

## Quality assurance report Nº 2

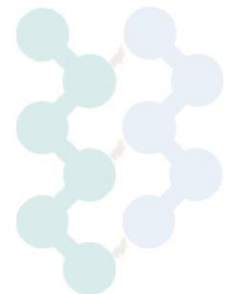
### D8.1

Project reference No.	561854 – EPP – 1 – 2015 – 1 – AR – EPPKA2 – CBHE – JP
Work package	WP8: Quality assurance
Nature	Report
Dissemination Level	Project consortium members
Date	15/10/2016
Elaboration and edition of the document	Universidad de Buenos Aires (UBA) – Quality Auditor
Document description	Second quality audit report. This document describes the evolution in the implementation of the project activities, as well as the quality assurance activities carried out and the compliance of the project deliverables with the quality standards set in the Quality Management Plan.



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### 1. Progress in the Project execution

Project activity	Month																																								
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A delay in the execution of activities 1.5, 1.6, 1.7, 3.3, 4.1 and 4.2 is observed, which is explained by the delay in signing of the Grant Agreement on December 2015 and the development of the kick-off meeting of the selected Capacity Building projects at Brussels, on January 2016.



## 2. Project activities and quality assurance activities carried out

### 2.1. Concluded activities since previous report

**Activity 1.2.** *Collection of information on the vision and needs of the different actors.*

Participating organizations: ISALUD - UBA - UNSSA - UEES - UNIGRAN – UNIBE

As established in the QMP, the coordinator agreed with the consortium members the schedule and the methodology of the field work. Each LA HEI collected information using the ad hoc questionnaire elaborated in activity 1.1 (D1.1.), including at least 20 students and 10 teachers belonging to a career in the field of economic sciences or management, preferably health management and e-learning modalities.

After the implementation of the survey each LA HEI elaborated and sent a report to the coordinator with the analysis of the results.

**Activity 1.3.** *Identification, analysis and systematization of the two kinds of user needs.*

Participating organizations: ISALUD – UBA - UNIROMA

The consortium members involved in this activity defined the minimum contents of the situational analysis:

Student-centered learning; Flexible curriculums; Competency-based educational programs in healthcare management; Identification, definition and evaluation of competences; Result-based training; Quality assurance in higher education; Common framework for qualifications in higher education area; Credit transfer system; Integration of digital technologies in the curriculum; Virtual learning environments; Computer-based simulation training; Innovative simulation in higher education. Capabilities of the LA HEIs staff and the ICT infrastructure required for the dictation of an online course in healthcare management.

**Activity 2.2.** *Preparation and development of an internship for those in charge of creating the scheme in LA HEIs, in European HEIs, for them to be trained on the use of new learning technologies.*

Participating organizations: ISALUD - UBA - UPNA - UNIPV - UNIROMA - EHESP - CBIM - UNSSA - UEES - UNIGRAN - UNIBE

The internships have been developed from 27<sup>th</sup> June to 15<sup>th</sup> July 2016 with the main goal to transfer knowledge to LA HEIs in the field of e-learning (at UPNA, in Pamplona) in the

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field of healthcare management (at EHESP, in Rennes) and in the field of simulation (at UNIPV and CBIM, in Pavia).

The Programme of each internship has been elaborated by the responsible organization and agreed among all partners.

All consortium members have collaborated in the elaboration of an Internship Memory; a document that expresses the principal issues addressed in each one of the internships, which was shared by mail.

ISALUD elaborated and sent to all consortium members an assessment form, showed in the *Quality assessment instruments* section, in order to collect relevant information for the evaluation of the activity results.

**Activity 2.3.** *Development of workshops for the dissemination of the content learnt by interns to the professionals who will participate in the curricular design of their local HEIs.*

Participating organizations: ISALUD - UBA - UNSSA - UEES - UNIGRAN – UNIBE

Each LA HEI has developed a workshop in order to disseminate among the professionals of their education community involved in the LASALUS curricular design, the content learnt in the European internships. Previously, the coordinator established the main guidelines for the development of the workshops in a video conference with the LA partners.

Each LA HEI elaborated a report of the workshop developed and sent it to the coordinator.

**Activity 3.1.** *Design, modeling and development of server and client side of the simulation software, with a user-friendly interface.*

Participating organizations: ISALUD - CBIM

The minimum contents and capabilities of the simulation software started to be addressed in the kick off meeting at Buenos Aires, through a brainstorming developed with the participation of all the consortium members. This work continued via mail and videoconferences, and a document with the essential characteristics of the simulator was elaborated. Its final version was shared with all the consortium members in June of 2016, in order to discuss it during the final stage of the internships.

**Activity 3.4.** *Development and releasing of the Computerized Simulator for Healthcare Management Training prototype (Beta version of the CSHCMT)*

Participating organizations: ISALUD – CBIM



As established in the QMP, the simulation software prototype was developed promoting the participation of all consortium members, and the inclusion of healthcare institutions, as the Hospital de Pediatría S.A.M.I.C. Prof. Dr. Juan P. Garrahan and Hospital Interzonal General de Agudos Dr. Alberto Antranik Eurnekian, which made relevant contributions especially in the definition and measurement of the relations between the inputs and outputs of the model.

The advances in the development of the software prototype were presented and discussed during the European internships, in Pavia. An access to the simulator prototype was given to all the consortium members so they could interact with it.

The software was developed considering the quality criteria present in the ISO normative (ISO 25.000 and 9241-210). This point will be addressed again, in greater depth, in the section “Assessment of the quality level of the project deliverables”.

**Activity 5.1.** *Preparation of a modular training course for LA HIEs staff designed to meet their needs related to new digital technologies and associated pedagogies considering the new approaches transferred by EU HEIs.*

Participating organizations: ISALUD - UBA - UPNA - UNIPV - UNIROMA - EHESP

A survey on existing capacities in LA HEIs for the implementation of the new distance tutoring model was carried out by each LA HEI, which determined the lack of competencies, not only in virtual learning but also in healthcare management. The programme of the training course, named “Training for tutors and content developers for e-learning” was elaborated by UPNA addressing the low capacities of the LA HEIs staff related to e-learning, and agreed upon among the LA HEIs involved in the training.

The training course, which was prepared considering the quality standards established by ANECA, is composed by four training modules: 1) Management of student-centered learning in Moodle; 2) Development of content for e-learning; 3) Evaluation of online training and 4) Quality of online training

**Activity 5.2.** *Development of course materials.*

Participating organizations: ISALUD - UPNA

UPNA developed various types of materials for each of the four training modules of the course, including reading material, videos and self-assessment questionnaires.

These materials were developed considering the quality criteria used by ANECA.

**Activity 7.2. Creation of a project website as platform of collaboration and dissemination.**

Participating organizations: ISALUD - CBIM

The Project website was created: <http://www.lasalus.org.ar/>

Its was developed considering the standards established by the European Comission in the [Information Providers Guide](#), and using the checklist for successful websites of the European Comission, available at: [http://ec.europa.eu/ipg/docs/plan/checklist-successful\\_en.pdf](http://ec.europa.eu/ipg/docs/plan/checklist-successful_en.pdf)

A Moodle platform was set in the website in order to support and improve the development of some activities and share the project deliverables and results with all the consortium members.

**Activity 7.4. Designing of the news bulletin.**

Participating organizations: UBA - UNIGRAN

The design of the news bulletin was made with an agreement among all the consortium members.

**Activity 9.1. Formalization of network and agreements between the participating HEIs.**

Participating organizations:

ISALUD – UNIGRAN – UNIBE – UBA – UPNA – UNIPV – UNIROMA – EHESP – CBIM – UNSSA – UEES

After the formalization of the Grant Agreement, signed on 22<sup>nd</sup> December 2015, the following agreements have been signed between the consortium members:

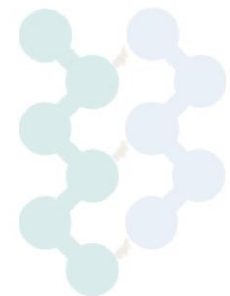
- a. Bilateral specific agreements between the coordinating institution and each consortium member, in order to make the first transfer of funds without delay, before the signing of the Partnership Agreement.
- b. Partnership agreement.

As settled in the QMP, an instruction sheet and schedule for the signature of the Partnership Agreement was elaborated and distributed among the consortium members, in order to guarantee the compliance with the deadlines established by the EACEA.

## 2.2. Ongoing activities

At the date of this report, the following activities are being carried out:

- 1.4. Development of two situational analysis: a) LA HEIs staff needs for the integration of digital technologies and pedagogies into curriculum designs; b) Profiles and competences of the professionals who should hold managerial positions in LA healthcare services.
- 2.4. Design and preparation of orientating guidelines and support devices for those who participate in the curricular design in each Latin American HEI.
- 3.5. Releasing of the final version of the CSHCMT.
- 3.6. Monitoring development and testing of the simulation software prototype and the final version of CSHCMT.
- 7.3. Maintenance and administration of the website.
- 8.4. Monitoring, assessment and control of the predetermined and defined standards and goals.
- 8.5. Elaboration of the project quality assurance report at month 6; 12; 18;24; 30 and 36.
- 9.2. Planning and development of meetings for the administration of the project.
- 9.3. Designing and administration of the organizational and communicational structures (internal and external).
- 9.5. Collection and storage of data for the monitoring of the project and the elaboration of reports and budgets.
- 9.6. Periodic actualization of the plan and monitoring of the fulfillment of the working schedule.
- 9.7. Monitoring, assessment and control of any deviation in the progress of the project.
- 9.9. Control of the use of resources and budgetary execution.
- 9.10. Monitoring of the compliance of the grant agreement.



### 3. Assessment of the quality level of the project deliverables

The deliverables produced at the date of this report, and since the date of the previous report, are the following:

D3.2: CSHCMT prototype (Beta version).

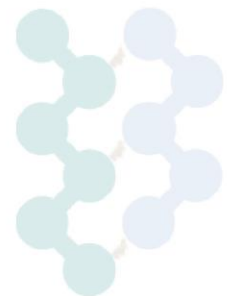
D5.1: Programme of the course for staff and teachers.

D5.2: Training material.

#### **D3.2. CSHCMT prototype**

As established in the QMP, the development of the simulation software prototype was assessed using an ad hoc instrument, shown in the next section (quality assessment instruments). Interviews to disciplinary experts were carried out in which the Beta version of the simulation software was presented and each of the dimensions specified in the form was evaluated.

The results of the assessment are presented below:





Quality criteria		Insufficient	Sufficient but improvable	Sufficient	Comments
<b>Functional Suitability</b>	<b>Functional completeness.</b> Degree to which the set of functions covers all the specified tasks and user objectives.			X	The software covers all the functional needs of the Educator (User A) and the Educating (User B) as long as it is applied to the specific course for which it was developed. It is an educational software
	<b>Functional correctness.</b> Degree to which a product or system provides the correct results with the needed degree of precision.		X		The software does not perform complex operations but comparisons with a Knowledge Base referring to the discipline for which it was developed. It provides exact results.
	<b>Functional appropriateness.</b> Degree to which the functions facilitate the accomplishment of specified tasks and objectives.		X		The set of functions meet the needs of Users A and B, as long as it is applied to the universe of teachers and students for whom it was developed.
	<b>Time behaviour.</b> Degree to which the response and processing				The software operates in the Cloud, therefore there are several speed and performance limitations that are not related to development.



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Performance efficiency	times and throughput rates of a product or system, when performing its functions, meet requirements.		X		However, there may be some delay effect due to concurrency over time.
	<b>Resource utilization.</b> Degree to which the amounts and types of resources used by a product or system, when performing its functions, meet requirements.			X	The software was developed by providing a database distributed in an international Cluster to avoid loss of performance in extreme situations. (Overload of Users B)
	<b>Capacity.</b> Degree to which the maximum limits of a product or system parameter meet requirements.		X		The software was developed on the basis of permanent dynamic growth with data feedback. It is unlikely to perform a capacity limit calculation.
Compatibility	<b>Co-existence.</b> Degree to which a product can perform its required functions efficiently while sharing a common environment and resources with other products, without detrimental impact on any other product.	X			The software was developed based on the coexistence with a parallel graphic environment of Virtual Reality and connection with other graphic representation software.





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	<p><b>Interoperability.</b> Degree to which two or more systems, products or components can exchange information and use the information that has been exchanged.</p>			X	The parallel systems developed use the permanent exchange of information, without prejudice to performance.
Usability	<p><b>Appropriateness recognizability.</b> Degree to which users can recognize whether a product or system is appropriate for their needs.</p>			X	The software has been developed with a profusion of contextual and specific aids that allow an intuitive and simple operation.
	<p><b>Learnability.</b> Degree to which a product or system can be used by specified users to achieve specified goals of learning to use the product or system with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use.</p>			X	The software is a one-time educational tool, meaning that User B will use it only during the learning process.
	<p><b>Operability.</b> Degree to which a product or system has attributes that make it easy to operate and control.</p>			X	The Software is easy to use and friendly.



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	<p><b>User error protection.</b> Degree to which a system protects users against making errors.</p>		X		In the educational process for which the Software has been developed, the errors of User B are part of the expected sequence.
	<p><b>User interface aesthetics.</b> Degree to which a user interface enables pleasing and satisfying interaction for the user.</p>		X		The aesthetics of the Software allows an intuitive operation, being visually simple and of austere design.
	<p><b>Accessibility.</b> Degree to which a product or system can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use.</p>		X		The software has a graphical data entry / exit interface, prepared only for use by keyboard and screen.
Reliability	<p><b>Maturity.</b> Degree to which a system, product or component meets needs for reliability under normal operation.</p>		X		The software is developed to maintain reliability and growth for several years.
	<p><b>Availability.</b> Degree to which a system, product or component is operational and accessible when required for use.</p>		X		Because it is a software to operate in the cloud, availability is 24/7 without limitations of any kind.





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	<p><b>Fault tolerance.</b> Degree to which a system, product or component operates as intended despite the presence of hardware or software faults.</p>				X	The Database of the Software, in a cluster formed by 6 Servers, ensures its operation in the cloud even with hardware failures.
	<p><b>Recoverability.</b> Degree to which, in the event of an interruption or a failure, a product or system can recover the data directly affected and re-establish the desired state of the system.</p>				X	Due to its design, supported in the cloud by a Cluster of 6 Servers in an international network, it allows to maintain permanent backup and restore processes to any instance, essential necessity in all educational software.
Security	<p><b>Confidentiality.</b> Degree to which a product or system ensures that data are accessible only to those authorized to have access.</p>				X	Following the directives of the ISO 27001 and ISO 20018 standards, the Software allows the protection of personal or institutional data and prevents undesired access.
	<p><b>Integrity.</b> Degree to which a system, product or component prevents unauthorized access to, or modification of, computer programs or data.</p>				X	The System is protected in the Cluster and in each Server preventing unauthorized access.





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	<p><b>Non-repudiation.</b> Degree to which actions or events can be proven to have taken place, so that the events or actions cannot be repudiated later.</p>			X	The System in each of its instances, stores a log file, distributed in the Cluster and encrypted that cannot be deleted or altered.
	<p><b>Accountability.</b> Degree to which the actions of an entity can be traced uniquely to the entity.</p>			X	The System logs can be translated, and any unwanted action determined.
	<p><b>Authenticity.</b> Degree to which the identity of a subject or resource can be proved to be the one claimed.</p>			X	The Cluster and the Software in general, permanently identifies all access to it in the cloud.
	<p><b>Modularity.</b> Degree to which a system or computer program is composed of discrete components such that a change to one component has minimal impact on other components.</p>		X		Due to the development scheme of the teaching object, the system is totally modular. A modification of one module does not alter the rest.
	<p><b>Reusability.</b> Degree to which an asset can be used in more than one system, or in building other assets.</p>		X		In fact, the software developed is expected to be used in other similar software aimed at the same educational process.



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<b>Maintainability</b>	<p><b>Analysability.</b> Degree of effectiveness and efficiency with which it is possible to assess the impact on a product or system of an intended change to one or more of its parts, or to diagnose a product for deficiencies or causes of failures, or to identify parts to be modified.</p>		X		<p>The software has been developed in modular form to satisfy two needs: the stepped process of the educational object, and the need to update its functionalities based on its deficiencies.</p>
	<p><b>Modifiability.</b> Degree to which a product or system can be effectively and efficiently modified without introducing defects or degrading existing product quality.</p>		X		<p>For the reasons of modularity, the Software has connectors between processes that never change, allowing each module to be updated without affecting the operation.</p>
	<p><b>Testability.</b> Degree of effectiveness and efficiency with which test criteria can be established for a system, product or component and tests can be performed to determine whether those criteria have been met.</p>			X	<p>The Software requires permanent testing in each component due to its modular scheme and the dynamics of the Database with the Knowledge Base and glossaries differentiated by country.</p>

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<b>Portability</b>	<p><b>Adaptability.</b> Degree to which a product or system can effectively and efficiently be adapted for different or evolving hardware, software or other operational or usage environments.</p>		X		The Software was developed and tested in various environments to allow rapid migration to different platforms.
	<p><b>Installability.</b> Degree of effectiveness and efficiency with which a product or system can be successfully installed and/or uninstalled in a specified environment.</p>			X	The Software is easy to install remotely or locally. Operates in the cloud
	<p><b>Replaceability.</b> Degree to which a product can replace another specified software product for the same purpose in the same environment.</p>	-	-	-	At the time of its launch it is the only one of its kind and characteristics.

**Conclusions and recommendations:** The LASALUS simulator is the first development of an integrated healthcare management simulator. A simulator that follow the key concepts of the LASALUS training model in healthcare management. Prior to the development of the final version of the simulator, baseline consensus had been to be reached on the key macrovariables of the management model for health outcomes, to be simulated. Therefore, it is a product in permanent development. The present evaluation should be contextualized in that framework.

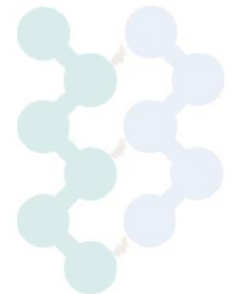




### **D5.1. Programme of the course for staff and teachers and D5.2. Training material**

The programme, the materials and audiovisual resources of the training course for LA HEIs teachers who will be in charge of the e-learning courses on professionalization of the healthcare management, have been developed by UPNA complying with the following quality standards, settled in the QMP:

1. The Programme:
  - a. Is a programme developed specifically to achieve the project objective: “training staff and teachers involved in the new curriculum in healthcare management”, considering the needs of those who will be trained.
  - b. Learning results are clearly established.
  - c. The contents and formative activities are clearly and coherently related with the expected learning results.
  - d. The programme offers the students considerable flexibility in the place of study
  - e. The temporal organization, of contents and formative activities is appropriate
2. The materials:
  - a. Properly develop the contents described in the programme and enable the development of the proposed formative activities.
  - b. Comply with universal accessibility criteria; are accessible and usable via a variety of devices including mobile devices.
  - c. Were developed using modern e-learning ICTs.
  - d. Have self-assessment elements.
  - e. Meet good graphic design standards.





## 4. Quality assessment instruments

### 4.1. Internships assessment forms

#### ASSESSMENT FORM FOR THE INTERNSHIP COORDINATOR AND ITS TEACHERS/TUTORS

**INTERNSHIP, AT .....,  
FOR THE PROFESSIONALS IN CHARGE OF THE CURRICULAR DESIGN AND  
THE DEVELOPMENT OF THE SIMULATOR IN LATIN AMERICAN HEIS**

**ACTIVITY 2.2 ASSESSMENT FORM (Preparation and development of an internship for those in charge of creating the curricular design in LA HEIs, in European HEIs, for them to be trained on the use of new learning technologies, particularly those regarding distance education, simulation based training and practice revision), from Work Package No 2 (Knowledge transfer).**

*For the coordinator and tutors/teachers of the .....*

The general objective of Activity 2.2 was for Latin American HEIs to benefit from the **technology and knowledge transfer** of European HEIs through **good practices and lessons learnt**, for them to be applied in the elaboration of the curriculum and in the development of the simulator, which are both part of the project. Said transfer will be useful for Latin American HEIs to revise traditional practices used in the curriculum design and in the application of e-learning tools, multimedia technology and simulation. The curriculum design will be aimed at the distance higher learning of the different professionals at managerial levels in Latin American health care organizations.

With the aim of collecting information concerning the development of activity 2.2, we kindly request the coordinator and the tutors/teachers who made presentations and/or conducted a workshop during the internship at ....., to complete this assessment tool.

This will contribute to the improvement of the empowerment process of Latin American HEIs, along with the experiences and good practices developed by ....., which were transmitted during the internship.

**Thank you for your cooperation!**

1. Which were the objectives that you had set when planning the activity?

- a) .....
- .....
- .....
- .....





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- b) .....
- .....
- .....
- .....
- c) .....
- .....
- .....
- .....

2. Briefly explain if, during the development of the activity, said objectives were achieved:

3. If any of the objectives has not been achieved, which do you think is the reason?

4. We kindly ask you to give us your opinion of the interns during the development of the activity (please, complete the following rating scale):

The professionals in the internship:	Mark with a cross where applicable			
	To a large extent	To a moderate extent	To a small extent	Not at all
1. Asked relevant questions, in order to improve their understanding of the topics presented.				
2. Expressed their opinion as to the situation in their institutions or their country, regarding the topics presented, which contributed to the framing of said topics.				
3. Showed an interest in deepening the discussion of the topics presented.				
4. Critically analyzed the way the activities proposed by the speakers/tutors were carried out.				
5. Made remarks concerning the value of the material they were given.				
6. Kept good communication with you.				
7. Had a cooperative attitude towards each other.				





**ASSESSMENT FORM FOR THE LA HEIS PARTICIPANTS OF THE INTERNSHIPS**

**INTERNSHIP, AT**  
.....,  
**FOR THE PROFESSIONALS IN CHARGE OF THE CURRICULAR DESIGN AND  
THE DEVELOPMENT OF THE SIMULATOR IN LATIN AMERICAN HEIS**

**ACTIVITY 2.2 ASSESSMENT FORM (Preparation and development of an internship for those in charge of creating the curricular design in LA HEIs, in European HEIs, for them to be trained on the use of new learning technologies, particularly those regarding distance education, simulation based training and practice revision), from Work Package No 2 (Knowledge transfer).**

*For the participants from Latin American HEIs*

The general objective of Activity 2.2 was for Latin American HEIs to benefit from the **technology and knowledge transfer** of European HEIs through **good practices and lessons learnt**, for them to be applied in the elaboration of the curriculum and in the development of the simulator, which are both part of the project. Said transfer will be useful for Latin American HEIs to revise traditional practices used in the curriculum design and in the application of e-learning tools, multimedia technology and simulation. The curriculum design will be aimed at the distance higher learning of the different professionals at managerial levels in Latin American health care organizations.

With the aim of collecting information concerning the development of activity 2.2, we kindly request the members of the teams from the Latin American Universities that participated in the internship at ....., to complete this assessment tool. This will contribute to the improvement of the empowerment process of Latin American HEIs, along with the experiences and good practices developed by ....., which were transmitted during the internship.

**Thank you for your cooperation!**

1. Regarding the objectives, contents, strategies and material	Mark with a cross where applicable			
	To a large extent	To a moderate extent	To a small extent	Not at all
a) Were the objectives of the internship defined in a clear and precise manner?				
b) Were the activities of the internship significant to achieve these objectives?				
c) Did this internship allow the acquisition of new knowledge and the access to experiences related to the curriculum				



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design, the use of technological resources and teaching strategies in healthcare management distance learning?				
d) Did the work methodology enable feedback with the tutors/speakers?				
e) Was the material delivered to you appropriate in amount and quality?				
f) Did the translation allow the fluent communication with the tutors/speakers?				
g) If you have any further remarks, please let us know in this section:				

2. Further remarks about the internship and its connection with Project LASALUS	Mark with a cross where applicable			
	To a large extent	To a moderate extent	To a small extent	Not at all
a) Did the internship meet your expectations?				
b) Were the topics addressed in the internship relevant to increase institutional capacity of HEIs in your country for professional training in healthcare management?				
c) Were the topics addressed relevant for the academic authorities and teachers from your institution?				
d) Were the topics addressed have any connection with the user needs identified in your country, in terms of healthcare management?				

3. Which activities were of particular importance for your institution? Please, mention three of them and state why they were of such importance:

4. Do you believe there was any topic or experience that was not included in the internship which may have been important for you and your institution? If so, please specify:



5. How would you describe the internship as a whole?

a) Very good	b) Good	c) Average	d) Poor
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6. Based on your experience during this internship, how do you think future events may be improved?

7. Regarding the coordination of the internship	Mark with a cross where applicable			
	To a large extent	To a moderate extent	To a small extent	Not at all
a) Were the organization and the coordination prior to the activity appropriate?				
b) Were the organization and coordination during the activity appropriate?				
c) Were you informed of any possible change in a timely manner?				
d) Did the organization and the coordination dealt with difficulties in an appropriate manner and facilitate your trip and stay?				
If there are any further remarks you would like to make regarding the organization of the activity, please write them in the following space:				

8. Taking into account the topics addressed, and regarding the length of the internship, you believe it was:

a) Too short	b) Short	c) Appropriate	d) Long	e) Too long
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