



UNIVERSITY OF
CALGARY

Teaching Entrepreneurship Thinking in Geomatics Engineering

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Embed entrepreneurial thinking and competencies in the BSc Geomatics Engineering curriculum

- Objectives

1. Ensure that all BSc geomatics engineering students graduate with enhanced entrepreneurial and interpersonal skills;
2. Spur growth of the geomatics industry through entrepreneurship and commercialization of innovative technology;
3. Expose geomatics engineering students to the entrepreneurial ecosystem in Calgary.

Embed entrepreneurial thinking and competencies in the BSc Geomatics Engineering curriculum

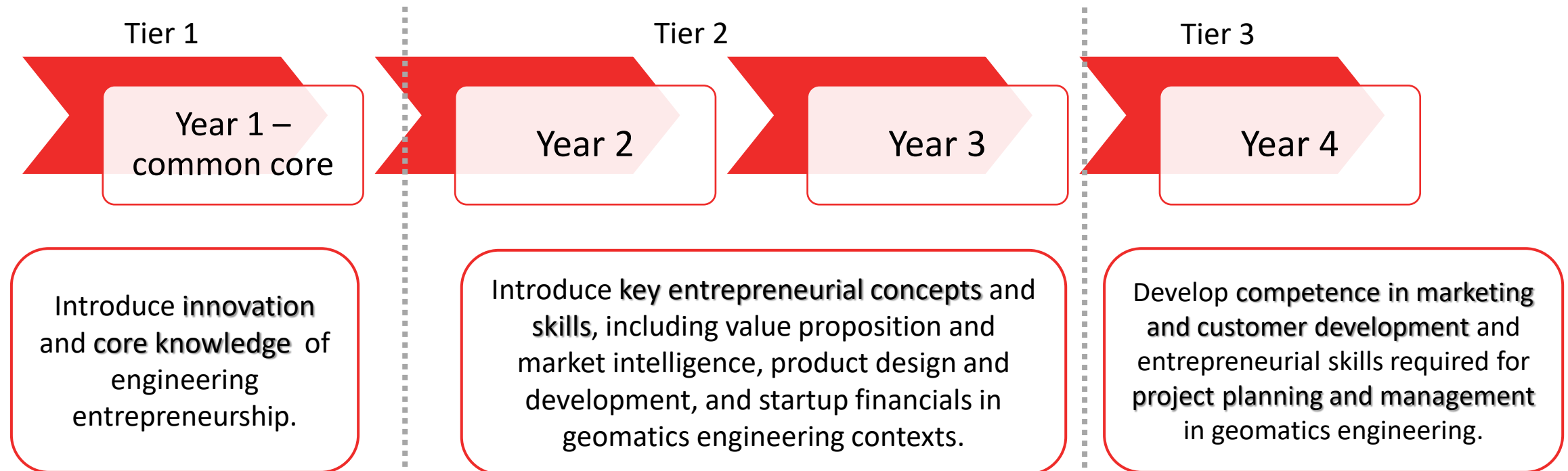
The objectives of this initiative align with priorities outlined in

- the UCalgary strategic plan [Ahead of Tomorrow](#), Strategy 1: Increase access to impactful and future-focused education;
- the SSE strategic plan [Schulich Momentum: Enhancing Community, Expanding Impact](#), “Be nationally recognized as a top entrepreneurial engineering school”.



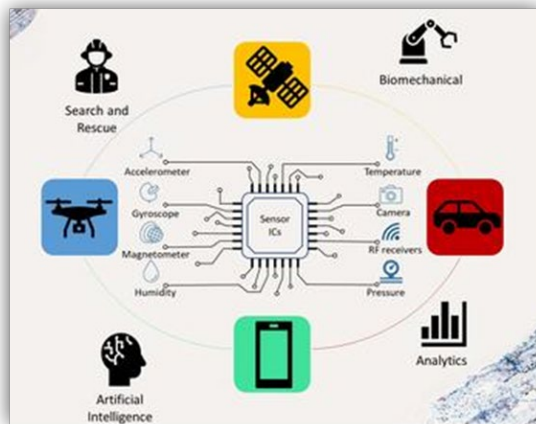
Embed entrepreneurial thinking and competencies in the BSc Geomatics Engineering curriculum

- By 2027, geomatics engineering students will have had entrepreneurial content in each year of their degree.



Embed entrepreneurial thinking and competencies in the BSc Geomatics Engineering curriculum

- Embedding the entrepreneurial content in geomatics engineering courses – aligned with design and creative thinking.



Courtesy: Mobile multi-sensor systems research group, UCalgary

First Year: ENGG 200 - Introduction to Engineering Design

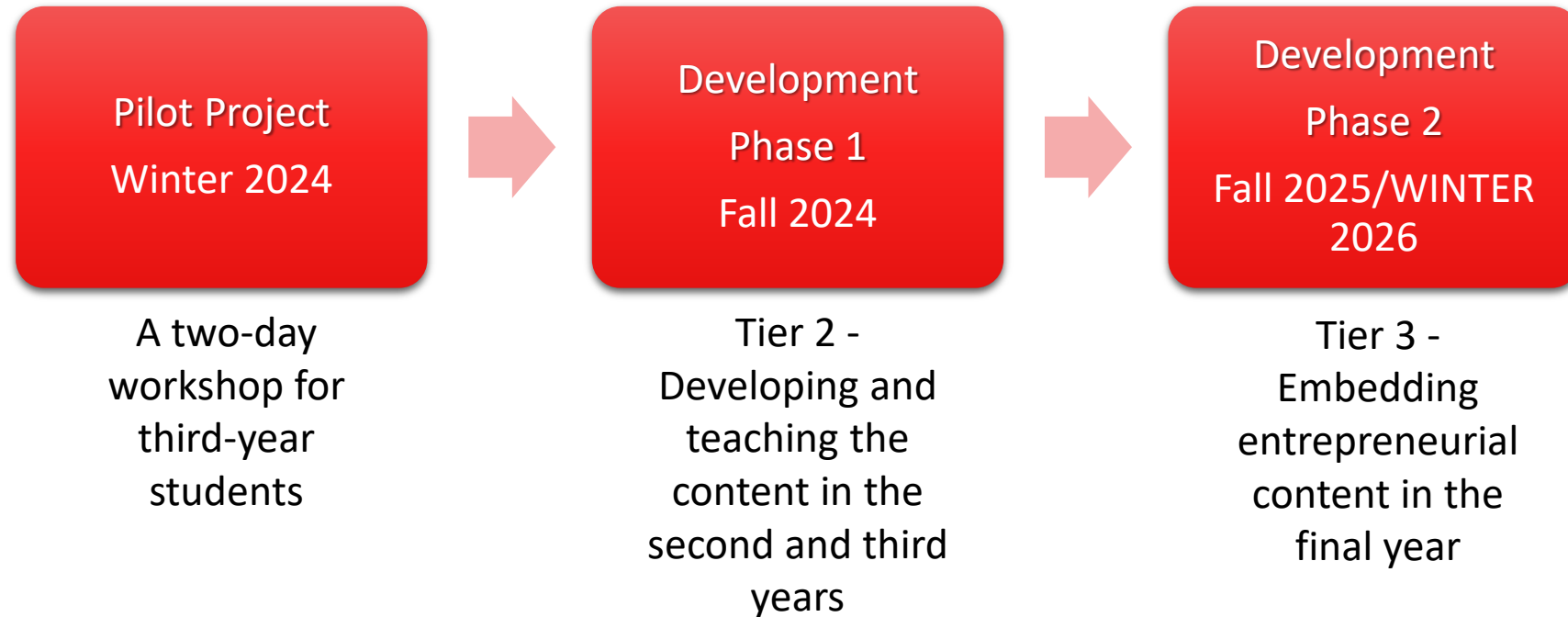
Second Year: ENGO 351 - Introduction to GIS

Third Year: ENGO 401 - Geomatics Engineering Design and Communication

Fourth year: ENGO 500 - Geomatics Engineering Project

Embed entrepreneurial thinking and competencies in the BSc Geomatics Engineering curriculum

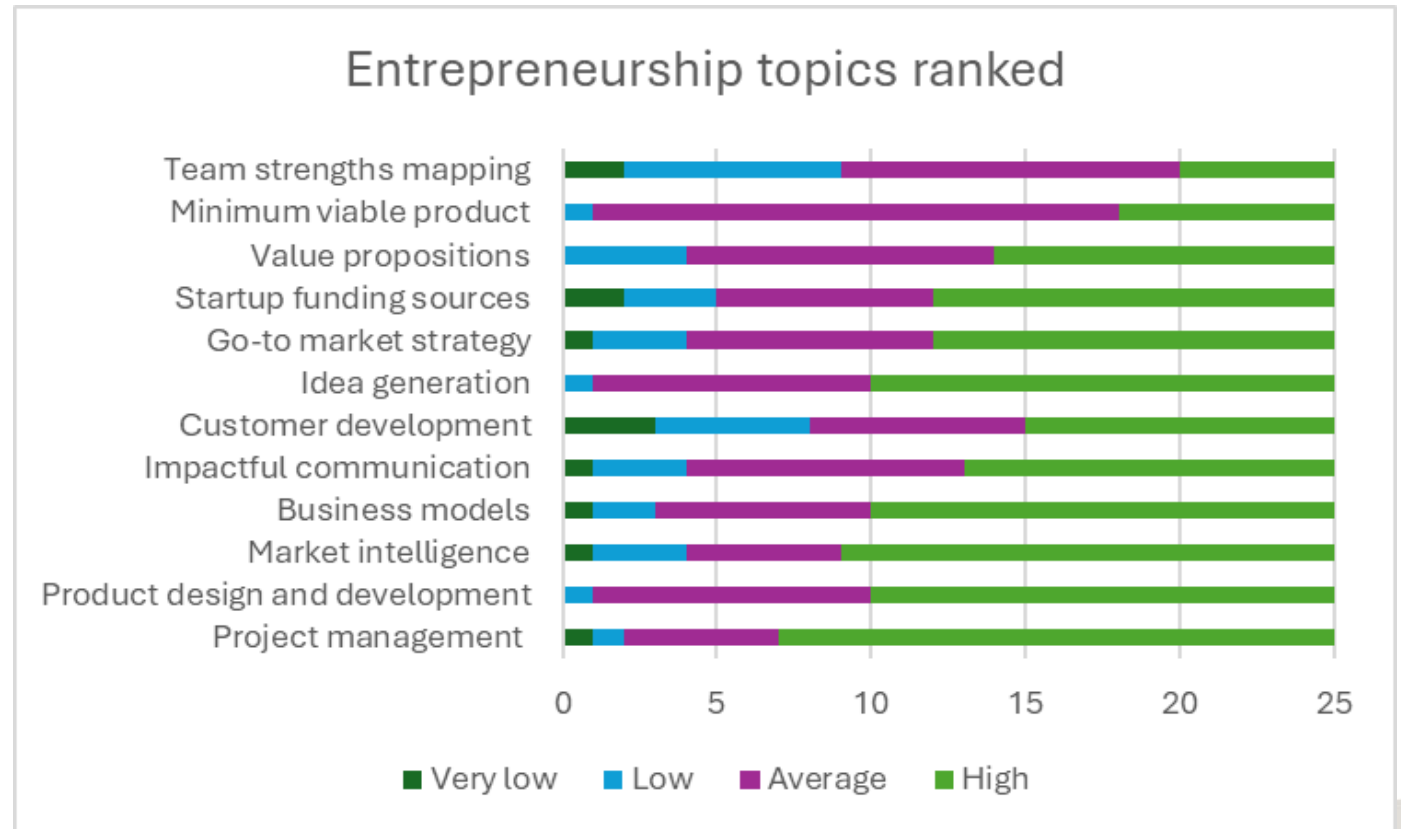
- Curriculum development process





Pilot Workshop – Winter 2024

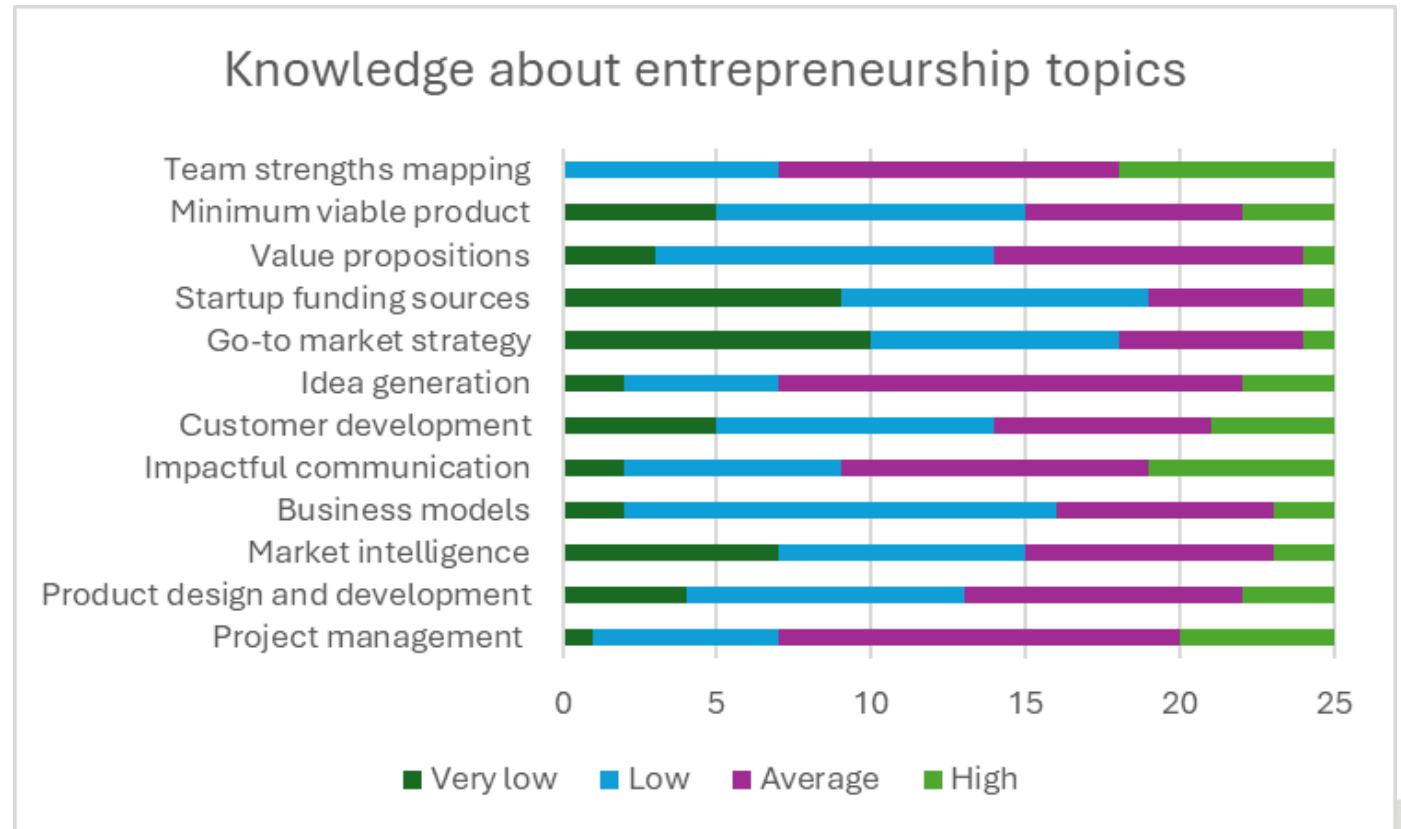
- Survey of third-year students: Topics of interest ranked
 - High: Project management
 - High: Market intelligence
 - High: Idea generation
 - High: Business model
 - High: Product development
 - Average: Minimum viable product





Pilot Workshop – Winter 2024

- Survey of third-year students: Prerequisite knowledge
 - Low: Startup funding sources
 - Low: Go-to-market strategy
 - Low: Business models
 - Low: Minimum viable product
 - Low: Market intelligence
 - Average: Idea generation



Development Phase 1: ENGO 401 Geomatics Engineering Design and Communication

- Course content
 - A topographic survey project
 - Design of a topographic survey
 - Communication in geomatics engineering
 - An entrepreneurial thinking module (New in fall 2024)
 - Duration: Four weeks
 - Combines elements of a survey design and data collection with innovative thinking
 - Active → Constructive → Interactive learning
 - Low stake assessment

Development Phase 1: ENGO 401 Geomatics Engineering Design and Communication

- Entrepreneurial module (1/4)

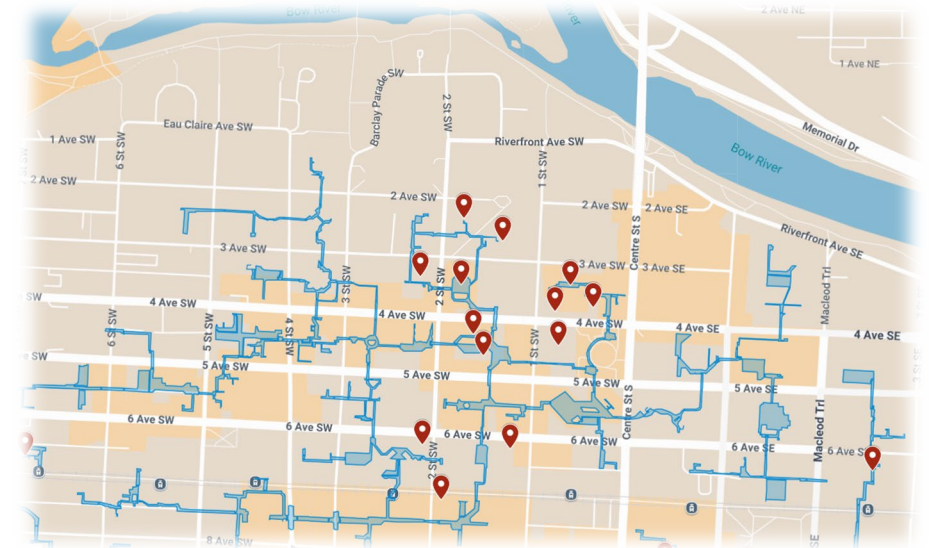
Lectures by a geomatics entrepreneur



Social innovation, community development and how location services can add value to community:
a case study PEDESTING



The future of the geomatics engineering industry:
GeoAI technology trends and digital twins



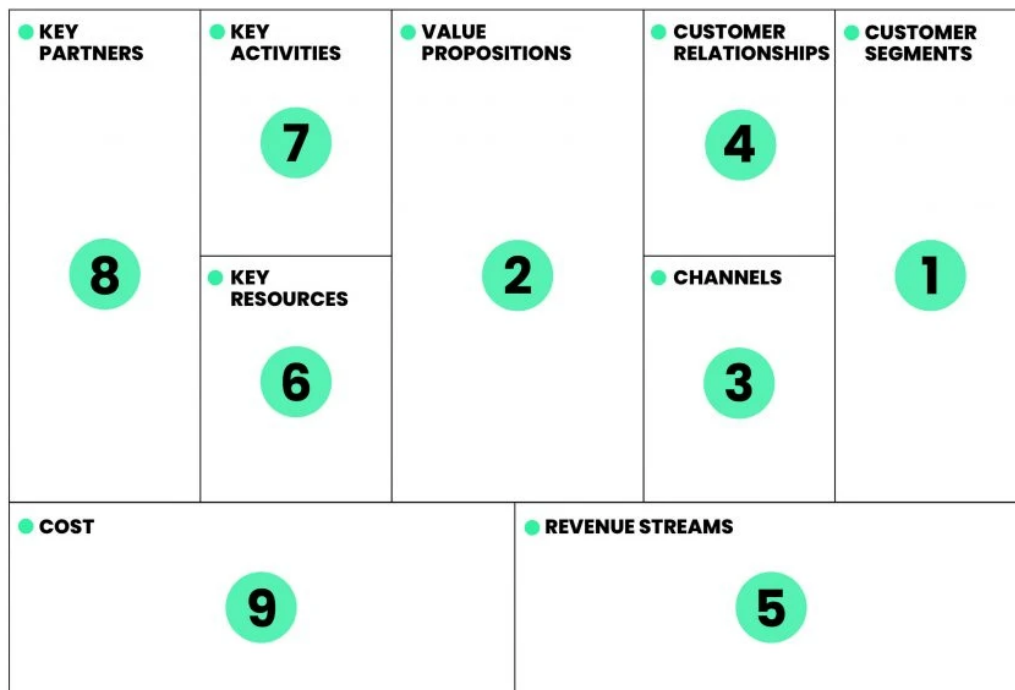
Source: <https://pedesting.com/>

Development Phase 1: ENGO 401 Geomatics Engineering Design and Communication

- Entrepreneurial module (2/4) – Class activity 1 Business model canvas

| BUSINESS MODEL CANVAS

The Power MBA

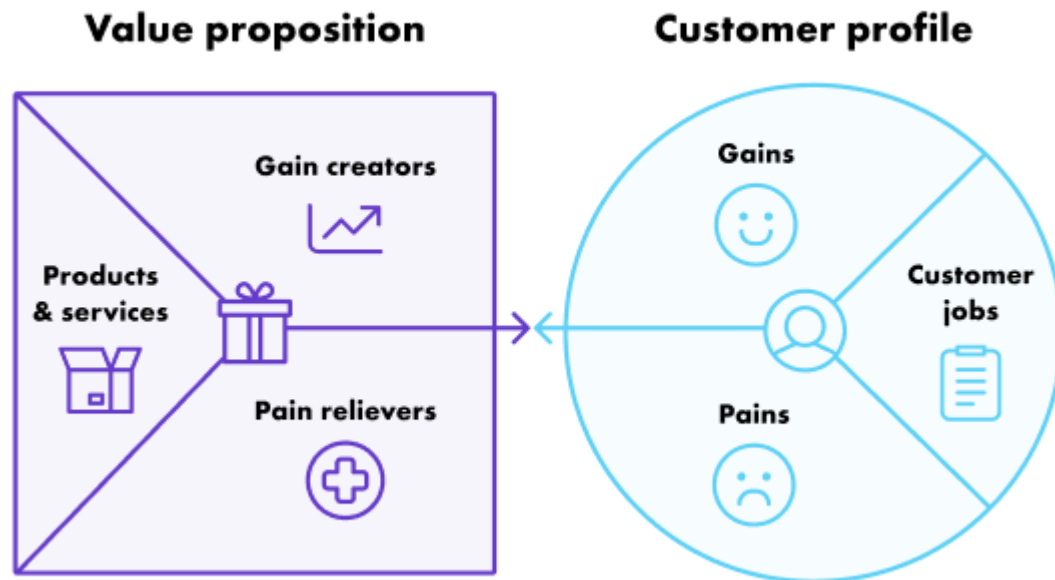


Working in pairs, choose one company from the list of entrepreneurial businesses in the geospatial sector based on your background and interests. Alternatively, if you are aware of another business in the geospatial sector, you can use it as an example.

1. Blackline Safety (GPS enabled safety sensors)
2. Attabotics (autonomous robots)
3. Veerum (digital twins)
4. samdesk (location-based emergency response)
5. MappedIn (indoor mapping)
6. Micro Engineering Tech (digital transformation consultancy)

Development Phase 1: ENGO 401 Geomatics Engineering Design and Communication

- Entrepreneurial module (3/4) – Class activity 2 Value proposition canvas



Review the completed Business model canvas and geospatial sector business from Activity 1.

Fill in the Value proposition canvas template for the geospatial business you used in Activity 1.



Development Phase 1: ENGO 401 Geomatics Engineering Design and Communication

- Entrepreneurial module (4/4) – Project “Map your move”

Problem statement

University District does not have a comprehensive map that shows details of the following elements of the natural and built environments: (i) green areas, parks and recreational opportunities, (ii) the mobility network including bike lanes, pathways, bus routes and stops, and (iii) shops, entertainment and services. Furthermore, the community is constantly expanding by integrating new development.

Task

Develop an application that can help users decide whether they want to rent at University District. Such an application should provide comprehensive data that combines accurate locations and attribute information and can be updated following the completion of new development. To test your idea, you will create a low-fidelity prototype of your application that focuses on one element of the natural or built environments in the problem statement.

Explore

whether your idea can be developed into a business model. Use the Business Model Canvas (BMC) to describe and develop your business idea. Include 3-5 points for each section of the BMC. If you are unable to find an answer, you can either reference a similar company or provide your best possible response.

Present

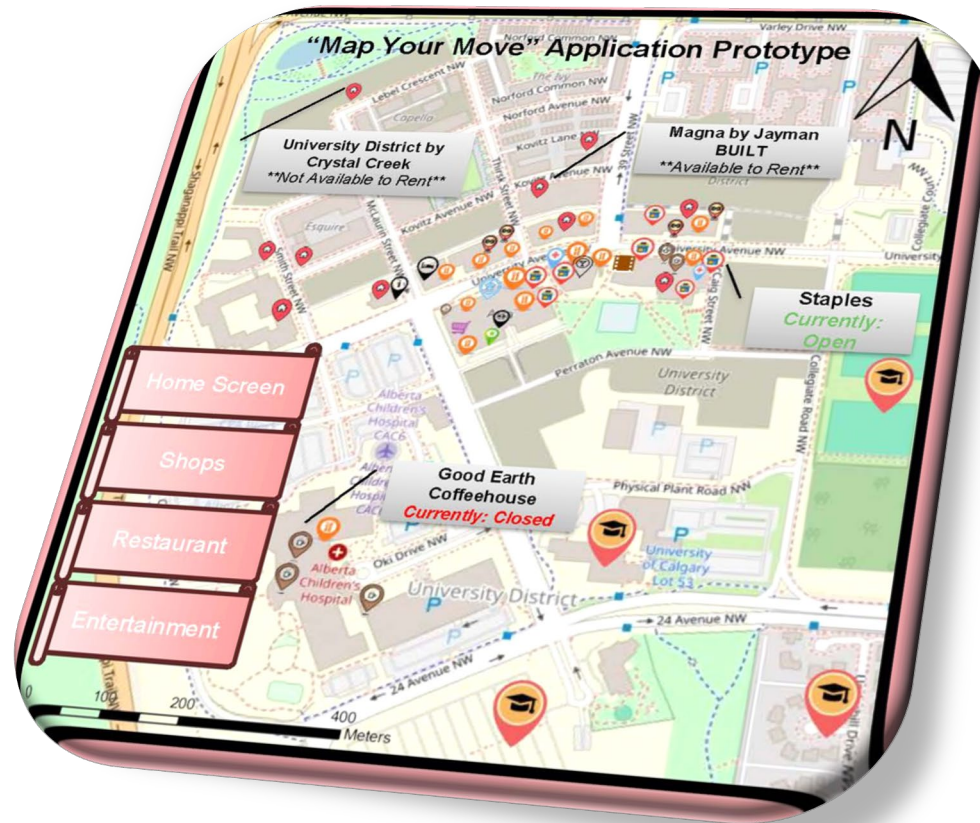
- A 5-minute video pitch or
- An ArcGIS story map

Idea generation

Business model

Impactful communication

THANK YOU!



Courtesy: The ENGO 401 F24 students