Annex No. 3

The External Evaluation Report of a Doctoral Study Domain

Contents

I. Introduction[1]

The doctoral school of which the evaluated doctoral studies field is part: The Doctoral School of Informatics (SD-FII)

This periodic external evaluation report was prepared for the evaluation of the field of doctoral **studies in computer science at the "Alexandru Ioan Cuza" University of Iași.**

Type of evaluation: periodic external evaluation

Period of the evaluation visit: 09 - 17 September 2021.

Composition of the Commission of expert evaluators:

1. **Prof. univ. dr. Anca ANDREICA** , Babes-Bolyai University of Cluj-Napoca - expert evaluator
2. **Prof. univ. Dr. Gabor KISS,** Obuda University, Hungary - international expert
3. **Sebastian-Aurelian ȘTEFĂNIGĂ** , West University of Timișoara- Student-doctoral student

The Doctoral School of Informatics (SD-FII) is a structure created in 2005, following the decision of the UAIC Senate, by Order of the Minister of Education and Research 4491 / 06.07.2005 on the organization and development of doctoral studies starting with the academic year 2005-2006, with the implementation of the transferable credit system in education in Romania. The Doctoral School of Informatics is the continuator of the doctoral education with specific computing machines previously developed within the Faculty of Mathematics. At the Doctoral School of Informatics (SD-FII) the scientific doctoral supervisors and the doctoral students work in the doctoral field of *Informatics.*

[1] Each time when applicable the information shall be presented gender-wise.

The number of doctoral supervisors at SD-FII in the period 2015 - 2020/21 increased from 5 to 8, of which 5 holders and 3 associate doctoral supervisors. Within the Doctoral School there are doctoral supervisors who are tenured at the Faculty of Informatics and 1 associate is tenured at the Romanian Academy, 1 associate at the "Vasile Alecsandri" University of Bacău and the last at the University Paris - East Creteil, Faculty of Sciences and Technologies.

The total number of students - PhD students of SD-FII registered a continuous increase, from 29 in 2015/2016 to 45 in 2020/2021, of which 77 with scholarship and 21 with tuition fee. Also, the number of doctoral students admitted annually has evolved positively, from 4 (2015/2016) to 13 (2020-2021). The total number of doctoral theses defended publicly in the period 2015 - 2020/21 at SD-FII is 10, the graduates obtaining grades from "Good" (Cum Laude) to the grade "Excellent" (Summa Cum Laude). Regarding the language of the thesis, all 10 theses were defended in English.

II. Methods used

This chapter will contain the methods and tools used in the external evaluation process, before and during the evaluation visit, including at least:

• The analysis of the internal evaluation report of the doctoral study domain under review and its Annexes;

• The analysis of documents made available by the IOSUD, in physical format, during the evaluation visit (if such documents have been requested);

• The analysis of documents, data and information available on the IOSUD/Doctoral School(s) website, in electronic format;

• Visiting the buildings included in the institution's property, comprising (indicative and non-exhaustive list, which shall be changed according to the context):

- classrooms;
- laboratories;
- the institution's library;
- research centers;
- the Career Counselling and Guidance Center;
- lecture halls for students;
- the student residences;
- the student cafeteria;
- sports ground etc.;

• Meeting/discussions with doctoral students in the doctoral study domain under review;

• Meeting/Discussions with the graduates of the doctoral study domain under review;

• Meeting/Discussions with employers of the graduates in the doctoral study domain under review;

• Meeting/Discussions with the school officials of the Doctoral School(s) in which the doctoral study domain under review is operating;

• Meeting/Discussions with the doctoral advisors in the doctoral study domain under review;

• Meeting/discussions with the representatives of the various structures of the IOSUD/Doctoral School(s) in which the doctoral study domain under review is operating:

- The Council of the Doctoral School, the University Senate, 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);
- the Career Counselling and Guidance Center;
- student organizations;
- secretariats;
- various departments/administrative offices (Social/Student residences-Cafeterias etc.);

• Application of questionnaires to doctoral students or academic staff in the doctoral study domain under review.

III. Analysis of ARACIS performance indicators

Domain A. INSTITUTIONAL CAPACITY

All 14 indicators that are part of Domain A were met. Institutional capacity.

Criterion A.1. Institutional administrative, managerial structures and financial resources

The analysis of the criterion was based on the self-assessment file submitted to ARACIS, as well as on the browsing of the documents available online on the SD / IOSUD / UAIC page, on the discussions held online and on-site during the visit September 9-17, 2021.

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

Following the analysis of the fulfillment of the indicators that are included in this standard, it is considered that IOSUD UAIC, as well as the Doctoral School of Informatics and (SD-FII) that manages the evaluated doctoral field (Informatics) have implemented and efficiently use the legal mechanisms for organizing university studies. doctorate. There are and are applied specific regulations, methodologies and procedures that cover all areas related to the organization and efficient functioning of the Doctoral School and the Doctoral Field of Informatics.

It is appreciated that the standard is met.

Performance indicator A.1.1.1. ***Existence of specific regulations and their application at the level of the doctoral school of which the field of doctoral university studies is part:***

a) doctoral school regulations;

The existence of the following documents is noted:

- Institutional regulation for the organization and conduct of doctoral studies (Senate Decision 30.04.2020) within IOSUD-UAIC (Annex 12.1.6.Regulament_IOSUD_2020_2021)
- Regulations of the Doctoral School of the Faculty of Informatics from the "Alexandru Ioan Cuza" University of Iași (2018) (Annex 12.1.8.Regulament_SD-FII_2018) and on the website of the Doctoral School:

https://www.info.uaic.ro/wp-content/uploads/2020/12/Regulament-ScDoc-Info-2018.pdf

b) the methodology for conducting the elections for the position of director of the Doctoral School Council (CSD), as well as the election by the students of the representative in the CSD, and evidence of their development;

The last elections took place in 2020. Both at the level of IOSUD and at the level of SD-FII was applied the Methodology for conducting the competition for the position of Director of the Council of Doctoral Studies (CSUD) from IOSUD -UAIC (Annex 1.15. 3.MethodologyConcourseDirectorCSUD_UAIC_2020-2024), Methodology for organizing the elections of the members of the Council of Doctoral Studies (CSUD) from IOSUD -UAIC (Annex 1.15.6.MethodologyDesignationMembersCSUD_UAIC_2020-2024)

The following evidence of election organization is found:

- CSUD director elections (Annex 1.15.3.MethodologyContestDirectorCSUD_UAIC_2020-2024, and Annex 1.3.H.SenateNumberDirectorCSUD_2020-2022)
- Election of SD-FII director (Annex 1.15.3.MethodologyContestDirectorCSUD_UAIC_2020-2024 and Annex 1.6.DecisionAppointment of DirectorCSDFII_2020-2022)
- Elections for the student representative in CSUD (Annex 1.15.6.MethodologyDesignationMembersCSUD_UAIC_2020-2024 and Annex 1.9.PV_AlectionDoctoranziCSUD_2018-2020)
- Elections for the student representative in CSD-FII (Annex 1.15.6.MethodologyDesignationMembersCSUD_UAIC_2020-2024 and Annex 1.12.PV_AlegereDoctorandCSDFII_2020)

c) methodologies for organizing and conducting doctoral studies (admission of doctoral students, completion of doctoral studies);

The existence of the following documents is noted:

- The methodology regarding the organization and development of the admission in the doctoral studies cycle for the academic year 2020-2021 (Annex 12.2.7.MethodologyAdmissionDoctorate_2020-2021 and on the UAIC website https://www.uaic.ro/wp-content/uploads/2020/ 02 / METHODOLOGY-ADMISSION-DOCTORATE-2020-2021.pdf)

- *The operational procedure regarding the completion of doctoral university studies, submission of the doctoral thesis for public* defense *online (Annex* 12.8.ProcedureSubstantiationPublicOnlineDoctoral Thesis_SenateUAIC_2020 and on the website of the SD-FII Doctoral School https://www.info.uaic.ro/wp-c /2021/02/procuctura_sustinere_publica_online_teza_de_doctorat_aprobata_senat-SD-FII.pdf)
- *Operational Procedure on online assessment reports of the doctoral research program (Appendix* 12.7.ProceduraEvaluareOnlineRapoarteCercetareDoctoranzi_SenatUAIC_2020 and on the website of the Doctoral School SD-BE https://www.info.uaic.ro/wp-content/uploads/2021/02 /procedure_evaluation_online_reports_research_doctorates_approved_senate-SD-FII.pdf)

d) the existence of mechanisms for the recognition of the quality of doctoral supervisor and

equivalence of the doctorate obtained in other states;

The existence of the following documents is noted:

- *The procedure for recognizing the quality of doctoral supervisor obtained in accredited educational institutions from abroad* (Annex 12.3.1 . //www.uaic.ro/studii/studii-universitare-de-doctorat/procuctura-de-recunoastere-a-calitatii-de-conducator-de-doctorat-obtinuta-in-institutii-de-invatamant-acreditate-din- abroad /)
- *The procedure for recognizing the diploma and doctoral degree obtained in accredited educational institutions from abroad* (Annex 12.3.2. Procedure-for-recognition-of-the-diploma-and-doctoral-degree-2017 and on the UAIC website *https : //www.uaic.ro/studii/studii-universitare-de-doctorat/procuctura-de-recunoastere-a-diplomei-si-a-titlului-de-doctor-obtinute-in-institutii-de-invatamant-acreditate -from-abroad /)*
- Ministerial Order no. 6129 of 20.12.2016 (Annex 12.12.Minister OrderNo_6129_2016)
- CNRED documents - National Center for Recognition and Equivalence of Diplomas (https://cnred.edu.ro/ro/recunoasterea-diplomei-de-doctor-si-a-titlului-de-doctor-in-stiinte-sau-intr- a-professional-field)

e) functional management structures (Doctoral School Council), proving also the regularity of convening meetings;

The existence of the following documents is noted:

- the minutes of the meetings of the Council for Doctoral Studies are (Annex 11.2. Minutes_CSUD)
- minutes of the meetings of the Council of the Doctoral School of Informatics (Annex 11.1. Minutes_CSD-FII)

f) the doctoral university contract;

The existence of the following documents is noted:

- Doctoral university study contracts for the period 2015-2020 (Annex 13.1.Study Contracts)

g) internal procedures for analysis and approval of proposals on the subject of the training program based on advanced university studies.

- The mentioned procedures are described in the Regulations of the Doctoral School of Informatics (Annex 12.1.8.Regulament_SD-FII_2018) (Chapter III.2) The topics of the doctoral study programs are established through direct discussions and consultations between the doctoral student and the scientific director during the admission period. , the topic to be specified is the study contract. The members of the Council of the Doctoral School of Informatics approve the Advanced University Training Program (PPUA).

Recommendations: Not applicable.
The indicator is fullfilled**.**

Performance indicator A.1.1.2. The regulations of the doctoral school include criteria, procedures and mandatory standards for the aspects specified in art. 17, para. (5) of the Government Decision no. 681/2011 on the approval of the Code of doctoral studies, with subsequent amendments and completions.

The existence of the following documents is noted:

- Regulations of the Doctoral School of Informatics (Annex 12.1.8.Regulament_SD-FII_2018 and on the website of the Doctoral School SD-FII https://www.info.uaic.ro/regulamente-formulare-scoala-doctorala/)
- The institutional regulation for the organization and development of doctoral university studies (Senate Decision 30.04.2020) (valid 2020-2021) within IOSUD-UAIC (Annex 12.1.6.Regulament_IOSUD_2020_2021 and on the website of the Doctoral School SD-FII https: / /www.info.uaic.ro/regulamente-formulare-scoala-doctorala/)

The analysis of those regulations shows that they include mandatory criteria, procedures and standards covering at least the following aspects:

a) the acceptance of new doctoral supervisor members, as well as regulations regarding the way in which a doctoral supervisor can be revoked as a member of the doctoral school;
b) the decision-making mechanisms regarding the appropriateness, structure and content of the training program based on advanced university studies;
c) the procedures for changing the doctoral supervisor of a certain doctoral student and the procedures for mediating conflicts;
d) the conditions under which the doctoral program may be interrupted;
e) ways to prevent fraud in scientific research, including plagiarism;
f) ensuring access to research resources;
g) attendance obligations of doctoral students.

Recommendations: Not applicable.
The indicator is fullfilled**.**

Standard A.1.2. IOSUD has the logistical resources necessary to fulfill the mission of doctoral studies.

Following the analysis of the fulfillment of the indicators that are included in this standard, it is considered that IOSUD UAIC, as well as the Doctoral School of Informatics (SD-FII) that manages the evaluated doctoral field (Informatics) have the necessary logistics: there is an adequate IT system. doctoral students and their academic background (Esims), as well as a computer program (Turnitin) to verify the percentage of similarity in all doctoral theses.

It is appreciated that the standard is met.

Performance indicator A.1.2.1. ***The existence and effectiveness of an adequate computer system for the record of doctoral students and their academic career.***

The student management system implemented at the "Alexandru Ioan Cuza" University of Iași allows the management, in an integrated way, of the data related to all enrolled students , regardless of the study cycle, through a specialized software system (Annex 12.4.ESims and the website https://simsweb.uaic.ro/eSIMS/).

Recommendations: Continue the development of the Esims system, in order to be connected with the main platforms for the visibility of their scientific results (Publons, SCOPUS, Google Scholar, etc.)
The indicator is fullfilled**.**

Performance indicator A.1.2.2. ***Existence and use of a computer program and evidence of its use to verify the percentage of similarity in all doctoral theses.***

Within the doctoral field Informatics, as within all doctoral fields from IOSUD UAIC, for checking the percentage of similarity in doctoral theses, the TURNITIN software system is mandatory (Annexes Annexes 17.4.ContractTurnitin2018, 17.5.ContractTurnitin2019 and 17.6.20contract) .

Recommendations: It's not necessary.
The indicator is fullfilled**.**

Standard A.1.3. IOSUD ensures that financial resources are used optimally, and revenues from doctoral studies are supplemented by funding in addition to that provided by the government .

Of the 3 indicators included in this standard, all 3 are met. Thus, there are 9 research and institutional development grants obtained by doctoral supervisors in the last 5 years (A.1.3.1.), The percentage of doctoral students has benefited from at least 6 months from other sources of funding, other than government funding (A .1.3.2.) Is 23%, compared to the required (20%) and the percentage of IOSUD UAIC investment to finance the training expenses of doctoral students (A.1.3.3.) Is reached (14.29%), compared with the minimum necessary (10%), highlighting a significant effort of financial support for doctoral students.

Performance indicator A.1.3.1. ***Existence of at least one research or institutional development grant / human resources in implementation at the time of submitting the self-assessment file, per doctoral field of study or existence of at least 2 research or institutional development grants / human resources per field of doctoral studies obtained by doctoral supervisors in the field evaluated in the last 5 years. The grants address topics relevant to the field and, as a rule, are carried out with the involvement of doctoral students.***

In the field of *Informatics* , in the last 5 years, the doctoral supervisors have coordinated several research or institutional development grants, national and international projects . At the time of the evaluation, 3 research grants are in progress. PhD students are also involved in these grants within topics relevant to the field of Informatics (Annex 14.2.Research_Projects_ParticipationDoctoral Students_2015-2020)

Recommendations: Encourage doctoral students to participate both in project development teams and as members of their implementation teams.
The indicator is fullfilled**.**

*Performance indicator * A.1.3.2.* ***The proportion of doctoral students existing at the time of the evaluation, who benefit for a minimum of six months from sources other than government funding, through scholarships granted by individuals or legal entities or are financially supported by research or institutional development / human resources grants, is the at least 20%.***

At the request of the Evaluation Committee, the coordinator of the evaluated doctoral field provided up-to-date data for the doctoral students existing at the time of the evaluation:

- PhD students existing at the time of evaluation: 39.
- PhD students who have benefited from sources of funding other than government funding: 9 PhD students who have received financial support for doctoral activities from their employers, in the form of scholarships, funding for research projects, use of material and logistical basis for research, etc. . Names of beneficiary doctoral students: Crăciun Vlad Constantin, Anton Dan Gabriel, Popoiu George, Marculeț Dan Georgian, Leonte Mihai, Postolachi Nicolae, Simion Ciprian Alin, Stoleru Georgiana Ingrid, Lupascu Marilena. (Annexes: 14.3.Doctoral students Beneficiaries Bitdefender Resources, 14.2.Research_Participation Projects Doctoral Students_2015-2020 and 4.1.Scientific Activity Doctoral Students_SD-FII_2015-2020)
- Result percentage: 23%.

Recommendations: Increase the proportion of PhD students in the field of Informatics to benefit for at least 6 months from other sources of funding: their inclusion in research projects, institutional development projects and human resources, obtaining private scholarships, partnerships with environmental agents business to provide them with scholarships or financial support to solve through doctoral theses the problems they face.
The indicator is fullfilled**.**

*Performance indicator * A.1.3.3.*[2] ***At least 10% of the total amounts related to doctoral grants obtained by the university through institutional contract and tuition fees collected***

from doctoral students in the form of paid education shall be used to reimburse the training expenses of doctoral students (participation in conferences, summer schools, courses, internships abroad, publication of specialized articles or other specific forms of dissemination, etc.).

Compared to the amounts from doctoral grants and tuition fees, a percentage of **14.29%** resulted , according to the data in **Table 4.1_6** , the indicator being met. The situation of the mobility of PhD students within SD-FII was numerous, with over 70 participations in the period 2015-2020 (Annex 14.5.SituatieMobilitatiDoctoranzi_SD-FII_2015-2020).

Recommendations: Not applicable.
The indicator is fullfilled**.**

Criterion A.2. Research infrastructure

The analysis of the criterion was based on the self-assessment file submitted to ARACIS, as well as on the browsing of the documents available online on the SD / IOSUD / UAIC page, on the discussions held online and on-site during the visit September 9-17, 2021.

Standard A.2.1. IOSUD / doctoral schools have a research infrastructure to support the development of activities specific to doctoral studies.

Following the analysis of the fulfillment of the indicators, corroborated with the observations made by the on-site visit, it is estimated that IOSUD UAIC as well as the Doctoral School managing the evaluated field (SD FII), have a research infrastructure (material base) of the highest level. allows the realization in very good conditions of the activities specific to doctoral studies.

It is appreciated that the standard is met.

Performance indicator A.2.1.1. ***The spaces and material endowment of the doctoral school allow the realization of research activities in the evaluated field, in accordance with the mission and objectives assumed (computers, specific software, equipment, laboratory equipment, library, access to international databases, etc.). The research infrastructure and the offer of research services are presented publicly through a profile platform. The research infrastructure described above, acquired and developed in the last 5 years, will be highlighted separately.***

Following the consultation of the existing documents in the file (Annex 7.4.Spatii_SD-FII, Annex 7.3.LicenteSoftware_SD-FII_2015-2020) and the on-site visit, it is appreciated that the material base to which doctoral students have access in the field of Informatics (computers, specific software, equipment, laboratory equipment, library, access to international databases, etc.) is in line with the mission and objectives assumed. The research infrastructure is available to doctoral students on the Doctoral School website (https://www.info.uaic.ro/resurse/).

At the request of the evaluation commission, the SD-FII coordinator provided data on the research infrastructure acquired and developed in the last 5 years (Annex 7.2.Expenditure_Laboratory_Support_SD-FII_2015-2020).

Recommendations: Presentation of the research infrastructure available to doctoral students on the ERRIS platform.
The indicator is fullfilled**.**

Criterion A.3. The quality of human resources

The analysis of the criterion was based on the self-assessment file submitted to ARACIS, as well as on the browsing of the documents available online on the SD / IOSUD / UAIC page, on the discussions held online and on-site during the visit September 9-17, 2021.

Standard A.3.1. At the level of each field there are qualified staff with the necessary experience to carry out the doctoral studies program .

Of the four indicators related to this standard, all 4 are met. Thus, within the doctoral field, 8 qualified doctoral supervisors carry out their activity, all of whom meet (100%) the minimum standards of CNADTCU. Of these, 5 (62.8%) are holders within IOSUD.

The disciplines in the training program based on advanced university studies in the field of Informatics were and are still supported by teachers who have the quality of doctoral supervisor, professor, scientific researcher I or associate professor (A.3.1.3.).

Regarding the share of doctoral supervisors who coordinate more than 8 doctoral students at the same time, but not more than 12 (A.3.1.4.), There is 1 doctoral supervisor who coordinates more than 8 doctoral students and the weight is 12 , 5%, without exceeding the maximum provided (20%).

It is appreciated that the standard is met.

Performance indicator A.3.1.1. Within the doctoral field, at least three doctoral supervisors work and at least 50% of them (but not less than three) meet the minimum CNATDCU standards in force at the time of the evaluation, necessary and mandatory to obtain the certificate of qualification .

Within the doctoral field of Informatics, 8 doctoral supervisors work. All 8 have been qualified and meet the minimum CNATDCU standards (100% percentage). (Annex 3.1.4.EvalCNATDCU_AlboaieLenuta Annex 3.2.4.EvalCNATDCU_CiobanuGabriel Annex 3.4.5.EvalCNATDCU_CristeaDan Annex 3.3.4.EvalCNATDCU_CrisanGloriaCerasela Annex 3.5.4.EvalCNATDCU_DimaCatalin Annex 3.6.5.EvalCNATDCU_IfteneAdrian Annex 3.7.5.EvalCNATDCU_LucanuDorel, Annex 3.8.3.EvalCNATDCU_LuchianHenri)

Recommendations : Increasing the number of doctoral supervisors, in order to consolidate the Informatics field within UAIC.

The indicator is fullfilled**.**

*Performance indicator * A.3.1.2.* ***At least 50% of the doctoral supervisors in the evaluated doctoral field are holders within IOSUD, employed with the conclusion of an employment contract for an indefinite period.***

Within the doctoral field of Informatics, 5 of the 8 doctoral supervisors (62.8%) are holders within IOSUD, having an employment contract for an indefinite period.

Recommendations: Increasing the number of doctoral supervisors by enabling tenured teachers in the UAIC, to consolidate the field of Informatics, within the university.
The indicator is fullfilled**.**

Performance indicator A.3.1.3. ***The disciplines in the training program based on advanced university studies related to the field are supported by teachers or researchers who have the quality of doctoral / qualified supervisor, professor / CS I or associate professor / CS II with proven expertise in the field of taught subjects or other specialists in field that meet the standards set by the institution for the teaching and research functions mentioned above, in accordance with the law.***

Teachers who support the disciplines in the training program based on advanced university studies related to the field of Informatics, have the quality of doctoral supervisor and / or are professor / CS I or associate professor / CS II with proven expertise in the field of taught subjects or other specialists in the field which meet the standards set by the UAIC (Annex 3.DoctorateDoctoral_SD-FII).

Recommendations: Not applicable.
The indicator is fullfilled**.**

*Performance indicator * A.3.1.4.* ***The share of doctoral supervisors who coordinate at the same time more than 8 doctoral students, but not more than 12, who are in the period of doctoral studies[3] , does not exceed 20%.***

The analysis of the Self-Assessment Report (**Table 4.1_ 8 and Table 4.1_ 9**) shows the following percentages regarding the doctoral supervisors in the field of Informatics, regarding the coordination of doctoral students:

- More than 8, but not more than 12: 1/8 x 100 = 12.5%;
- More than 8: 0/8 x 100 = 0%;
- More than 12: 0/8 x 100 = 0%.

Recommendations: Limit the number of doctoral students admitted by professors who exceed this upper limit, etc.) and support the empowerment of new doctoral supervisors in the field, to cover the growing demand for the evaluated doctoral field.
The indicator is fullfilled**.**

Standard A.3.2. The doctoral supervisors within the field carry out an internationally visible scientific activity.

The analysis of the fulfillment of the indicators shows that all doctoral supervisors in the field of Informatics are particularly visible internationally, carrying out a sustained, high-level scientific activity. All indicators in this standard are met.
It is appreciated that the standard is met.

Performance indicator A.3.2.1. ***At least 50% of the doctoral supervisors in the field subject to evaluation present at least 5 publications indexed Web of Science or ERIH in journals with impact factor or other achievements, with relevant relevance for the respective field in which there are international contributions that reveal a progress. in scientific research - development - innovation for the evaluated field. The mentioned doctoral supervisors have international visibility in the last five years, consisting in: the quality of member in the scientific committees of the international publications and conferences; membership in the boards of international professional associations; the quality of a guest at conferences or groups of experts held abroad or the quality of a member of commissions for the defense of doctoral theses at foreign universities or in co-supervision with a foreign university. For the arts and sciences of sport and physical education, the doctoral supervisors will prove the international visibility in the last five years by being a member of the boards of professional associations, by being a member of the organizing committees of artistic events and international competitions, respectively by membership in juries or arbitration teams in artistic events or international competitions.***

The analysis of the Self-Assessment Report shows that all 8 doctoral supervisors (100%) in the field of Informatics present at least 5 publications indexed Web of Science or ERIH in journals with impact factor or other achievements, with relevant significance for the field, in which they are found. international level contributions that reveal a progress in scientific research - development - innovation for the field and have international visibility in the last five years (Annex 3.14. Synthesis of Activity

Recommendations: Not applicable.
The indicator is fullfilled**.**

*Performance indicator * A.3.2.2.* ***At least 50% of the doctoral supervisors assigned to a field of doctoral studies continue to be scientifically active, obtaining at least 25% of the score required by the minimum CNATDCU standards in force at the date of evaluation, necessary and mandatory to obtain the certificate of qualification, on based on scientific results from the last five years.***

The analysis of the Self-Assessment Report shows that all 8 doctoral supervisors (100%) working in the field of Informatics meet this criterion (Annex 3.15.SynthesisEvaluationCNATDCU_ConductorsDoctorateSD-FII).

Recommendations *:* Not applicable.
The indicator is fullfilled**.**

Domain B. EDUCATIONAL EFFECTIVENESS

11 of the 12 indicators that are part of Domain B were met. Educational effectiveness (Indicator * B.3.2.2. Is partially met). Thus, the threshold of 0.3 related to the number of participations for external references (* B.3.2.2.) Is exceeded by 2 external references, prof. Univ. dr. Dan Simovici and prof. univ. Dr. Daniela Zaharie. This is due to the fact that the above-mentioned references have important contributions in the specific field of the thesis in which there are related topics, to which the same referent can compare and appreciate the level of originality and relevant contribution.

Criterion B.1. The number, quality and diversity of the candidates who applied for the admission competition

All 12 indicators related to the field of educational effectiveness are met. Thus, the candidates who apply for the admission competition for the PhD field in Informatics are in an adequate number, diverse and of a high quality. The content of the doctoral study programs in the field of Informatics is appropriate and meets all the rigors.

Standard B.1.1. The institution organizing doctoral studies has the capacity to attract candidates from outside the higher education institution or in greater numbers than the number of places financed from the state budget.

The ratio between the number of master's degree graduates of other higher education institutions in the country or abroad who have registered for 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 within the field of doctoral studies Informatics is 0.595. Thus, the indicator related to standard B.1.1. is fulfilled.

It is appreciated that the standard is met.

*Performance indicator * B.1.1.1.* ***The ratio between the number of master's degree graduates of other higher education institutions in the country or abroad who have registered for the competition for admission to doctoral studies in the last five years and the number of places financed from the state budget put up for competition in the field of doctoral studies is at least 0.2 or the ratio between the number of candidates in the last five years and the number of places financed from the state budget put up for competition in the field of doctoral studies is at least 1.2.***

From the analysis of the Self-evaluation Report it is found that for the Informatics field the ratio is 0.36 (Table 4.2_1).

Recommendations: It is recommended to maintain the current trend, through promotional actions to attract master's degree graduates from other higher education institutions in the country or abroad to enter the admission competition.
The indicator is fullfilled**.**

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

From the analysis of the 2 indicators related to the standard (both met), it appears that admission to doctoral studies is based on selection criteria that ensure academic, research and professional performance. Coupled with the 16% expulsion rate of PhD students, including after dropping out of school 3 years after admission, demonstrates compliance with standard B.1.2.

*Performance indicator * B.1.2.1.* ***Admission to doctoral study programs is based on selection criteria that include: the academic, research and professional performance of the candidates, their interest in scientific or artistic / sports research, publications in the field and a research topic proposal. . An interview with the applicant is a mandatory part of the admission procedure.***

According to the Admission Methodology within IOSUD UAIC (Annex 12.2.7.MethodologyAdmissionDoctorate_2020-2021), the interview with the candidates is mandatory for the admission procedure. The selection criteria include: the academic, research and professional performance of the candidates, their interest in scientific research, publications in the field and a research topic proposal.

Recommendations: Not applicable.
The indicator is fullfilled**.**

Performance indicator B.1.2.2. ***The expulsion rate of doctoral students, including after dropping out of studies, at 3, respectively 4 years after admission[4] , does not exceed 30%.***

For the PhD field in Informatics, the dropout rate of doctoral students 3 years after admission does not exceed 30% (**16%**).

Recommendations: Take medium / long term measures to maintain a low level of expulsion of students in the field of Informatics.
The indicator is fullfilled**.**

Criterion B.2. The content of doctoral university study programs

The analysis of the criterion was based on the self-assessment file submitted to ARACIS, as well as on the browsing of the documents available online on the SD / IOSUD / UAIC page, on the discussions held online and on-site during the visit September 9-17, 2021.

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

All 5 indicators related to standard B.2.1. are satisfied. The training program based on advanced university studies (PPUA) includes at least 3 disciplines for training in scientific research of doctoral students, of which at least one discipline is intended for research methodology and another ethics in scientific research. There are mechanisms at the SD-FII level to ensure that the PPUA program targets learning outcomes. Doctoral students also

benefit from the advice of functional steering committees, in which an adequate number of members participate. (Annex 10.1.SD-FII_PlanuriDeInvatamant_2015-2021 and Annex 13.2.6.PPUA_2020_2021)

It is appreciated that the standard is met.

Performance indicator B.2.1.1. ***The training program based on advanced university studies comprises at least three disciplines relevant for the training of scientific students in scientific research, of which at least one discipline is intended for the in-depth study of research methodology and / or statistical data processing.***

The individual program of advanced university training (PPUA) in SD-FII includes 4 compulsory disciplines, of which 2 are specialized disciplines, established by the doctoral supervisor and 2 are disciplines that ensure transversal competences: Ethics and academic integrity and Methods and methodologies in computer science research according to Annex 10.1.SD-FII_PlanuriDeInvatamant_2015-2021.

Recommendations: Not applicable.
The indicator is fullfilled**.**

Performance indicator B.2.1.2. ***There is at least one discipline dedicated to ethics in scientific research and well-defined intellectual or thematic property on these topics within a discipline taught in the training program.***

The individual program of advanced university training (PPUA) also includes at SD-FII the discipline Ethics and academic integrity. The Ethics and Academic Integrity discipline is provided in the Individual Advanced University Training Program (PPUA) as a compulsory discipline for all first year doctoral students, and the discipline sheet is attached in Annexes 10.1.5.Ethics_and_Academic Integrity to the Self-Assessment Report.

Recommendations: Not applicable.
The indicator is fullfilled**.**

Performance indicator B.2.1.3. ***IOSUD has created the mechanisms to ensure that the training program based on advanced university studies, related to the evaluated field, aims at "learning outcomes", specifying the knowledge, skills and responsibility and autonomy that doctoral students should acquire after completing each discipline. or through research activities*** [5] **.**

The Doctoral School of Informatics (SD-FII) aims at acquiring the knowledge, abilities / skills, competences, as well as the responsibility and autonomy acquired by each doctoral student after completing the training program through the guidance committee consisting of at least three members who analyze the doctoral student's activity drawing up minutes of the papers presented by him according to the individual training plan.

Recommendations: Not applicable.
The indicator is fullfilled**.**

Performance indicator B.2.1.4. ***Throughout the doctoral training period, doctoral students in the field benefit from the counseling / guidance of some functional guidance commissions, aspect reflected by guidance and points of view expressed in writing or regular meetings.***

Students benefit from the counseling / guidance of functional guidance commissions, as follows:

- On the occasion of the presentation of the papers;
- During meetings scheduled in the period between the presentations of the papers;
- For writing articles, etc.

Recommendations: Not applicable.
The indicator is fullfilled**.**

Performance indicator B.2.1.5. ***For a field of doctoral studies, the ratio between the number of doctoral students and the number of teachers / researchers providing guidance should not exceed 3: 1.***

Nr. total number of PhD students enrolled in Computer Science: 45;

- Nr. of doctoral supervisors: 8;
- Total number of teachers / researchers providing guidance: 33;
- The ratio between the number of doctoral students and the number of teachers / researchers who provide guidance = 45/33 = **1.36** .

(Annex 4.5.Component of the Guidance Commission_SD-FII_2015-2020).

Recommendations: Ensuring the guidance of doctoral students by competent guidance committees formed by experts in the field, mainly from outside IOSUD-UAIC, to ensure the objectivity and enrichment of the content of the scientific guidance of doctoral students.
The indicator is fullfilled**.**

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

The analysis of the criterion was based on the self-assessment file submitted to ARACIS, as well as on the browsing of the documents available online on the SD / IOSUD / UAIC page, on the discussions held online and on-site during the visit September 9-17, 2021.

Standard B.3.1. The research is capitalized by doctoral students through presentations at scientific conferences, scientific publications, through technology transfer, patents, products, service orders.

Research is recovered by SD-BE PhD students of the scientific conference presentations and scientific publications as shown in Annexes 4.1.ActivitateStiintificaDoctoranzi_SD-FII_2015-2020 14.5.SituatieMobilitatiDoctoranzi_SD-FII_2015-2020.pdf respectively , and the synthesis shown in **Table 4.2_5** .

In the analyzed period 2015-2020 at the level of SD-FII were defended 10 theses in the field of Informatics, so that the two indicators that make up the standard B.3.1. are satisfied.

It is appreciated that the standard is met.

Performance indicator B.3.1.1. ***For the evaluated field there is at least one article or other relevant contribution per doctoral student who has obtained the title of doctor in the last 5 years. From this list, the members of the evaluation commission select for analysis, at random, 5 such relevant articles / contributions per field of doctoral studies. At least 3 of the selected articles have significant original contributions in the field concerned.***

The analysis of the Self-Assessment Report shows that for the Informatics field there is at least one article or another relevant contribution per doctoral student who has obtained the doctorate in the last 5 years and the selected articles present significant original contributions in the targeted field.

Recommendations: Not applicable.
The indicator is fullfilled**.**

*Performance indicator * B.3.1.2.* ***The ratio between the number of presentations of doctoral students who completed their doctoral studies in the evaluated period (last 5 years), including those of poster type, exhibitions, made at prestigious international events (held in the country or abroad) and the number of students PhD students who have completed their doctoral studies in the evaluated period (last five years) is at least equal to 1.***

The analysis of the Self-Assessment Report shows that the ratio between the number of participations in conferences held in the country or abroad of the 10 PhD students of SD-FII who obtained a doctorate in 2015-2020 is higher than 1, as well as and relevant contributions in the field of Informatics (Annex 5.Doctors-In-Informatics)

Recommendations: Not applicable.
The indicator is fullfilled**.**

Standard B.3.2. the Doctoral school appeals to a significant number of external scientific references in the commissions for public defense of doctoral theses for the analyzed field.

From the analysis of the 2 indicators related to the standard (B.3.2.1. Fulfilled and B.3.2.2. Partially fulfilled), it results that the Doctoral school appeals to a significant number of external scientific references in the commissions for public defense of doctoral theses for the field Informatics.

Thus, the threshold of 0.3 related to the number of participations for external references (* B.3.2.2.) Is exceeded by 2 external references, prof. Univ. dr. Dan Simovici and prof. univ. Dr. Daniela Zaharie. This is due to the fact that the above-mentioned references have important contributions in the specific field of the thesis in which there are related topics, to which the same referent can better compare and appreciate the level of originality and contribution.

It is appreciated that the standard is partially fullfilled.

*Performance indicator * B.3.2.1.* ***The number of doctoral theses assigned to a specific referent from a higher education institution, other than the IOSUD evaluated, must not exceed two (2) for theses coordinated by the same doctoral supervisor, in a year.***

The analysis of the Self-Assessment Report shows that for the field of Informatics the number of doctoral theses allocated to a certain referent coming from a higher education institution, other than IOSUD-UAIC, does not exceed two for the theses coordinated by the same doctoral supervisor, in a an (Annex 5.15.NumberThesesDoctorate_ReferentExtern_SD-FII_2015-2020 *)*

Recommendations: Not applicable.
The indicator is fullfilled**.**

*Performance indicator * B.3.2.2.* ***The ratio between the number of doctoral theses assigned to a certain scientific referent from another higher education institution than the one in which the doctoral thesis is organized and the number of doctoral theses defended in the same doctoral field within the doctoral school must not be higher. high of 0.3, compared to the situation recorded in the last five years. It is analyzed only if in the evaluated doctoral field at least ten doctoral theses have been defended in the last five years.***

From the analysis of the Self-evaluation Report it is found that in the field of Informatics from the 17 external references that participated in the last 5 years in the defense of doctoral theses, only two, prof. Univ. dr. Dan Simovici and prof. univ. dr. Daniela Zaharie, exceed the threshold of 0.3. This is due to the fact that the above-mentioned references have important contributions in the specific field of the thesis in which there are related topics, to which the same referent can better compare and appreciate the level of originality and contribution (Annex 5.13.

Recommendations: Limit as much as possible the number of participations for references that have exceeded the established threshold and keep in the future the number of external references below the established level, for the IT field.
The indicator is partially fulfilled.

Domain C. QUALITY MANAGEMENT

All 9 indicators related to Domain C. Quality management are met. Within the IOSUD-UAIC, the Operational Procedure regarding the evaluation and internal monitoring of the doctoral schools within the "Alexandru Ioan Cuza" University of Iași is implemented and observed. IOSUD-UAIC and SD-FII also ensure transparency of information and accessibility to learning resources. The degree of internationalization of doctoral studies is also satisfactory, being met all the indicators related to this criterion.

Criterion C.1. Existence and regular development of the internal quality assurance system

IOSUD - UAIC is constantly concerned with ensuring the quality of the educational process and finding appropriate internal quality assurance policies. The objectives pursued by

UAIC in the field of quality management are included in the UAIC Quality Assurance Code (Annex Quality Assurance Code and Quality Manual).

Standard C.1.1. The institutional framework exists and policies and procedures are applied for relevant internal quality assurance.

There are Quality Monitoring and Evaluation Commissions both at IOSUD-UAIC level and at SD-FII level. IOSUD has periodically developed and applied the Operational Procedure regarding the evaluation and internal monitoring of the doctoral schools within the "Alexandru Ioan Cuza" University of Iași. Within the Procedure, there are mechanisms for collecting feedback from PhD students. Based on their analysis, the plan of measures is developed and implemented.

It is appreciated that the standard is met.

Performance indicator C.1.1.1. The doctoral school in which the field of doctoral university studies falls proves the constant development of the process of evaluation and internal quality assurance in accordance with a procedure developed and applied at IOSUD level, among the evaluated criteria being obligatorily found:

a) the scientific activity of doctoral supervisors;
b) the infrastructure and logistics necessary for carrying out the research activity;
c) the regulations and procedures on the basis of which doctoral studies are organized;
d) the scientific activity of doctoral students;
e) the training program based on advanced university studies of doctoral students;
f) social and academic support services (including participation in various events, publication of articles, etc.) and counseling provided to PhD students.

IOSUD-UAIC periodically carries out and applies the *Operational Procedure regarding the evaluation and internal monitoring of doctoral schools within the "Alexandru Ioan Cuza" University of Iași* (Annex 12.11.ProcedureInternalEvaluationDoctoral SchoolsUAIC_2019), which includes all aspects mentioned in Indicator C.1.1.1.
There are Quality Monitoring and Evaluation Commissions both at the level of IOSUD-UAIC and at the level of SD-FII (Annex 2.6.CommissionEvaluationAssuranceQualityFII_2015-2020).

Recommendations: Not applicable.
The indicator is fullfilled**.**

Performance indicator * C.1.1.2. During the doctoral training internship, evaluation mechanisms are implemented aimed at identifying the needs, as well as the general level of satisfaction with the doctoral studies program, of doctoral students, in order to continuously improve the academic and administrative processes. Following the analysis of the obtained results, it is proved the elaboration and implementation of a plan of measures.

At the level of SD-FII there are mechanisms for collecting feedback from doctoral students (Annex 4.6.AnswersDoctoralDoctoral SurveySD-FII_2020). The feedback is also materialized through face-to-face dialogues encouraged by the affirmation of an open,

benevolent and positive attitude in the interaction between doctor-student, supervisor-doctoral student and secretary-doctoral student.

Recommendations: Present the results of the analysis of the feedback of all doctoral students and doctoral supervisors and their approval of the Plan of Measures, in order to continuously improve the quality.
The indicator is fullfilled**.**

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

The promotion of quality in the Doctoral School of Informatics is achieved by implementing a quality management system that ensures the general and specific competencies of each research area in compliance with the quality standards developed for higher education.
The main objective in terms of ensuring the quality of scientific research is its orientation in competitive directions, in relation to current requirements at local, national and international level. It also aims to capture all sources of funding for research through a sustained activity of disseminating research results and capitalizing on
research potential.

Standard C.2.1. The information of interest for doctoral students, future candidates, respectively the information of public interest are available for consultation in electronic format.

IOSUD-UAIC and the Doctoral School publish, on its own website, in compliance with the regulations in force regarding data protection, all the necessary information for candidates, doctoral students and other interested parties.

It is appreciated that the standard is met.

Performance indicator C.2.1.1. *IOSUD publishes, on the website of the higher education institution, in compliance with the regulations in force regarding data protection, information such as:*
It is found that all the necessary information is available on the SD-FII and / or IOSUD-UAIC website, as follows:

a) doctoral school regulations;
https://www.info.uaic.ro/wp-content/uploads/2020/12/Regulament-ScDoc-Info-2018.pdf
b) admission regulations;
https://www.uaic.ro/wp-content/uploads/2019/02/Metodologie-admitere-doctorat-2019-2020.pdf
c) doctoral studies contract;
https://www.info.uaic.ro/wp-content/uploads/2021/04/S01-Contract-studii-universitare-de-doctorat-A2.pdf
d) the regulation for the completion of studies which should also include the public support procedure
of the thesis;

https://www.info.uaic.ro/regulamente-formulare-scoala-doctorala/

e) the content of training programs based on advanced university studies;

https://www.info.uaic.ro/programul-de-doctorat/

f) the scientific and scientific profile, the thematic areas / research topics of the doctoral supervisors in the field, as well as their institutional contact data;

https://www.info.uaic.ro/programul-de-doctorat/

g) list of doctoral students in the field with basic information (year of registration; leader);

https://www.info.uaic.ro/programul-de-doctorat/

h) information about the standards for the elaboration of the doctoral thesis;

https://www.info.uaic.ro/sustineri-teze-scoala-doctorala/

i) links to the abstracts of the doctoral theses to be defended publicly, as well as the date, time, place where they will be defended, at least 20 days before the defense.

https://www.info.uaic.ro/sustineri-teze-scoala-doctorala/

Recommendations: Not applicable.
The indicator is fullfilled**.**

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

All three criteria for the standard are met. All PhD students have free access to a platform with relevant academic databases through the ANELIS Plus program, to an electronic system for verifying the degree of similarity for their scientific creations, as well as to the scientific research laboratories within the Doctoral School of Informatics.

Performance indicator C.2.2.1. ***All PhD students have free access to a platform with academic databases relevant to the field of doctoral studies analyzed.***

"Alexandru Ioan Cuza" University of Iasi is a member of *the Anelis Plus Project* , thus providing doctoral students access to international publications and online databases such as: *ScienceDirect Freedom Collection, Scopus, SciFinder (CAS), MathSciNet* , both based on institutional IP. The accesses of the databases by the doctoral students of SD-FII can be done from any computer from the C building, the R building, the UAIC dormitories or from the Library of the Faculty of Informatics and the "Mihai Eminescu" Central University Library, as well as mobile access through the *e-nformation* platform , which allows the creation of an account based on institutional e-mail and access to databases from anywhere.

Recommendations: Not applicable.
The indicator is fullfilled**.**

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

All doctoral students have access, through the doctoral supervisor to the Turnitin platform to verify the degree of similarity, mandatory for the verification of all doctoral theses before the

public defense, or whenever necessary, in intermediate phases of the paper (https: // www.turnitin.com).

Recommendations: Not applicable.
The indicator is fullfilled**.**

Performance indicator C.2.2.3. All doctoral students have access to scientific research laboratories or other facilities depending on the specifics of the field / fields within the doctoral school, according to internal regulations.

The access of doctoral students in all research spaces and laboratories of SD-FII is unrestricted, the activity being coordinated by the coordinating professor of the doctoral thesis. The list of laboratories is available in Annex 7.4.Spatii_SD-FII and the list of endowments used by doctoral students and coordinators is presented in Annex 7.2.Expenses_EquipmentLaboratories_SD-FII_2015-2020. The internal regulations for access to laboratories are stipulated in Annex 12.1.9.

Recommendations: Not applicable.
The indicator is fullfilled**.**

Criterion C.3. Degree of internationalization

The analysis of the criterion was based on the self-assessment file submitted to ARACIS, as well as on the browsing of the documents available online on the SD / IOSUD / UAIC page, on the discussions held online and on-site during the visit September 9-17, 2021.

Standard C.3.1. There is a strategy and it is applied to increase the degree of internationalization of doctoral studies.

All three indicators related to standard C.3.1. are satisfied. Regarding the internationalization of doctoral studies, IOSUD-UAIC and SD-FII have concluded mobility agreements with educational or research institutions abroad. Evidence has been provided that at least 35% of PhD students in the field of Informatics have completed a training course abroad or other form of mobility, such as participation in international conferences. Within the field, the organization of doctorates in international co-supervision is supported and first-rate experts have been invited to give courses / lectures for doctoral students. The internationalization of doctoral studies is also supported by other measures, such as participation in educational fairs to attract international doctoral students.

It is appreciated that the standard is met.

Performance indicator * C.3.1.1 . IOSUD, for the evaluated field of study, has concluded mobility agreements with foreign universities, with research institutes, with companies that carry out activities in the studied field, aiming at the mobility of doctoral students and teachers (for example, ERASMUS agreements for the cycle of Doctoral studies). At least 35%

of PhD students have completed a training course abroad or another form of mobility, such as participating in international scientific conferences. IOSUD develops and implements policies and action plans aimed at increasing the number of doctoral students participating in training courses abroad, up to at least 20%, which is the target at the level of the European Higher Education Area.

The PhD field in *Informatics* , through IOSUD-UAIC, has concluded mobility agreements with foreign universities (Annex 8.1 . Erasmus Agreements), with research institutes, with companies, partnerships (" *Formal Methods in Software Engineering",* Institute of Theoretical Informatics) IIT), projects (*" An Executable Semantic Framework for Rigorous Design, Analysis and Testing of Systems" - DAK , " Increasing the competitiveness of the EURONEST IT&C Hub Regional Innovative Cluster and stimulating interactions between members for the development of high-tech products and services "*, *" Development experimental public-private partnership to create cloud platform indigenous advanced features of data protection " PrivateSky , Technology Transfer Center iTransfer (CTT-iT),"* *Event Based Systems in Iasi "- EBSIS .* " *Targeted Therapy for advanced colorectal cancer Patients "- REVERT ,* which carries out activities in the studied field, aiming at mobility doctoral students and teachers.

Table 4.3_2 shows that in the analyzed period (2015-2020) **46.68%** of doctoral students benefited from internships or participation in international scientific conferences abroad.

IV. The SWOT analysis

Strong points:	**Weaknesses:**
S1. Increasing the number of PhD supervisors within SD-FII in recent years and their scientific quality **S2.** Number and quality of scientific publications involving PhD supervisors and PhD students **S3.** The level of involvement of doctoral supervisors in attracting funds for research by applying research infrastructure funding in various competitions (some of them being funded, in which PhD students of SD-FII were involved) **S4.** Attracting foreign researchers with experience in scientific research to give courses / lectures for PhD students of SD-FII **S5.** Constant concern for ensuring a curriculum that reflects new technologies and models and that serves the purpose of developing a doctoral thesis **S6.** Ensuring a synchronicity of the areas of doctoral scientific research with the "wave" areas worldwide in the IT field **S7.** Existence of collaboration agreements concluded with higher education institutions, research institutes, research networks, a number of companies with significant economic impact in the IT field and 4 clusters with different sectors of activity	**W1.** The small number of candidates for doctoral studies in Computer Science, caused by competition from the industry **W2** . The small number of international doctoral students **W3.** The small number of doctoral theses elaborated in co-supervision / collaboration **W4.** The significant difference between the level of salary offered by IT companies and the level of doctoral scholarships offered by the Romanian state (leads to difficulties in retaining employees recently graduated from master's studies) **W5.** Difficulties in completing theses in three years in conjunction with practices of exceeding the deadlines provided in the plan for conducting research and writing the thesis

S8. Existence of opportunities to carry out doctoral theses in partnership with the private sector as a result of the close collaboration between the IFI and the IT industry **S9.** Experience of collaboration with the State Office for Inventions and Trademarks **S10.** Existence of a modern research infrastructure **S11.** Existence of an extensive portfolio of research results in collaboration with potential for capitalization through technology transfer **S12.** Compatibility with European doctoral programs, through the Bologna process **S13.** Admission to the doctorate at SD-FII is also open to candidates who have higher education in related subdomains in the broad area of Mathematics and Natural Sciences. **S14.** SD-FII offers the possibility to enroll for a doctorate, on special places, for Roma citizens **S15.** Existence of a specialized journal (Scientific Annals of Computer Science "Alexandru Ioan Cuza" University of Iasi) edited by FII and listed nationally and internationally	
Opportunities: **O1.** Existence and provisional accreditation of the iTransfer Technology Transfer Center (http://itransfer,.space), which can create the framework for collaborative research (academic and private) and technology transfers **O2.** The rapid degree of development of the IT sector and implicitly of the connections it can have with other sectors leading to the approach of innovative inter- and multidisciplinary research directions **O3.** Possibility to address RDI topics and activities of increasing complexity, focused on cutting-edge directions and technologies **O4.** Development of existing partnerships with public institutions and the private environment, generating new ways of financial support for the research activity of doctoral students. **O5.** Increasing the need for IT&C products and services, as a result of the SARS-CoV-2 epidemiological phenomenon **O6.** Exploring new directions in the IT field (corroborated with other fields) meant to counteract / reduce / combat the effects of the SARS-CoV-2 epidemiological phenomenon and to support the resumption of social, cultural manifestations, etc. in complete safety.	**Threats:** **T1** . Poor funding of the Romanian university system, especially in the conditions of signs of an economic crisis caused by coronavirus (SARS-CoV-2) which has the impact of allocating mainly financial resources for areas related to national health and safety **T2.** Significant reduction of national research funds in recent years, while raising standards for minimum eligibility criteria, for attracting national research grants for project managers. **T3.** The number of qualifications, from a quantitative and qualitative point of view, does not equal the number of retirees, thus leading to the lack of experience / expertise in coordinating doctoral theses. **T4.** Frequent changes in the scope of the legislation regarding the Romanian university education. **T5.** Migration of potential candidates for doctoral studies in Computer Science to the IT industry in the country and abroad. **T6.** National legislation that is not yet extremely stimulating for attracting foreign students (from outside the EU). Also, in the current epidemiological context, both international and national legislation impose, due to the slowdown in the spread of coronavirus and to protect human health and well-being, a number of travel restrictions, which affect both Erasmus mobility and the mobility of potential candidates. from EU / non-EU countries. **T7.** The dropout and disinterest rate (more and more teenagers failing to complete their baccalaureate studies) produces cascading effects that affect the investment in the university system of bachelor's, master's and finally doctoral level. **T8.** The declining trend of demographics, with a negative impact on the dynamics of the number of students and the

	gradual increase of living costs, lead to a decrease in living standards and the lack of interest of high school graduates for undergraduate and postgraduate studies.

V. Synthesis of the grades awarded and recommendations

Nr. Crt.	Indicator type (IP, IP *, IPC)	Performance indicator	Qualifying	recommendation
1.	IP	A.1.1.1. Existence of specific regulations and their application at the level of the doctoral school of which the field of doctoral university studies is part: a) the regulations of the doctoral school; b) the methodology for conducting the elections for the position of director of the Doctoral School Council (CSD), as well as the election by the students of the representative in the CSD, and evidence of their development; c) methodologies for organizing and carrying out doctoral studies (for admitting doctoral students, for completing doctoral studies); d) the existence of the mechanisms for recognizing the quality of doctoral supervisor and for equivalence of the doctorate obtained in other states; e) functional management structures (Doctoral School Council), proving also the regularity of convening the meetings; f) the doctoral university contract;	accomplished	It's not necessary.

Nr. Crt.	Indicator type (IP, IP *, IPC)	Performance indicator	Qualifying	recommendation
		g) internal procedures for analysis and approval of proposals on the subject of the training program based on advanced university studies.		
2.	IP	A.1.1.2. The regulations of the doctoral school include criteria, procedures and mandatory standards for the aspects specified in art. 17, para. (5) of the Government Decision no. 681/2011 on the approval of the Code of doctoral studies, with subsequent amendments and completions.	accomplished	It's not necessary.
3.	IP	A.1.2.1. The existence and effectiveness of an adequate computer system for the record of doctoral students and their academic career.	accomplished	Continuing the development of the Esims system, in order to be connected with the main platforms for the visibility of their scientific results (Publons, SCOPUS, Google Scholar, etc.)
4.	IP	A.1.2.2. Existence and use of a computer program and evidence of its use to verify the percentage of similarity in all doctoral theses.	accomplished	… ..
5.	IP	A.1.3.1. Existence of at least one research or institutional development grant / human resources in implementation at the time of submission of the self-assessment file, per field of doctoral studies or existence of at least 2 research or institutional development grants / human resources per field of doctoral studies obtained by doctoral supervisors in the field evaluated in the last 5 years. The grants address topics relevant to the field and, as a rule, are carried out with the involvement of doctoral students.	accomplished	Encouraging doctoral students to participate both in project development teams and as members of their implementation teams.
6.	IP *	A.1.3.2. The proportion of doctoral students existing at the time of the evaluation, who benefit for a minimum of six months from sources other than government funding, through scholarships granted by individuals or legal entities or are	accomplished	Increasing the proportion of PhD students in Computer Science to benefit for at least 6 months from other sources of funding: their inclusion in research projects, institutional development projects and human resources, obtaining

Nr. Crt.	Indicator type (IP, IP *, IPC)	Performance indicator	Qualifying	recommendation
		financially supported by research or institutional development / human resources grants, is the at least 20%.		private scholarships, partnerships with business agents to provide them with scholarships or financial support to solve through doctoral theses the problems they face.
7.	IP *	A.1.3.3. At least 10% of the total amounts related to doctoral grants obtained by the university through institutional contract and tuition fees collected from doctoral students in the form of paid education are used to reimburse the training expenses of doctoral students (participation in conferences, schools summer, courses, internships abroad, publication of specialized articles or other specific forms of dissemination, etc.).	accomplished	It's not necessary.
8.	CPI	A.2.1.1. The spaces and material endowment of the doctoral school allow the realization of research activities in the evaluated field, in accordance with the mission and objectives assumed (computers, specific software, equipment, laboratory equipment, library, access to international databases, etc.). The research infrastructure and the offer of research services are presented publicly through a profile platform. The research infrastructure described above, acquired and developed in the last 5 years, will be highlighted separately.	accomplished	Presentation of the research infrastructure available to doctoral students on the ERRIS platform.
9.	CPI	A.3.1.1. Within the doctoral field, at least three doctoral supervisors work and at least 50% of them (but not less than three) meet the minimum CNATDCU standards in force at the time of the evaluation, necessary and mandatory to obtain the certificate of qualification.	accomplished	Increasing the number of doctoral supervisors, in order to consolidate the Informatics field within UAIC
10.	IP *	A.3.1.2. At least 50% of the doctoral supervisors in the evaluated doctoral field are holders within IOSUD,	accomplished	Increasing the number of doctoral supervisors by enabling tenured teachers in UAIC, to consolidate the field

Nr. Crt.	Indicator type (IP, IP *, IPC)	Performance indicator	Qualifying	recommendation
		employed with the conclusion of an employment contract for an indefinite period.		of Informatics, within the university.
11.	IP	A.3.1.3. The disciplines in the training program based on advanced university studies related to the field are supported by teachers or researchers who have the quality of doctoral / qualified supervisor, professor / CS I or associate professor / CS II with proven expertise in the field of taught subjects or other specialists in field that meet the standards set by the institution for the teaching and research functions mentioned above, in accordance with the law.	accomplished	It's not necessary.
12.	IP *	A.3.1.4. The share of doctoral supervisors who coordinate at the same time more than 8 doctoral students, but not more than 12, during their doctoral studies3, does not exceed 20%.	accomplished	Limiting the number of doctoral students admitted by professors who exceed this upper limit, etc.) and supporting the empowerment of new doctoral supervisors in the field, to cover the growing demand for the evaluated doctoral field.
13.	CPI	A.3.2.1. At least 50% of the doctoral supervisors in the field subject to evaluation present at least 5 publications indexed Web of Science or ERIH in journals with impact factor or other achievements, with relevant relevance for the respective field in which there are international contributions that reveal a progress. in scientific research - development - innovation for the evaluated field. The mentioned doctoral supervisors have international visibility in the last five years, consisting in: the quality of member in the scientific committees of the international publications and conferences; membership in the boards of international professional associations; the quality of a guest at conferences or groups of experts held abroad or the quality of a member of commissions for the defense of doctoral theses at universities abroad or in co-supervision with a university	accomplished	It's not necessary.

Nr. Crt.	Indicator type (IP, IP *, IPC)	Performance indicator	Qualifying	recommendation
		abroad. For the arts and sciences of sport and physical education, the doctoral supervisors will prove the international visibility in the last five years by being a member of the boards of professional associations, by being a member of the organizing committees of artistic events and international competitions, respectively by membership in juries or arbitration teams in artistic events or international competitions.		
14.	IP *	A.3.2.2. At least 50% of the doctoral supervisors assigned to a field of doctoral studies continue to be scientifically active, obtaining at least 25% of the score required by the minimum CNATDCU standards in force at the date of evaluation, necessary and mandatory to obtain the certificate of qualification, on based on scientific results from the last five years.		It's not necessary.
15.	IP *	B.1.1.1. The ratio between the number of master's degree graduates of other higher education institutions in the country or abroad who have registered for the competition for admission to doctoral studies in the last five years and the number of places financed from the state budget put up for competition in the field of doctoral studies is at least 0.2 or the ratio between the number of candidates in the last five years and the number of places financed from the state budget put up for competition in the field of doctoral studies is at least 1.2.	accomplished	It is recommended to maintain the current trend, through promotional actions to attract master's degree graduates from other higher education institutions in the country or abroad to register for the admission competition.
16.	IP *	B.1.2.1. Admission to doctoral study programs is based on selection criteria that include: the academic, research and professional performance of the candidates, their interest in scientific or artistic / sports research, publications in the field and a research topic proposal. . An interview with the applicant is a mandatory part of the admission procedure.	accomplished	It's not necessary.

Nr. Crt.	Indicator type (IP, IP *, IPC)	Performance indicator	Qualifying	recommendation
17.	IP	B.1.2.2. The expulsion rate of doctoral students, including after dropping out of school, 3 and 4 years after admission4, respectively, does not exceed 30%.	accomplished	Taking measures in the medium / long term to maintain at a low level the expulsion rate of students in the field of Informatics.
18.	IP	B.2.1.1. The training program based on advanced university studies comprises at least three disciplines relevant for the training of scientific students in scientific research, of which at least one discipline is intended for the in-depth study of research methodology and / or statistical data processing.	accomplished	It's not necessary.
19.	IP	B.2.1.2. There is at least one discipline dedicated to ethics in scientific research and well-defined intellectual or thematic property on these topics within a discipline taught in the training program.	accomplished	It's not necessary.
20.	IP	B.2.1.3. IOSUD has created the mechanisms to ensure that the training program based on advanced university studies, related to the evaluated field, aims at "learning outcomes", specifying the knowledge, skills and responsibility and autonomy that doctoral students should acquire after completing each discipline. or through research activities	accomplished	It's not necessary.
21.	IP	B.2.1.4. Throughout the doctoral training period, doctoral students in the field benefit from the advice / guidance of functional guidance commissions, an aspect reflected by guidance and points of view expressed in writing or regular meetings.	accomplished	It's not necessary.
22.	CPI	B.2.1.5. For a field of doctoral studies, the ratio between the number of doctoral students and the number of teachers / researchers providing guidance must not exceed 3: 1.	accomplished	Ensuring the guidance of doctoral students by competent guidance commissions formed by experts in the field, mainly from outside IOSU-UAIC, to ensure the objectivity and enrichment of the content of

Nr. Crt.	Indicator type (IP, IP *, IPC)	Performance indicator	Qualifying	recommendation
				the scientific guidance of doctoral students.
23.	CPI	B.3.1.1. For the evaluated field there is at least one article or another relevant contribution per doctoral student who has obtained the title of doctor in the last 5 years. From this list, the members of the evaluation commission select for analysis, randomly, 5 such relevant articles / contributions per field of doctoral studies. At least 3 of the selected articles have significant original contributions in the field concerned.	accomplished	It's not necessary.
24.	IP *	B.3.1.2. The ratio between the number of presentations of doctoral students who completed their doctoral studies in the evaluated period (last 5 years), including those of poster type, exhibitions, made at prestigious international events (held in the country or abroad) and the number of students PhD students who have completed their doctoral studies in the evaluated period (last five years) is at least equal to 1.	accomplished	It's not necessary.
25.	IP *	B.3.2.1. The number of doctoral theses assigned to a specific referent from a higher education institution, other than the IOSUD evaluated, must not exceed two (2) for theses coordinated by the same doctoral supervisor, in a year.	accomplished	It's not necessary.
26.	IP *	B.3.2.2. The ratio between the number of doctoral theses assigned to a certain scientific referent from another higher education institution than the one in which the doctoral thesis is organized and the number of doctoral theses defended in the same doctoral field within the doctoral school must not be higher. high of 0.3, compared to the situation recorded in the last five years. It is analyzed only if in the evaluated doctoral field at least ten doctoral theses have been defended in the last five years.	partially fulfilled	Limiting as much as possible the number of participations for references that have exceeded the established threshold and maintaining in the future the number of external references below the established level, for the IT field.

Nr. Crt.	Indicator type (IP, IP *, IPC)	Performance indicator	Qualifying	recommendation
27.	IP	C.1.1.1. The doctoral school in which the field of doctoral university studies falls proves the constant development of the process of evaluation and internal quality assurance in accordance with a procedure developed and applied at IOSUD level, among the evaluated criteria being obligatorily found: a) the scientific activity of the doctoral supervisors; b) the infrastructure and logistics necessary for carrying out the research activity; c) the regulations and procedures on the basis of which the doctoral studies are organized; d) the scientific activity of doctoral students; e) the training program based on advanced university studies of doctoral students; f) social and academic support services (including participation in various events, publication of articles, etc.) and counseling provided to doctoral students.	accomplished	It's not necessary.
28.	IP *	C.1.1.2. During the doctoral training internship, evaluation mechanisms are implemented aimed at identifying the needs, as well as the general level of satisfaction with the doctoral studies program of doctoral students, in order to continuously improve the academic and administrative processes. Following the analysis of the obtained results, it is proved the elaboration and implementation of a plan of measures.	accomplished	Presentation of the results of the analysis of the feedback of all doctoral students and doctoral supervisors and their approval of the Plan of Measures, in order to continuously improve the quality.
29.	CPI	C.2.1.1. IOSUD publishes, on the website of the higher education institution, in compliance with the regulations in force regarding data protection, information such as: a) the regulations of the doctoral school; b) the admission regulation; c) the doctoral studies contract;	accomplished	It's not necessary..

Nr. Crt.	Indicator type (IP, IP *, IPC)	Performance indicator	Qualifying	recommendation
		d) the regulation for completing the studies, which should also include the procedure for public defense of the thesis; e) the content of training programs based on advanced university studies; f) the scientific and scientific profile, the thematic areas / research topics of the doctoral supervisors in the field, as well as their institutional contact data; g) the list of doctoral students in the field with the basic information (year of registration; leader); h) information about the standards for the elaboration of the doctoral thesis; i) links to the abstracts of the doctoral theses to be defended publicly, as well as the date, time, place where they will be defended, at least 20 days before the defense.		
30.	IP	C.2.2.1. All PhD students have free access to a platform with academic databases relevant to the field of doctoral studies analyzed.	accomplished	It's not necessary.
31.	IP	C.2.2.2. Each doctoral student has access, upon request, to an electronic system for verifying the degree of similarity with other existing scientific or artistic creations.	accomplished	It's not necessary.
32.	IP	C.2.2.3. All PhD students have access to scientific research laboratories or other facilities depending on the specifics of the field (s) within the doctoral school, according to internal regulations.	accomplished	It's not necessary.
33.	IP *	C.3.1.1. IOSUD, for the evaluated field of study, has concluded mobility agreements with foreign universities, with research institutes, with companies that carry out activities in the studied field, aiming at the mobility of doctoral students and teachers (for example, ERASMUS agreements for the cycle of Doctoral studies). At least 35% of PhD students have completed a training course abroad or another form of mobility,	accomplished	It's not necessary.

Nr. Crt.	Indicator type (IP, IP *, IPC)	Performance indicator	Qualifying	recommendation
		such as participating in international scientific conferences. IOSUD develops and implements policies and action plans aimed at increasing the number of doctoral students participating in training courses abroad, up to at least 20%, which is the target at the level of the European Higher Education Area.		
34.	IP	C.3.1.2. Within the evaluated field of studies, it is supported, including financially, the organization of doctorates in international co-supervision, respectively the invitation of first-rate experts to give courses / lectures for doctoral students.	accomplished	***Maintaining the development and periodic organization of events for doctoral students, to which leading experts are invited.***
35.	IP	C.3.1.3. The internationalization of doctoral studies activities is supported by concrete measures (for example, participation in educational fairs to attract international doctoral students; inclusion of international experts in guidance commissions or defending doctoral theses, etc.).	accomplished	Maintaining and including in the future the international experts in the guiding commissions and in the commissions for public defense of the doctoral theses.

VI. General conclusions and recommendations

This periodic external evaluation report was prepared for the evaluation of the PhD field of **Informatics** at the " **Alexandru Ioan Cuza" University of Iași** .

Type of evaluation: periodic external evaluation
Period of the evaluation visit: 09 - 17 September 2021.

Overall, it was found that the Informatica doctoral field has a clear and well-defined mission, well-thought-out objectives and programs, successfully responding to a unique need in the market, that of a multidisciplinary doctoral program that simultaneously meets industry requirements and current needs. from computer science. The evaluated doctoral field meets the quality assurance criteria. Doctoral theses lead to patents, scientific publications and research project proposals.

PhD students have access to the library, software, multidisciplinary laboratories and financial resources. The doctoral field successfully realizes the international cooperation in research, education and exchange of doctoral students.

It was found that the PhD field Informatics is well managed, benefiting from the input of experts in the field - PhD supervisors, members of the steering committees - dedicated, who strive to advise students and respond to their training needs. It seems a very conducive academic environment for training PhD students to the highest performance standards.

Following the analysis, it was found that all quality indicators related to the standards and evaluation criteria are met, except for indicator B.3.2.2. which is partially fulfilled. As the latter is not a critical indicator, its partial fulfillment does not prevent the decision to grant the accreditation of the evaluated doctoral field.

Following the visit from 9 to 17 September 2021, the Evaluation Team for the evaluation of doctoral studies in the field of Informatics UAIC based on the self-evaluation documents of the institution and the findings during the visit, concludes that the doctoral field of Informatics meets the mandatory normative requirements and standards and indicators. performance according to the ARACIS Methodology and, on this basis, creates conditions for ensuring the quality of doctoral school activities.

Budapest, 01.10.2021

International Expert

VII. Annexes

- *The detailed schedule of the evaluation visit*
- *The survey questionnaire applied to doctoral students in the doctoral study domain under review, the results and their interpretation.*