to build grid):
  - Advantages :
    - Large number of PCs exist
    - Configuration and operating systems are homogeneous
    - Renewed regularly
  - Disadvantages:
    - Most use Windows OS
    - Uncertainty of availability (owned by desktop PC users)
- Servers
  - Either owned by specific group with dedicated application modules
  - Or running applications in high priority

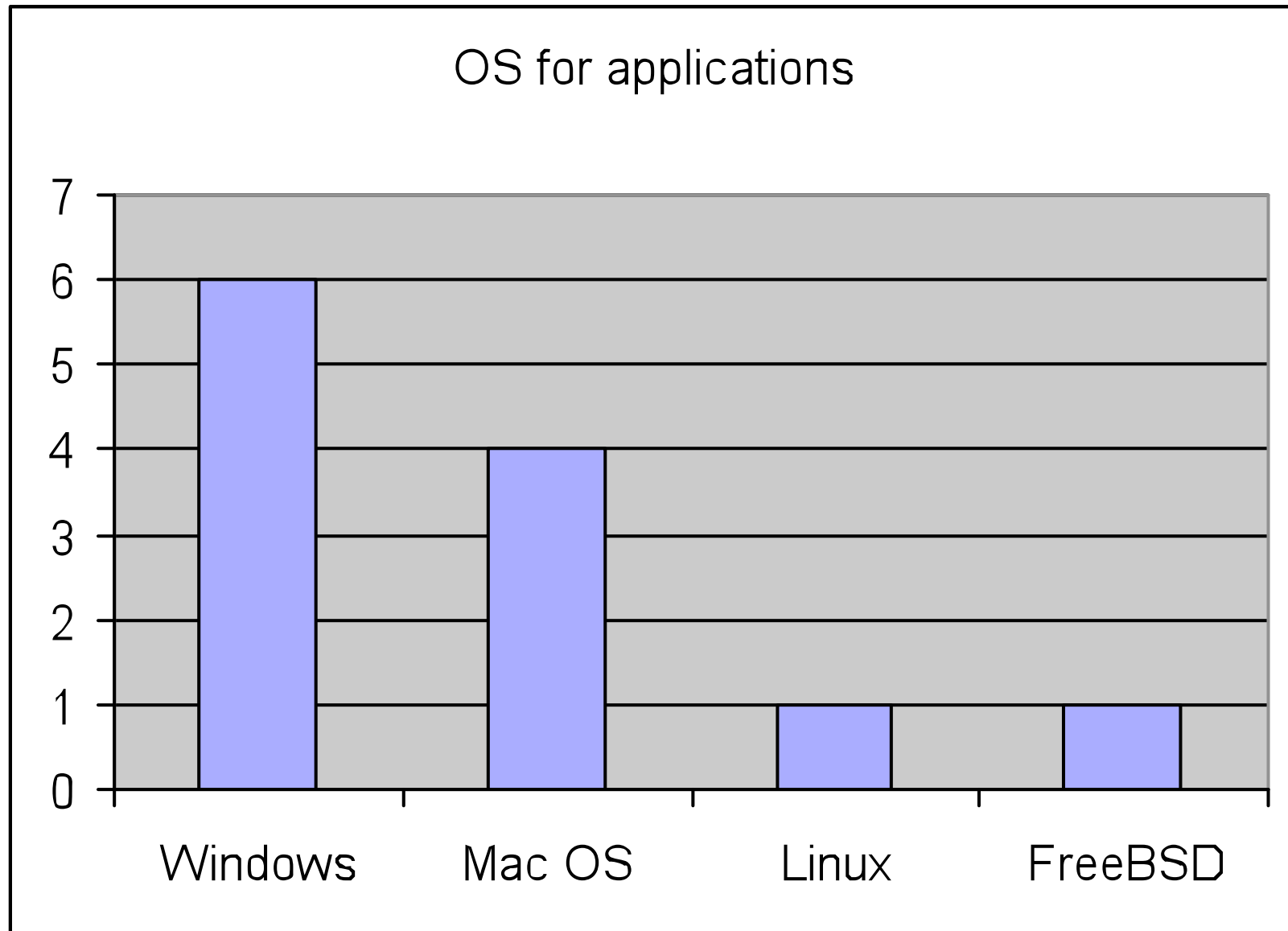# Network condition

- From 1GB to 10GB bound width

- Hospitals and Government hold confidential data protected by policy and proxy (NAT, firewall)

- Network charge depends on the rushing hours (needs as well as limits)

  - Sharing: given resources or taken away?

  - Grid running 24h/24h? 7d/7d? (Hospitals outbound network is 70%~80% used 20h/day)

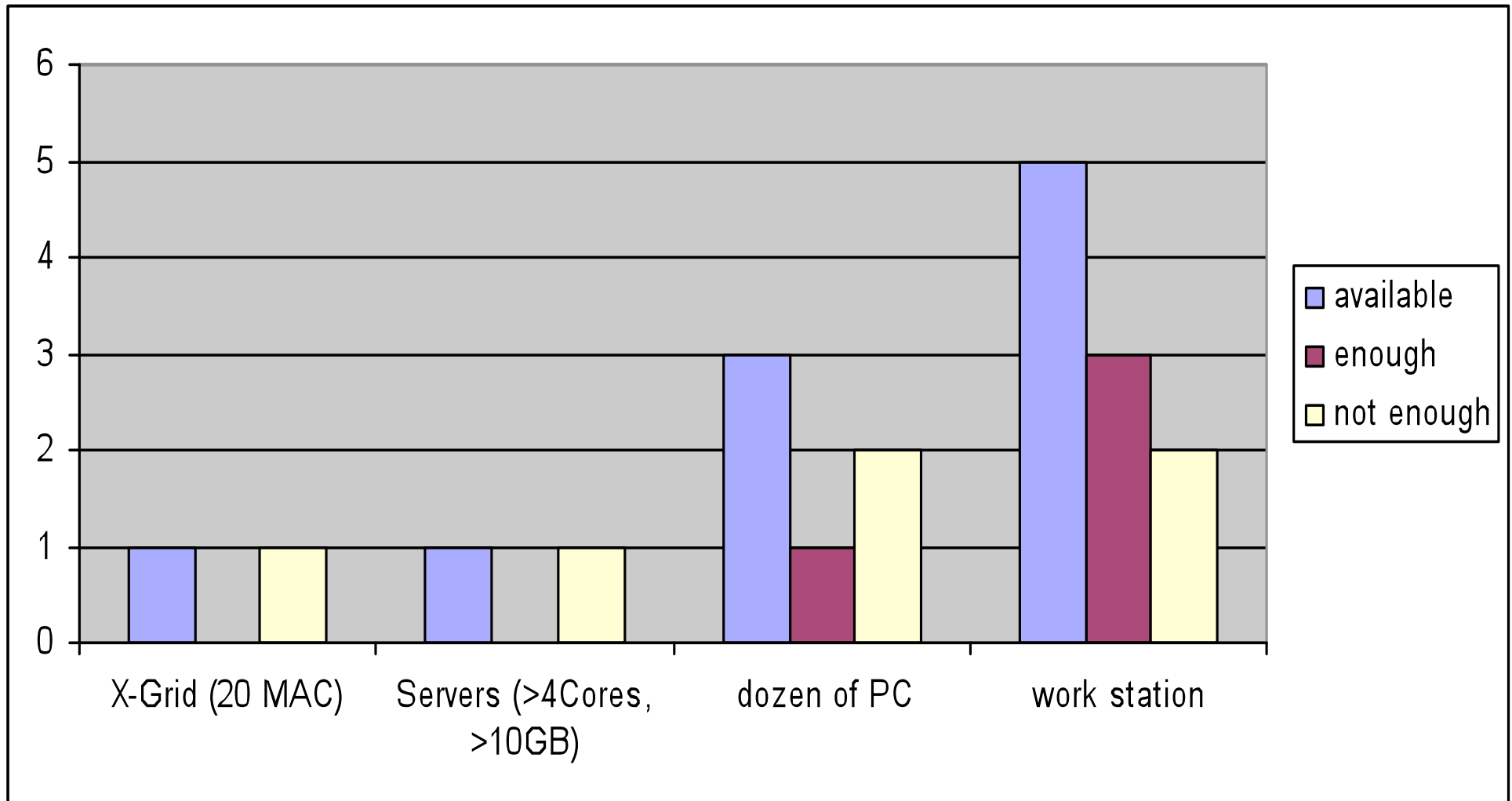 - How (who) to decide to start or stop the grid service? (Users? Administrator? Or config in middlewares?)

on-line services
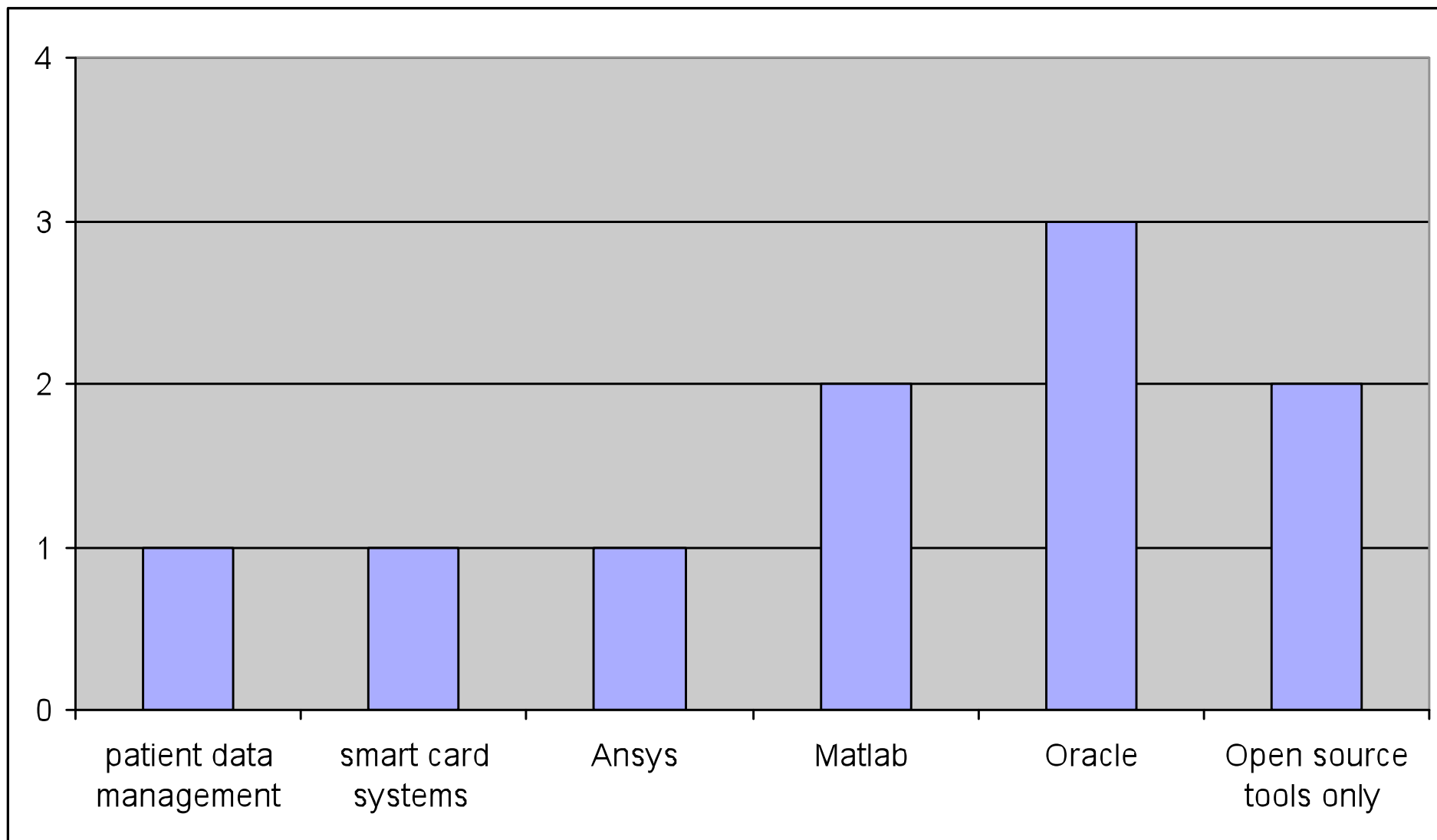IT management
medical coding
data mining
clinical simulation
medical imaging

OS for applications

Perception of Grid and clouds.

Q: What aspects of Grid computing are most interesting for you?

A: computing power (3), Grid web services (3), distributed storage (1), increased efficiency of resources (2), simple access to heterogeneous resources (2), data sharing (4), not interested at all (1)

Q: If you have interest in Grid, cloud and distributed computing what barriers to adoption do you see?

A: application migration (4), change of existing infrastructure (1), lack of expertise (2), not supported commercially (3), Licenses (1), low motivation for sharing(4), legal restriction concerning confidential data (2), obtain funding(1)

Conclusion

- **Increasing** requirement of computer resources make Grid techniques a **trend** for further applications

- Main barriers of adoption are **motivation** of sharing & **stability** & **commercial** support (Windows platform is important)

- Firewall NAT adapted solutions (http-based)

- Should focus on **rush** hour usage rather than computational intensive

- Application **migration** is the most mentioned technical obstacle

- By solving these problems, Grid technology can be used in Public section

Thank You for Your Attention!

Questions?

http://www.knowarc.eu/