



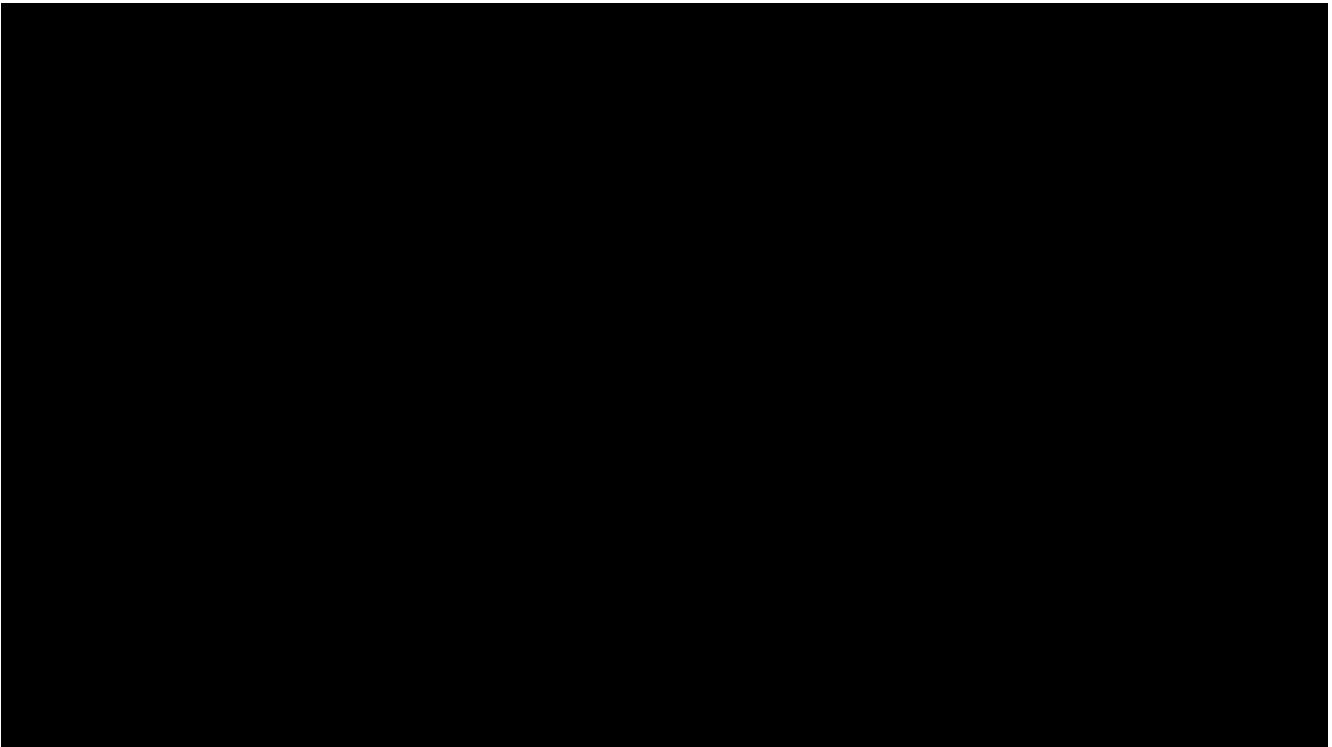
Moore's Law Calls for the Next-Generation University
Maarten Steinbuch
27 OCTOBER 2025

ECSS 2025 - European Informatics Leaders Summit
Rennes, France
27-29 October 2025

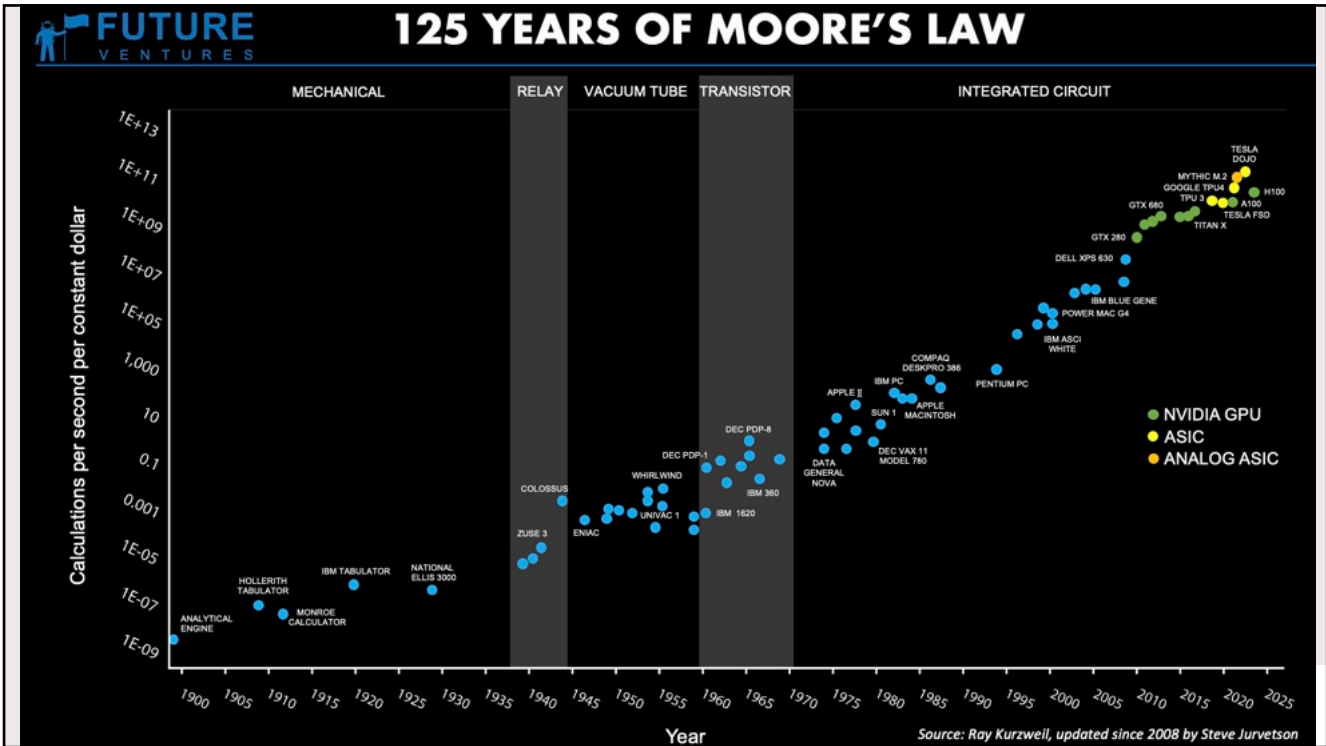
 INFORMATICS EUROPE

 **TU/e** EINDHOVEN UNIVERSITY OF TECHNOLOGY

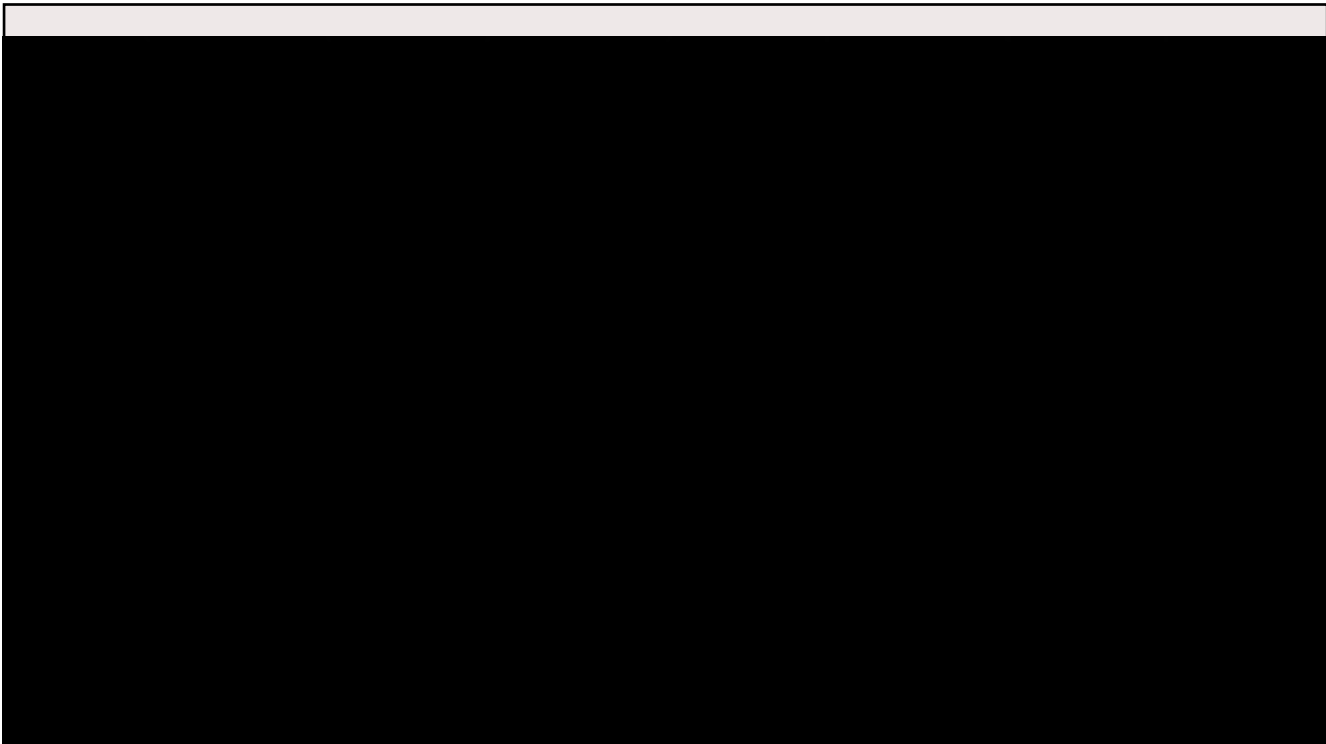
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Movie links

<https://www.youtube.com/watch?v=dPa5a9nUCAs>

https://www.youtube.com/watch?v=h_zgURwr6nA

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38 years in Brabant

1987 start at Philips 'NatLab'



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eindhoven-in-beeld.nl



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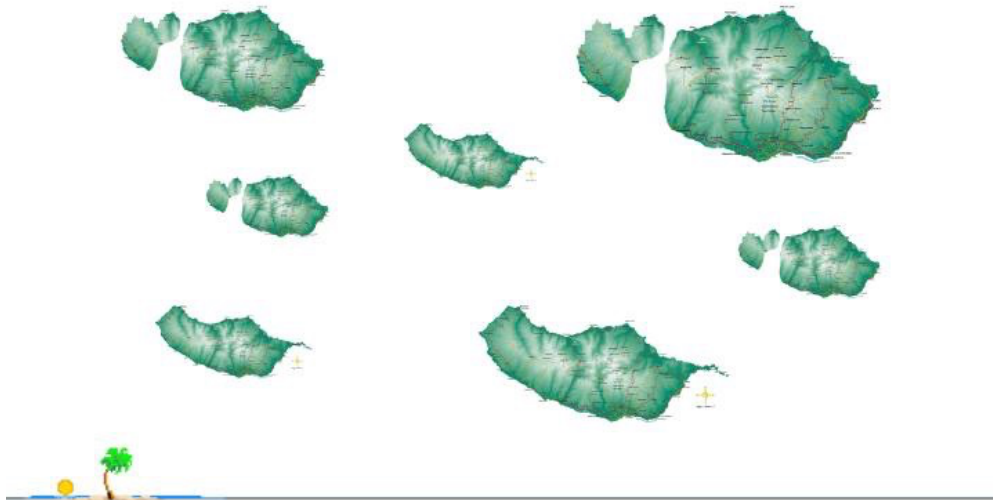
The ten commandments of Holst



1. Recruit clever researchers, possibly young, but with experience in academic research.
2. Do not pay too much attention to the details of the work they have done.
3. Give employees a lot of freedom and accept their peculiarities.
4. Have the employees publish and participate in international scientific activities.
5. Avoid an organization that is too rigid. Let authority be based on real expertise.
6. Do not divide a laboratory into different disciplines, but form multidisciplinary teams.
7. Give great freedom in the choice of work, but let the leading figures, in particular, be aware of their responsibility towards the company.
8. Don't budget an industrial laboratory per project and do not allow manufacturing departments to have budgetary control over research programmes.
9. Promote the transfer of skilled older researchers from the laboratory to product development and production.
10. The choice of research projects should not only be determined by market opportunities, but also by the state of academic research.

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Isles of Academia



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Kennis werkers regeling



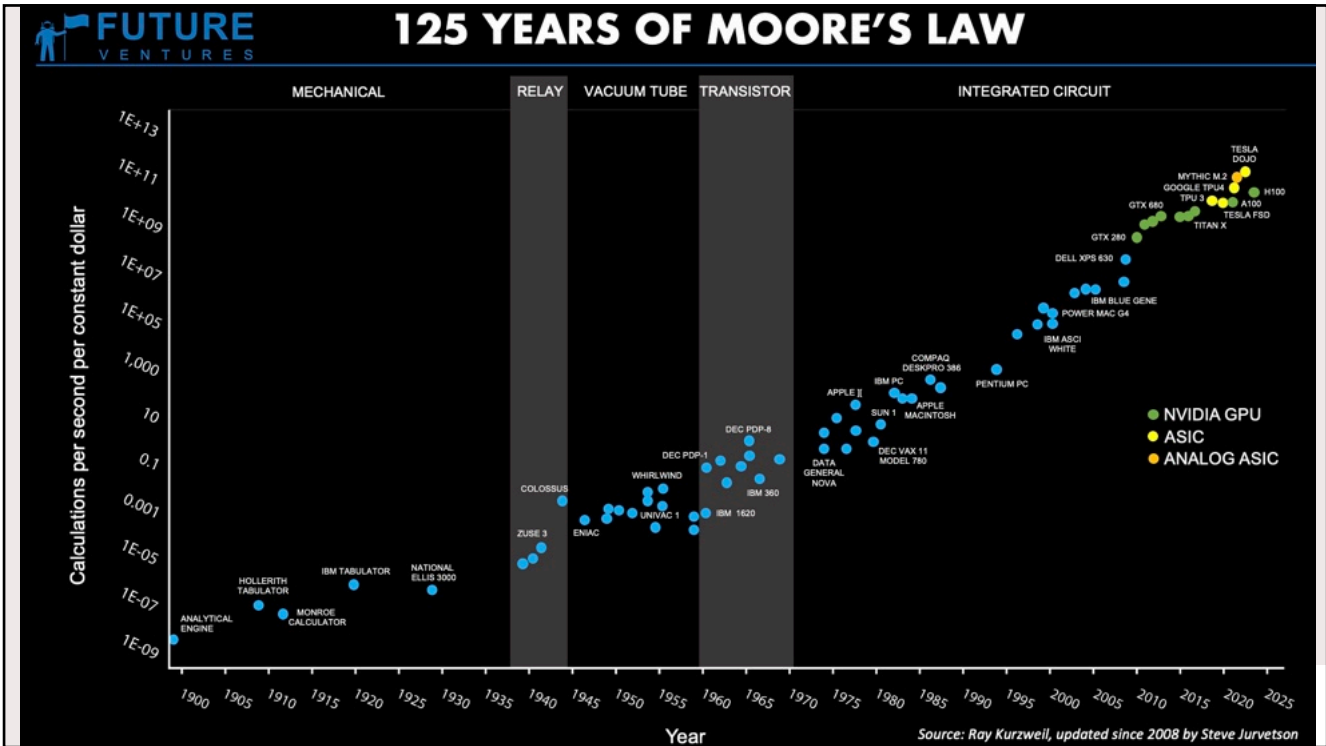
Student Teams



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Q1: In an exponential world, should the research still be done linearly?

Q2: How can we transform the university into a responsible place for the required change of human mankind?

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Towards a 4th generation University....

	1 st Generation	2 nd Generation	3 rd Generation
Objective	Education	Education & research	Education, research & know-how exploitation
Role	Defending the truth	Discovering nature	Creating value
Method	Scholastic	Mono-disciplinary science	Inter-disciplinary science
Human capital development	Professionals	Professionals & scientists	Professionals, scientists & entrepreneurs
Orientation	Universal	National	Global
Language	Latin	National languages	English
Organization	Colleges	Faculties	Institutes & centers
Management	Rector & Chancellor	Part-time academics	Professional management

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“Not all the smart people in the world work for us”

Bill Joy, co-founder of Sun Microsystems, quoted in:
Chesbrough, H. 2003. *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Boston, MA: Harvard Business School Press. (p. 197)



14 Next slides made by Marcel Bogers, TU/e

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Inside-out

“Through ‘inside-out’ innovation, we make our skills and resources available to the outside world. For example, we regularly undertake contract research for external parties, provide technical facilities and support, and assist with IP licensing.”

www.philips.com/a-w/research/open-innovation.html (2021)

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Outside-in

“Through ‘outside-in’ innovation, we draw on the capacities of individuals, organizations, and even small start-ups from around the globe. By providing a broader window on the world of health and well-being, these strategic partners help us gain new insights and access to new technologies.”

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The Fourth Generation University (4GU)

“From closed knowledge house to open innovation hub”

- Distributed innovation model
- Multi-stakeholder innovation

‘Mode 2’ knowledge production

- Knowledge produced in the context of application
- Increased societal responsibility and reflexivity
- Flatter hierarchies and temporary organizational structures
- Transdisciplinary approach

Universities increasingly act as orchestrators of the regional ecosystem

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Bogers, M., & Steinbuch, M. 2023. De vierde generatie universiteit: Het nieuwe tijdperk van open innovatie en ecosysteemdenken. *Holland Management Review*, 208: 62-71. Translated into English: ‘The Fourth-Generation University: The New Era of Open Innovation and Ecosystem Thinking’


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	1GU	2GU	3GU	4GU
Mission	Teaching	+ Research	+ Commercialization	+ Societal transformation
Knowledge flow	Unidirectional (to student)	Primarily unidirectional (to society)	Predominantly unidirectional (to market)	Multidirectional (co-creation with diverse stakeholders)
R&D partnership model	Personnel recruitment only	Occasional consulting	Technology transfer and licensing	Ecosystem orchestration and co-innovation
Stakeholder integration	Minimal	Limited to academic peers	Triple helix	Quadruple/quintuple helix
Societal role	Knowledge preservation	Knowledge advancement	Economic development	Systemic transformation for societal challenges
Organizational structure	Disciplinary silos	+ Research institutes	+ Technology transfer offices and incubators	+ Transdisciplinary platforms and collaborative infrastructure
Regional engagement	Limited	Indirect	Focused on economic impact	Focus on ecosystem orchestration and resilience

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Bogers, M., Poursaeidi, S.A. Mahdad, M., & Norn, M.T. 2025. The Fourth Generation University: Catalyzing regional innovation ecosystems to address global challenges. *Working paper.*



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4GU: What's new?

From implicit to explicit societal mission framing

→ Grand societal challenges as primary mission

From bilateral to ecosystem-level orchestration


→ Intentional management of ecosystem orchestration as a core university activity

Working definition:

“A 4GU is an entrepreneurial university that explicitly organizes its teaching, research, and engagement activities around societal transformation missions, both locally and globally, positioning itself as a deliberate orchestrator of multi-stakeholder innovation ecosystems.”

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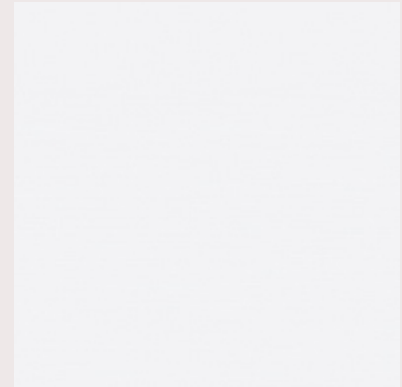
Bogers, M., Poursaeidi, S.A. Mahdad, M., & Norn, M.T. 2025. The Fourth Generation University: Catalyzing regional innovation ecosystems to address global challenges. *Working paper.*



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4GU: What's next?

- 🔄 Open innovation is evolving into ecosystem innovation.
- 🌍 Addressing grand challenges requires systemic and collaborative innovation.
- 👏 The 4GU is not (just) about universities, but about *all* stakeholders in the ecosystem.
- 🚀 The next frontier: from innovation ecosystems to ecosystem innovation.



<https://4thgenuniversity.com>

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Bogers, M., Poursaeidi, S.A. Mahdad, M., & Norn, M.T. 2025. The Fourth Generation University: Catalyzing regional innovation ecosystems to address global challenges. *Working paper*.

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Thanks for the attention!

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