

# Regulation of Emerging Disciplines

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# Panel Members



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# What is an emerging discipline?

For purposes of this discussion, an emerging discipline is a set of scopes of practice that fall within the [national] definition of *the practice of professional engineering* but that are not yet being recognized or regulated as such, for example:

- **Nanomolecular Engineering (NME)** - the engineering of functional systems at the molecular or nano scale
- **Communications Infrastructure Engineering (CIE)** - the systems level architecture, design, and management of reliable, secure networks for mission-critical and safety-critical applications, including those that support other critical infrastructures



# Why are emerging disciplines important?

Emerging disciplines are important to engineering regulators because:

- Science, technology, and engineering are evolving rapidly and generating new scopes of practice
- Practitioners in these new scopes of engineering practice may have no formal education relative to those scopes of practice (i.e., they may have learned “on the job”). In fact, they may have no formal engineering background at all (and hence may be ineligible for licensure).
- If these scopes of practice involve public safety or the protection of public interest, it is our job to regulate them. If we don’t, someone else will.
- Emerging disciplines may be the future of professional engineering, as mature engineering disciplines become commoditized.

# What are our objectives for emerging disciplines?

Regulate them by.....

- Establishing them as the practice of professional engineering in the minds of industry, government, and practitioners
- Establishing ourselves as their regulators before they escape our purview
- Capturing a critical mass of existing practitioners
- Establishing restricted scopes of practice that can be enforced
- Encouraging the development of accredited engineering programs
- Communicating how the profession is proactively protecting the public



# What are the challenges of regulating emerging disciplines?



# Challenges in Regulating

- Where is work being done? – is there jurisdiction?
- Not recognized as being Engineering (by regulator, public, practitioner)
- Little or no demand-side legislation
- Practitioners may not come from Engineering background
  - Push-back on regulation
- Education programs may be outside Engineering schools (or joint programs)



# What are the risks associated with emerging disciplines?



# Emerging Disciplines Risk

- Accidents/Public Safety
- Legal Precedents
  - Definition of Engineering
  - Regulation pushback
- Loss of control of title
- Dilution of Profession

# How can regulators integrate emerging disciplines into their domain?



# Integration of Emerging Disciplines

- Define the scope of practice for the emerging discipline
- Develop the core body of knowledge
- Consider broad assessment criteria for licensure
- Recruit licensed practitioners to supervise & review applications
- Conduct outreach and education with industry and government
- Create practice guidelines and standards
- Establish a unified position with other engineering regulators
- Investigate demand-side legislation



# Additional Resources

- [Areas of Engineering Practice](#)  
Engineers Canada, Established and Emerging Disciplines  
<https://engineerscanada.ca/regulatory-excellence/areas-engineering-practice>
- [White paper on professional practice in software engineering](#), Qualifications Board  
May 2016  
<https://engineerscanada.ca/publications/white-paper-on-professional-practice-in-software-engineering>
- [Regulating emerging engineering disciplines](#), Engineering Dimensions September 2016  
<http://engineeringdimensions.peo.on.ca/index.php/2016/09/06/regulating-emerging-engineering-disciplines/>



# Thank you

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