

Strategic Research Plans and Priorities of Universities

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OUTLINE

- UOIT and FEAS
- Strategic Research Plan (SRP)
- Institutional Characterization
- UTILISER Concept
- Culture of Innovation
- Impactful Researcher
- Research-Innovation-Commercialization
- Entrepreneurship
- Road Map
- Institutional Responsibilities
- Impactful Research
- REB
- Conclusions

University of Ontario

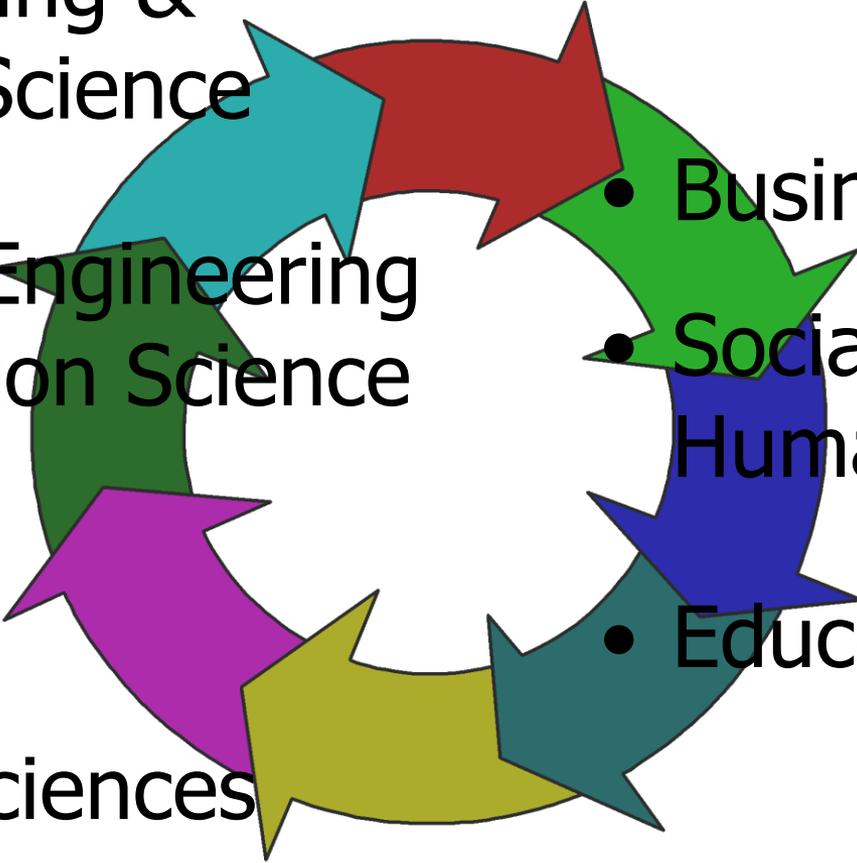
- First technology based university in Ontario
- Laptop-based university
- Publicly funded
- Enrollment:
 - 9,803 in 2014
 - 10,272 in 2015
- Meeting students' interests and career aspirations, along with the market-driven requirements of employers
- Providing critical thinking, innovative research and technological skills
- Branding: **Challenge-Innovate-Connect**
→ **The bottom line: Quality matters**



Branding Universities

- **UOIT:** Challenge – Innovate – Connect
- **University of Toronto:** Canada's Answers to the World's Questions
- **University of Waterloo:** Everything You Discover At
- **University of McMaster:** Inspiring Innovation and Discovery
- **University of British Columbia:** A Place of Mind
- **University of Windsor:** Thinking Forward
- **University of Alberta:** The Future of Everything
- **York University:** Redefine the Possible
- etc.

UOIT's Innovative and Unique Program Areas

- Engineering & Applied Science
 - Nuclear Engineering & Radiation Science
 - Science
 - Health Sciences
 - Business & IT
 - Social Sciences & Humanities
 - Education
- 
- A circular diagram consisting of seven thick, colored arrows arranged in a clockwise cycle. The arrows are: a red arrow at the top, a green arrow pointing right, a blue arrow pointing down-right, a teal arrow pointing down, a yellow-green arrow pointing left, a purple arrow pointing up-left, and a cyan arrow pointing up. The text of the program areas is placed around the cycle, with some overlapping the arrows.

Strategic Research Plans (SRPs)

- ✓ The Strategic Research Plan (SRP) is the only planning document a university will require in working with the *Canada Research Chairs program*, the *Canada Foundation for Innovation (CFI)*, and *any federal granting agency program* that requires an SRP, e.g. the *Canada Excellence Research Chairs (CERC) program*.
- ✓ The president, rector or principal of an eligible university or affiliated research institute is accountable for the SRP, which must be supported by the university's most senior planning body.

UOIT's Strategic Research Themes

- Sustainable Energy
- Applied Bioscience
- Automotive, Materials and Manufacturing
- Information and Communication
- Community and Social Wellness

Faculty of Engineering and Applied Science

- Innovative programs
- Superior teaching and learning
- Leading faculty
- Outstanding facilities
- Exceptional research and graduate programs
- Excellence centers
- Personal touch



Institutional Characterization

- Institutions with no formal innovation structure/policies,
- Institutions with novice innovation structure/policies,
- Institutions with established innovation structure/policies, and
- Institutions with integrated innovation structure/policies.

UTILISER Concept

- **U**niversity
- **T**echnology
- **I**nnovation
- **L**aboratory
- **I**ndustry
- **S**cience
- **E**ntrepreneur
- **R**e\$earch

**“Economic independence
depends on
technological success”.**

Government of Ontario

→ Commitment to Innovation

*"Countries and places that invest in innovation will be home to the most rewarding jobs, the strongest economies and the best quality of life. Ontarians' ability to combine **creativity** and **innovation** is helping to provide good local jobs and putting the province on the global stage."*—
Dalton McGuinty, Past Premier of Ontario

- Ontario's GDP of more than \$580 billion (~ 40% of the country's GDP) is larger than that of many countries (e.g., Switzerland, Belgium, Greece, Sweden or Austria).
- Ontario is one of North America's top 10 economies by size and Canada's economic engine, and financial and manufacturing centre.
- More than \$13.9 billion of R-D-I takes place every year in Ontario.
- R-D-I tax incentives are among the most generous in the world: a \$100 R-D-I expenditure can be reduced to less than \$56 – or less than \$37 for small businesses.
- Total international trade by Ontario companies > \$1 billion per day.

Ministry of Research and Innovation

- MRI was created in 2005 to act as a catalyst for innovation in Ontario.
- Its mandate focuses on strengthening Ontario as a leading, **innovation-based economy and society** where **innovative thinkers can flourish and innovative ideas are rewarded**. It brings all parties (universities to industries) together. It supports the best ideas in Ontario and builds relationships between all participants in Ontario's innovation ecosystem. These help leverage Ontario's **greatest resources: its people and their ideas**.
- Its agenda focuses on leveraging the province's existing strengths, identifying opportunities, creating and cultivating the type of ecosystem necessary to not only **drive innovation**, but to ensure that it thrives through the **commercialization pipeline**.
- It delivers a practical vision for **continuous innovation**, recognizing it as the only real pathway to **sustainability in today's global economy**.

Culture of Innovation in Ontario

- A **culture of innovation** is an environment that supports creative thinking and advances efforts to extract economic and social value from knowledge, and, in doing so, generates new or improved products, services or processes.
- From 2003 to 2011, Ontario made notable strides toward developing a **culture of innovation**. Intermediary organizations like MaRS and OCE were set up to provide local entrepreneurs with support to advance their innovative ideas and ventures.

Visit: <http://marsinnovation.com/> and <http://www.oce-ontario.org/>

- Ontario has developed various programs on innovation: Ontario Innovation Fund, Innovation Demonstration Fund, etc.

COU: Council of Ontario Universities

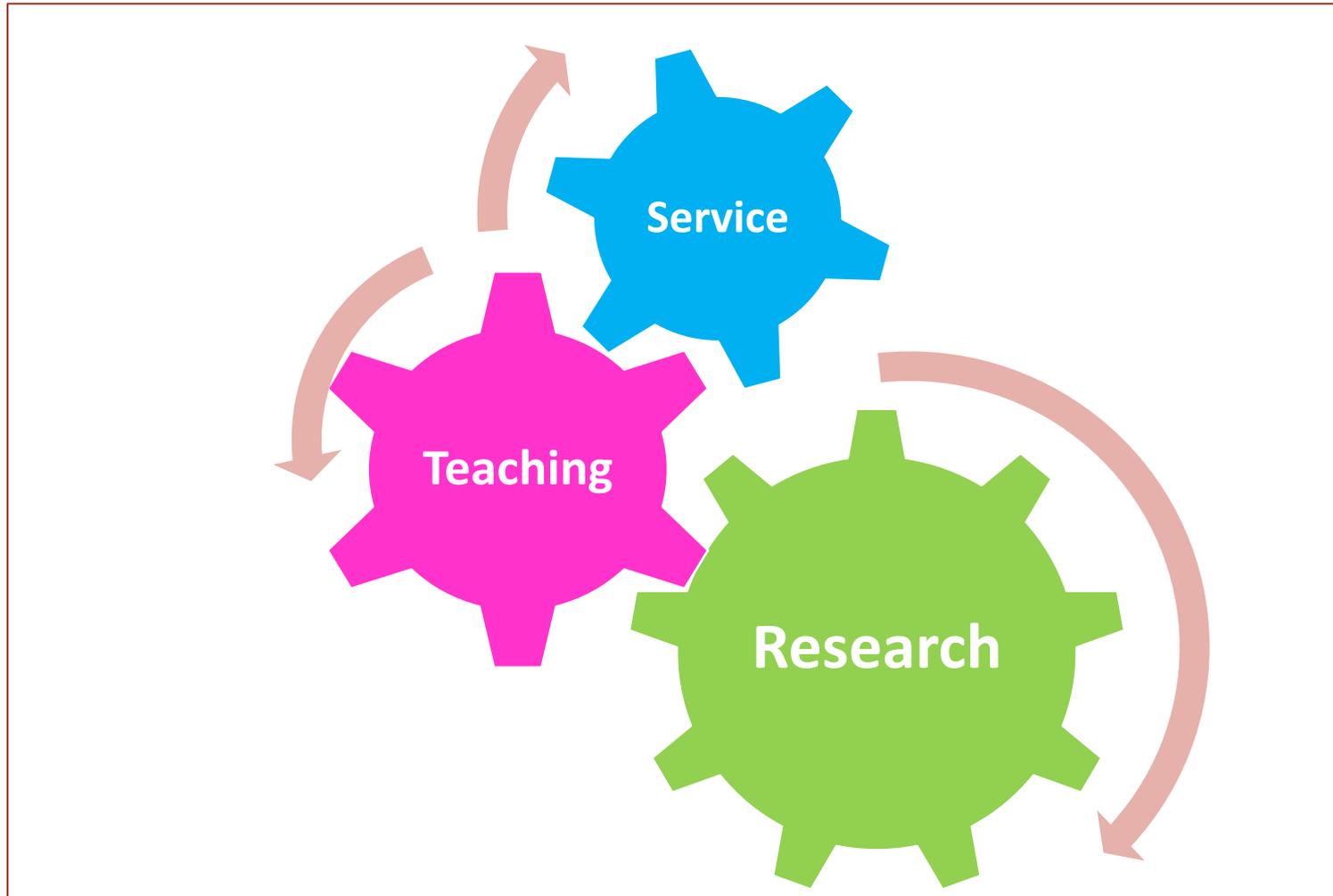
- *It was formed on December 3, 1962, with the original name of the "Committee of Presidents of Provincially Assisted Universities and Colleges of Ontario.*
- **Objective:** to promote cooperation among the provincially assisted universities of Ontario, and between them and the Government of the Province, and, generally, to work for the improvement of higher education for the people of Ontario.
- It ensures that universities fulfil their commitment to:
 - research, **innovation**, scholarship, academic inquiry and the advancement of knowledge (RESEARCH)
 - teaching and other forms of dissemination of knowledge, in which the delivery of university degree-level programs is the major activity (TEACHING)
 - service to the community (SERVICE)

The Innovation Vision of Canada

“In the new global knowledge economy of the 21st century prosperity depends on **innovation** which, in turn, depends on the investments that we make in the creativity and talents of our people. We must invest not only in **technology and innovation** but also, in the Canadian way, to create an environment of inclusion, in which all Canadians can take advantage of **their talents, their skills and their ideas**; in which imagination, skills and innovative capacity combine for maximum effect.”

*Past Prime Minister Jean Chrétien
Canada's Innovation Strategy*

Universities and Their Responsibilities



Impactful Researcher



Universities and Faculty Members

→ **Universities** are ranked by research, not by teaching (education).

→ **Faculty Members** are assessed by their research, teaching and service activities (e.g., 40%+40%+20%=100%).

→ Some teaching-only faculty (80% teaching + 20% service).

→ **Academic Freedom**: main motive behind innovation in universities.

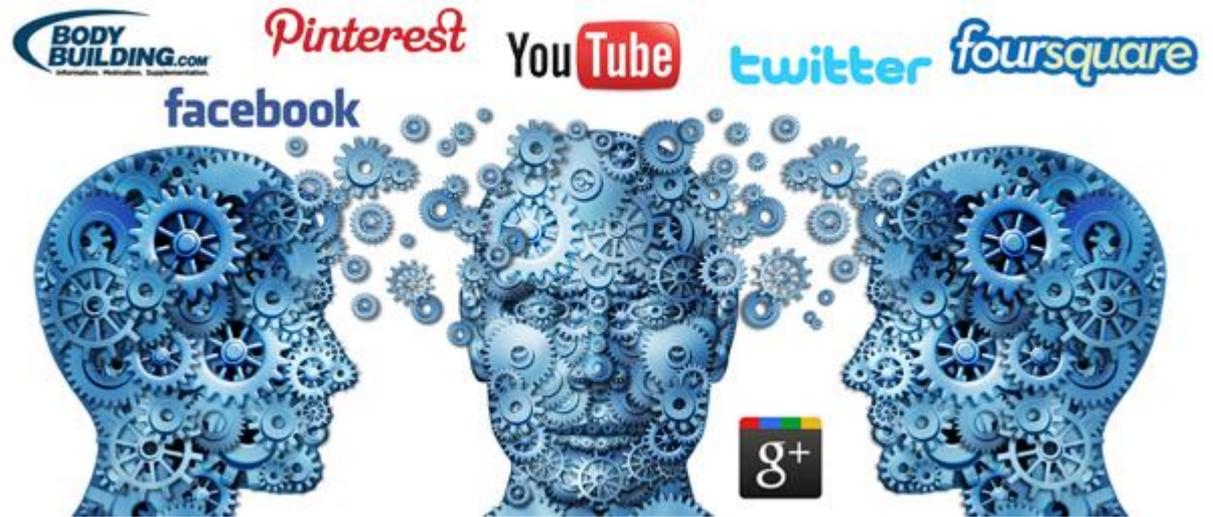
System: based on performance assessment!

Research → Innovation

- **Research:** process of learning what is not known (by anyone)
 - **Basic research:** *research with the object of discovery*
 - **Project research:** *research with the object of solving a problem that cannot be solved with existing knowledge*
- **Innovation:** process of **creating** new things (models, products, services, technologies, etc.)

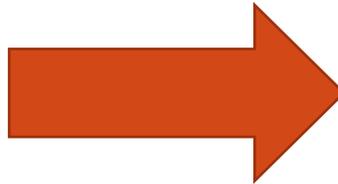
“Research without innovation cannot go beyond entertainment”

Ideas → Research → Innovation



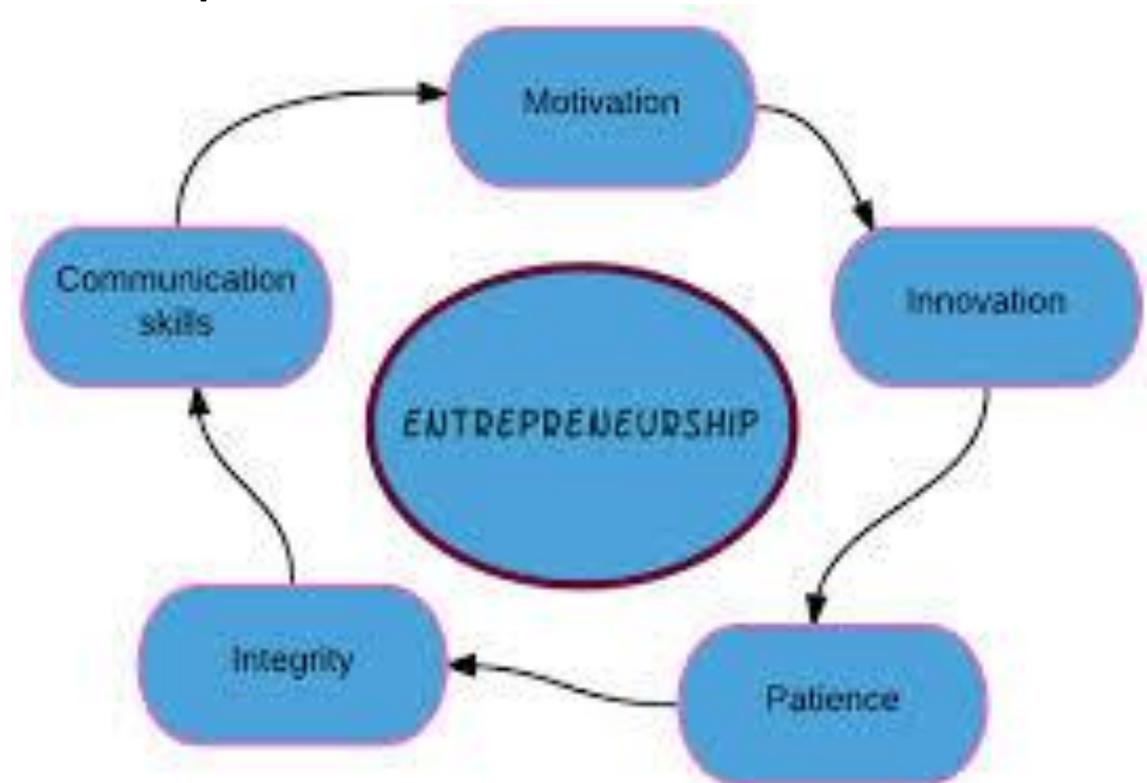
RIC Concept

- Research-Innovation-Commercialization
- Knowledge into technological products

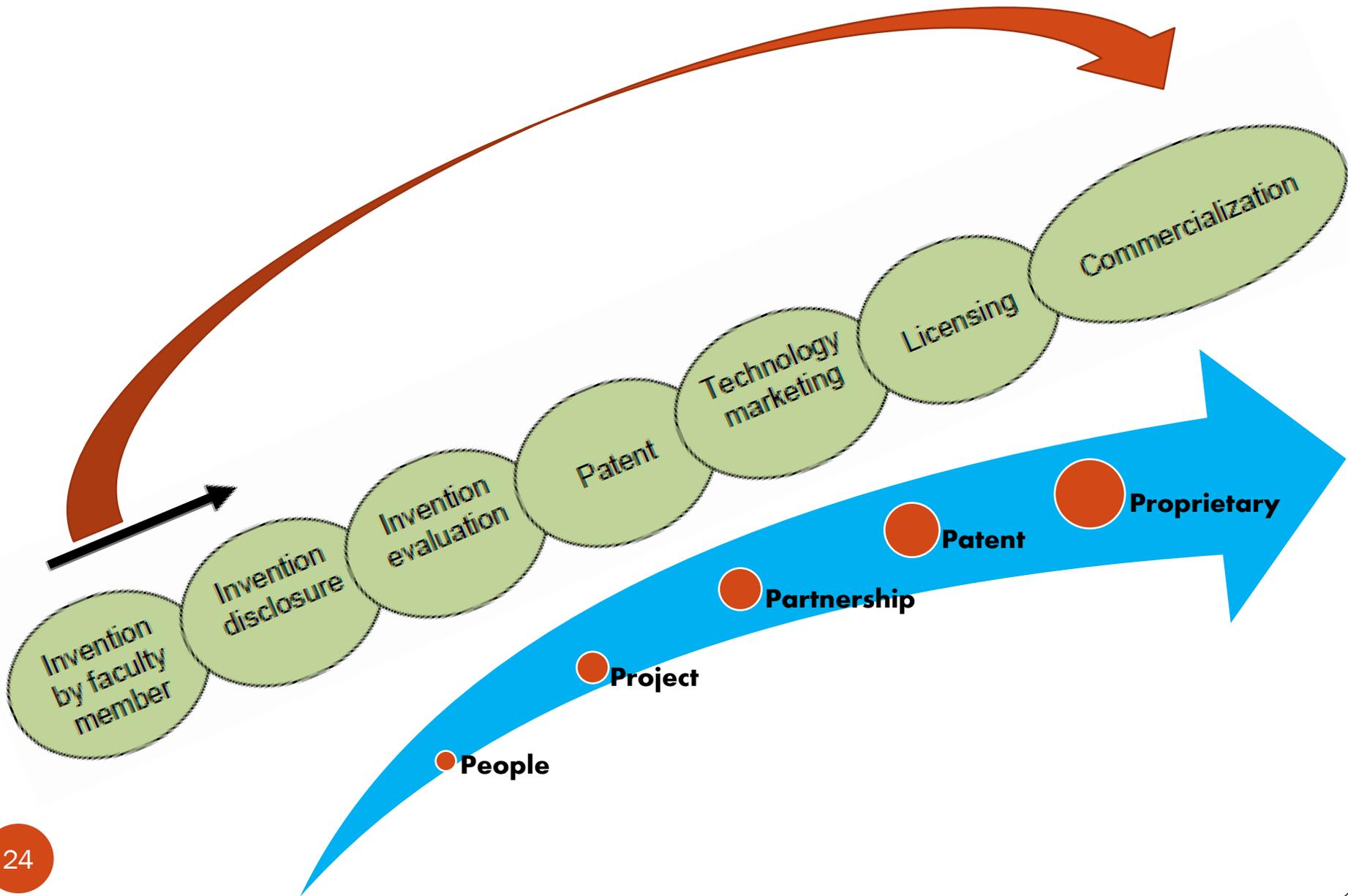


Entrepreneurship

- It is an activity that involves the **discovery, evaluation and exploitation** of opportunities to introduce innovative products and services, etc.
- It is critical for commercialization of innovative products and development of spin-off companies.



A Common Process:



Better life for people in Canada

more investments that reflect our values: health, children, education, environment, etc.

greater prosperity: more individual and collective wealth

more value-added economic activity and wealth creation in Canada

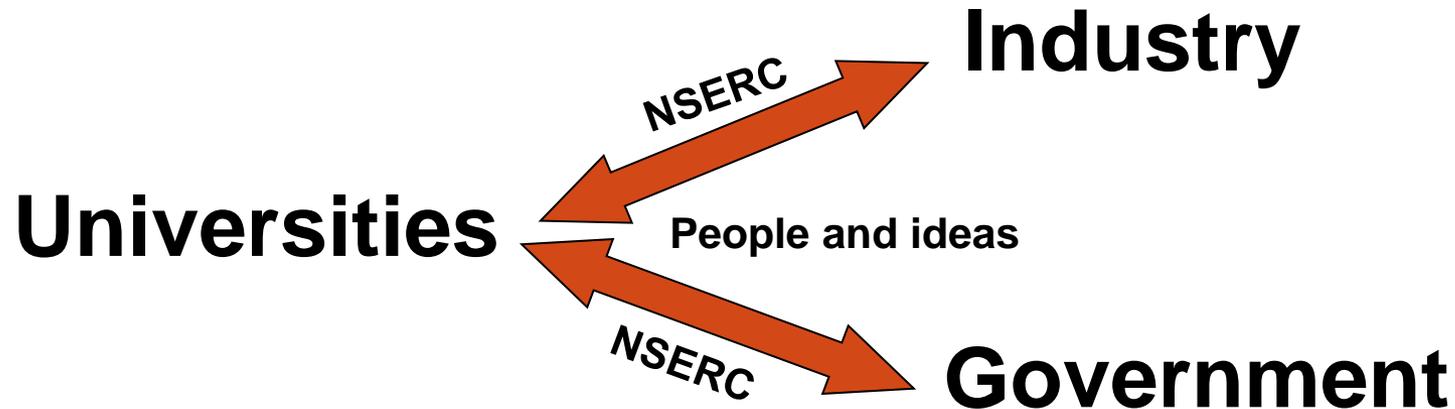
more Canadian-made innovations that succeed in world markets

more innovation in all sectors of Canadian industry

more research in Canada

NSERC:

The Research Partnerships Programs (RPP)' goal ...



To stimulate and build research relationships with potential economic and/or social benefits for Canada

Some Innovative Programs:

- 1. Engage**
- 2. Collaborative**
- 3. Research Chairship**
- 4. Innovation Projects**
- 5. Innovation Platforms**
- 6. Technology Development**
- 7. Market readiness**
- 8. Commercialization**
- 9. Spin-off company development**

Role of Government

- 1) Strategic planning
- 2) Road maps
- 3) RIC concept
- 4) Innovative mechanisms (MaRS, OCE, etc.)
- 5) Innovative funding programs (in a systematic order)
- 6) Strategic partnership grants for networks
- 7) Centers of research excellence (instead of TPs)
- 8) Research chair programs

Role of Universities

- 1) Strategic research planning
- 2) VP for RIC (and RIC offices)
- 3) Merit system
- 4) Academic freedom
- 5) Mentality change for TPs
- 6) Academic criteria changes
- 7) Right policies and strategies
- 8) Culture of innovation
- 9) Mentorship
- 10) Sense of belonging

Role of Industry

- 1) Building trust
- 2) Matching priorities
- 3) Incentives and mechanisms for partnership
- 4) Development of research programs and labs at universities
- 5) Fair funding schemes and mechanisms

Impactful Research Requires

- 1) Right People
- 2) Right Environment
- 3) Right Resources
- 4) Right Policies
- 5) Right funding

About the Research Ethics Board (REB)

- Ensures that research meets the highest scientific and ethical standards in order to protect faculty members, HQPs, students, staff, and the institution.
- Is responsible for approving and monitoring studies, projects, etc.

Concluding Remarks

- **Universities:** critical players in innovation
- **Faculty members:** critical researchers
- **Research:** path to innovation
- **Innovation:** prerequisite for technology development
- **Technology development:** prerequisite for economic independence
- **Commercialization:** key for industrial development
- **End result:** Prosperity and high quality of life

Questions & Comments?