

NEW LICENSURE MODELS: INNOVATION VS. DISRUPTION

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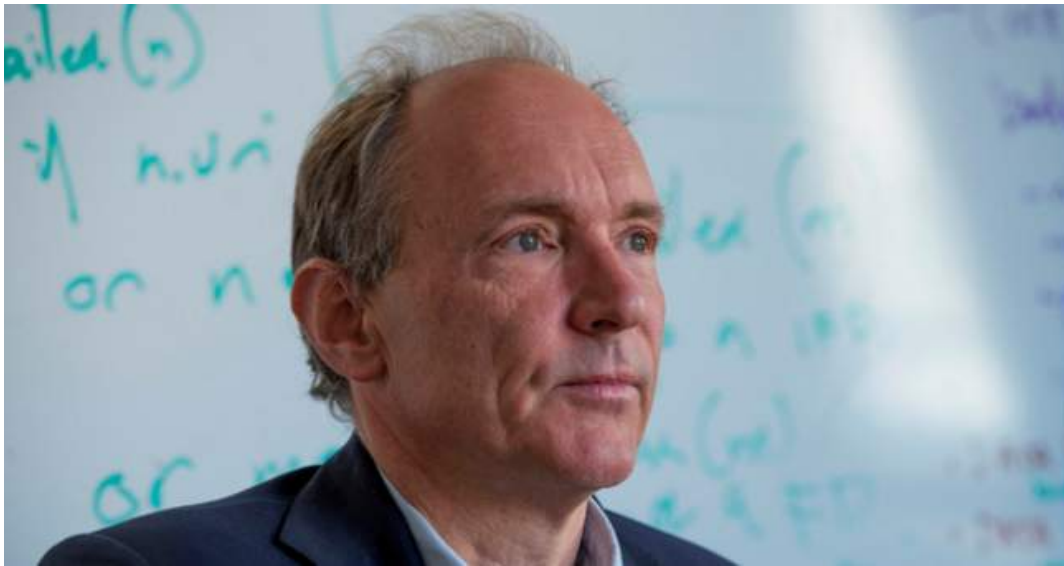
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Timeless Expectations

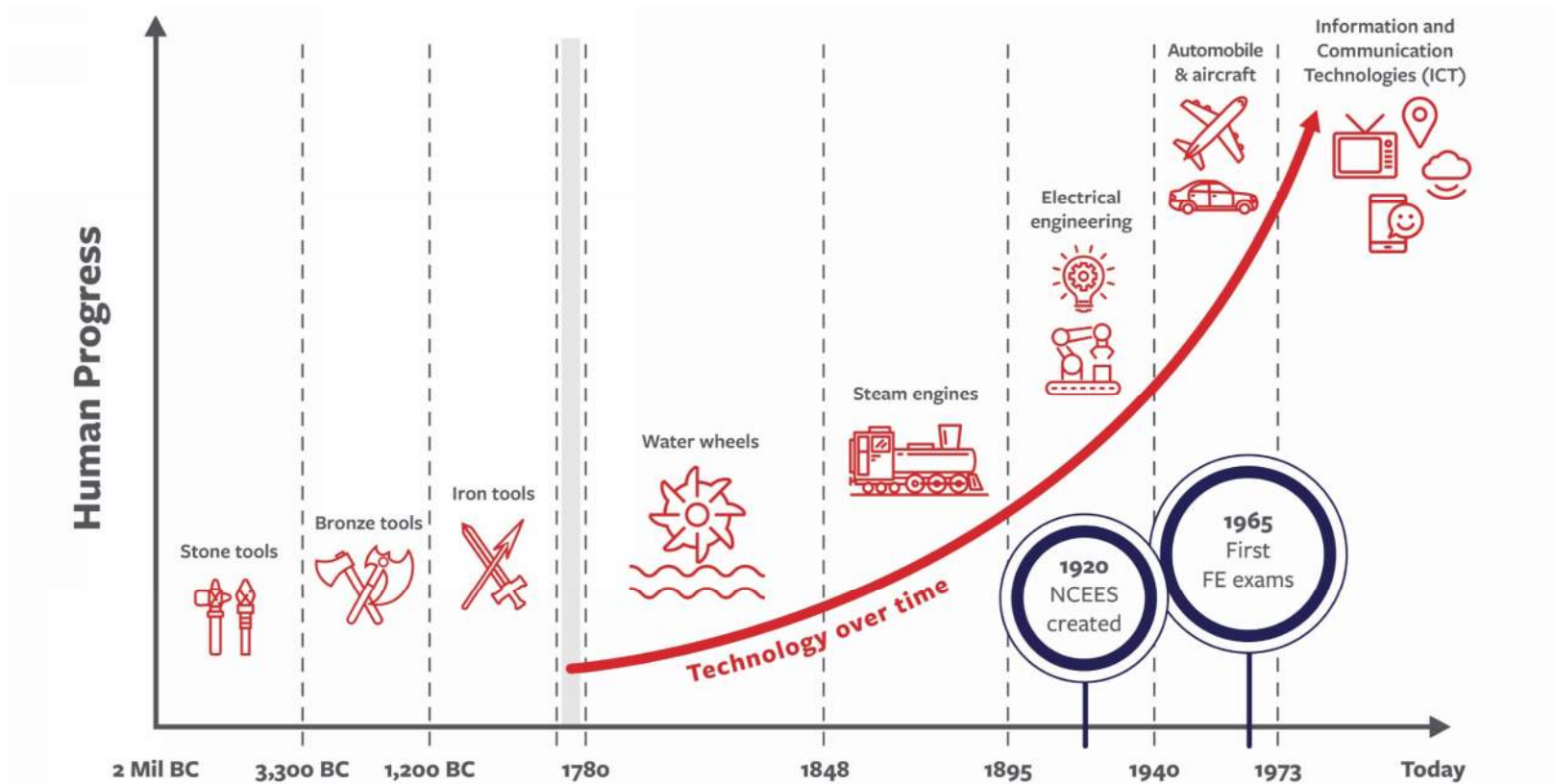
- **The public** relies on the professional judgment of engineers to keep them safe
- **Professional engineers** must regard their duty to public welfare as paramount
- **Regulators** protect the public by:
 - setting standards of technical competence and professional conduct for engineers
 - ensuring that license holders meet these standards
 - holding practitioners accountable if they are incompetent or unethical
- **Applicants** for registration are governed by registration practices that are transparent, objective, impartial, fair and timely

Tim Berners-Lee on the huge sociotechnical design challenge

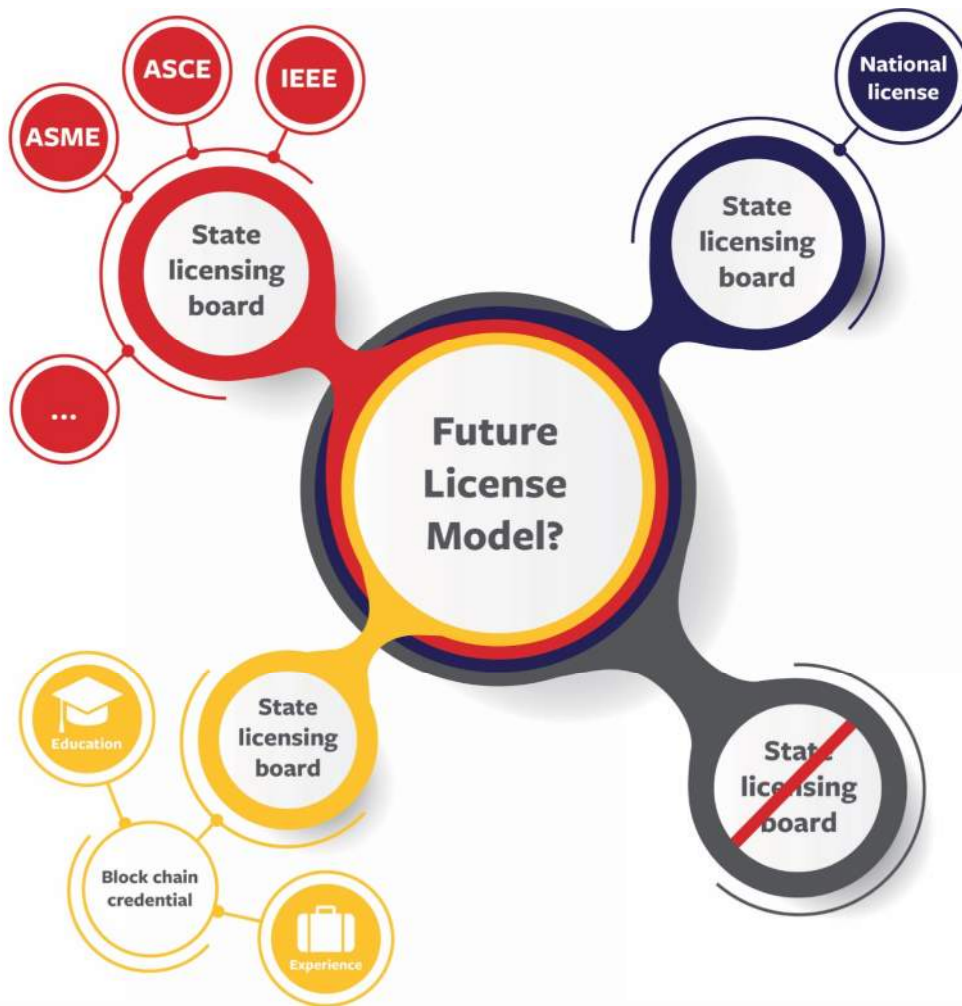


“As we’re designing the [technological] system, we’re designing society. Ethical rules that we choose to put in that design [impact the society]... Nothing is self evident. Everything has to be put out there as something that we think will be a good idea as a component of our society.”

Human Progress vs. Tech



Future Licensure Model



Software Engineering – Case Study

- Did software go away? Did it stop having an impact on society?
- Issues
 - Process takes too long
 - Process starts too late
 - Process is reactive
 - Area of practice is unregulated/path to licensure doesn't exist, so that when it finally does, no one is interested or it isn't useful.

Software Engineering – Case Study

- What will happen next time?
- What is the next big thing?
- Is the exam process relevant or appropriate for new areas of practice?
- “Every system is perfectly designed to get the results it gets.” — Attributed to W. Edward Deming

Professional Registration Model

- Many jurisdictions worldwide, do not regulate the practice of engineering
- It is more common to regulate the use of the title “engineer” or its affiliates — professional engineering, chartered engineer, registered engineer, etc.
- Often two tiers — Registered Engineer on Graduation, Professional Engineer with Four Years Experience

Benefits of Registration Often Cited

- Demonstration of a professional attitude valued by employers and customers
- Improved career prospects and employability
- Evidence of expertise
- Higher earning potential
- Enhanced status leading to higher self-esteem
- International recognition of competence and commitment
- Greater influence within own organization and industry

Professional Regulation Model

- Primarily used to regulate the practice of engineering related to the built environment
- Needs to expand to cover all technology — the means by which humans adapt their environment to meet their needs or wants

Principles of Good Regulation

- **Accountability:** regulators must be able to justify decisions, and be open to public scrutiny
- **Agility:** regulators must look forward and be able to adapt to and anticipate change
- **Consistency:** rules and standards must be aligned and implemented fairly
- **Proportionality:** regulators should only intervene when necessary — remedies should be appropriate to the risk posed and costs identified and minimized
- **Targeting:** regulation should be focused on the problem, and minimize unintended consequences
- **Transparency:** regulators should be open, and keep regulations and regulatory processes simple and user friendly



Global Practice of Engineering

A Blended Model

A new model needs to accommodate existing, emerging, and new fields of engineering and technology, (**registered**) and holding a practitioner publicly accountable for safeguarding and protecting the public interest where required (**licensed**)

- Common definitions of what constitutes the practice of engineering and professional engineering to provide clarity for the public, applicants, registrants, engineering organizations, and the engineering regulatory bodies

“Engineering” is the process of creating or maintaining technologies.

The **“practice of professional engineering”** means any act of creating or maintaining technology that requires the application of engineering principles and that concerns the safeguarding of life, health, property, economic interests, the public welfare and the environment.



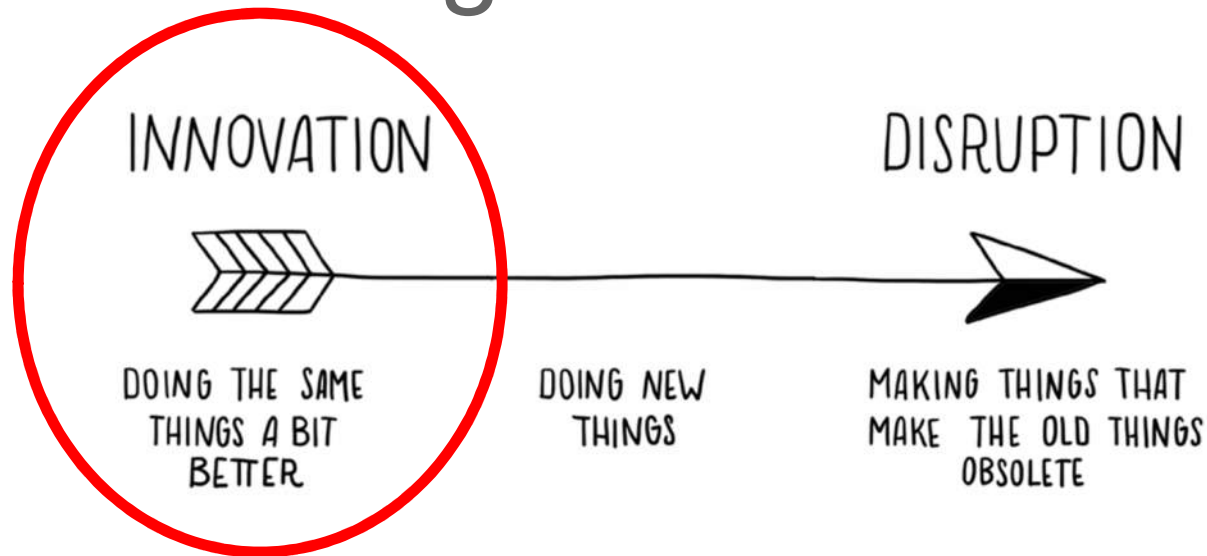
Global Recognition of Credentials

Imagine a future where all regulators have access to a blockchain-based system for licensure that provides an immutable record of engineering credentials and professional development validated by experts.

Then

1. Resources that are currently being used to assess credentials could be redeployed to regulate the practice
2. Licensing professional engineers from other jurisdictions could occur in seconds
3. Qualified engineering graduates could register and have a bridge to licensure. Also, they would be obligated by the code of ethics not to practice in an area that requires a license.

How Should We Regulate Going Forward?



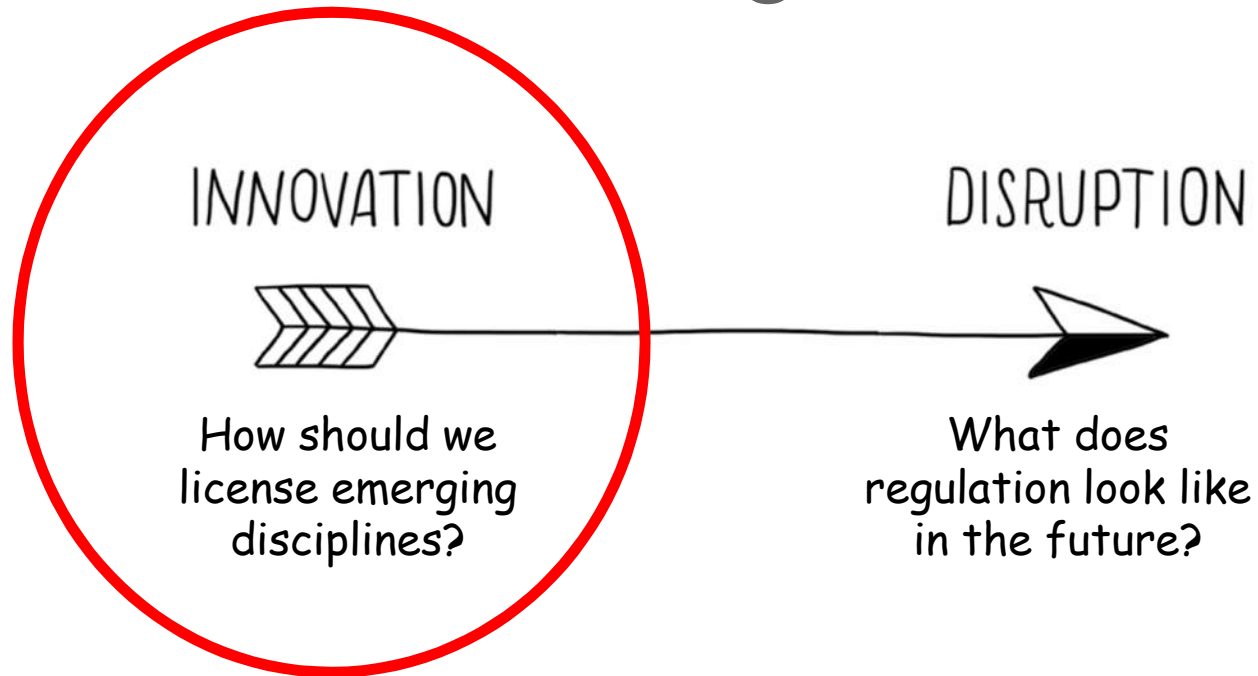
How Should We License Emerging Disciplines?

- What do we want regulation to look like?
- Licensure in its current form?
- A new model?

Emerging Disciplines

- If licensure doesn't adapt, it may become antiquated and irrelevant.
- Challenges to licensure are happening NOW.
- We need to challenge our thinking going forward.

The Question Changes



Innovation

- Doing the same things a little bit better...
 - Different number of states?
 - Start earlier?
 - “Expedite” exam development process?
 - Modify other “similar” disciplines for new materials?

Disruption

- Envisioning new things beyond the old things
 - Still use exams?
 - Phased licensing?
 - Tiered licensing?
 - 2 different models: “old” engineering and “new” engineering?
- License for ethics and not for engineering competency?
- Competency by degree and experience?
- Only license “core” or “legacy” disciplines?
- Is licensure of an individual relevant in a new age?
- Regulate teams and not individuals?
- Regulate projects and not individuals?

Guest Provocateur –
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Licensing Emerging Disciplines

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