External Evaluation Report of the Doctoral Study Domain "Computers and Information Technology" at Lucian Blaga University of Sibiu

Contents

I. Introduction

This external evaluation report was drafted by Prof. Sokratis Katsikas, Norwegian University of Science and Technology. It reports on the findings and assessment of the doctoral programme in Computers and Information Technology at Lucian Blaga University of Sibiu that resulted from the periodic external evaluation of doctoral study domains. The evaluation was carried out in the period 19-23 July 2021, in a mixed manner (all meetings were held online, and a site visit was paid by the coordinator of the evaluation committee). The committee consisted of Prof. Horia Ciocîrlie (coordinator), Prof. Sokratis Katsikas (international expert), and Alexandru Iliescu (PhD student).

The doctoral domain in Computers and Information Technology is part of the Interdisciplinary Doctoral School of the University (SDI-ULBS), which currently comprises 15 doctoral programmes of study. The mission of SDI-ULBS is "*to model researchers and specialists (doctors) capable of performing at the highest possible levels in their scientific research, as well as in practical professional activity*". At the end of the assessment period (academic year 2019 – 2020) SDI-ULBS had 105 active doctoral advisors and 479 doctoral students. During the assessment period (2015-2020), 220 doctoral degrees were awarded.

The doctoral study domain in Computers and Information Technology is part of the Engineering Sciences primary doctoral field at SDI-ULBS. The mission of the domain is to "*train specialists (Doctors) in COMPUTERS AND INFORMATION TECHNOLOGY and to foster excellence in research, development, and innovation, while ensuring the transfer of knowledge between the national and international communities, with a view to promoting progress.*" The doctoral study programme consists of a 30 ECTS training component and an individual programme of scientific research. The training component comprises the following courses:

- Academic Ethics and Integrity – 3 ECTS (compulsory)
- Research Methodologies – 7 ECTS (compulsory)
- Aggregation in Multi-agent Systems - 10 ECTS or The Fundamentals of Advanced Image Processing and Artificial Vision - 10 ECTS

- Distributed Resource Allocation Algorithms - 10 ECTS or Advanced Data Communication Techniques - 10 ECTS.

The individual programme of scientific research is supervised by a Doctoral Advisory Committee, which consists of the student's doctoral advisor and three other academic members with expertise in the respective research area. The doctoral study domain in Computers and Information Technology has had a steadily increasing number of students: 5 in the academic year 2015-2016 and 14 in the academic year 2019-2020. There are 3 doctoral advisors affiliated with the doctoral study domain, one from the University of Vienna and two from IOSUD.The programme has awarded two doctoral degrees in the assessment period.

The students of the doctoral study domain in Computers and Information Technology are affiliated with two accredited research centers of the University's Faculty of Engineering, namely the Connected Intelligence Research Centre (INCON) and the Advanced Computer Architecture and Processing Systems Research Centre (CCAAPI). Quality assurance follows the policies and procedures of the University and of the IOSUD.

II. Methods used

This evaluation is based on data, information and findings derived from:

- The analysis of the internal evaluation report of the doctoral study domain in Computers and Information Technology and its Annexes;
- The analysis of documents, data and information available on the IOSUD/Doctoral School website, in electronic format;
- Meeting/discussions with doctoral students in the doctoral study domain Computers and Information Technology;
- Meeting/Discussions with the graduates of the doctoral study domain Computers and Information Technology;
- Meeting/Discussions with employers of the graduates in the doctoral study domain Computers and Information Technology;
- Meeting/Discussions with the school officials of the SDI-ULBS, in which the doctoral study domain Computers and Information Technology is operating;
- Meeting/Discussions with the doctoral advisors in the doctoral study domain Computers and Information Technology;
- Meeting/Discussions with the Directors / persons in charge of the research centers/laboratories with which the doctoral study domain Computers and Information Technology is affiliated;
- Meeting/discussions with the representatives of the various structures of the IOSUD/Doctoral School in which the doctoral study domain under review is operating: the Council of the Doctoral School, the Board of Directors, the Quality Assessment and Assurance Commission, the Quality Assurance Department, the Ethics Commission (including with the student representatives of these structures.

III. Analysis of ARACIS's performance indicators

Domain A. INSTITUTIONAL CAPACITY

Criterion A.1. The administrative, managerial institutional structures and the financial resources

Standard A.1.1. The institution organizing doctoral studies (IOSUD) has implemented the effective functioning mechanisms provided for in the specific legislation on the organization of doctoral studies.

Performance Indicator A.1.1.1. *The existence of specific regulations and their application at the level of the Doctoral School of the respective university doctoral study domain:*

a. *the internal regulations of the Doctoral School;*
b. *the methodology for conducting elections for the position of director of the Council of doctoral school (CSD), as well as elections by the students of their representative in CSD and the evidence of their conduct;*
c. *the methodologies for organizing and conducting doctoral studies (for the admission of doctoral students, for the completion of doctoral studies);*
d. *the existence of mechanisms for recognizing the status of a Doctoral advisor and the equivalence of the doctoral degree obtained abroad;*
e. *functional management structures (Council of the doctoral school), giving as well proof of the regularity of meetings;*
f. *the contract for doctoral studies;*
g. *internal procedures for the analysis and approval of proposals regarding the training for doctoral study programs based on advanced academic studies.*

a. The University organizes university-level doctoral studies through the IOSUD-ULBS. The doctoral studies are organized and conducted in accordance with internal regulations for organizing and conducting doctoral studies within ULBS that have been provided in Appendix A.1.1.1.01 of the Internal Evaluation Report – IER. An overview of this document has been provided in the IER. According to this overview, these regulations include stipulations for different principles and fields of application, IOSUD, the interdisciplinary doctoral school, the admission and registration of doctoral students, the doctoral thesis agreement, doctoral advisors, doctoral students, finances, the completion of doctoral studies etc. and they are in accordance with the pertinent national legislation.
b. IOSUD-ULBS is led by the Council for Doctoral Studies - CSUD. The current CSUD is appointed for a 4-year term, from 2020 to 2024, and consists of 8 members three of which, namely the director, one doctoral advisor, and one doctoral student are elected; the remaining members are appointed by the Rector. According to the IER, the process for the appointment of CSUD members as well as the voting process for electing the representative of the doctoral advisors are described in documents that can be found at the University's website (all in Romanian). Details (e.g. dates, publicity) regarding the election process are provided in the IER. The members of the CSUD confirmed, during their meeting with the evaluation panel, that the election process had been carried out. It is noted that there was only one candidate for the position of the director.

c. Matters related to the admission of doctoral students and to the completion of doctoral studies are regulated by the internal regulations mentioned in (a) above, and have been provided as Appendices A.1.1.1.05 and A1.1.1.06 to the IER, respectively.
d. The mechanisms for recognizing the status of a Doctoral advisor and the equivalence of the doctoral degree obtained abroad, as well as for obtaining the habilitation degree are described in Appenices A.1.1.1.07-09 to the IER respectively.
e. As already mentioned, the CSUD has been formed. It was only recently formed (March 2021), hence the frequency of its meetings cannot be established.
f. Three templates of the contract for doctoral studies are provided on the website of the University and as Appendix A1.1.1.10 to the IER. An overview of its contents is provided in the IER.
g. IOSUD-ULBS has internal analysis and approval procedures regarding proposals on the topics and themes of the doctoral programmes. At the level of each doctoral field, the field coordinators (as appointed by CSUD discuss with the doctoral advisors affiliated to the corresponding field the training programme founded on advanced university studies and the different themes pertaining to each particular training programme. These practices have been confirmed by the doctoral advisors and coordinators that the committee met with. The writer of this report did not participate in the site visit; hence further evidence of adherence to these practices has not been made available.

Recommendations:

1. The University should actively promote the importance of the management of the doctoral schools, and should further motivate qualified faculty members to increase interest and participation in the management of the CSUD, to increase the competition for the position of the director.

The indicator is fulfilled.

Performance Indicator A.1.1.2. *The doctoral school's Regulation includes mandatory criteria, procedures and standards binding on the aspects specified in Article 17, paragraph (5) of the Government Decision No. 681/2011 on the approval of the Code of Doctoral Studies with subsequent amendments and additions.*

According to the IER, the regulation abides by all national legislation pertinent to the organization of doctoral studies. As all the documents supporting this claim are in Romanian, the writer was unable to verify the claim. This should not be taken to mean that there is any doubt whatsoever on the validity of the claim.

Recommendations: None

The indicator is fulfilled.

Standard A.1.2. The IOSUD has the logistical resources necessary to carry out the doctoral studies' mission.

Performance Indicator A.1.2.1. *The existence and effectiveness of an appropriate IT system to keep track of doctoral students and their academic background.*

ULBS has implemented a university-wide digital system for the registration of all enrolled students, the UMS-University Management System, which the students can access with their personal usernames and passwords. UMS (at https://ums.ulbsibiu.ro/ums/do/secure/inregistrare_user) has a bilingual (Romanian and English) interface. The functionality of the system was not established, as the writer did not participate in the site visit.

Recommendations: None.

The indicator is fulfilled.

Performance Indicator A.1.2.2. *The existence and use of an appropriate software program and evidence of its use to verify the percentage of similarity in all doctoral theses.*

ULBS uses the sistemantiplagiat.ro service for determining the similarity score of doctoral theses: and the checkforplagiarism.net service for plagiarism control. All doctoral theses submitted to the doctoral school are checked with both services in order to determine their similarity score. The theses whose scores fall outside of the allowed limits are not approved for public defence.

Recommendations:
1. Consider allowing doctoral students to use these services before they submit their theses.

The indicator is fulfilled.

Standard A.1.3. The IOSUD makes sure that financial resources are used optimally, and the revenues obtained from doctoral studies are supplemented through additional funding besides governmental funding.

Performance Indicator A.1.3.1. *Existence of at least one research or institutional / human resources development grant under implementation at the time of submission of the internal evaluation file, per doctoral study domain under evaluation, or existence of at least 2 research or institutional development / human resources grant for the doctoral study domain, obtained by doctoral thesis advisors operating in the evaluated domain within the past 5 years. The grants address relevant themes for the respective domain and, as a rule, are engaging doctoral students.*

According to the IER, during the assessment period, doctoral advisors in the Computers and Information Technology domain were awarded a total of seven grants, six of which were international. These grants address relevant themes of the domain. It is noted that six of these grants are directed by the same faculty member. Doctoral students are engaged with these grants.

Recommendations:
1. Consider supporting more doctoral advisors in the study domain in their quest for attracting research grants.
2. Consider broadening the research areas in the domain, and involve more advisors.

The indicator is fulfilled.

Performance Indicator *A.1.3.2. *The percentage of doctoral students active at the time of the evaluation, who for at least six months receive additional funding sources besides government funding, through scholarships awarded by individual persons or by legal entities, or who are financially supported through research or institutional / human resources development grants is not less than 20%.*

According to the clarifications provided in the document entitled "A.1.3.2. IOSUD și domenii", within the interdisciplinary doctoral school, the total number of doctoral students in the domain was 14. A total of 3 doctoral students financed from the state budget (during the normal 3-year internship) benefited in the past or currently benefit from other sources of funding, for a period of at least six months (from the research grants mentioned in Performance Indicator A.1.3.1). Consequently, at the time of evaluation, the percentage of PhD students who benefit for a minimum of 6 months from sources other than government funding through research grants, is 21.43.

Recommendations:

1. Increase the percentage of students receiving additional support, to compensate for the low stipend

The indicator is fulfilled.

Performance Indicator *A.1.3.3.[1] *At least 10% of the total amount of doctoral grants obtained by the university through institutional contracts and of tuition fees collected from the doctoral students enrolled in the paid tuition system is used to reimburse professional training expenses of doctoral students (attending conferences, summer schools, training, programs abroad, publication of specialty papers or other specific forms of dissemination etc.).*

According to the clarifications document entitled "Anexa A.1.3.3. Cheltuieli de formare profesională aledoctoranzilor", the relevant percentage is 10.25%.

Recommendations: None

The indicator is fulfilled.

Criterion A.2. Research infrastructure

Standard A.2.1. The IOSUD has a modern research infrastructure to support the conduct of doctoral studies' specific activities.

Performance Indicator A.2.1.1. *The venues and the material equipment available to the doctoral school enable the research activities in the evaluated domain to be carried out, in line with the assumed mission and objectives (computers, specific software, equipment, laboratory equipment, library, access to*

[1] The indicators marked with an asterisk (*) hold a special status, referring exclusively to the evaluation of doctoral studies domains, as per Article 12 from the annex No.1 of the Order of the minister of education No. 3651/12.04.2021 approving the Methodology for evaluating university doctoral studies and the system of criteria, standards and performance indicators used in the evaluation. In case they are not met, the Agency extends a period of maximum 3 years to IOSUD to correct the respective deficiencies.

international databases etc.). The research infrastructure and the provision of research services are presented to the public through a specific platform. The research infrastructure described above, which was purchased and developed within the past 5 years will be presented distinctly.

The writer did not participate in the site visit, therefore first hand knowledge of the alignment of the venues and of the material equipment available to the doctoral school to the requirements of the assumed mission and objectives has not been acquired. Nevertheless, the research infrastructure of the two research centers to which the Computers and Information Technology domain is affiliated is presented at their respective websites. This infrastructure is certainly in line with the mission and objectives of the domain and enables carrying our highly quality research.

Recommendations: None

The indicator is fulfilled.

Criterion A.3. Quality of Human Resources

Standard A.3.1. At the level of each domain there are sufficient qualified staff to ensure the conduct of doctoral study program.

Performance Indicator A.3.1.1. *Minimum three doctoral thesis advisors within that doctoral domain, and at least 50% of them (but no less than three) meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when the evaluation is carried out, which standards are required and mandatory for obtaining the enabling certification.*

Three doctoral advisors are affiliated with the doctoral programme in Computers and Information Technology, namely Prof. Dimitrios Karagiannis, Prof. Remus Ovidiu Brad, and Prof. Constantin-Bala Zamfirescu. All of them meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when this evaluation was carried out, such standards set out in Appendix A.3.1.1 to the IER.

Recommendations:

1. Enhance the doctoral study domain with more doctoral advisors, in diverse fields within the domain.

The indicator is fulfilled.

Performance Indicator *A.3.1.2. *At least 50% of all doctoral advisors have a full-time employment contract for an indefinite period with the IOSUD.*

Two out of the three current doctoral advisors (i.e. 67%) are tenured wirth ULBS IOSUD.

Recommendations:

1. Enhance the doctoral study domain with more full-time, tenured doctoral advisors, in diverse fields within the domain.

The indicator is fulfilled.

Performance Indicator A.3.1.3. *The study subjects in the education program based on advanced higher education studies pertaining to the doctoral domain are taught by teaching staff or researchers who are doctoral thesis advisors / certified doctoral thesis advisors, professors / CS I or lecturer / CS II, with proved expertise in the field of the study subjects they teach, or other specialists in the field who meet the standards established by the institution in relation with the aforementioned teaching and research functions, as provided by the law.*

The core technical courses of the training component are being taught by the doctoral advisors of the programme. The course on Academic Ethics and Integrity is being taught by a faculty member of the Faculty of Letters and Arts and the course on Research Methodologies is being taught by a faculty member of the Faculty of Engineering. All academics teaching the courses in the training component of the doctoral study programme meet the required national minimum standads.

Recommendations: None.

The indicator is fulfilled.

Performance Indicator *A.3.1.4. *The percentage of doctoral thesis advisors who concomitantly coordinate more than 8 doctoral students, but no more than 12, who are themselves studying in doctoral programs[2] does not exceed 20%.*

No doctoral advisor currently coordinates more than 8 doctoral students.

Recommendations: None

The indicator is fulfilled.

Standard A.3.2. The Doctoral advisors within the domain are carrying out a scientific activity visible at international level.

Performance Indicator A.3.2.1. *At least 50% of the doctoral thesis advisors in the evaluated domain have at least 5 Web of Science- or ERIH-indexed publications in magazines of impact, or other achievements of relevant significance for that domain, including international-level contributions that indicate progress in scientific research - development - innovation for the evaluated domain. The aforementioned doctoral thesis advisors enjoy international awareness within the past five years, consisting of: membership on scientific boards of international publications and conferences; membership on boards of international professional associations; guests in conferences or expert groups working abroad, or membership on doctoral defense commissions at universities abroad or co-leading with*

[2] 3 years for the doctoral university studies with the duration stipulated at Article 159, paragraph (3), respectively 4 years for the doctoral university studies with the duration stipulated at Article 174, paragraph (3) of the Law of national education No.1/2011 with subsequent amendments and additions, with additional extension periods approved as per Article 39, paragraph (3) of the Code of doctoral studies approved by the GD No. 681/2011 with subsequent amendments and additions.

universities abroad. For Arts and Sports and Physical Education Sciences, doctoral thesis advisors shall prove their international visibility within the past five years by their membership on the boards of professional associations, membership in organizing committees of arts events and international competitions, membership on juries or umpire teams in artistic events or international competitions.

The IOSUD website contains outdated CVs of the doctoral advisors (as old as from 2014). However, from their CVs found on their personal webpages it is evident that they all meet the requirements set out in this performance indicator. Slightly deviant from the requirement to enjoy international awareness over the past five years is the CV of Prof. Zamfirescu (found at http://web.ulbsibiu.ro/constantin.zamfirescu/), who appears to have published his last journal paper in 2015 and his last conference paper in 2014, whilst his membership in International Program Committees also appears to have ended in 2014 and his membership in the editorial board of the International Journal on Advances in Intelligent Systems is not confirned by the journal's website. As Prof. Zamfirescu has, according to Google Scholar, published as recently as 2021, this finding may be securely attributed to an outdated CV of his.

Recommendations:

1. Update the CVs of the faculty members on the IOSUD website and ensure that they remain updated at all times.

The indicator is fulfilled.

Performance Indicator *A.3.2.2. *At least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation, which are required and mandatory for acquiring their enabling certificate, based on their scientific results within the past five years.*

All three doctoral advisors are scientifically active, and they have all acquired more than 25% of the minimum required CNATDCU score within the past five years. Specifically, Prof. Karagiannis's CNATDCU score is 820 (96% of the minimum required), that of Prof. Brad is 206 (27% of the minimum required), and that of Prof. Zamfirescu is 388 (45% of the minimum required).

Recommendations: None

The indicator is fulfilled.

Domain B. EDUCATIONAL EFFECTIVENESS

Criterion B.1. The number, quality and diversity of candidates enrolled for the admission contest

Standard B.1.1. The institution organizing doctoral studies has the capacity to attract candidates from outside the higher education institution or a number of candidates exceeding the number of seats available.

Performance Indicator *B.1.1.1. *The ratio between the number of graduates of masters' programs of other higher education institutions, national or foreign, who have enrolled for the doctoral admission contest within the past five years and the number of seats funded by the state budget, put out through contest within the doctoral domain is at least 0.2 or the ratio between the number of candidates within the past five years and the number of seats funded by the state budget put out through contest within the doctoral studies domain is at least 1,2.*

During the period of assessment, 16 candidates participated in the admission exam for the doctoral programme in Computers and Information Technology. Of these, 3 were graduates of higher education institutions other than ULBS. The number of places financed from the national budget during the reporting period was 15. Consequently, the ratio between the number of master's degree graduates from other educational institutions who have entered the competition for admission to doctoral studies in the last 5 years and the number of places financed from the state budget put up for competition in the doctoral programme in Computers and Information Technology is equal to 0.2 and the ratio between the number of candidates in the last five years and the number of places financed from the national budget put up for competition in the doctoral programme is 1.06. As such, the former ratio satisfies the requirement, whilst the latter falls short of it.

Recommendations:

1. Measures are needed to increase the capacity of the doctoral study programme to attract more candidates for admission, and also candidates from other Universities, to combat inbreeding. To this end, among others, enhancement of the pool of doctoral advisors; significant expansion of the research areas within the domain that are covered by the programme; inclusion of core and currently attractive research areas in the domain (e.g. Artificial Intelligence, Data Science, Cybersecurity); offer of more and more diverse courses in the training component of the programme; promotion of the programme both nationally and internationally; use of English as the working language of the programme; are needed.

The indicator is partially fulfilled.

Standard B.1.2 Candidates admitted to doctoral studies demonstrate academic, research and professional performance.

Performance Indicator *B.1.2.1. *Admission to doctoral study programs is based on selection criteria including: previous academic, research and professional performance, their interest for scientific or arts/sports research, publications in the domain and a proposal for a research subject. Interviewing the candidate is compulsory, as part of the admission procedure.*

Admission at doctoral studies is regulated by the Regulation for organization and development of doctoral studies at "Lucian Blaga" University of Sibiu (available only in Romanian). The admission contest for doctoral studies is organized in a unitary manner across doctoral programmes and includes an examination of language proficiency, in one of the languages of international circulation (English, French, German); and an examination on the basis of the specialty/domain topic consisting of an interview of the admission commission with the candidate on the basis of the doctoral research project. The criteria for

admission to the doctoral programme in Computers and Information Technology are laid out in the same regulation.

Recommendations:

1. Make all documents relevant to the doctoral study, including those on admission, available in English as well.

The indicator is fulfilled.

Performance Indicator B.1.2.2. *The expelling rate, including renouncement / dropping out of doctoral students 3, respectively 4, years after admission[3] does not exceed 30%.*

The average dropout rate in the last three academic years was 14.3%; it was 0 in the preceding years. This is below the allowed threshold. However, in the academic year 2018-2019 the ratio exceeded the threshold (it was 33.3%). All in all, the programme experiences rather high dropout rates, attributed to the fact that the stipend for doctoral students is inadequate, hence the students seek employment in parallel with their studies, and eventually they cannot keep up with the requirements of the doctoral study. This practice also prolongs, sometimes considerably, the time taken to complete their study.

Recommendations:

1. Improve the level of financial support to the doctoral students
2. Better inform the students at the time of admission on the requirements of their study and the limitations of the financial support
3. Become more selective during admission

The indicator is partially fulfilled.

Criterion B.2. The content of doctoral programs

Standard B.2.1. The training program based on advanced university studies is appropriate to improve doctoral students' research skills and to strengthen ethical behavior in science.

Performance Indicator B.2.1.1. *The training program based on advanced academic studies includes at least 3 disciplines relevant to the scientific research training of doctoral students; at least one of these disciplines is intended to study in-depth the research methodology and/or the statistical data processing.*

The training component of the doctoral study programme in Computers and Information Technology comprises six courses, of which two are compulsory and sum up to 10 ECTS: Academic Ethics and Integrity, and Research Methodologies. Doctoral candidates are required to opt for two additional elective courses, each of 10 ECTS. They have to select between Preference Aggregation in Multi-agent Systems and The Fundamentals of Advanced Image Processing and Artificial Vision; and between Distributed Resource Allocation Algorithms and Advanced Data Communication Techniques. The syllabuses for

[3] 3 years for the doctoral university studies with the duration stipulated at Article 159, paragraph (3), respectively 4 years for the doctoral university studies with the duration stipulated at Article 174, paragraph (3) of the Law of national education No. 1/2011 with subsequent amendments and additions.

these courses are available at the IOSUD website (in Romanian) and have been provided as Appendix B.2.1.3 to the IER. The evaluation of the effort needed to complete each of the elective courses at 10 ECTS each is too high, considering the syllabuses and according to the input received during the committee's meetings.

Recommendations:
1. Enrich the training component with more courses
2. Reconsider the ECTS credits assigned to each of the elective courses in the training component
3. Make the course syllabuses available in English

The indicator is fulfilled.

Performance Indicator B.2.1.2. *At least one discipline is dedicated to Ethics and Intellectual Property in scientific research or there are well-defined topics on these subjects within a discipline taught in the doctoral program.*

The training component includes one such course.

Recommendations: None

The indicator is fulfilled.

Performance Indicator B.2.1.3. *The IOSUD has mechanisms to ensure that the academic training program based on advanced university studies addresses „the learning outcomes", specifying the knowledge, skills, responsibility and autonomy that doctoral students should acquire after completing each discipline or through the research activities[4].*

Such mechanisms are part of the IOSUD quality management approach.

Recommendations: None

The indicator is fulfilled.

Performance Indicator B.2.1.4. *All along the duration of the doctoral training, doctoral students in the domain receive counselling/guidance from functional guidance commissions, which is reflected in written guidance and feedback or regular meeting.*

Doctoral candidates are counselled by a Doctoral Advisory Committee, which consists of their doctoral advisor and three other faculty members with expertise in the research area of each candidate. The doctoral students and graduates of the programme that the evaluation committee met confirmed their satisfaction with their interaction with their doctoral advisors.

[4] Or by what the graduate should know, understand and to be able to do, according to the provisions of the Methodology of 17 March 2017 regarding inscription and registration of higher education qualifications in the National Register of Qualifications in Higher Education (RNCIS) approved by the Order No.3475/2017 with subsequent amendments and additions.

Recommendations: None

The indicator is fulfilled.

Performance Indicator B.2.1.5*. For a doctoral study domain, the ratio between the number of doctoral students and the number of teaching staff/researchers providing doctoral guidance must not exceed 3:1.*

Between 2017 and 2020, 14 doctoral candidates were enrolled in the doctoral programme in Computers and Information Technology. As shown in Appendix B.2.1.5 to the IER, a total of 7 teaching staff members supervised their progress. Thus, the ratio of doctoral candidates to teaching staff providing doctoral guidance was 2:1.

Recommendations: None

The indicator is fulfilled.

Criterion B.3. The results of doctoral studies and procedures for their evaluation.

Standard B.3.1. Doctoral students capitalize on the research through presentations at scientific conferences, scientific publications, technological transfer, patents, products and service orders.

Performance Indicator B.3.1.1. *For the evaluated domain, the evaluation commission will be provided with at least one paper or some other relevant contribution per doctoral student who has obtained a doctor's title within the past 5 years. From this list, the members of the evaluation commission shall randomly select 5 such papers / relevant contributions per doctoral study domain for review. At least 3 selected papers must contain significant original contributions in the respective domain.*

In the period under assessment two doctoral theses (both supervised by the late Prof. Vinţan, one in 2017 and one in 2018) were defended and the respective degrees were awarded. One doctoral candidate published four articles in Conference Proceedings of good standing and one article in a high quality scientific journal (IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems). The other candidate published also four articles in Conference Proceedings of good standing and one article in a scientific journal (International Journal of Computers Communications & Control). Most of these publications contain significant original contributions in the respective domain.

Recommendations: None

The indicator is fulfilled.

Performance Indicator *B.3.1.2. *The ratio between the number of presentations of doctoral students who completed their doctoral studies within the evaluated period (past 5 years), including posters, exhibitions made at prestigious international events (organized in the country or abroad) and the number*

of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) is at least 1.

According to Appendix B.3.1.1 to the IER, the two doctoral candidates who were awarded the doctoral degree in the past five years participated with a total of 8 papers (4 each) in international conferences, abroad or in Romania. Accordingly, the ratio of presentations/doctoral student is 4.

Recommendations: None

The indicator is fulfilled.

Standard B.3.2. The Doctoral School engages a significant number of external scientific specialists in the commissions for public defense of doctoral theses in the analyzed domain.

Performance Indicator *B.3.2.1. *The number of doctoral theses allocated to one specialist coming from a higher education institution, other than the evaluated IOSUD should not exceed two (2) in a year for the theses coordinated by the same doctoral thesis advisor.*

According to Appendix B.3.2.1 to the IER, no doctoral theses of the doctoral study programme in Computers and Information Technology were supervised by the same doctoral advisor and allotted to the same external referent, from a different higher education institution.

Recommendations: None

The indicator is fulfilled.

Performance Indicator *B.3.2.2. *The ratio between the doctoral theses allocated to one scientific specialist coming from a higher education institution, other than the institution where the defense on the doctoral thesis is organized, and the number of doctoral theses presented in the same doctoral study domain in the doctoral school should not exceed 0.3, considering the past five years. Only those doctoral study domains in which minimum ten doctoral theses have been presented within the past five years should be analyzed.*

In the past five years two doctoral theses in the doctoral study programme in Computers and Information Technology were defended. Accordingly, the performance indicator is not applicable.

Recommendations: None

The indicator is fulfilled (Not applicable).

Domain C. QUALITY MANAGEMENT

Criterion C.1. Existence and periodic implementation of the internal quality assurance system

Standard C.1.1. There are an institutional framework and procedures in place and relevant internal quality assurance policies, applied for monitoring the internal quality assurance.

Performance Indicator C.1.1.1. *The Doctoral school in the respective university study domain shall demonstrate the continuous development of the evaluation process and its internal quality assurance following a procedure developed and applied at the level of the IOSUD, the following assessed criteria being mandatory:*

a. *the scientific work of Doctoral advisors;*
b. *the infrastructure and logistics necessary to carry out the research activity;*
c. *the procedures and subsequent rules based on which doctoral studies are organized;*
d. *the scientific activity of doctoral students;*
e. *the training program based on advanced academic studies of doctoral students;*
f. *social and academic services (including for participation at different events, publishing papers etc.) and counselling made available to doctoral students.*

The IOSUD has established and observes a number of regulations and procedures enabling the internal quality assurance and assessment of all the items listed in the description of the performance indicator.

Recommendations: None

The indicator is fulfilled.

Performance Indicator *C.1.1.2. *Mechanisms are implemented during the stage of the doctoral study program to enable feedback from doctoral students allowing to identify their needs, as well as their overall level of satisfaction with the doctoral study program in order to ensure continuous improvement of the academic and administrative processes. Following the analysis of the results, there is evidence that an action plan was drafted and implemented.*

ULBS has designed a questionnaire to collect feedback from all students, including doctoral students regarding the overall doctoral programme. In the academic year 2019-2020 such a questionnaire was disseminated via Google Forms to 278 (out of a total of 479) students enrolled in the doctoral training programme; 183 responses from doctoral students were validated. Of these, about 80% of the respondents were content or very satisfied (on a scale from 1 to 5) with the overall doctoral programme. In terms of the identified needs, mention should be made of the limited access to the research infrastructure (triggered by the pandemic context) as one of the major problems (especially to such fields as medicine or engineering) encountered in abiding by the timeframe and requirements of the individual research programme. On the other hand, the pandemic context provided access to a series of open access sources - available free of charge from an institutional account - to other fields of doctoral studies, such as: economics, philology or law. Evidence of an action plan drafted and implemented to address these findings has not been identified.

Recommendations:

1. Distribute the questionnaire to all doctoral students

2. Motivate students to participate actively in the QA process, including by reporting on action taken to address their concerns and needs

The indicator is partially fulfilled.

Criterion C.2. Transparency of information and accessibility of learning resources

Standard C.2.1. Information of interest to doctoral students, future candidates and public interest information is available for electronic format consultation.

Performance Indicator C.2.1.1. *The IOSUD publishes on the website of the organizing institution, in compliance with the general regulations on data protection, information such as:*

a. the Doctoral School regulation;
b. the admission regulation;
c. the doctoral studies contract;
d. the study completion regulation including the procedure for the public presentation of the thesis;
e. the content of training program based on advanced academic studies;
f. the academic and scientific profile, thematic areas/research themes of the Doctoral advisors within the domain, as well as their institutional contact data;
g. the list of doctoral students within the domain with necessary information (year of registration; advisor);
h. information on the standards for developing the doctoral thesis;
i. links to the doctoral theses' summaries to be publicly presented and the date, time, place where they will be presented; this information will be communicated at least twenty days before the presentation.

All the information prescribed in the performance indicator is available at the IOSUD website. Unfortunately, not all of it is available in English. Some is not up-to-date.

Recommendations:

1. Make all this information available in English on the website.
2. Ensure that all this information is kept up-to-date at all times

The indicator is fulfilled.

Standard C.2.2. The IOSUD/The Doctoral School provides doctoral students with access to the resources needed for conducting doctoral studies.

Performance Indicator C.2.2.1. *All doctoral students have free access to one platform providing academic databases relevant to the doctoral studies domain of their thesis.*

All doctoral students have, via their institutional email accounts, access to online platforms of relevant academic databases for each doctoral field. Additionally, they have access to the University library resources.

Recommendations: None.

The indicator is fulfilled.

Performance Indicator C.2.2.2. *Each doctoral student shall have access, upon request, to an electronic system for verifying the degree of similarity with other existing scientific or artistic works.*

Each doctoral student, subject to approval by the doctoral advisor, has access to the two electronic systems of plagiarism checking available at the University.

Recommendations:

1. Remove the requirement for approval of the doctoral advisor to use the plagiarism control and similarity check services. Doctoral students should have unrestricted access to these resources; limits on the use may, if absolutely necessary, be imposed.

The indicator is fulfilled.

Performance Indicator C.2.2.3. *All doctoral students have access to scientific research laboratories or other facilities depending on the specific domain/domains within the Doctoral School, according to internal order procedures.*

All doctoral students have access to the laboratories for undertaking research activities, to other academic facilities, to the research centres or to the third-party research infrastructure, subject to submitting a request to be approved by the doctoral advisor, and in keeping with the availability of the research infrastructure.

Recommendations: None

The indicator is fulfilled.

Criterion C.3. Internationalization

Standard C.3.1. There is a strategy in place and it is applied to enhance the internationalization of doctoral studies.

Performance Indicator *C.3.1.1. *IOSUD, for every evaluated domain, has concluded mobility agreements with universities abroad, with research institutes, with companies working in the field of study, aimed at the mobility of doctoral students and academic staff (e.g., ERASMUS agreements for the doctoral studies). At least 35% of the doctoral students have completed a training course abroad or other mobility forms such as attending international scientific conferences. IOSUD drafts and applies policies and measures aiming at increasing the number of doctoral students participating at mobility periods abroad, up to at least 20%, which is the target at the level of the European Higher Education Area.*

ULBS has concluded a number of ERASMUS mobility agreements with higher education institutions, as shown in Appendix C.3.1.1. Of these, 4 include the domain “061 Information and Communication technologies”; two include the domain “481 Informatics, Computer Sciences”; two include the domain “0610 ICTs”; and one includes the domain “0613 Software and applications development and analysis”.

These domains are relevant to the doctoral study programme in Computers and Information Technology. Additionally, close collaboration in research with higher education institutions in Europe exists, in the context of European R&D projects. This collaboration also allows for mobility of doctoral students abroad, The same holds true with collaboration with Romanian industry. All doctoral students attend international conferences, but international mobility through e.g. the ERASMUS programme is limited.

Recommendations:

1. Stimulate doctoral students to take advantage of the existing research collaboration agreements to spend considerable time abroad, in collaborating academic/research institutions and/or industry.
2. Formulate own (within the doctoral study domain) strategy for international collaboration and further leverage existing research collaborations through EU-funded projects to build strategic alliances with top-tier European and/or international higher education institutions, such alliances to include regular researcher exchanges.

The indicator is fulfilled.

Performance Indicator C.3.1.2. *In the evaluated doctoral study domain, support is granted, including financial support, to the organization of doctoral studies in international co-tutelage or invitation of leading experts to deliver courses/lectures for doctoral students.*

A total of 16 lectures by international invitees were delivered to the students of the doctoral study programme in Computers and Information Technology in the course of the last three years. Of these, 7 lectures were in the thematic area “Engineering of physical-cybernetic systems”, 7 lectures were in the thematic area “medical imaging”, 1 lecture was in the thematic area “Artificial Intelligence, and 1 lecture was in the thematic area “Methods of applying the concept of Design Thinking in the development and implementation of innovative solutions for solving problems involving complex processes”.

Recommendations:

1. Exploit existing international research collaborations towards arranging co-tutelle supervision of doctoral theses.

The indicator is fulfilled.

Performance Indicator C.3.1.3. *The internationalization of activities carried out during the doctoral studies is supported by IOSUD through concrete measures (e.g., by participating in educational fairs to attract international doctoral students; by including international experts in guidance committees or doctoral committees etc.).*

The IOSUD supports the internationalization of doctoral studies by means of a number of initiatives, including membership to doctoral education associations; participation in international educational fairs; and provision of doctoral study scholarships. One of the doctoral advisors of the doctoral study programme in Computers and Information Technology is an international expert of high calibre and reputation.

Recommendations:

1. Increase the international visibility of the doctoral study programme and enhance its promotion, by e.g. improving the quality of the programme website, and keeping it up-to-date (it has not been updated since January 2011); involving more international experts in the supervisory and examination committees of the doctoral students; organizing high calibre scientific conferences in Sibiu etc.

The indicator is fulfilled.

IV. SWOT Analysis

Strengths:	**Weaknesses:**
• Support for the occupation by doctoral students of the positions of university or research assistant; • Doctoral supervisors with national and international visibility; • Existence of several national and international research collaborations with industry and academia; • Affiliation with an interdisciplinary research center of very good standing; • Doctoral advisors active in research and able to attract funded R&D projects.	• High dropout rate among PhD students; • Low number of international doctoral students; • High degree of inbreeding among doctoral students; • Two few doctoral supervisors; • Inadequate promotion of the doctoral study programme; • Low stipend for doctoral students; • Too few areas of research within the domain; • Too few full-time and tenured doctoral advisors; • Too few electives courses in the training component; • The courses of the training component cover only a couple of research areas, whilst core areas of the domain are not covered; • The programme website is not up-to-date; • The doctoral advisors' CVs at the IOSUD website are not up-to-date; • Low number of candidates for admission to the programme; • The number of ECTS credits allocated to the core technical courses of the training component is not commensurate with the effort expected to be required to complete the courses; • Insufficient participation of doctoral students to the student satisfaction survey; • Little information on the programme is available in the English language; • Restrictions/limitations on the use of the similarity check and plagiarism control services;

	• Doctoral students do not take full advantage of existing arrangements for international mobility; • International collaboration agreements for mobility do not follow a well-defined programme-specific strategy; • Few international experts participate in advisory and examination committees of doctoral students; • No co-tutelle supervision arrangements;
Opportunities: • Increased demand for PhD holders in the domain by research organizations, academia, and industry in the domain, internationally and nationally; • Increased -compared to other domains- opportunities for externally funded R&D projects inetrnationally and nationally; • Existence of a large number of high quality academic and research institutions active in the domain, to build strategic alliances with; • Existence of an internationally thriving industry, highly dependent on research and technological innovation, to build strong collaborations with; • The witnessed increasing digitalization of education, which lowers barriers related to geographic location and facilitates building collaborations and international presence and visibility.	**Threats:** • Decreased interest in doctoral studies by master's graduates; • Increased competition between academia and industry; • Existence of strong academic competitors nationally and internationally; • Uncertainty about the continuity of research funding coming from external sources; • Impairement of the access of doctoral students to the research infrastructure, due to the current pandemic; • Decreasing the number of places for doctoral students financed from the state budget.

V. Overview of judgments awarded and of the recommendations

No.	Type of indicator (*, C)	Performance indicator	Judgment	Recommendations
1	C	A.1.1.1	Fulfilled	Yes
2	C	A.1.1.2	Fulfilled	None
3	C	A.1.2.1	Fulfilled	None
4	C	A.1.2.2	Fulfilled	Yes
5	C	A.1.3.1	Fulfilled	Yes
6	*	A.1.3.2	Fulfilled	Yes
7	*	A.1.3.3	Fulfilled	None

8	C	A.2.1.1	Fulfilled	None
9	C	A.3.1.1	Fulfilled	Yes
10	*	A.3.1.2	Fulfilled	Yes
11	C	A.3.1.3	Fulfilled	None
12	*	A.3.1.4	Fulfilled	None
13	C	A.3.2.1	Fulfilled	Yes
14	*	A.3.2.2	Fulfilled	None
15	*	B.1.1.1	Partially Fulfilled	Yes
16	*	B.1.2.1	Fulfilled	Yes
17	C	B.1.2.2	Partially Fulfilled	Yes
18	C	B.2.1.1	Fulfilled	Yes
19	C	B.2.1.2	Fulfilled	None
20	C	B.2.1.3	Fulfilled	None
21	C	B.2.1.4	Fulfilled	None
22	C	B.2.1.5	Fulfilled	None
23	C	B.3.1.1	Fulfilled	None
24	*	B.3.1.2	Fulfilled	None
25	*	B.3.2.1	Fulfilled	None
26	*	B3.2.2	Fulfilled (Not applicable)	None
27	C	C.1.1.1	Fulfilled	None
28	*	C.1.1.2	Partially Fulfilled	Yes
29	C	C.2.1.1	Fulfilled	Yes
30	C	C.2.2.1	Fulfilled	None
31	C	C.2.2.2	Fulfilled	Yes
32	C	C.2.2.3	Fulfilled	None
33	*	C.3.1.1	Fulfilled	Yes
34	C	C.3.1.2	Fulfilled	Yes
35	C	C.3.1.3	Fulfilled	Yes

VI. Conclusions and general recommendations

The doctoral study programme in Computers and Information Technology is currently a small programme, with a few doctoral advisors and a few doctoral students. The quality of the programme is good. The programme does have potential for growth, both in quality and quantity, as the identified strengths can exploit the (rather abundant) opportunities to both mitigate the threats and alleviate most of the weaknesses. Nevertheless, some of the weaknesses appear to be of a more structural nature, meaning that they should be considered at the institutional rather than the programme level. Examples are the establishment of English as the working language of the programme and the stimulation of cross-faculty

collaboration, which would, for example, bring closer the programme with the Center for Informatics Research and Information Technology (ITI), thus facilitating the creation of critical mass.

VII. Annexes

Annex I: The detailed schedule of the evaluation visit.
Annex II: Print screen of the personal pages with the CVs of the doctoral advisors (accessed 02.08.2021)
Annex III: Print screen of the page with the description of the doctoral study programme (accessed 02.08.2021).

ANNEX I

Programul[1] vizitei de evaluare instituțională - IOSUD / domenii de studii universitare de doctorat a **Universității de**
The timetable of the institutional evaluation visit - IOSUD / doctoral study domains at the **UNIVERSITATEA „LUCIAN BLAGA“ DIN SIBIU - „LUCIAN BLAGA“ UNIVERSIY OF SIBIU**

Perioada de derulare a vizitei: 19-23.07.2021
The evaluation period: 19-23.07.2021

Evaluarea Externă Periodică a domeniului de studii universitare de doctorat Calculatoare si Tehnologia informatiei
Periodical External Evaluation of the doctoral study domain_ Computers and Information Technology

Intervalul orar / *Hour* (Romanian Time)	**Activitate / *Activity***	**Participanți / *Participants***	**Observații/ Responsabil** *Comments/ Responsible*
Luni / *Monday*, 19.07.2021			
09:00-09:45	Întâlnire preliminară online pentru pregătirea și armonizarea etapelor de evaluare, în modul mixt, la nivel de domenii de doctorat și IOSUD *Online preliminary meeting for the preparation and harmonization of evaluation steps, in hybrid mode, of doctoral study domains and IOSUD*	**Comisia de evaluare IOSUD&domenii** *IOSUD&domains evaluation panel* - **toți membrii echipei de evaluare** *all evaluation panel members*	Înregistrare audio-video **ARACIS / platforma ZOOM (apăsați aici pentru a vă conecta)** *Audio-video recording ARACIS / ZOOM platform (click here to join)*
10:00-10:45	Întâlnirea online a comisiei de experți evaluatori cu reprezentanții **conducerii universității și ai CSUD** *Online meeting with representatives of the institution and of the Council for Academic Doctoral Studies (CSUD)*	**Comisia de evaluare IOSUD&domenii** *IOSUD&domains evaluation panel* - **toți membrii echipei de evaluare** *all evaluation panel members*	Înregistrare audio-video **ULBS / platforma ZOOM (apăsați aici pentru a vă conecta)** *Audio-video recording ULBS / ZOOM platform*

[1] În perioada vizitei, pot fi solicitate și alte întâlniri, pentru eventuale clarificări.
During the visit, other meetings may be requested for possible clarifications.

Intervalul orar / *Hour* (Romanian Time)	**Activitate / *Activity***	**Participanți / *Participants***	**Observații/ Responsabil** *Comments/ Responsible*
		- reprezentanți ai conducerii *representatives of the University's management* - reprezentanți ai CSUD și ai școlii/școlilor doctorale *representatives of the CSUD and of the Doctoral School /Schools* - persoana de contact IOSUD/domenii *the contact person for IOSUD / doctoral domains*	*(click here to join)*
11:00-12:00	Activități de evaluare *Evaluation activities* **Domeniu de doctorat Calculatoare și tehnologia informației:** Întâlnire online a comisiei de experți evaluatori cu **responsabilul domeniului de studii universitare de doctorat evaluat** și cu echipa care a realizat raportul de evaluare internă *Doctoral study domain Computers and Information Technology: Online meeting with the **contact person for the doctoral study domain under review a**nd the team who drafted the internal evaluation report*	**Comisia de evaluare domeniu** ***Domain evaluation panel*** -membrii comisiei de experți evaluatori domeniu ***members of domain evaluation panel*** - responsabilul domeniului de studii universitare de doctorat evaluat și echipa care a realizat raportul de evaluare internă *The doctoral studies domain contact person and the team who drafted the internal evaluation report*	Înregistrare audio-video **ULBS** / **platforma (apăsați aici pentru a vă conecta)** *Audio-video recording ULBS / ZOOM platform (click here to join)*
13:30-14:30	Activități de evaluare *Evaluation activities* **Domeniu de doctorat Calculatoare și tehnologia informației**: Întâlnire online a comisiei de experți evaluatori cu personalul **didactic aferent domeniului evaluat**	**Comisia de evaluare domeniu** *Domain evaluation panel* -membrii comisiei de experți evaluatori domeniu *members of domain evaluation panel*	Înregistrare audio-video **ULBS** / **platforma (apăsați aici pentru a vă conecta)**

Intervalul orar / *Hour* (Romanian Time)	**Activitate / *Activity***	**Participanți / *Participants***	**Observații/ Responsabil** *Comments/ Responsible*
	Doctoral study domain Computers and Information Technology: Online meeting with the academic staff corresponding to the doctoral study domain	-cadre didactice cu titlul de conducător de doctorat *Doctoral coordinators*	*Audio-video recording ULBS / ZOOM platform (click here to join)*
Marți / *Tuesday*, 20.07.2021			
09:00 - 10:00	Întâlnire online cu membrii **Comisiei de Etică** a universității *Online meeting with the members of the Ethics Commission*	**Comisia de evaluare IOSUD&domenii** *IOSUD&domains evaluation panel* - **toți membrii echipei de evaluare** *all evaluation panel members* -membrii Comisiei de Etică *Ethics Commission members*	Înregistrare audio-video **ULBS / platforma ZOOM (apăsați aici pentru a vă conecta)** *Audio-video recording ULBS / ZOOM platform (click here to join)*
10:15 - 11:15	Activități de evaluare *Evaluation activities* Întâlnire online cu membrii **Comisiei pentru Evaluarea și Asigurarea Calității (CEAC)** / Departamentul de asigurare a calității *Online meeting with the Commission for Quality Evaluation and Assurance (CEAC) members / Quality Assurance Department*	**Comisia de evaluare IOSUD&domenii** *IOSUD&domains evaluation panel* - **toți membrii echipei de evaluare** *all evaluation panel members* - reprezentanți ai CEAC/Departament AC *representatives of Commission for Quality Evaluation and Assurance (CEAC) / Quality Assurance Department*	Înregistrare audio-video **ULBS / platforma ZOOM (apăsați aici pentru a vă conecta)** *Audio-video recording ULBS / ZOOM platform (click here to join)*
11:30– 12:30	Activități de evaluare *Evaluation activities* **DOMENIUL FUNDAMENTAL Științe inginerești** : Întâlnire online a comisiei de evaluare cu **studenții doctoranzi**	**Comisia de evaluare domeniu** *Domain evaluation panel* - membrii comisiei de experți evaluatori domeniu *members of domain evaluation panel*	Înregistrare audio-video **ARACIS / platforma ZOOM (apăsați aici pentru a vă conecta)**

Intervalul orar / *Hour* (Romanian Time)	**Activitate / *Activity***	**Participanți / *Participants***	**Observații/ Responsabil** *Comments/ Responsible*
	fundamental domain ENGINEERING SCIENCES: Online meeting with PhD students	- studenții doctoranzi *PhD students*	*Audio-video recording ARACIS / ZOOM platform (click here to join)*
14:00-15:00	Activități de evaluare *Evaluation activities* **Domeniu de doctorat Calculatoare și tehnologia informației:** Întâlnire online a comisiei de evaluare cu reprezentanți ai **absolvenților domeniului** *Doctoral study domain Computers and Information Technology: Online meeting with graduates for the respective doctoral study domain*	**Comisia de evaluare domeniu** *Domain evaluation panel* - membrii comisiei de experți evaluatori domeniu *members of domain evaluation panel* - reprezentanți ai absolvenților *representatives of doctoral graduates*	Înregistrare audio-video **ULBS** / **platforma (apăsați aici pentru a vă conecta)** *Audio-video recording ULBS / ZOOM platform (click here to join)*
Miercuri / *Wednesday*, 21.07.2021			
09:00-10:00	Activități de evaluare *Evaluation activities* **Domeniu de doctorat Calculatoare și tehnologia informației:** Întâlnire online cu **directorii/responsabilii centrelor/laboratoarelor de cercetare** aferente domeniului de studii universitare de doctorat *Doctoral study domain Computers and Information Technology: Online meeting with the Directors/ persons in charge of the research centers/laboratories within the doctoral study domain*	**Comisia de evaluare domeniu** *Domain evaluation panel* - membrii comisiei de experți evaluatori domeniu *members of domain evaluation panel* -directorii centrelor / laboratoarelor de cercetare *directors of research centers/laboratories*	Înregistrare audio-video **ULBS** / **platforma (apăsați aici pentru a vă conecta)** *Audio-video recording ULBS / ZOOM platform (click here to join)*
11:30 - 12:30	Activități de evaluare *Evaluation activities* **Domeniu de doctorat Calculatoare și tehnologia informației:**	**Comisia de evaluare domeniu** *Domain evaluation panel* - membrii comisiei de experți evaluatori domeniu *members of domain evaluation panel*	Înregistrare audio-video **ULBS** / **platforma ZOOM (apăsați aici pentru a vă conecta)** *Audio-video recording ULBS / ZOOM platform (click here to join)*

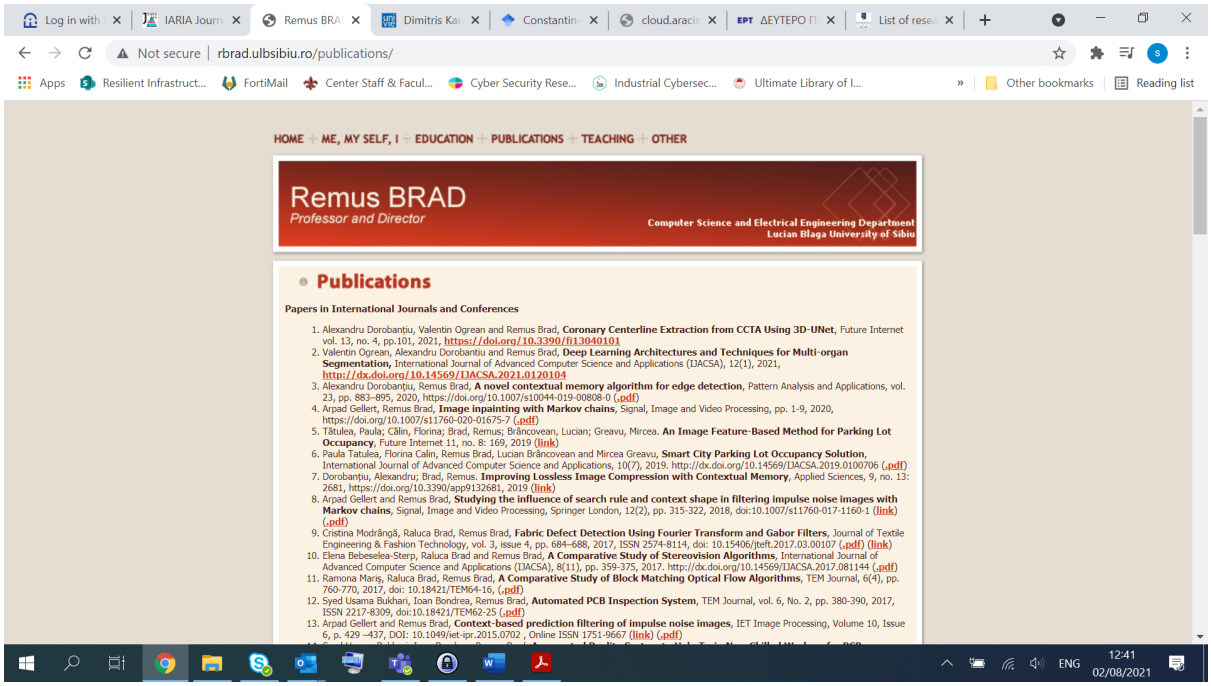
Intervalul orar / *Hour* (Romanian Time)	**Activitate / *Activity***	**Participanți / *Participants***	**Observații/ Responsabil** *Comments/ Responsible*
	Întâlnire online cu membrii Consiliului școlii /școlilor doctorale (CSD) în cadrul cărora funcționează domeniul evaluat *Doctoral study domain Computers and Information Technology: Online meeting with Doctoral Schools Council (CSD members)*	-membrii CSD *CSD's members*	
14:00 - 15:00	Activități de evaluare *Evaluation activities* **Domeniu de doctorat Calculatoare și tehnologia informației**: Întâlnire online a comisiei de evaluare cu reprezentanți **ai angajatorilor absolvenților domeniului** *Doctoral study domain Computers and Information Technology: Online meeting with employers of Doctoral graduates in the domain*	**Comisia de evaluare domeniu** *Domain evaluation panel* - membrii comisiei de experți evaluatori domeniu *members of domain evaluation panel* - reprezentanți ai angajatorilor *employers' representatives*	Înregistrare audio-video **ULBS / platforma (apăsați aici pentru a vă conecta)** *Audio-video recording ULBS / ZOOM platform (click here to join)*
16:30 -17:30	Întâlnire tehnică online, pentru identificarea aspectelor specifice care trebuie clarificate, dacă este cazul, pe parcursul vizitei la fața locului *Online technical meeting to identify specific issues that need to be clarified, if necessary, during the on-site visit*	**Comisia de evaluare IOSUD&domenii** *IOSUD&domains evaluation panel* - **toți membrii echipei de vizită** *all evaluation panel members*	Înregistrare audio-video **ARACIS / platforma ZOOM (apăsați aici pentru a vă conecta)** *Audio-video recording ARACIS / ZOOM platform (Click here to join)*
Joi / *Thursday*, 22.07.2021			

Intervalul orar / *Hour* (Romanian Time)	**Activitate / *Activity***	**Participanți / *Participants***	**Observații/ Responsabil** *Comments/ Responsible*
09:00-18:00	Reuniuni de lucru față în față[2], vizitarea bazei materiale didactice și de cercetare *Face-to-face working meetings, visiting the educational and research infrastructure*	- **directorul de misiune și coordonatorul, un student doctorand evaluator** *the Evaluation Director and the coordinator of the IOSUD evaluation panel, one student* - reprezentanți ai universității *university's representatives*	Vizită UNIVERSITATE *Site visit to the university*
Vineri / *Friday*, 23.07.2021			
11:45-12:45	Întâlnire online pentru concluzii *Online meeting for conclusions*	**Comisia de evaluare IOSUD&domenii** *IOSUD&domains evaluation panel* - **toți membrii echipei de evaluare** *all evaluation panel members*	Înregistrare audio-video **ARACIS / platforma ZOOM (apăsați aici pentru a vă conecta)** *Audio-video recording ARACIS / ZOOM platform(click here to join)*
13:00-14:00	Întâlnire finală online în vederea prezentării principalelor constatări rezultate în urma evaluării la nivel de domenii de doctorat și IOSUD și a recomandărilor de îmbunătățire a calității *Meeting with representatives of the institution under review to discuss on the conclusions of the evaluation process and the main reccomandations*	**Comisia de evaluare IOSUD&domenii** *IOSUD&domains evaluation panel* - **toți membrii echipei de evaluare** *all evaluation panel members* - reprezentanții universității *university's representatives*	Înregistrare audio-video **ULBS / platforma ZOOM (apăsați aici pentru a vă conecta)** *Audio-video recording ULBS / ZOOM platform (click here to join)*

[2] Experții evaluatori la nivelul domeniilor de studii universitare de doctorat pot stabili independent programul vizitei la fața locului, de comun acord cu persoana de contact de la domeniul evaluat și respectând programul întâlnirilor comune cu restul membrilor echipei de evaluare. *The evaluators at doctoral study domain level can independently establish the program of the on-site visit, in agreement with the contact person for the evaluated domain and respecting the schedule of joint meetings with the rest of the evaluation panel members.*


ARACIS

ANNEX II


Log in with
IARIA Journ
Remus BRA
Dimitris Kar
Constantin
cloud.aracis
ΕΡΤ ΔΕΥΤΕΡΟ Π
List of rese
Not secure | rbrad.ulbsibiu.ro/publications/
Apps
Resilient Infrastruct...
FortiMail
Center Staff & Facul...
Cyber Security Rese...
Industrial Cybersec...
Ultimate Library of I...
Other bookmarks
Reading list
HOME + ME, MY SELF, I + EDUCATION + PUBLICATIONS + TEACHING + OTHER
Remus BRAD
Professor and Director
Computer Science and Electrical Engineering Department
Lucian Blaga University of Sibiu
Publications
Papers in International Journals and Conferences
1. Alexandru Dorobanțiu, Valentin Ogrean and Remus Brad, Coronary Centerline Extraction from CCTA Using 3D-UNet, Future Internet vol. 13, no. 4, pp.101, 2021, https://doi.org/10.3390/fi13040101
2. Valentin Ogrean, Alexandru Dorobantiu and Remus Brad, Deep Learning Architectures and Techniques for Multi-organ Segmentation, International Journal of Advanced Computer Science and Applications (IJACSA), 12(1), 2021, http://dx.doi.org/10.14569/IJACSA.2021.0120104
3. Alexandru Dorobanțiu, Remus Brad, A novel contextual memory algorithm for edge detection, Pattern Analysis and Applications, vol. 23, pp. 883–895, 2020, https://doi.org/10.1007/s10044-019-00808-0 (.pdf)
4. Arpad Gellert, Remus Brad, Image inpainting with Markov chains, Signal, Image and Video Processing, pp. 1-9, 2020, https://doi.org/10.1007/s11760-020-01675-7 (.pdf)
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ENG
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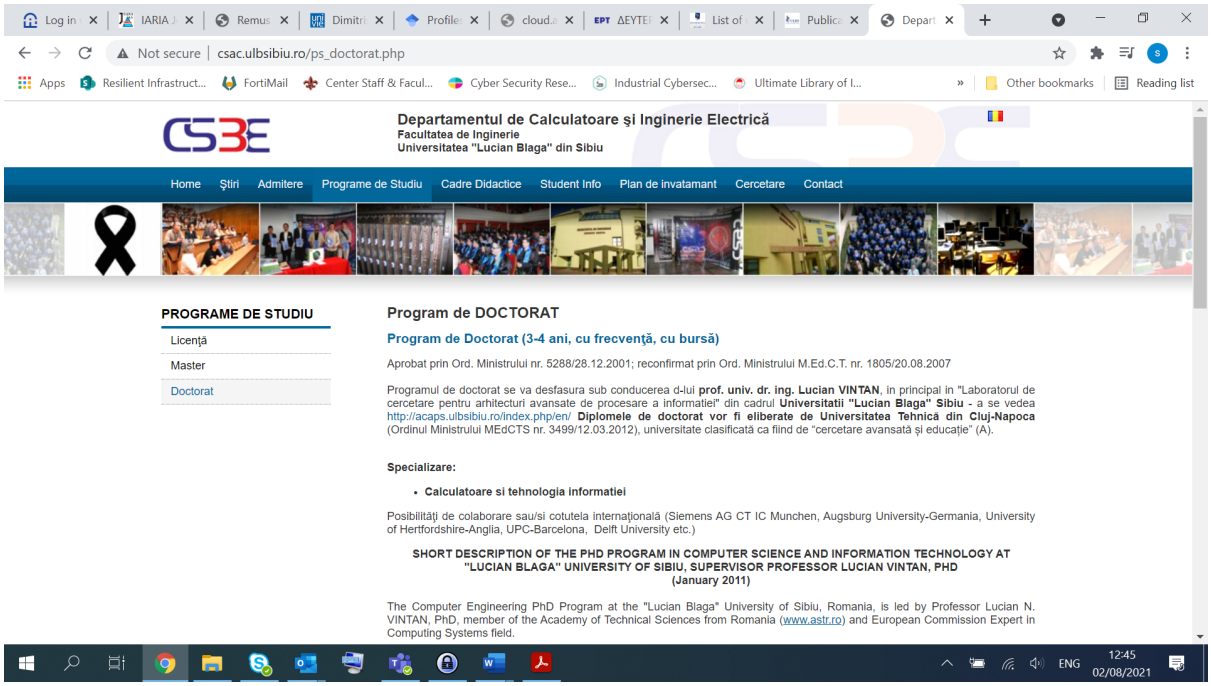
02/08/2021

ANNEX III


Log in
IARIA
Remus
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List of
Public
Depart
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csac.ulbsibiu.ro/ps_doctorat.php
Apps
Resilient Infrastruct...
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Industrial Cybersec...
Ultimate Library of I...
Other bookmarks
Reading list
Departamentul de Calculatoare şi Inginerie Electrică
Facultatea de Inginerie
Universitatea "Lucian Blaga" din Sibiu
Home
Ştiri
Admitere
Programe de Studiu
Cadre Didactice
Student Info
Plan de invatamant
Cercetare
Contact
PROGRAME DE STUDIU
Licenţă
Master
Doctorat
Program de DOCTORAT
Program de Doctorat (3-4 ani, cu frecvenţă, cu bursă)
Aprobat prin Ord. Ministrului nr. 5288/28.12.2001; reconfirmat prin Ord. Ministrului M.Ed.C.T. nr. 1805/20.08.2007
Programul de doctorat se va desfasura sub conducerea d-lui prof. univ. dr. ing. Lucian VINTAN, in principal in "Laboratorul de cercetare pentru arhitecturi avansate de procesare a informatiei" din cadrul Universitatii "Lucian Blaga" Sibiu - a se vedea http://acaps.ulbsibiu.ro/index.php/en/ Diplomele de doctorat vor fi eliberate de Universitatea Tehnică din Cluj-Napoca (Ordinul Ministrului MEdCTS nr. 3499/12.03.2012), universitate clasificată ca fiind de "cercetare avansată şi educaţie" (A).
Specializare:
Calculatoare si tehnologia informatiei
Posibilităţi de colaborare sau/si cotutela internaţională (Siemens AG CT IC Munchen, Augsburg University-Germania, University of Hertfordshire-Anglia, UPC-Barcelona, Delft University etc.)
SHORT DESCRIPTION OF THE PHD PROGRAM IN COMPUTER SCIENCE AND INFORMATION TECHNOLOGY AT "LUCIAN BLAGA" UNIVERSITY OF SIBIU, SUPERVISOR PROFESSOR LUCIAN VINTAN, PHD
(January 2011)
The Computer Engineering PhD Program at the "Lucian Blaga" University of Sibiu, Romania, is led by Professor Lucian N. VINTAN, PhD, member of the Academy of Technical Sciences from Romania (www.astr.ro) and European Commission Expert in Computing Systems field.
ENG
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