

Recommendation for an ICT agenda for Higher Education

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Introduction

The recommendations for ambitions listed here are primarily aimed at the members of SURF, e.g. the students, faculty and researchers, management and institutions and the government.

The Council recommends collaboration within SURF on those ambitions that exceed the strength of individual institutions or provide extra advantages when working together. The topics presented here are intended as an initial impetus for a thorough dialogue among institutions and SURF to define choices, priorities and modes of collaboration. This discussion should lead to an innovative ICT agenda for the coming years.

The ambitions proposed by the Council:

1. Sustain the joint investment in the network infrastructure;
2. Continue to build the expertise on wireless networks as a flexible augmentation to the existing cable network;
1. Develop a common infrastructure for security management;
2. Provide users with more control over their personal information;
3. Further invest in the economic optimisation of ICT services;
4. Develop a new model for roles and responsibilities of information services;
5. Provide next generation facilities for research, study and work;
6. Develop an integrated vision on the use of ICT in education;
7. Aim to establish one Digital (Research) Library for The Netherlands;
8. Foster the differentiation and freedom of choice in the use of ICT.

On 1: Sustain the joint investment in the network infrastructure

Addressees: Government, management and corporations

An advanced infrastructure is the basis for all innovation. This also applies to the network infrastructure. Although the future use of an advanced infrastructure is somewhat unpredictable, it is clear that the continuous renewal of SURFnet since it was established in 1985 provided a network infrastructure that was always ready for new ICT applications.

The importance of this continuous innovation is evidenced by the challenges caused by delays in the development of the infrastructure for rail and road transport. The combined investment by the Dutch government and institutions in the innovation of the educational and research network infrastructure proved a fruitful investment for The Netherlands as a whole. SURFnet not only successfully absorbed a strong growth in use; it also stimulated a change in the use of ICT. Additionally, the network offers its users new opportunities for challenges such as the reduction of energy costs and optimisation of resource usage.

On 2: Continue to build the expertise on wireless networks as a flexible augmentation to the existing cable network

Addressees: SURFnet and the institutions

The coming years requires a continued investment in fixed (optical fibre) networks for research and education, despite the fact that wireless networks might exceed the capacity of wired networks in the long run. This investment is required due to the demands by advanced multi media applications such as HDTV and high quality video conferencing for new forms of education. Currently, 'wireless only' is a satisfying option for a limited number of staff. Additionally, security deserves extra attention here. Apart from knowledge on fixed and wireless networks the institutions and SURFnet are advised to extend their knowledge about technologies such as WiMAX, mesh-, ad-hoc and sensor networks. The SURFnet User Survey 2007 underpins the value of the knowledge that SURFnet provides to the institutions.

On 3: Develop a common infrastructure for security management**Addressees: SURF, SURFnet and the institutions**

Similar to the European Union, borders are increasingly dissolving between individual institutions, between institutions and business and between end users operating in these areas. ICT creates a smaller world with a rapidly increasing amount of information while the security management of ICT systems is still based largely on (network) perimeter protection. This presents restrictions that are not always accepted by users, and certainly not by students, and it poses new threats. More and more external (web)applications gain access through ports that were not designed for that purpose. This demands for a new joint security structure that pays more attention to the protection of the network components, the data and the transport of information. Due to this demand the significance of the SURFfederatie service will increase.

The Council advises SURF to develop a new security concept to face the new demands and threats. This is not purely a technical exercise. It urgently requires a paradigm shift in thinking about issues concerning access and the use of information. Foremost, it demands a shift in how we think about the terms 'inside and 'outside'.

On 4: Provide users with more control over their personal information**Addressees: Management, faculty and students**

As traditional borders get blurred, uncertainty increases about the question who is allowed access to and use of which information. Increasingly, personal data are collected and stored at a variety of service providers whom assure us that our data are in safe hands. Currently the benefits of these services outweigh possible negative consequences because personal customised services are appealing. As open as users are about their data, as closed businesses can be about the use of the data, or even the possession of them.

The years to come, the amount of personal data handled by third parties will strongly increase in order to provide context aware services to the customer. This raises many questions about the storage, use, linking, possession, accessibility and control of these data.

The institutions and the individual users are advised to pay more attention to questions concerning personal data collection. Institutions as well as individual users need to critically evaluate service providers on their privacy policy and the options for the control of personal information. Retracting after sharing the data is much more complex. Once shared, data will keep on roaming in the cloud of resources the internet has become.

On 5: Further invest in the economic optimisation of ICT services

Addressees: ICT- services

Information service departments should take more advantage of their joint network infrastructure as a means towards further optimising the business economics of their ICT-services provision. The collaborative development or joint procurement of functionality from external parties can be extra advantageous. To this end, the potential benefits should be examined of using optical wavelength networks (light paths) for the establishment of a common emergency backup centre.

However, such common initiatives require a more mature level of ICT. This higher level of ICT-maturity can be obtained by implementing standard methods such as ITIL, ASL and P-CMM.

In terms of ICT the similarities between higher education institutions are far greater than their differences. Therefore, the Council recommends the initiation of projects within SURF to further explore these options for higher education.

On 6: Develop a new model for roles and responsibilities of information services

Addressees: ICT management, policy makers

In the past years the traditional computing centres are transforming into information service centres. Though the Council is not maintaining that ICT centres are superfluous (as Nicholas Carr does) but the ICT centres will go through another metamorphosis in the coming years. A change will occur from delivering services to orchestrating external service providers and the exchange of information. A new balance must be established between the innovative use of ICT by groups of researchers and standard services for large groups of users. The need for technical operational staff will decrease, while the short term need for highly specialised knowledge for specific projects will increase. Coinciding with this change the need for generalists in the area of information architecture and ICT-governance will increase.

In this context policy makers and ICT managers are advised to review the tasks and roles of information service centres.

On 7: Provide next generation facilities for research, study and work

Addressees: The institutions and the developers

Key terms for the development of ICT services in the coming year are: open, peering and sharing. 'Open' in the sense of transparent, explicit, free and flexible, as in open source projects; 'peering', in the sense of collaboration without a given hierarchy, but with an underlying structure; and 'sharing' in the sense of the sharing of knowledge and resources. This development requires new applications for education and research to serve individuals and groups.

In contrast to most institutions, the market appears to be highly capable in adapting and responding to these new demands from consumers/ producers. Institutions and developers are well advised to better focus on user demands when developing new tools. ICT is a facilitating tool with many possibilities, but only if the users experience the added value and accept the technology.

ICT developments in the commercial world are an inspiration and applying commercial market products is a serious alternative to in-home development. Good and personalised services play an important role in the quality experience of students and staff. To ease the administrative burdens, smart services can

have a strong impact. Topics that are worth exploring are, among others: the use of (student) profiles, enhanced self service, customised information provision, and the support of researchers to obtain research grants. The institutions are advised to offer more tailor made services to students and staff. The palette of services may differ per institute but on a national level many services will be technologically identical. This makes it beneficial to build and use a common information structure.

On 8: Develop an integrated vision on the use of ICT in education

Addressees: Directors of Education and developers

The frequently recurring hope and desire for a killer application frustrates a realistic view on the more complex character of ICT-integration in education. The transformative value of ICT in education has yet to be proven. There is a growing consensus that ICT related innovations in education can only be successful if the views of students and faculty are taken into account. Directors of education and developers are advised to stop searching for the killer application, but to aspire for a more integrated vision and approach for educational ICT applications. This should be backed by analyses how to achieve actual implementation in higher education.

On 9: Aim to establish one Digital (Research) Library for The Netherlands

Addressees: Institutions and UKB¹

As early as in 1995 the UKB expressed the opinion that on a national level there is need for a common virtual library. Fast global changes and very different local developments have slowed down the realisation of this common library. Therefore, once again, the question needs to be answered whether a part of the physical collections should be centralised, while local university libraries concentrate on their collections of old and valuable publications. This corresponds with the aspiration of UKB, written in the policy paper 2005 - 2007, that the level of collaboration that was regarded unrealistic in 1995 now is a desired, even required, level of ambition. Only by intensive collaboration will the Dutch UKB libraries be able to fulfil their innovation plans. The Council recommends the institutions and UKB libraries to explore if some form of centralisation, or at least closer collaboration, could lead to more efficiency and effectiveness. This applies to both the physical and the digital libraries. Establishing one central 'Dutch Digital (Research) Library' would be an obvious goal.

¹ Dutch consortium of the thirteen university libraries and the National Library of The Netherlands

On 10: Foster the differentiation and freedom of choice in the use of ICT**Addressees: Policy makers, ICT managers, faculty and students**

The implementation of (new) applications requires more freedom of choice for faculty and students with regard to which applications to use and how they should be used. For faculty this means that they should be granted more flexibility in the use of educational methods and technologies. It also means that faculty should develop the capability to use that freedom to enhance the quality of education. Differences in learning styles, ICT skills, but also physical impairment of students require a wider diversity in educational methods and formats.

The palette of ICT-applications is no longer determined by the institutional resources, but by market forces. ICT functionality can be obtained from a variety of sources and this diversity should be utilised.

The Council advises policy makers to grant staff, faculty and students more freedom for differentiation in performing their tasks and the use of ICT, under the premise that this freedom is used to enhance the quality of their work. ICT managers are advised not to use uniformity of applications as an ad hoc form of standardisation, but to focus on the standardisation of information exchange.

External service providers must be confronted with and evaluated on these standardisation demands. SURF is the platform par excellence to enforce the increased demand for standardisation.