Report on the evaluation of the IT for Innovative Services (ITIS) department at the Luxembourg Institute of Science and Technology (LIST)

Based on a peer review as commissioned by the Ministry of Higher Education and Research of Luxembourg

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1. Introduction

The Ministry of Higher Education and Research (MESR) of Luxembourg mandated *Interface Policy studies Research Consulting*, Switzerland, to organise and lead a research evaluation of the Centres de Recherche Publics (CRP).

The Grand Duchy of Luxembourg operates three non-university public research and technology institutions. They are the Luxembourg Institute of Science and Technology (LIST), the Luxembourg Institute of Health (LIH) and the Luxembourg Institute of Socio-Economic Research (LISER). The three CRPs include departments linked to different scientific disciplines. The evaluation focused on the research performance of the CRPs' departments.

The research evaluation was conducted in 2022 and followed two earlier evaluations carried out in 2012 and 2018. This report presents the evaluation of the IT for Innovative Services (ITIS) department of LIST.[1]

The observations and recommendations presented in this report are based on a peer review by the following four experts working in the unit's research fields:

- Prof. em. Dr. Dr. h.c. Heinrich C. Mayr, Professor emeritus & Former president, Department of Artificial Intelligence and Cybersecurity (AICS), University of Klagenfurt, Austria
- Prof. Dr. Florian Matthes, Professor of Software Engineering for Business Information Systems, Department of Informatics, Technical University of Munich (TUM)
- Prof. Dr. Pierluigi Siano, Professor and Scientific Director of the Smart Grids and Smart Cities Laboratory, Department of Management and Innovation Systems, University of Salerno, Italy
- Prof. Dr. Kilian Stoffel, President & Professor of Data Management, University of Neuchatel, Switzerland

The peer review consisted of a self-assessment report written by ITIS and a hearing at the department that took place in September 2022. The assessment period runs from 2018 to 2021. The hearing, which was organised and moderated by Interface, comprised a presentation by the department, a group discussion of the self-assessment report and several individual and group interviews. These included interviews with the Head of department, research team leaders, members of the wider research staff and PhD students as well as clients and business partners. The report was finalised by Dr. Stefan Rieder (Panel chair) and Chiara Büchler (Rapporteur) of Interface.

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[1] Between 2010 and 2012, evaluations of selected departments of the former CRPs were carried out. The first full evaluation of the CRPs, which included all departments, was carried out in 2018.

The overall results of all unit evaluations are summarised in an institute report for each CRP[2] and a synthesis report[3]. The institute report includes an assessment of the CRPs as a whole. It also summarises the findings from additional governance interviews with representatives of the management teams at the CRPs as well as a comparison between the CRPs and a foreign benchmark institute.

The report is structured into two parts: The first part discusses in detail the observations gathered by the expert team during the evaluation process. This part will focus on the input, output and outcome/impact of the department:

– *Input* includes the preconditions for the research conducted, such as strategies, financial and human resources, infrastructure, organisation and external research, industry and other collaborations.
– *Output* includes the performance of the department, exemplified through research and innovation results and their dissemination.
– *Outcome and impact* refer to the medium- and long-term effects as well as the relevance of the output on science, society, economy, and public administration/politics.

The second part presents the expert team's overall assessment and recommendations for further developing existing strengths and overcoming observed weaknesses.

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[2] Rieder, Stefan; Grosjean, Nicolas; Büchler Chiara (2023): Report on the evaluation of the Luxembourg Institute of Science and Technology (LIST), Interface Policy studies Research Consulting, Lucerne and Lausanne.

[3] Rieder, Stefan; Balthasar, Andreas; Haefeli, Ueli; Grosjean, Nicolas; Büchler, Chiara; Essig, Stefan; Thorshaug, Kristin (2023): Synthesis report on the evaluation of the Centres de Recherche Publics (CRP) in Luxembourg, Interface Policy studies Research Consulting, Lucerne and Lausanne.

2. Detailed results of the evaluation

2.1 Description of the department

ITIS was established in 2015 as a department of CRP LIST. The department is the result of merging different entities from CRP Henri Tudor and CRP Gabriel Lippmann, which focused on IT-related research and innovation. ITIS aims to generate research and innovation in the field of information systems as well as computer and data science. The department's target groups are public stakeholders such as ministries and public administration in Luxembourg, national and international industry as well as the international scientific community.

Since 2015, ITIS has undergone several changes at the corporate level as regards the department's management positions, strategy, and organisational structure. The leadership of the department has changed twice between 2018 and 2021. Since 2021 the department has been divided into two primary research, development, and innovation units: the "Responsible Data Science and Analytics" unit and the "Reliable Distributed Systems" unit. By the end of the evaluation period, the number of research groups had decreased from eleven to six. In addition, the Artificial Intelligence and Data Analytics platform (AIDA Research and Technology Infrastructure) was established as a follow-up to the former Service Innovation Accelerator Platform (SIA) at the end of the evaluation period. ITIS is now planning the creation of two additional RDI Units in the next evaluation period, in the fields of Quantum Computing Systems and Software engineering. The appointment of Francesco Ferrero as the Head of the department helped to start the consolidation of ITIS's reorganisation at the end of the evaluation period.

2.2 Input

2.2.1 Strategy

The experts acknowledge the efforts of ITIS's management in specifying and implementing the general strategy as recommended in the 2018 evaluation. However, due to the various management changes and strategy adjustments, the experts cannot identify a clear strategy line, making it difficult for them to assess strategy development and implementation for the evaluation period. The experts state an urgent need to clarify the strategy in accordance with the organisational changes made, as a matter of priority. Overall, the expert team expresses concern about the strategic development of the research units in general as well as their unclear vision, mission, and objectives in particular. According to the experts, the strategy of the department should, as a minimum, clarify the following aspects:

– Firstly, the experts could not clearly identify the current strategic positioning of the existing "Responsible Data Science & Analytics" (RDSA) and "Reliable Distributed Systems" (READY) research units, and the AIDA platform, and it was not possible to determine clear objectives for the future development of ITIS. Thus, the department should work on clarifying its strategic positioning in the next evaluation period.

– Secondly, ITIS should clarify the specific objectives and aim of the planned "Quantum Computing Systems" and "Software Engineering RDI" research units. This is especially important because creating two new research units leads to an increase from two to four research units. This significant increase needs to be addressed in terms of its consequences for human and financial resources and as well as the department's research agenda. In general, the experts note that the successful implementation of the

new research units relies heavily on recruiting excellent staff, especially unit leaders. Given the recruitment problems that ITIS's management has described in the documentation made available, as well as during the hearing, the expert group assesses this as a high-risk development strategy with an unknown result.

–   Thirdly, the experts observe that three of the six technology & innovation lines have not yet been implemented at the time of the evaluation. Thus, emphasis should be placed on clarifying the three technology & innovation lines that are not yet implemented as regards their content and implementation (e.g. start date, content, responsibilities).

In addition, the experts noted that there are no guidelines for aligning and prioritizing new and ongoing research and industry projects with the department's overall strategy and, therefore, a lack of focus. Based on the interviews during the hearings, the unclear situation regarding prioritizing the project has led to a situation where ITIS has a broad project portfolio filled with small to medium short-term projects with little room for achieving overarching strategic goals. According to the experts, project portfolio management must be considered from an overarching strategic standpoint. ITIS is already working on necessary strategic considerations such as the planning and implementation of the technology and technology & innovation lines as well as restructuring and, in particular, reducing the research groups. In the opinion of the experts, these developments are a first step in the right direction but seem to be too structure-focused. According to the expert team, these efforts need to be focused using the motto "structure follows strategy": the research priorities are to be defined first, and then the structure is to be determined based on available or procurable competencies.

Considering the performance contract for LIST and the KPIs contained therein, the expert group identifies the following potential for improvements:

–   Firstly, the KPIs listed at both institute and department level are, with the exception of the technology demonstrators, very traditional. Moreover, the indicators, with the exception of the KPIs for publications, do not sufficiently cover the objective of an RDI-department such as ITIS or an RTO like LIST. The experts see a need for more accurate KPIs for ITIS and, more generally, LIST, including in particular the area of intellectual capital.

–   Secondly, the timescale of the KPIs needs to be considered. Most of the KPIs are designed to be evaluated after a short period of time and therefore, they do not assess the implementation of long-term strategies. According to the experts, this could lead to a situation where, for example, a large number of low-quality patent applications are filed to meet the KPI, but few patents are granted after filing and little revenue is generated.

2.2.2 Human and financial resources, infrastructure and equipment

The experts are aware of the negative aspects of the restructuring process, especially as regards the maintenance and development of human resources at all levels. The experts state that at the time of the evaluation, consolidation has been achieved by the department's management. Change fatigue is no longer felt within the staff. Overall, the working conditions at ITIS in terms of infrastructure, office spaces, IT infrastructure, and salaries are assessed as good.

Irrespective of these positive remarks, the experts note that the department has difficulties effectively using and/or managing the available HR resources. The experts identified three challenges for the HR development of the department:

– The balance between the permanent and non-permanent staff within the department is a concern for the expert group. On the one hand, the experts see the need to balance the ratio between permanent and non-permanent staff (in order to provide the flexibility required to enable the implementation of new strategic objectives) with recruiting the necessary competencies to acquire new projects and funding. On the other hand, the experts acknowledge that there is a need to establish and foster stable relationships and long-term strategic partnerships between the ITIS staff and its industry partners and other stakeholders.

– During the interviews at the hearing and in the documentation made available, the experts expressed their concerns regarding overhead costs. According to the interviewees, during the evaluation period the department's overheads stemmed, for the largest part, from administrative expenditure at the corporate level. Overall, the experts see the need to reduce administrative costs at both department and corporate levels.

– The experts see room for improvement in the career management provided by ITIS, especially for junior researchers and PhD students. During the evaluation period, the experts identified deficits in the supervision structures and career development support for PhD students. Considering the difficulties the department has experienced with attracting talent and accounting for shifts to new topical foci; this is especially concerning for the experts. In addition, the experts find that the selection and involvement of PhD students should be strategic and topic-oriented and not left to chance. This will require close cooperation with universities in the next evaluation period, preferably supported by joint professorships.

– The number of women in management positions in the research units is inadequate. Even though the experts acknowledge that the proportion of female researchers in the field of computer sciences and IT is low, they see a clear need for a diversity policy at ITIS.

The 2018 evaluation stated the need for ITIS to achieve a substantially higher rate of external funding. Between 2018 and 2020 the department managed to improve its financial performance especially as regards competitive funding (notably Horizon 2020/Horizon Europe). However, the experts note that this positive development has not proven to be sustainable in the short-term with a notable decrease in the department's overall funding in 2021 (see also 3.2.4). In addition, the block grant was discussed by the experts as concerns its distribution by ITIS and LIST. Two aspects are relevant:

– On the one hand, the block grant was used to cover the costs incurred during the evaluation period. The experts state, that ITIS should focus on using the block grant for expenses that support the department's strategy and not to fill gaps due to high overhead costs or a number of small projects.

– On the other hand, the a posteriori distribution of the block grant from LIST to ITIS poses a challenge for the department's budget planning. The experts suggest a discussion at the level of LIST to improve the block grant distribution principle.

In general, the experts see the need for a revision of the distribution of the block grant by LIST. According to the experts, a certain share of the block grant should be distributed based on departmental success factors and, thus, be awarded as a performance incentive. This would allow the use of the block grant as a steering or controlling instrument within the institute and the department.

2.2.3 Organisation

The expert team acknowledges the increased stability of the organisational structure of ITIS since the appointment of the new Head of department in 2021. Nevertheless, the experts assert that further reflection on the organisational structure is needed.

The experts note that besides reducing research groups and rebranding the SIA to AIDA, the organisational structure of ITIS has not undergone a fundamental structural revision within the evaluation period. Changes that will potentially influence the department's structure, such as the Technology & Innovation lines, have not yet materialized. Nevertheless, the experts see a need for support to manage the consolidation phase and the organization's alignment with the further development of the department's strategy.

The experts identify room for improvement as regards internal collaboration procedures with the AIDA platform (former SIA). While the strategic objective of the AIDA platform within the organisation is clear, the experts formed the impression that the AIDA platform is only partly used by ITIS staff from the research units at the end of the evaluation period. Moreover, the experts formed the impression that AIDA is mainly used as a marketing instrument. According to the experts, AIDA should be used by the research units and made available to the industry. The experts state that the AIDA platform could then become an important structure and asset for ITIS in the future.

2.2.4 External research and industry collaboration and service provision

The experts assess the external funding of ITIS as too low. In the experts' assessment, this holds especially true given the extensive infrastructure (e.g. AIDA) that is available. The share of collaborative funding with the private sector in Luxembourg, in particular, decreased during the evaluation period.

In general, the expert group notes that it is not clear how ITIS is structuring its collaborations with the public and private sectors. However, the experts recognize that the technology & innovation lines are a first step in systematically approaching new projects using existing assets. Unfortunately, only three of these have been implemented so far. The experts strongly advise ITIS to continue on this path and fill the remaining vacancies. A clear strategy is needed as regards which projects are to be implemented based on a) the technology & innovation lines, b) potential or established partnerships with the industry, or c) core thematic areas of the department. Consequently, project partnerships can be systematically developed, and sustainable alliances formed (see section 3.2.1).

In terms of collaboration with other research institutes, the relationship between ITIS and the University of Luxembourg (UL) is a recurring topic and the strengthening of the link between ITIS and the UL was discussed during the 2018 evaluation. Based on the documentation made available and the interviews at the hearing, the experts noted uncertainty about the future affiliation between ITIS and the UL. With the departure of the Lead R&T Associate, ITIS faces the loss of an important connection to the UL. However, the experts acknowledge that with a new PEARL-professorship which will be established in the next evaluation period, an important step towards the development of a relationship with the UL has been taken.

Despite these positive remarks, the experts note that the position of ITIS within the Luxembourgish research and innovation landscape is not fully clear. The relationship between ITIS and the Interdisciplinary Centre for Security, Reliability and Trust (SnT) causes particular concern within the expert group. This was also the case in the 2018 evaluation. The attempt to form a strategic partnership has not been successful during the

evaluation period. Due to its thematic and geographical proximity, the experts consider strategic cooperation with the SnT to be crucial for the further development of ITIS.

2.3 Research and innovation performance

When assessing the quality and quantity of the department's outputs, the experts acknowledge the difficulties ITIS faced during the evaluation period. The Covid-19-pandemic and the ongoing organisational reforms of the department have been a challenge for everyone involved. Taking into account the difficult underlying conditions, the performance can be considered satisfactory overall.

2.3.1 Quality of output

In general, the expert group assesses the quality of output during the evaluation period as sufficient. The quality of scientific output in the form of publications is rated as good, even if this does not apply to all areas to the same extent. Research and development are at a TRL level of 3 to 7, which is appropriate in the view of the experts. This allows for a transfer between research and industry. In discussions with customers, the quality of the services provided by ITIS was rated as good.

The quality of the various industry collaboration projects presented in the interviews during the hearing and the SAR can only be roughly assessed. The experts noted that some of the presented collaborations were at an early stage and in some cases were strongly supported financially by the public sector. Without a deeper analysis of the projects carried out during the evaluation period, an assessment is therefore not possible. However, the impact of a number of larger projects presented in the SAR provides a clue: it makes clear that some projects have a considerable number of publications and citations or, in the case of technology development projects, users. This contrasts with the large number of smaller projects, whose impact is difficult to assess.

When assessing the quality and quantity of innovation output of ITIS, the experts note that few patents have been granted during the evaluation period. The experts could not identify a clear intellectual property (IP) strategy and note that the contribution to the LIST Key Performance Indicators (KPIs) via patents is not assessed as a sufficient IP strategy. The experts, therefore, see the need for a clarification of the IP strategy especially as regards the prioritising of patents currently held (see section 3.2.1). According to the experts, the revenues generated from licenses during the evaluation period seem to be disproportionate in comparison to the costs of holding patents. This indicates that the quality of the patents held by ITIS should be carefully reviewed. In relation to the financial resources of the departments, the experts believe that it would be beneficial if ITIS carried out a cost-benefit analysis of its IP Portfolio. The objective of this analysis should be to develop clear evaluation criteria for the prioritisation of patents.

2.3.2 Quantity of output

In relation to the department's research output, the experts note that the number of ITIS publications and spin-offs is sufficient given the department's resources and the reorganisation process.

The bibliometric analysis shows that ITIS displays an overall average performance in terms of its field-weighted citation impact in the evaluation period. However, a negative trend for the field-weighted citation index, as well as the number of publications per researcher and the share of top-10 per cent journal publications, is visible throughout the evaluation period. The difficult conditions (the reorganisation combined with the Covid crisis) partially explain this negative trend during the evaluation period. Nevertheless, in

line with the 2018 experts, the 2022 expert group encourages the department to broaden and intensify its publication activity.

In addition, the experts share the impression that a few select people are generating a high number of publications. This observation is supported by the result of the bibliometric analysis which shows a strong restructuring of research areas and topics between 2018 and 2019, leading to a shift towards Machine Learning related research areas and topics. According to the expert group, the distribution of the publication activities within ITIS was inadequate during the evaluation period and should be carefully reviewed to make sure that ITIS can adequately cover the department's important research areas.

According to the experts, the quantity and quality of ITIS's performance are illustrated in the department's third-party funding. ITIS's third-party funding has increased up to 2020 and exceeded 40 per cent of the department's total expenditures between 2018 and 2020. The department has been successful in increasing its funding from international funding programs (especially Horizon 2020/Horizon Europe) as well as collaborative funding with the public sector in Luxembourg. However, the financial data in the Self-Assessment Report indicates that the department has only partially been able to acquire high amounts of funding from the Fonds National de la Recherche (FNR) and the private sector in Luxembourg with the funding from both sources sharply decreasing in 2021. With the total expenditures of the department steadily decreasing during the evaluation period, this development seems to indicate a shift from private to public stakeholders. The impact of decreasing third-party funding on the amount of research at low TRL levels, however, cannot be assessed conclusively. On the one hand, the number of FNR projects decreased, while on the other hand, substantial projects were secured from the EU.

Overall, the department has the lowest percentage of external funding of all departments within LIST. The experts note that this result may also indicate that the impact of the department on industry in Luxembourg should be increased in the future. To achieve a higher impact on industry, the experts conclude that ITIS must focus on reaching scientific excellence in a few selected research areas (see section 2.2.1).

2.4 Outcome and Impact

The experts assess the impact of ITIS on public administration as high. Moreover, the interviewed stakeholders describe the positive impact of ITIS's research and innovation outputs on industry. In addition, some good examples of impactful projects were presented in the SAR and the hearings. However, according to the experts, it is not fully clear to what extent ITIS generates benefits for the economy in Luxembourg or how ITIS improves the economic competitiveness of Luxembourg. Overall, the experts have doubts about ITIS's impact on the industry because the funding of collaboration projects with the private sector is decreasing (see 3.3.2). It was not clear during the hearing what strategy is in terms of outcome and impact: is it to achieve more scientific outreach, or to collaborate more with industry, or both? A strategic clarification would be useful here.

The experts further state that ITIS's impact on society and the research community could be improved. Even though the research and innovation output of the department is sufficient, there are, for example, several publications with no citations, and the IP management needs to be revised in order to increase the department's impact (see 3.3.1).

Furthermore, the experts find that even though the department is developing its visibility nationally, the international visibility of ITIS could be improved. This was also noted by the experts in the 2018 evaluation, who stated that the department has the potential to gain international visibility in some areas primarily through cooperation with European and

international institutions. ITIS's success in acquiring funding from the European Commission is a promising first step in increasing its international visibility.

3. Overall assessment and recommendations

3.1 Overall assessment of the department

ITIS has undergone a major transformation over the past four years. The management has changed twice, and the organisational structure has recently been altered. The experts welcome the fact that these changes and the accompanying problems have been openly addressed during the evaluation process.

The experts acknowledge the ongoing efforts to stabilise the department and consolidate the reorganisation. This is a good starting point for the further development of ITIS. The department's performance has been good, especially in terms of publications, given the major changes that have taken place over the past four years. Furthermore, the experts acknowledge that ITIS deserves recognition for its function as a bridge between research, public administration, and industry. However, it must be noted that the trend for some output indicators is pointing downward, and, for example, third-party funding is low compared to other LIST departments.

Furthermore, the experts note that the development of the strategy and reorganisation have not yet been consolidated and that the strategy needs to be refined: technology & innovation lines are explained in detail in the strategy, however the "business processes" along these lines do not yet seem to be consistently defined and transparent within ITIS. Strategies for the two existing research groups: RDSA and READY, which form the core of ITIS, are missing. The same is true for the AIDA infrastructure facility. Therefore, the strategy still needs further development, and the management of the department has yet to prove itself. Whether this will lead to success cannot be judged with certainty at the time of the evaluation. In addition, there are some risks that the experts are not able to assess, especially as related to the ongoing recruitment processes.

3.2 Recommendations

Based on the observations stated above and in the previous chapters, the expert team formulates the following recommendations (any aspects which concern LIST as well as ITIS are also reported in the institute report for LIST):

❙ Recommendation 1: Revise the implementation of the strategy in two years
The experts acknowledge the stability and continuity that ITIS has experienced since the appointment of Francesco Ferrero as Head of the department.

Nevertheless, the experts recommend revising the overall strategy of the department in two years' time with reference, in particular, to the organisational structure, human resources and the management of IP. As part of this process, the experts further recommend carefully evaluating the performance of the research units.

❙ Recommendation 2: Support for the strategy revision to be provided by a "critical friend"
The evaluation identified ongoing challenges within the internal reorganisation process of ITIS. In order to successfully handle the reorganisation process, the experts recommend that ITIS seeks support from an external strategic advisor or an external strategic advisory group during the transformation phase. An external advisor or advisory group will be able to offer consultancy to the department's management as a critical friend and provide support in the strategic development and further consolidation of organisational changes

within the department. The critical friend can also help in the implementation of recommendation one.

Recommendation 3: Revise organisational chart to improve internal and external communication

The organisational chart of ITIS has not been fully developed. While the partnership office and the technology & innovation lines are clearly positioned, there is no clear positioning in the areas of "Quantum Computer Systems" and "Software Engineering RDI". In addition, only three of the six technology & innovation lines have been implemented. Therefore, the expert group recommends an immediate revision of the current organisational chart, and its adaptation once the strategy revision process according to recommendations one and two is complete.

Recommendation 4: Foster active human resources-management

With the most pressing organisational challenges addressed, there is an emerging need for more active human resources management within the department. The experts strongly recommend establishing this and suggest the following steps in particular:

1. Develop an HR-strategy at all levels according to the overall strategy. Place special emphasis on the recruitment of new staff and the promotion of existing staff.
2. Implement and formalize a supervision structure for PhD students. This should include guidance regarding promotion possibilities and/or career development support.
3. Develop a strategy for balance between permanent and non-permanent staff within the department.

Overall, the expert group notes the necessity to work on the department's internal culture as regards developing soft skills and inter-department collaboration.

Recommendation 5: Develop a diversity policy

There is an emerging need for a diversity policy within the overall strategy of ITIS. The expert group recommends that ITIS develops a diversity policy that is implemented in all processes within the department. The departmental diversity policy could be based on LISTs "Diversity and Inclusion Charter". Special attention should be paid to:

– Filling management positions with female staff.
– Developing a strategy to attract female PhD students and Postdocs.
– Implementing measures to provide attractive part-time positions for all staff members.
– Implementing a Work-Life-Balance strategy.

Recommendation 6: Future technology radar group

The experts recommend creating a future technology radar group. The group's first task would be to clarify the demand for the planned research unit for Quantum Computing in the industry.

Overall, the group should support ITIS's mission of identifying relevant themes and issues within the industry. Moreover, the group should function as support for the Head of the department and the research group leaders. The group could be implemented together with, or independently of, recommendation two. However, the experts advise ITIS to combine the technology radar group with the external strategic advisor or the external strategic advisory group. In the experts' view, it makes sense for the group to be composed of people from the ITIS department as well as external experts.

I Recommendation 7: Reflect on the relationship with the University of Luxembourg

The experts recommend reflecting on the department's relationship with the UL and, more generally, the positioning of ITIS as compared to corresponding departments at the UL, especially SnT and the Department of Computer Sciences. This reflection process should take place at the level of the department's management as well as at the institute level.

In particular, the expert group recommends working towards at least two joint professorships or research groups with the SnT and the Department of Computer Sciences to strengthen the links between complementary and similar research topics. Appropriate efforts are already underway and should be continued. In addition, the experts encourage ITIS to further foster current cooperation/collaboration projects with the UL.

I Recommendation 8: Develop a vision for a complementary research and innovation landscape

The experts recommend clarifying ITIS's and LIST's positions within Luxembourg's research and innovation landscape. The MESR needs to state the positioning of Luxembourg's research institutions clearly. Particular attention should be paid to the questions of cooperation, differentiation, and the third-party funding of LIST within Luxembourg's research and innovation landscape.

Based on this, the Key Performance Indicators for LIST and, therefore, ITIS should be carefully reviewed. In line with the 2018 experts, the 2022 expert group believes that ITIS could benefit from a more tailored performance evaluation system.

Appendix: Agenda of hearing

Monday, 5 September 2022			
1 | 15:45 – 16:45 | Welcome address by the Ministry of Higher Education and Research (MESR)			MESR ITIS Evaluation team
16:45 – 17:00 Break			
2 | 17:00 – 18:00 | Presentation by the Department of IT for Innovative Services (ITIS)			ITIS Evaluation team
Time	**#**	**Function/institution of participants**	
17:00 – 18:00	1	CEO of LIST	
	2	Head of the Department	
18:00 – 20:00		Discussion of self-assessment report and preparation of interviews	Evaluation team
Tuesday, 6 September 2022			
3 | 8:30 – 10:00 | Questions and discussion on the self-assessment report			ITIS Evaluation team
Time	**#**	**Function/institution of participants**	
8:00 – 09:30	1	Head of the Department	
	2	Former Head of the department	
	3	Lead R&T associate	
	4	Head of Director's Office	
	5	Lead Partnership Officer	
10:00 – 10:30 Break			
4 | 10:00 – 12:15, 13:30 – 15:10 | Individual interviews			ITIS Evaluation team
Time	**#**	**Function/institution of participants**	
10:00 – 10:30	1	Head of the Department	
10:35– 11:05	2	Head of RDSA Unit	
11:10 – 11:40	3	Head of READY Unit	
11:45 – 12:15	4	Senior Researcher	
12:15 – 13:30		*Lunch Break*	ITIS Evaluation team
13:30 – 14:00	5	Junior researcher	
14:05 – 14:35	6	Lead Partnership Officer	
14:40 – 15:10	7	Technology and Innovation Line Manager	
15:10 – 15:30		*Break*	

5 | 15:30 – 17:15 | Group discussions with clients/business partners (group 1) and researchers (group 2)			ITIS Evaluation team
Time	**#**	**Function/institution of participants**	
15:30 – 16:15	1	Goodyear	
	2	Polygone Sàrl, Luxembourg	
	3	Proximus Luxembourg, Luxembourg	
16:15 – 16:30 Break			
16:30 – 17:15	1	PhD Student	
	2	Postdoc	
	3	PhD Student	
17:15 – 17:30	Presentation of AIDA and VisWall		ITIS Evaluation team
From 17:30	Discussion of results and report writing		Evaluation team
Wednesday, 7. September 2022			
6 | 8:30 – 12:30 | Discussion of results and report writing			Evaluation team
7 | 12:30 – 13:00 | Presentation of results			MESR ITIS Evaluation team