

# Journey to Here

## Futures of Engineering Accreditation (FEA)

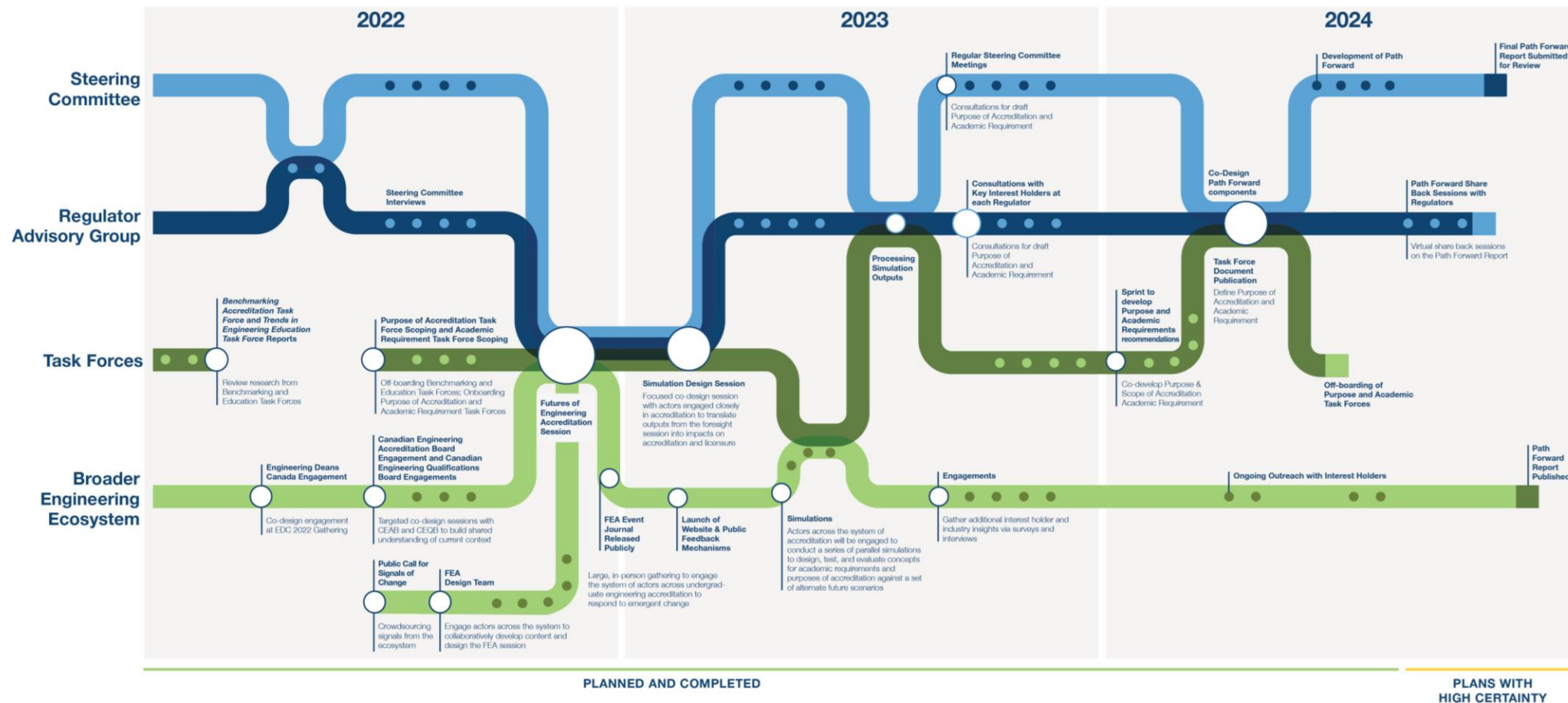
Futures of Engineering Accreditation (FEA) is a three-year project which seeks to address Strategic Priority 1.1 of Engineers Canada's 2022-24 Strategic Plan: **Investigate and validate the purpose and scope of accreditation.**

# Journey map



## Engineers Canada x Coeuraj Futures of Engineering Accreditation (FEA)

Strategic priority 1.1: Investigate and Validate the Purpose and Scope of Accreditation



# Engineers Canada's Strategic Priority 1.1



Investigate and validate the purpose and scope of accreditation:

1. All interest holders understand the purpose of accreditation.
2. Regulators have an academic requirement for licensure, applicable to all.
3. Engineers Canada, including the Canadian Engineering Accreditation Board (CEAB) and Canadian Engineering Qualifications Board (CEQB), have direction to implement systems aligned with the purpose and the academic requirement for licensure.

# Futures of Engineering Accreditation: Why we're here



- The context of engineering practice and education has radically changed since 1965.
- Engineers Canada wants to ensure that accreditation still provides value and is not only fit for purpose but also fit for context.
- Substantial equivalence between the various pathways to licensure (CEAB and non-CEAB) is necessary.
  - A national academic requirement for licensure has not been defined by regulators.

# Key concepts and philosophies guiding our work:



1. A collaborative design (co-design) approach helps people come together to solve problems, explore new ideas, and build solutions.

Applied to situations where there is a diverse set of perspectives and a requirement for alignment across a varied, and complex system.

Encompasses five core principles, including the concept that **people love what they design and own what they create.**

2. In every adverse condition, there are many good solutions, and those solutions rest with the actors in the system.
3. The project created the conditions to unearth and define the solutions with and for the Canadian engineering ecosystem.

# The FEA approach

Using a collaborative design (co-design) method, the project has heard from and worked directly with people across the Canadian engineering ecosystem.

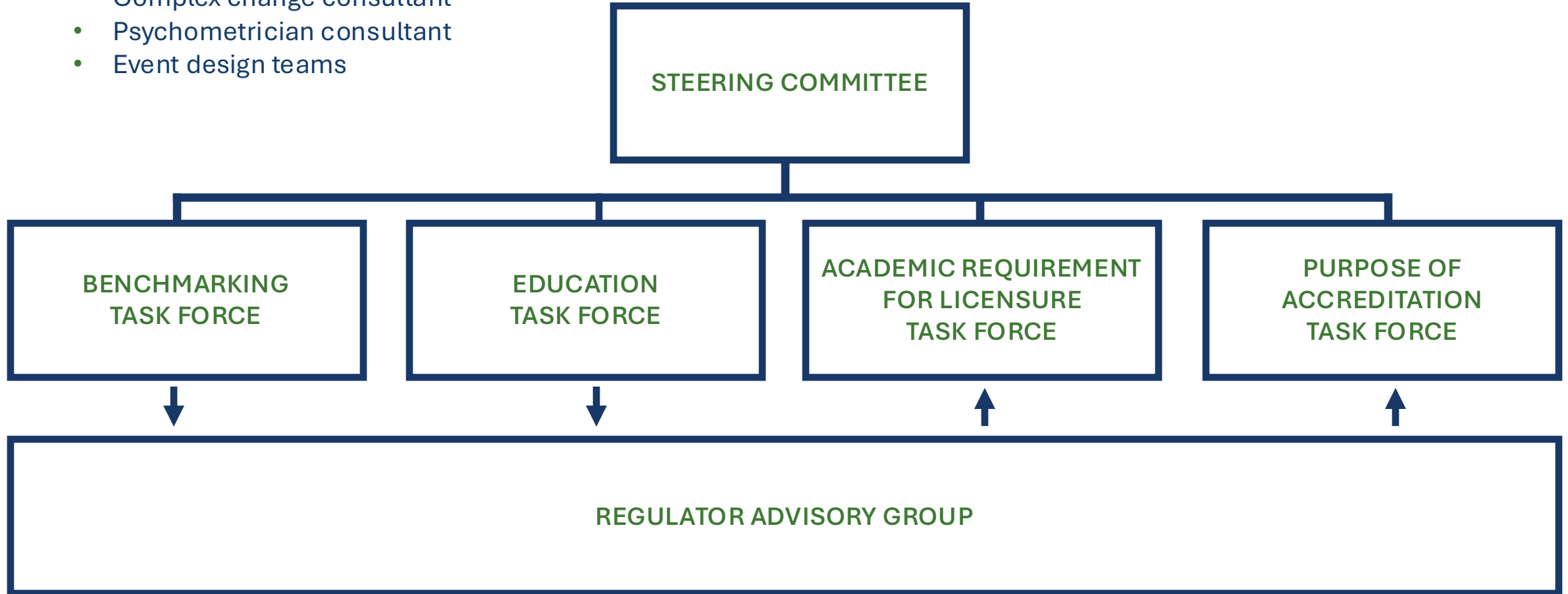
The following slides provide an overview of the steps the FEA project has taken to understand the current state and trends in the Canadian engineering ecosystem, what is important to all interest holders, and how best to address gaps and requirements to meet the needs of the engineer of the future.

The final recommendations, contained in the FEA Path Forward Report, will be presented to the Engineers Canada Board in December 2024 for direction.



# FEA project team

- Engineers Canada staff
- Complex change consultant
- Psychometrician consultant
- Event design teams



## Project journey

The FEA project was a multi-year initiative with different phases. Key activities and outputs included:

- Benchmarking the Canadian accreditation system and investigating a minimum academic requirement for licensure.
- Conducting a fundamental review of the current accreditation system and re-examining its purpose in the context of the overall licensure system.
- Gathering the different perspectives of the Canadian engineering ecosystem to shape future evolutions of accreditation to best meet society's needs.
- Delivering the Path Forward Report, which provides direction to Engineers Canada, including the CEAB and the CEQB, on implementing systems aligned with the purpose of accreditation and the academic requirement for licensure. The Report explains the future direction and presents recommendations to close the gaps between the current and envisioned future state.

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### LINKS:

[Current and Emerging Practices in Engineering Education](#)

[Benchmarking the Canadian Engineering Accreditation System](#)

[Academic Requirement document](#)

[Purpose of Accreditation document](#)

[Foresight event journal](#)



# Project participants

The FEA project engaged a dynamic group of volunteers from across Canada with a range of expertise.

## Organized groups included:

- Academic Requirement for Licensure Task Force
- Benchmarking Accreditation Task Force
- Engineering Education Task Force
- Purpose of Accreditation Task Force
- Regulator Advisory Group
- FEA Steering Committee

In addition to the organized groups, **more than 700 interest holders participated in FEA activities** through more than 35 engagements across Canada. Each contributor brought a unique perspective to the project and strengthened the research and insights about the accreditation system.

# Journey to here



# Research insights: Benchmarking the Canadian engineering accreditation system



## Key similarities:

- All accreditation systems rely on outcomes.
- Most comparators do not employ discipline-specific criteria.

## Key differences:

- The Canadian engineering education accreditation is extensively granular relative to comparators.
- Comparators place higher importance on integration of industry/practical experience in programs, including clear standards or outcomes as to the purpose of such experience.
- Other systems are less restrictive regarding licensure requirements of faculty.
- The purpose statement of comparators include more than one interest holder and/or multiple objectives.
- Comparators have a defined role for industry within the accreditation process (e.g. industry advisory panels).

**Full report:** [Benchmarking the Canadian Engineering Accreditation System](#)

**Report summary:** [Benchmarking Report Summary](#)

# Research insights: Current and emerging practices in engineering education



## Trend #1: Flexible and assessed pathway into and through higher learning

- Flexible student entry and bridging pathways to higher education institutions.
- Competency-based assessment in the learning environment.
- Micro-credential opportunities changing the structure of programming.

## Trend #2: Open and inclusive culture in the learning environment

- Focus on equity, diversity, and inclusion leading to programmatic, structural, and cultural changes.
- Indigenization of curriculum and educational structures.
- Focus on well-being and the whole student considered in educational research and program development.

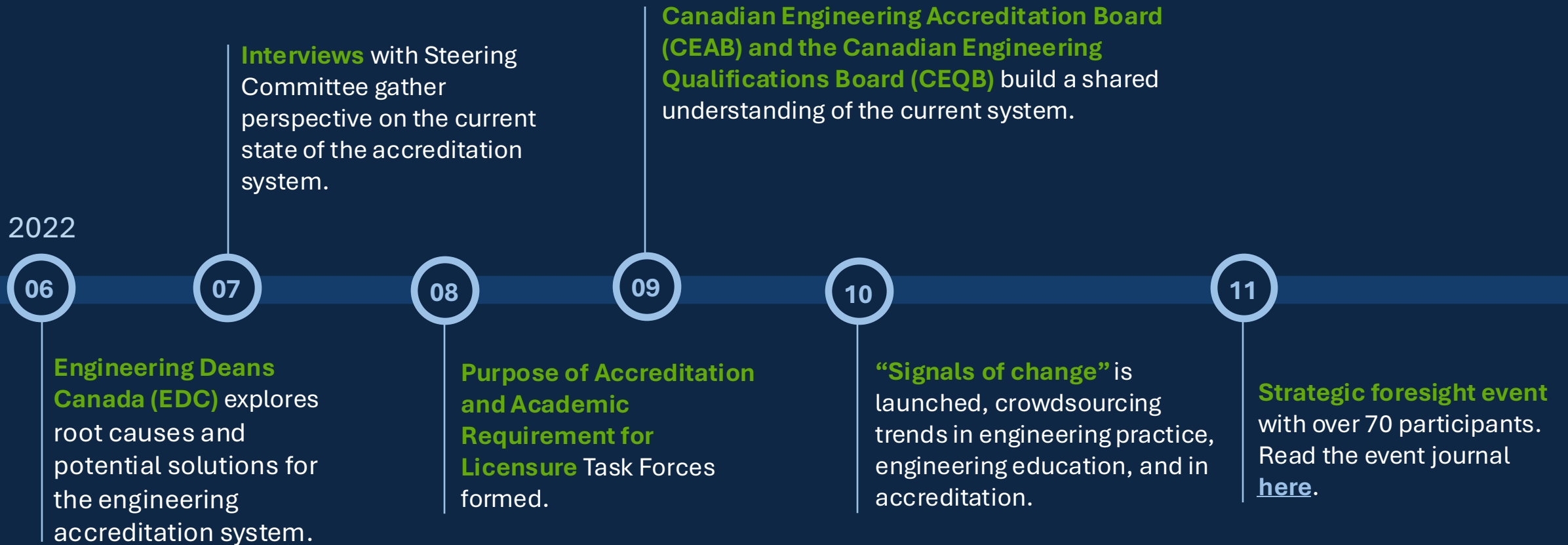
## Trend #3: Student-centred engagement with complex problems

- Integration of behavioural and technical skills development in programs.
- Experiential learning opportunities for students.
- Project/problem-based learning to deepen learning and understanding.

Full report: [Current and Emerging Practices in Engineering Education](#)  
Report summary: [Engineering Education Report Summary](#)

- Engineering education is changing in response to the world around us and to the changing realities of the practice of professional engineering; engineering education accreditation must change as a result.
- The Canadian engineering accreditation system is very similar to the selected comparators. The key differences offer an opportunity to reconsider certain aspects.
- Accreditation must remain fit for the educational environment in which it operates.
- **Task Force findings influence future work, including:**
  - A revised purpose of accreditation statement.
  - Development of ‘accreditation system design criteria’ for the future, which considers trends in education and learnings from other accreditation systems.
  - Creating an environment of greater collaboration with higher education institutions in the development of accreditation criteria, policies, and procedures.
  - Leverage what is working well in the current system; consider what no longer serves.

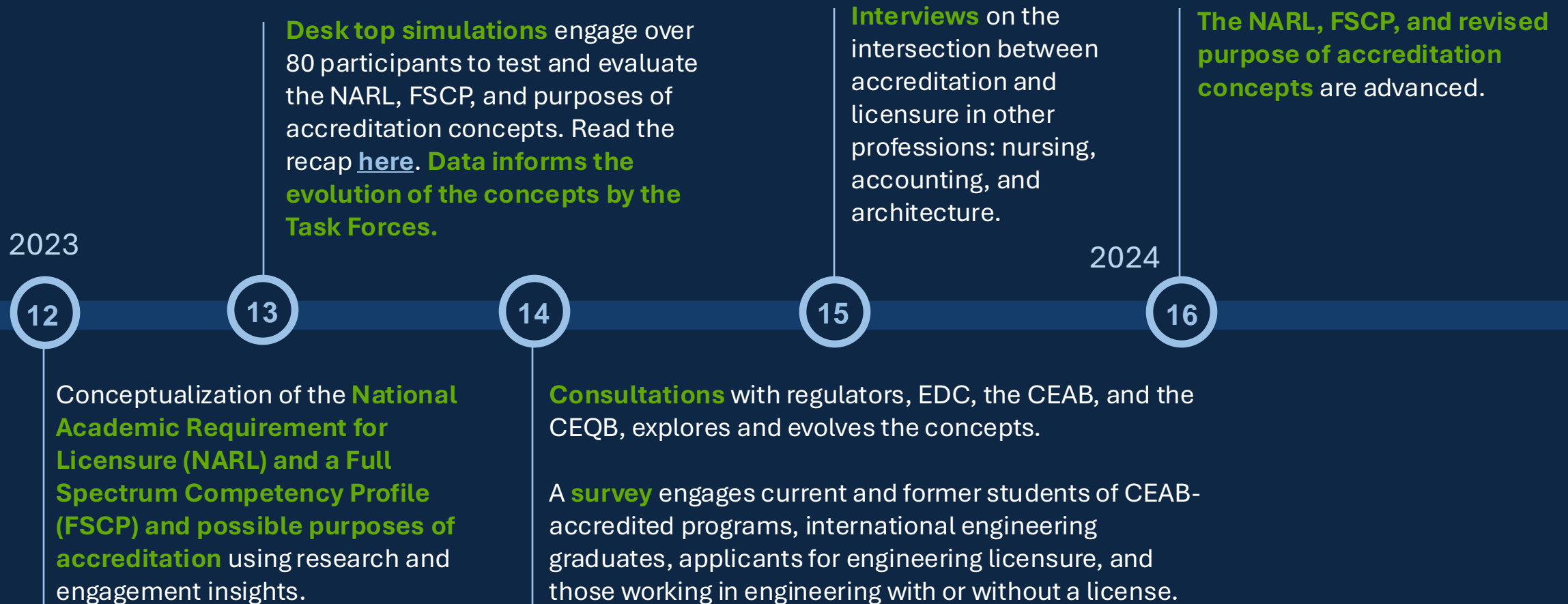
# Understanding the existing system



← Updates to the CEAB, CEQB, EDC, Engineers Canada Board, and Regulator Advisory Group. →

- Aspects of the current accreditation system work and should be maintained.
  - Can challenges be addressed through incremental changes and process improvements? Is transformative change needed?
- The needs and constraints of interest holders is a value that should underpin the FEA project.
- System actors have differing perspectives on their own role and roles of others and their relative importance in the engineering ecosystem.
- The vision of the engineer of the future emerges:
  - Value-driven leader
  - Technically excellent
  - Collaborative across disciplines
  - Future-focused
  - Committed to lifelong learning
- The future will see multiple paths to becoming an engineer, multidisciplinary collaboration in practice, and experimentation with technology, all while maintaining high regard for public safety.
- Substantial equivalence between the various pathways to licensure (CEAB and non-CEAB graduates) is necessary. A nationally-defined academic requirement for licensure has potential.

# Introducing new voices



Updates to the CEAB, CEQB, EDC, Engineers Canada Board, and Regulator Advisory Group.



- Accreditation should have a role in the engineering ecosystem, but it needs significant change to be fit for purpose and adaptable to the changing educational and professional environment.
- Calls for an accreditation system that more equally distributes the work and the benefits of accreditation.
- The future purpose of accreditation should consider the needs of regulators, students, and engineering programs and not focus solely on the needs of just one.
- The link between accreditation and licensure must be retained.
- Interest holders are committed to a collaborative future to realize alignment and a more efficient system.
- There is value in having nationally defined requirements for engineering knowledge and competence which address baseline technical knowledge, professional competencies, and ethical responsibilities – Expressed as the Full Spectrum Competency Profile (FSCP).
- A National Academic Requirement for Licensure (NARL), as a subset of the FSCP to apply equally to CEAB and non-CEAB graduates, starts to emerge.
- General direction for the FSCP is supported but caveated with concerns about complexity in defining competence, developing indicators, and understanding its use in various assessment methods.

# Nurturing an emergent system

2024

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Interest holders engage in a **co-design session where the FSCP, NARL, and purpose of accreditation concepts are discussed**. Implications for the engineering ecosystem are explored. Read the summary of the session [here](#).

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**The Task Forces submit their documents with recommendations, gaps, design considerations, and rationale for change to the Steering Committee.**

Read Purpose of Accreditation document [here](#).  
Read the Academic Requirement for Licensure document [here](#).

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**CEAB workshop** surfaces perspectives on Task Force documents

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**Steering Committee prepares the Path Forward Report.**

Updates to the CEAB, CEQB, EDC, Engineers Canada Board, Regulator Advisory Group, and Regulator Officials Groups.

- Aspects of the accreditation system design criteria will need more direction, such as the necessity of faculty licensure and incorporating learning environment factors into accreditation decisions.
- It will be necessary to confirm that the proposed purpose of accreditation and design parameters align with the requirements of the Washington Accord and other international agreements to which Engineers Canada is a signatory.
- A pilot is needed to demonstrate the feasibility of implementing the concepts regarding the FSCP across the engineering licensure and accreditation systems.
- There is excitement for the National Academic Requirement for Licensure (NARL) but also recognition that it requires more work, including defining the rationale for the selection of the competencies that make up the NARL.
- Moving forward, it will be important to ensure that outputs and outcomes, along with recommendations and decisions, are properly communicated across the system.
- Continued collaboration with key interest holders is needed to define the path between the current state and the desired future state.
- While some aspects of the FEA Path Forward Report's proposed changes will take time, there are also changes that can be implemented without delay.

# Nurturing an emergent system

2024

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**CEAB, CEQB, NAOG share back sessions** on key findings and Path Forward Report recommendations.

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**Regulator share back sessions** on key findings and Path Forward Report recommendations.

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**Path Forward Report workshop** with Engineers Canada Board Directors, regulator CEOs and presidents, Chairs of the CEAB, CEQB, and EDC.

← Updates to the CEAB, CEQB, EDC, Engineers Canada Board, and Regulator Advisory Group. →

# Thank you!

Visit the project website:  
[engineeringfutures.ca](http://engineeringfutures.ca)

Contact the project team:  
[fea@engineerscanada.ca](mailto:fea@engineerscanada.ca)

