The following are translated snippets from the original documentation. We identified only architecturally significant requirements from these non-functional requirements and translated them as quality attributes that serve as evaluation criteria that was later prioritized.

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1 Performance efficiency

The performance in relation to the amount of resources used under the conditions mentioned. speed and capacity:

- Speed (Time-behaviour), the extent to which response and processing times and throughput speed of a product or system, during the execution of its functions, meets the requirements;
- Capacity, the extent to which the maximum limits of a product or system parameter meet the requirements.

No.		Yes No
1.1	Speed (Time behavior)	
1.1.1	Users will not be affected by the speed of logging in, navigating, loading pages and uploading files within the application. This Requirement also applies to access via web services/APIs	
1.2	Capacity (Capacity)	
1.2.1	The application has sufficient capacity to handle large numbers simultaneously (i.e. logging in and participating in online activities) without any noticeable disruption in operation. Based on use by institutions with the same size in number of teachers, number of courses and number of students as the UvA and VU. By elastically scaling out (scale-out), the capacity of the system can be increased when necessary.	

2 Interchangeability

The extent to which a product, system or component can exchange information with other products, systems or components, and/or it can perform the desired functions while sharing the same hardware or software environment. Influenceability, SURFconext, linkability:

- Interoperability, the extent to which two or more systems, products or components can exchange information and use the exchanged information.

No.		Yes No
2.2	Connectability (Interoperability),	
2.2.1	The learning environment offers as much support as possible for existing and emerging standards, including at least in the educational logistics chain: • Possibility to link with an external Learning Analytics system via the IMS Caliper standard or the ADL Experience API	
2.2.2	The learning environment offers as much support as possible for existing and emerging standards, including in any case for realizing functional integrations: • IMS LTI (minimum version 1.1)	
2.2.3	The learning environment offers as much support as possible for existing and emerging standards, including at least the following content standards: • ADL SCORM (version: 1.2 and version: 2004)	
2.2.4	The learning environment supports two-factor authentication	
2.2.5	The application is able to set up authentication based on SAML2.0.	
2.2.6	When an authorization profile is adjusted, the new authorization immediately applies to all Users to whom this profile has been assigned Users can be linked to multiple authorization profiles in the application (authorization is then the sum of the profile authorizations)	
2.2.7	The application must be able to work 'off the shelf' with the browsers: Internet Explorer, Google Chrome, Mozilla Firefox and Apple Safari. "Off the shelf" means that no adjustments need to be made to the browser settings, such as cookie and privacy settings. This also applies to the mobile versions of the browsers.	

2.2.8	For links (services, interfaces) in an error situation, the application returns an error message that can be used for troubleshooting.	
2.2.9	If errors occur in links (services, interfaces), the system returns error messages to a User that provide the User with a clear picture of the error that has occurred without further explanation. The user should be able to judge from this message whether the error is caused by the calling or the processing system. Where Links or Interfaces are concerned, the error message is returned to the calling system.	
2.2.10	The user interface complies with W3C HTML5 standards. Java scripting is allowed as long as the ECMA standard is met.	
2.2.11	The system is capable of providing and using SOAP (version 1.1 or 1.2) web services. The web services provided are described in XSD & WSDL.	
2.2.12	The system is capable of providing RESTfull (REpresentational State Transfer; REST) web services.	
2.2.13	The application can handle asynchronous messaging (request only, no reply) that is stateless (without sessions).	
2.2.14	Subjects/courses archived in the application can be downloaded by a User who has rights to do so.	
2.2.15	Documents and parts of courses to which the Archives Act or formulated archive policy of the Institution apply and therefore must be archived, will in that case be kept in the LMS and it must be possible to export these parts and save them in the RMA (Record Management Solution) of the Institution.	

3 Usability

The extent to which a product or system can be used by specified Users to effectively, efficiently and satisfactorily achieve specified goals in a specified context of use. Topics included: branding, accessibility, mobility, 'app store', recognizability of suitability, learnability, operability, prevention of user errors, perfection of user interaction, authorizability and accessibility.

- Accessibility, the extent to which a product or system can be used by people with the most diverse characteristics and capabilities to achieve a specified goal in a specified context of use.

No.	.....	Yes No
3.1	Documentation	
3.1.1	The documentation provided as part of the implementation and delivery of the implemented solution contains at least the following documents: • management manual. • manual/description with all functional and technical specifications required for integration via the interface with a description of the operation. This must contain all information necessary for developing links with your interface.	
3.1.2	Online documentation is available for the application that is up-to-date and consists of at least: • System documentation • Supplier provides insight into the structure and coherence of the various options modules and the interfaces by means of a schematic overview. • A logical data model (Data Model) • Description of the structure and coherence of the various modules • Insight into the architecture of the system • User manual • Technical documentation • contains at least a description of the links and APIs that the application contains offers • release notes All documentation is available online and is publicly available or may be made available by the Tenderer to third parties for contracted work.	

3.2	Accessibility	
3.2.1	Language: The language of the user interface, documentation and help function is related to the student's language settings in the SIS (English or Dutch). Users who have a different preference or for whom no preference is known can adjust/overwrite the preferred language themselves in the application.	
3.2.2	The application is available in Dutch and English (user interfaces, error messages, help functions, manuals, reference cards). And follows the conventions (e.g. number and date formats) that apply to a localized user interface.	
3.2.3	The user interface complies with the formal web guidelines of Forum Standaardisatie (https://lijst.forumstandaardisatie.nl/open-standard/webproducten), or the system complies with the W3C WCAG 2.0 AA Standard and therefore provides for dyslexia, myopia and blindness, for example.	
3.3	Mobility	
3.3.1	The application's User Interface follows the principles of responsive design so that it can be adapted to the device (tablets, smartphones, desktop) that accesses the application.	
3.4	Branding	
3.4.1	Through branding, the user interface can be provided with an Institution logo and its own visual elements. This can be done at the highest level for UvA and VU individually, for partnerships between UvA and VU and at a lower level for faculties and other partnerships.	

4 Reliability

The extent to which a system, product, or component performs specified functions under specified conditions for a specified amount of time.

No.	.....	Yes No
4.1	Repairability	
4.1.1	A teacher designing a course cannot lose more than one hour of work if he makes an operating error or a system error occurs	
4.1.2	Courses and parts of courses deleted by a User can be restored within a period of 30 days.	
4.1.3	In the event of disaster recovery, data, files and configurations (including design) can be restored for a maximum period of 24 hours. lost.	

5 Security

The extent to which a product or system protects information and data so that persons, other products or systems have the appropriate level of data access appropriate to their type and level of authorization. Confidentiality, integrity, non-repudiation, accountability, authenticity, privacy, access/2-factor, SURF:

- Integrity, the degree to which a system, product or component prevents unauthorized access to or modification of computer programs or data;
- Non-repudiation, the degree to which it can be proven that actions or events took place, so that these actions or events cannot later be denied;
- Accountability, the extent to which an entity's actions are traceable can be referred to that specific entity;

- Modifiability The extent to which a product or system is effective and effective can be changed efficiently without resulting in errors or reduction in quality;
- Testability The extent to which test criteria can be effectively and efficiently established for a system, product or component and to which tests can be performed to determine whether those criteria have been met.

No.	[redacted]	Yes No
6.1	Modifiability	
6.1.1	The supplier also offers a Test and Acceptance Environment for every production environment used by the Client. Coordination takes place regarding the release times of updates to these different environments. The Client has exclusive access to all environments (non-shared) and uses them to develop and test new functionalities, integrations and migrations. The supplier ensures that the data in the TAPU environments is also processed and stored in accordance with legal requirements.	
6.1.2	The supplier provides insight into the release system and release planning, including cycle, frequency of updates and major revisions. The Client can influence the period within which new features and adjustments such as adding, removing or withdrawing functionality are implemented in the TAPU environments.	
6.1.3	Release management regarding changes to the API is carried out in consultation with the [redacted] Integration Team.	
6.1.4	Supplier supplies environments that can be used exclusively by the Client for TAPU.	
6.1.5	Supplier offers an automated solution for filling (and emptying) of (test) data in the TAPU environments.	