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UT Architecture Principles

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Table of Contents

1. Introduction.....	1
2. The principles.....	3
• UT provides students and staff with timely and accurate information	3
• UT ensures that all digital services are easily accessible	3
• UT students and staff can collaborate without borders	3
• UT provides digital services at all times, at all locations and on all devices	4
• UT offers students and staff freedom of choice in which information systems they use ...4	
• UT has explicitly designated the ownership and management of data and digital services ...5	
• UT takes a standard-based approach to integrating digital services	5
• UT ensures efficient information provision for operational management purposes	6
• UT takes a sustainable approach to information technology	6
• UT opts for responsible re-use, purchase or creation	6

1. Introduction

These architecture principles express a vision on information provision within UT. Where possible, they will be implemented immediately, but in several cases, this still requires that explicit changes be made in how information systems are set up. As such, they should primarily be seen as aspirations.

Architecture principles are guiding statements that serve to ensure that the information provision architecture is configured in a coherent manner. They are translations of objectives, needs and policy principles and therefore form a bridge towards implementation.

These architecture principles must be implemented whenever a change is made to an element in the information provision architecture. In principle, all changes made must be assessed for compliance with these architectural principles. Informal processes are acceptable for minor changes, but demonstrable assessment procedures must be in place for projects. A PSA (Project Start Architecture) is a valuable instrument in this context.

This document is the second version of UT's own set of architecture principles, which was first drawn up in 2010. The principles adopted by NHL Stenden University of Applied Sciences (March 2015) serve as the basis for these principles. On top of that, vision 2020, UT's I-strategy for 2014-2018, the HORA and ISO 25010 2 were used to update the principles.

For each principle, this document describes several implications that indicate how the principle affects day-to-day situations.

2. The principles

UT provides students and staff with timely and accurate information

Making available all relevant information to students ensures they enjoy optimal support in their learning process, increasing their chance of successfully completing their studies. Providing students with information about their own performance gives them more insight into areas to focus on and develop. Staff need good information to be able to do their job properly.

Implications:

- There is a clear understanding of students' information needs and these are regularly tested and updated.
- Frequently used information and digital services are easily accessible, integrated and personalised via web and mobile channels.
- Students can access information about educational units, teaching materials, grades, timetables and study progress quickly and easily.
- An extensive search system is in place, including tags, categories, filtering and hints, so that all information can be found quickly.
- Students and staff are proactively informed (notified) about matters that require their immediate attention (e.g. timetable change) or are essential to read.
- Students have insight into their progress in specific educational activities and their personal points of interest.
- Digital services have been set up to monitor the usage of online teaching activities and to provide lecturers, supervisors and students with better insight into said usage.

UT ensures that all digital services are easily accessible

UT is home to a highly diverse body of students and staff from a wide range of different backgrounds and with different nationalities. This includes people with a (functional) disability, who also need access. Everyone has the right to access UT's digital services.

Implications:

- Students and staff can use English-language digital services.
- Digital services do not make high demands on people's digital skills and are intuitive to use;
- The design of digital services is tested for usability and visual design by means of the national government's web guidelines.¹
- Digital services are tested by representative end-users

UT students and staff can collaborate without boundaries

Collaboration is a core component of modern research, education and operational management. This makes collaboration across organisational boundaries (both within UT and with other organisations) even more important. Information provision systems help people find each other, connect with each other, exchange information with each other and engage in co-creation.

¹ <https://www.webrichtlijnen.nl>

Implications:

- Digital services are available to support collaboration with other organisations.
- People outside UT can easily be granted access to sections of the information provision architecture.
- There is a central repository for identity and access information belonging to students and staff.

UT provides digital services at all times, at all locations and on all devices

Students and staff want to be able to access information relevant to them at all times, at all places and in all ways. The fact that UT operates worldwide requires its digital services to be accessible always and everywhere, regardless of time and place. This offers people a greater degree of flexibility in how they work and study, in addition to increasing staff productivity, allowing for more efficient utilisation of building capacity and preventing unnecessary travel. Fulfilling these needs increases the quality of service and also contributes to UT's reputation as an attractive employer.

Implications:

- Students and staff only need a web browser or "mobile" application and an internet connection to access digital services and data provided by UT.
- The user interface of websites and web applications responds to the size and resolution of the screen used (responsive design), so that they can be used properly on all devices.
- Popular digital services used for education and research are also available in the evenings and weekends (at agreed service levels).
- Digital services work properly on the latest versions of common web browsers.
- Students and lecturers can use their own device to show information on projectors, digiboards and other monitors.
- The most common support requests are resolved by self-services.
- UT has a wireless network that can support the simultaneous use of several devices by each user.

UT offers students and staff freedom of choice in which information systems they use

People are becoming increasingly experienced users of IT, have their own personal preferences and want to be able to decide which devices and applications to use, wherever possible. There are many free applications online that are better suited to people's needs than what UT can offer. Students have digital identities before they enrol at UT and should be able to continue to use said digital identities as much as possible. UT strongly supports digital openness.

Implications:

- Students and staff have the freedom to choose their preferred digital services. UT provides several prescribed services for managing operational data required for its formal processes.
- Students and staff make use of predefined digital delivery points for the delivery of data (which are used in UT's formal processes).
- Students and staff can use their own equipment to gain access to UT's information provision architecture.
- Standard interfaces are available that allow students and staff to access email, calendar, contacts and documents using their own devices and applications.
- Students and staff can choose to receive email on their existing personal email account.

UT has explicitly designated the ownership and management of data and digital services ..5

The availability, integrity and confidentiality of data and digital services are essential for both primary and supporting business processes. Clearly designated roles responsible for the management, provision and archiving of data are a critical success factor in this respect. Managing data in a single location simplifies sharing and helps prevent inconsistencies as much as possible. UT secures data based on their risk classification. People expect UT to handle their data carefully and to keep it out of the hands of unauthorised persons.

Implications:

- Owners have been designated for all data and digital services (authorisation objects) who bear responsibility for the availability, integrity and confidentiality of said data and services.
- An unambiguous data definition has been formulated for each type of data, along with explicit retention and deletion periods.
- Clear lists of authorised roles and users are in place for all authorisation objects.
- For all data, it is known which applications manage the data in question and therefore serve as the data source for users.
- Applications always retrieve information from the designated source application. Referencing information is preferable to copying information.
- Changes to data are only made in the source application, whether directly or indirectly.
- All access to authorisation objects must be explicitly authenticated and authorised, unless said objects are publicly available.
- Data will only be used for the purpose for which explicit permission has been given.
- All access to sensitive data is logged and regularly reviewed.
- Compliance with data security measures is the responsibility of all people involved and is controlled through periodic internal and external audits, among other things.

UT takes a standard-based approach to integrating digital services

UT wants data to be readily available to students and staff. Each individual digital service is offered as a whole. Decoupling matters that can be changed separately creates more flexibility. Open standards help avoid supplier dependencies as much as possible.

Implications:

- Digital services offer standardised interfaces based on open or de facto standards.
- When setting up digital services, possibilities for linking and re-use of functionality are taken into account.
- Interfaces are defined in such a way as to be optimally re-usable for other digital services.

UT ensures efficient information provision for operational management purposes

In order to make efficient use of the available IT resources, they should be re-used as much as possible. This also prevents too much time and energy being put into multiple management. Attention, people and investments can be used much more efficiently in a standardised environment. Monitoring digital services provides insight into how they are used.

Implications:

- If possible, functionalities must only be offered through one digital service.
- All services and faculties throughout the organisation make use of digital services.

- In some cases, concessions must be made with regard to the functionality of digital services to ensure that they can be used throughout the organisation.
- Usage levels of digital services are monitored periodically.
- Digital services that are of little interest to all of UT will be owned by the party that uses them most.
- In education and research, other interests may outweigh efficiency.

UT takes a sustainable approach to information technology

UT realises that it must make efforts to spare nature, limit the use of raw materials and prevent global warming as much as possible.

Implications:

- When purchasing IT equipment, attention is paid to energy consumption, the durability of the equipment, the packaging materials used and their correct disposal.
- When redesigning computer centres, the extent to which outsourcing or joint computer centres help to achieve a higher degree of sustainability in general and energy efficiency in particular will be examined.
- Sustainability is a fixed topic in tenders.
- Equipment destined for disposal is re-used and/or sustainably processed.
- User equipment that is not used for an extended period of time is automatically switched to standby or switched off.
- Servers are virtualised and consolidated to minimise the need for physical servers.
- Data that are no longer used, or hardly used at all, and that do not need to be kept are deleted.

UT opts for responsible re-use, purchase or creation

When setting up and updating services and business processes, a careful decision will be made to re-use, purchase or create the required resource based on cost effectiveness and market standards. In education and research, cost effectiveness may be less important or other considerations may weigh more heavily.

Implications:

- The choice to re-use, purchase or create must be justified. This can be done by means of a business case.
- Existing resources must preferably be used for operational management purposes (re-use over purchase over creation)
- Standard solutions are preferable to custom solutions (purchase over creation)
- With regard to operational management, custom creation will only be chosen if the desired functionality is not available on the market or if there is no cost-effective alternative.