

IC School Evaluation Final report Executive summary

23–26 April 2023

Audit Report

School of Computer and Communication Sciences IC, EPFL

Evaluation IC Experts

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Shafi Goldwasser, Director of the Simons Institute for the Theory of Computing, UC Berkeley

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Review April 22-26, 2023

1. Executive Summary

We applaud the IC school for **superb achievements** since the last review on

- Research breakthroughs
- Dramatically improved international ranking
- Impact on society during COVID19 pandemic through contact tracing app
- Hiring a younger and more gender balanced faculty
- Revamping of the undergraduate curriculum, the campus wide ICC required course, the innovative data science course that solves labs' problems across the institution
- Four new MS programs (within IC and across schools)
- Visionary new collaborative centers
- Increase in BS female students
- Outreach to international and women students

In addition, IC has taken extraordinary measures to address its doubling in student demand and anticipated retirements, while simultaneously addressing new campus-wide and societal needs, and enabling EPFL to embrace the AI/ML/Data Science revolution.

Looking forward, we are deeply impressed with the vision for the future of the IC school, the plans for collaboration across EPFL and for outreach to Swiss pre-college students.

At the same time we believe that the following **challenges** pose an immediate threat to all that IC has accomplished:

- The projected budget decrease and corresponding decrease in the number of IC faculty due to expected retirements.
- The lack of a plan by the EPFL Direction to support the IC given the projected budget deficit in the presence of unprecedented student demand.
- The increasing student-faculty ratio that leads to an unacceptably high workload imposed on both faculty and Ph.D. students.
- The departments IC is competing with for rank, students, and faculty are growing.

The committee is concerned that unless the above challenges are addressed, the ability of IC to recruit the best faculty and students, to improve gender balance, and to maintain research and education quality will be greatly diminished. This would be particularly damaging when AI, ML and Data Science are transforming the world and there is a societal need for a workforce trained in all these disciplines. Missed opportunities in IC today can lead to a long-term negative impact on Switzerland in its ability to compete on the international stage in Computer and Communication Sciences.

In sum, IC is in serious danger of losing what it has accomplished if the investment that IC has made is undermined through budget cuts.



EPFL's Direction response to the ETH Board regarding the IC evaluation 2023

The School of Computer and Communication Sciences (*Faculté informatique et communications*, IC) was formed in 2002 by merging the departments of computer science and communication systems. By numbers, it is one of the smallest Schools at EPFL, with around 53 professors, 115 staff members, 2084 Bachelor's and Master's students (approximately 26% of whom are women) and 305 PhD students. IC offers two BS programmes (Computer Science and Communication Systems) and six MS programs, (Computer Science, Communication Systems, Data Science, Cyber Security, Neuro-X, and Quantum Science Engineering)¹. IC is also strongly associated with the Computer and Communication Sciences doctoral program (EDIC).

Based on the recommendations of the 2015 evaluation, IC implemented a number of improvement measures such as involving faculty members in formulating the overall strategy, starting new MS programmes (data science, 2017; cyber security, 2019; quantum science; neuroscience, 2022) or introducing specific policies to make IC more family-friendly. Since its previous evaluation, the School has experienced a very positive development: it is larger, younger, there are more women and twice as many students.

The IC evaluation 2023 took place from 23–36 April, 2023. The evaluation committee consisted of eleven international experts² in computer science, artificial intelligence, programming languages, signal processing and security and privacy, in majority hired by the best North American universities and research institutes. It was chaired by Prof. Shafi Goldwasser, computer scientist and a Director of the Simons Institute for the Theory of Computing, UC Berkeley, USA.

The committee was asked to answer some general questions about IC's positioning in the national and international landscape and the coherence of IC's strategy with the needs of society and with EPFL's overall strategy. The committee was also invited to comment on IC's organizational efficiency and progress on implementing the 2015 recommendations. The specific issues to be addressed are summarized in the Terms of Reference, which are available in IC's self-assessment report (§1.1.2, p. 2-5).

The committee submitted a synthetic report to the EPFL Direction on June 6, 2023 (see attachment). The committee applauded the IC School for superb achievements since the last review. According to the panel, IC has taken extraordinary measures to address its doubling in student demand and anticipated retirements, while simultaneously addressing new campus-wide and societal needs, and enabling EPFL to embrace the artificial intelligence, machine learning and data science revolution.

At the same time, the committee believes that IC is in serious danger of losing what it has accomplished. It claims that the investment that IC has made is undermined through budget cuts. The projected budget decrease and the expected retirements are considered as threats.

¹ Computer Science, Communication Systems, Data Science are accredited by Commission française des titres d'ingénieur (CTI) until 2028. Neuro-X, and Quantum Science Engineering are joint programs with other Schools at EPFL. The cybersecurity programme is a joint programme with the ETHZ.

²One expert participated in the 2015 evaluation; one is currently working in industry. At least three experts are familiar with the Swiss academic context.

The increasing student-faculty ratio that leads to an unacceptably high workload imposed on both faculty and Ph.D. students is an important issue to be tackled immediately.

The committee's recommendations were favorably received by IC. In his response from June 28, 2023, the IC Dean outlined some mitigation measures that have already been implemented or are planned. He is currently consulting the faculty members in order to gain commitment to the planned changes, seeking advice from the Vice Presidency for Responsible Transformation regarding the equality and diversity issues and trying to translate to Swiss realities the recommendations relevant in an American context, mainly regarding alumni and philanthropy.

The committee's recommendations and IC's response were discussed at the D2 meeting (EPFL's Direction and all Deans) on July 4, 2023.

The EPFL Direction has identified some issues that should also be addressed at a centralized level, such as joint hiring and women-friendly evaluation of teaching. Moreover, the Direction foresees to rebalance the budget of the different Schools depending on the development of new topics and also the relative increase of the number of students. Discussions in this sense are currently underway between the Deans and the Direction.

The ETH Board will be informed of any further developments at the DIALOG meeting in December 2025.



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EXTRAIT DU PROCÈS-VERBAL

Séance du Conseil des EPF des 6 et 7 décembre 2023

Point 12

Décision:

Évaluation de la faculté Informatique et Communications (IC) de l'EPFL

Sur proposition de son président, le Conseil des EPF **décide ce qui suit:**

1. Le Conseil des EPF prend connaissance de l'évaluation de la faculté Informatique et Communications (IC) l'EPFL (rapport des experts, réponse de la faculté et prise de position de la direction de l'EPFL).
2. Communication au président de l'EPFL

Certifié conforme:

Le président du Conseil des EPF

La rédactrice du procès-verbal du Conseil des EPF

Michael O. Hengartner

Barbara Schär

EPFL