Track 3:

Networking

- The Networking Cluster – Who we are
- e-Infrastructure Survey on Standards
- Mapping projects to Standards Bodies and issues requiring standardisation

The Networking Cluster – Who we are

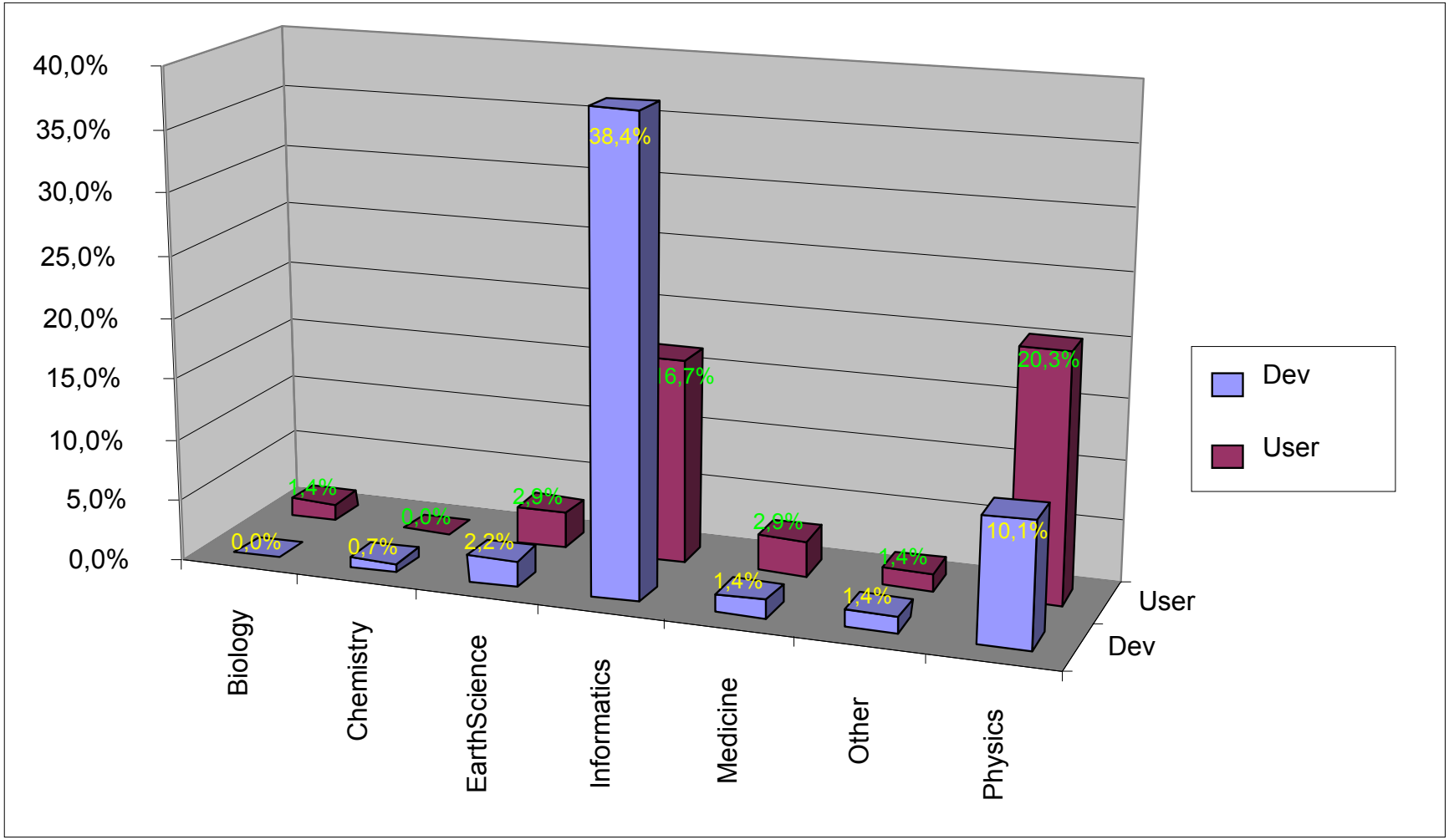
Track 3: Networking

FP6	GN2	GEANT
	ALICE	Latin America NREN connectivity
	EUMEDCONNECT	EU-Mediterranean connectivity
	OCCASION	Satellite communication to Central Asia
	SEEREN2	SE Europe NREN connectivity
	TEIN2	EU-Asia connectivity
	ORIENT	EU-China connectivity
	6DISS	IPv6 Dissemination and Training
	EuroLabs	Interconnected testbeds
	EXPReS	Radio astronomy connectivity
	Go4IT	IPv6 test tool
	LOBSTER	Measurement
	MUPBED	Optical testbed
	Phosphorus	Optical network
	SEEFIRE	SE Europe
	WEIRD	WiMAX
	AUGERACCESS	Argentina observatory (connectivity and grid)
FP7	EVALSO	Chile observatory (connectivity and grid)
	FEDERICA	Slices of European NRENs for experimentation

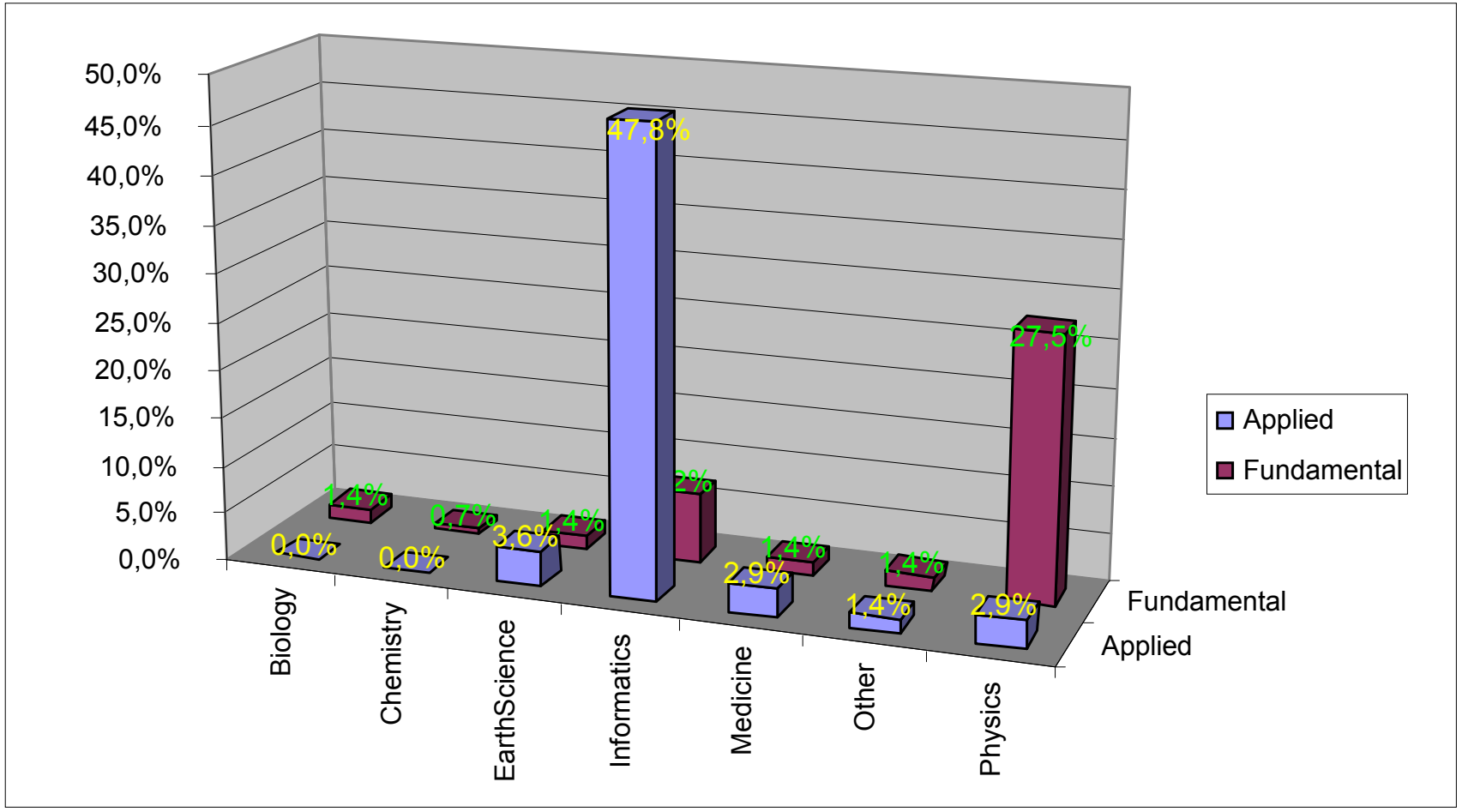
e-Infrastructure Survey on Standards

Analysis of Responses

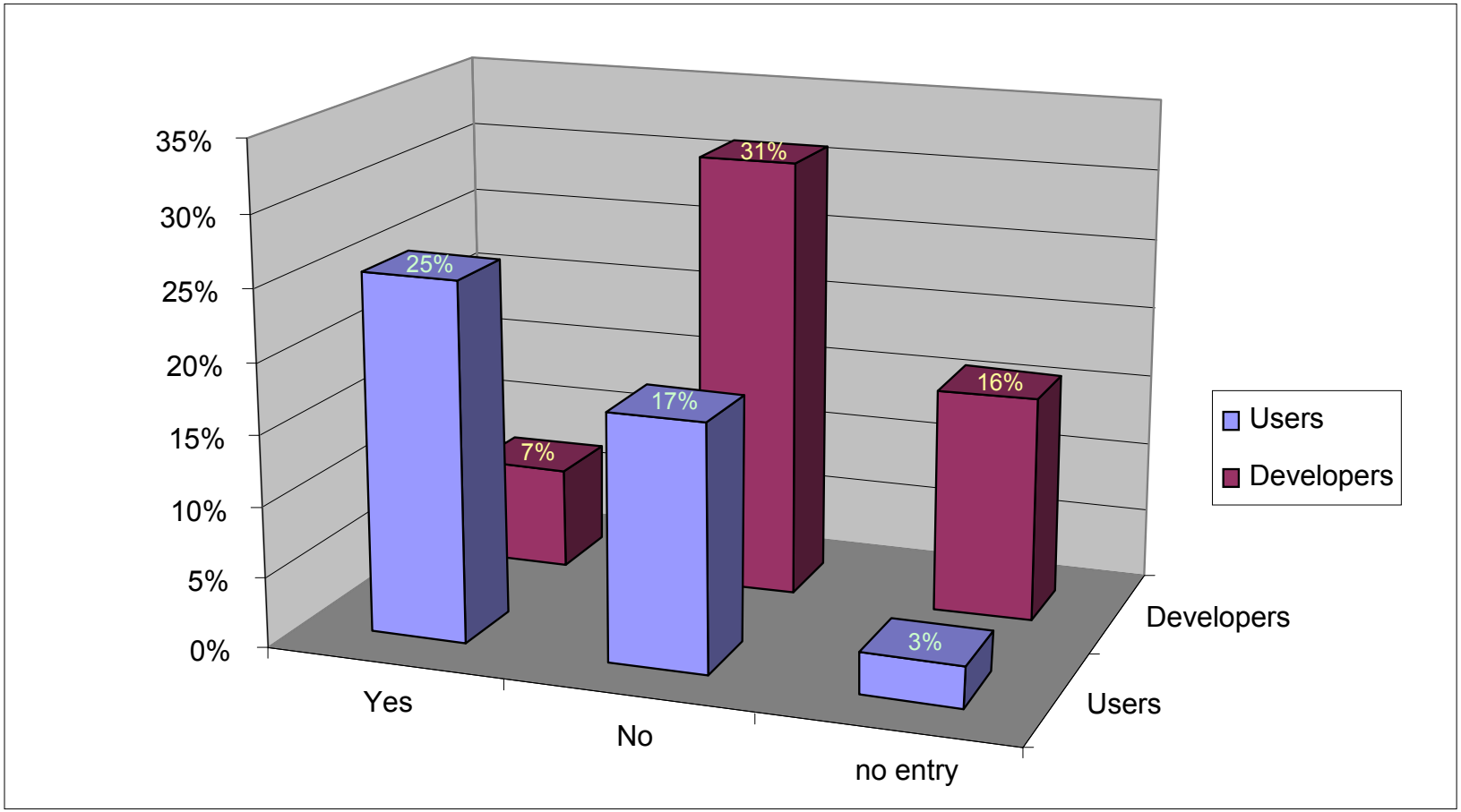
Demographics: Discipline, and User/Developer of e-Infrastructure



Demographics: Type of Research, and Discipline



Interaction with standardisation



Discussion items

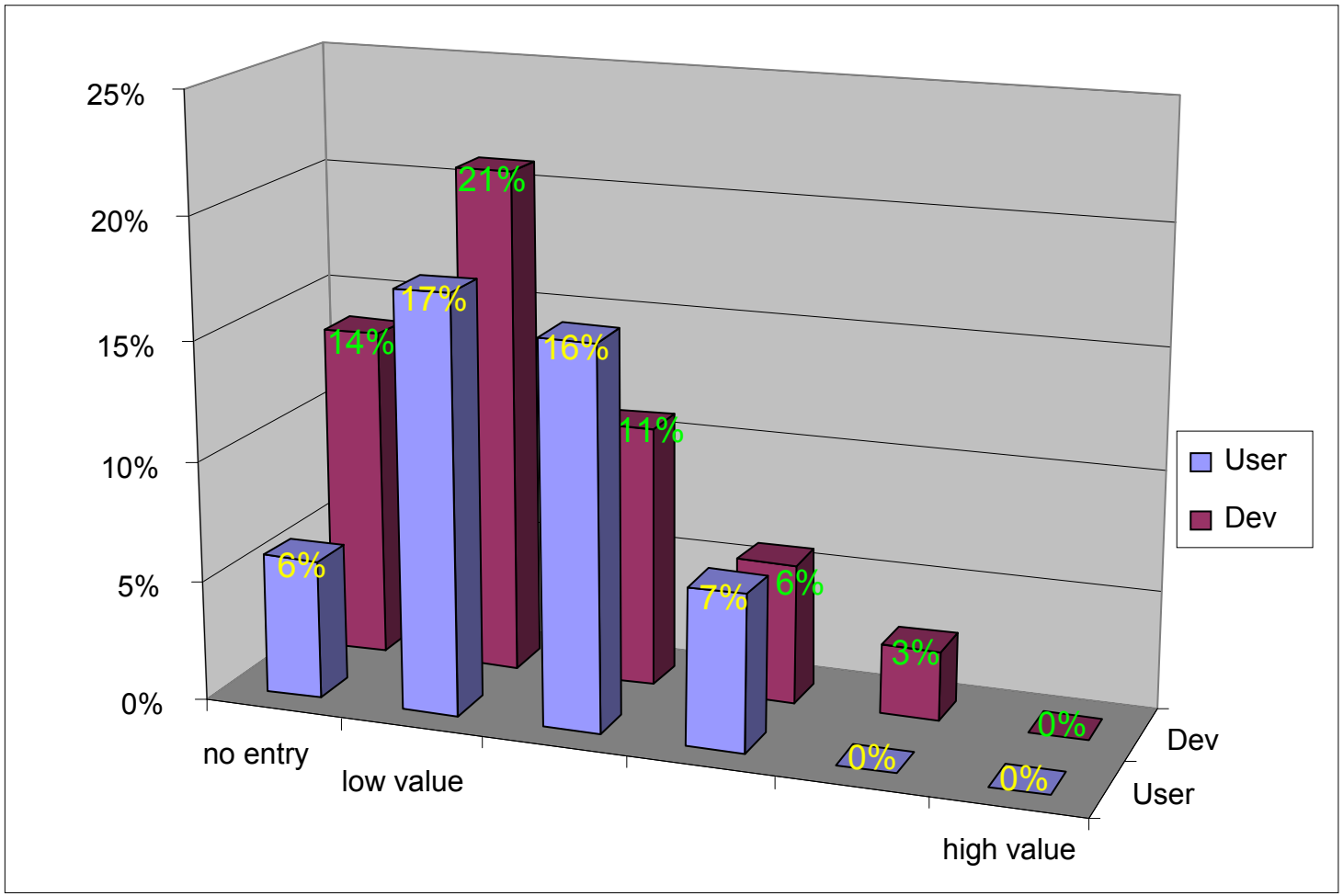
Definition of “Developer” and “User”:

- “Developers” may be programmers, with little interest in standardisation

Definition of “Interaction”

The opinion from the group was that standardisation **is** important

Value of spending effort on standardisation

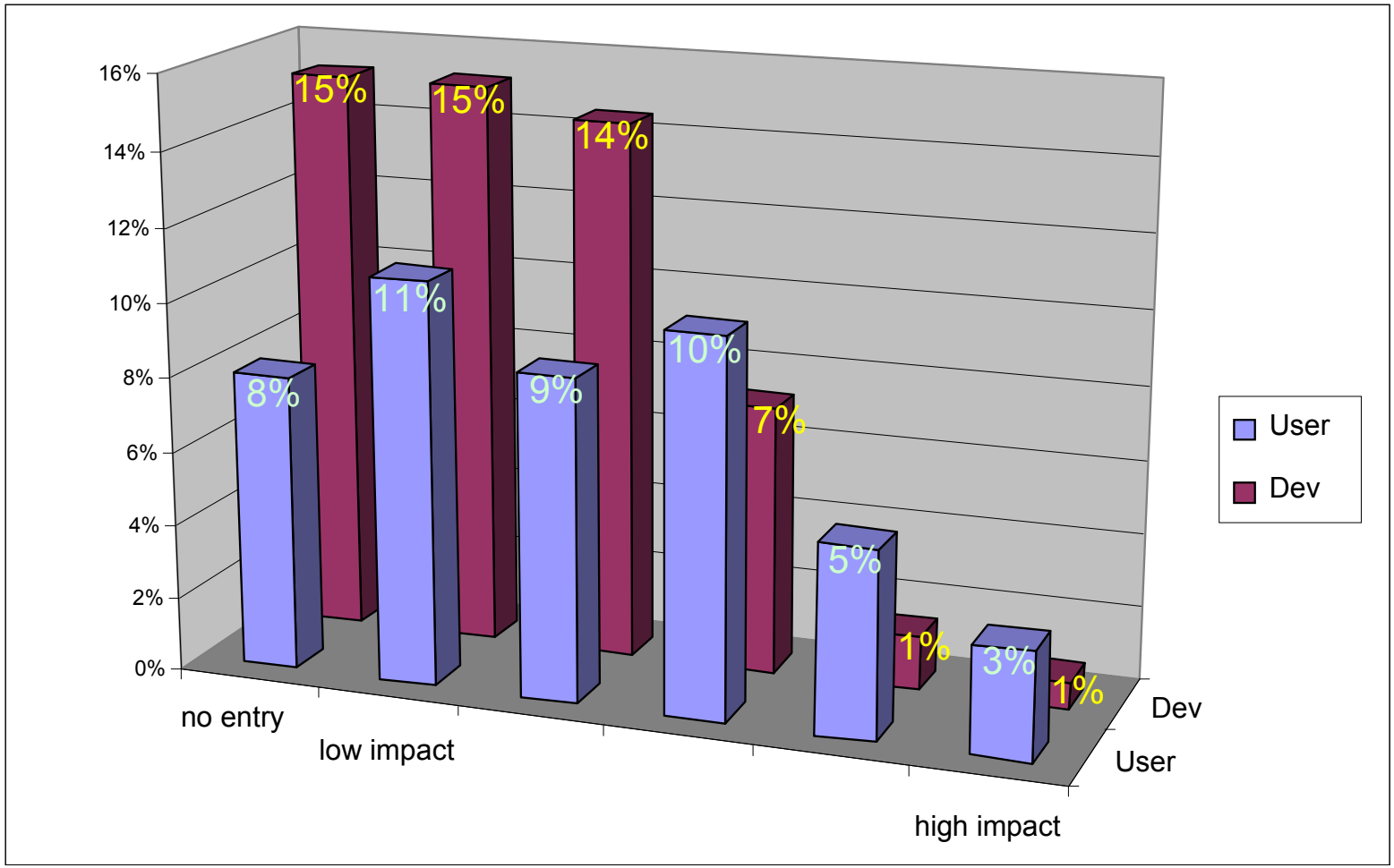


Discussion items

Value of standardisation:

- Time / effort vs rewards:
  - Takes time and costs
  - Balance between investing in developing a standard or buying a product later with the standard built-in
  - Lifetime of the resulting product
  - How to industrialise the solution (protect investment, exploit IPR, re-use in other environments, “growing the size of the cake”)
- … and we cannot rely on standards being there if we don’t get involved
- For some issues there is a need for standards (resolving current problems, interoperability, …)
- Consequence of not standardising

Perceived impact of standards



Discussion items

Pre-requisites for successful standards (advantages of such a clustering process):

- Critical mass, (cross-) communities:
  - Inter-domain co-operation
    The requirements of independent NRENs are essentially the same as large commercial ISPs have within their “single” networks.
  - High-speed TCP
    Initial trigger from radio astronomers – early identifiers, but the problem will be experienced by other communities soon
  - In terms of computational requirements (grids), the needs of High Energy physicists (as the early adopters) are the same as those working on (for example) bio-medical research

Type of standard:

- Enforcing standards vs ensuring interoperability (bridging) between existing ones

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Other discussion items:

Process of standardisation:

- Recognised the difference between ITU and IETF:
  - ITU: long process, but stable for several years
  - IETF: faster, but more dynamic
    … therefore, it is important to target the right one
- ETSI provides a service for creating/managing/testing standards (of whatever type)
- Early prototyping & testing to prove the concept seen as beneficial
- The process must be open (not restricted by membership conditions such as type of organisation or by high fees)
- The resultant standards must be open
- Standardisation of cross-layer issues could be complex, unless well-defined
- Ensure industry is involved
- Evolving a standard, once produced

Some thoughts …

Identify in the first months of a project the standards that will be used, or need to be developed

It is importance to disseminate about what standards work is being done in projects (to attract support, build communities, avoid duplication, identifying potential users in other areas, …)

Be aware of other factors associated with standardisation:

- set expectations at the right level
- be aware of the difficulty (especially when market issues are at stake)

This group is familiar with the routes to standardisation and requires openness to the mechanisms and results, and can support/validate standards through prototyping, testing, …

Some thoughts …

It is beneficial to identify common needs between communities (network layer capabilities and application requirements)

The standards situation is considered to be improving, but in each case it will be a commercial decision whether to spend the effort.

Mapping Projects to Standards Bodies and Open Issues

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Main target standards bodies: IETF, ETSI, OGF

Some open issues:

1. TCP enhancement (incl. a transport protocol more suitable to reliable, low-loss transmission media):
   - Projects: ExPRES, GEANT
   - Standards body: IETF

2. Optical monitoring:
   - Projects: FEDERICA, Phosphorus
   - Standards body: tbd

3. Network representation / mark-up language:
   - Projects: FEDERICA, Phosphorus
   - Standards body: OGF

4. Inter-domain exchange of information:
   - Projects: FEDERICA, GEANT, Phosphorus
   - Standards body: IPsphere, IETF, OGF

5. Control plane and network provisioning for optical networks:
   - Projects: FEDERICA, Phosphorus
   - Standards body: IETF, OGF