Agenda

- Welcome
- Presentation of project: challenges and objectives (SMIT, Adrem, imec, IDLab)
- *Coffee break*
- Participatory session
- Wrap-up and closing

Promotor: prof. dr. Pieter Ballon

Promotor: prof. dr. Pieter Colpaert

Promotor: prof. dr. Bart Goethals

Promotor: dr. Jan Adriaenssens

SERENDIPITY ENGINE

SBO-M

- Strategic Basic Research project with primarily a societal finality
  - Strategisch Basis Onderzoek met een Maatschappelijke finaliteit
- Between fundamental and applied research
  - **Research**
    - Excellent academic research
  - **Utilisation**
    - Transfer academic results to societal stakeholders → societal value creation

SBO-M

- SBO project: Oct 2022 – Oct 2026 (48 months)
  - Y1-Y4: Research
  - Y3-Y4: Start utilization phase

- Post-project: further development, implementation and upscaling of the SBO project results

fwo **Research Foundation Flanders**
Opening new horizons

SERENDIPITY ENGINE

Advisory Committee

- A two-way dialogue and interaction between the researchers and societal stakeholders

- Contributes to facilitate the knowledge transfer from science to practice

- Advisory Committee
  - To assist in monitoring the research from the societal utilisation aspect of the project;
  - To participate in a joint learning process whereby a culture of openness and mutual trust can be developed, and innovative solutions are explored;
  - To assist in designing and preparing the translation of the results into practice.

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Opening new horizons

SERENDIPITY ENGINE

SERENDIPITY

Serendipiteit

persoonlijk	*organisatie*

" ...in het Engels heet dat 'serendipity'. En serendipity is juist het feit dat je bijvoorbeeld in een stad je laat leiden door het onverwachte en eigenlijk zo ook in straten of wijken uitkomt die je niet kent, maar waar je eigenlijk door toeval in belandt, maar dat geeft mij bijvoorbeeld wel altijd een heel positief gevoel. En ik doe dat ook graag."

Respondent (39) over steden en digitale applicaties

Urban filter bubble?

Key application domains
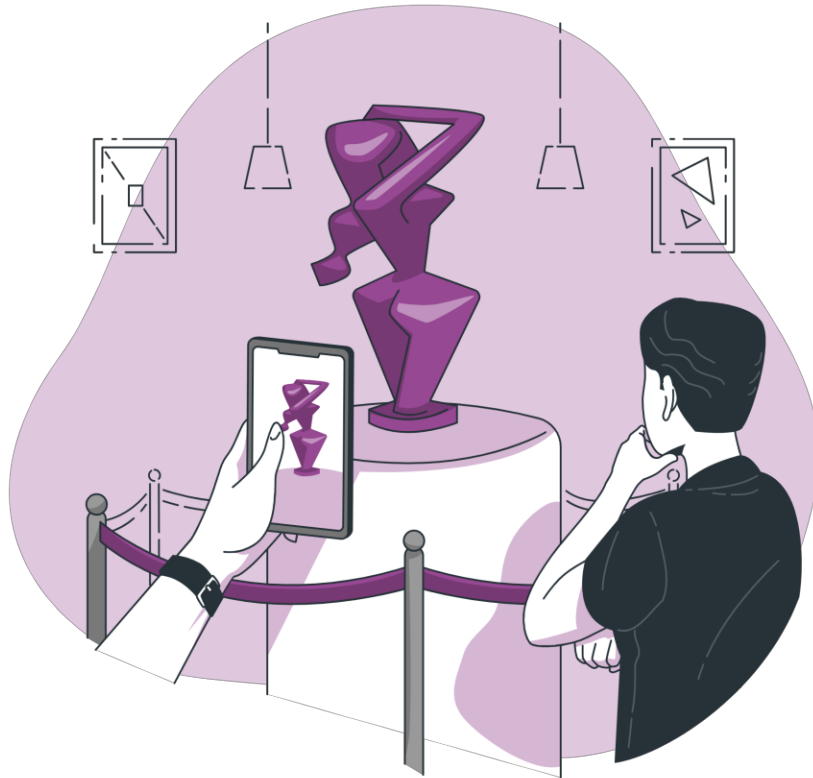
Culture participation and leisure

Urban mobility and cycling

SERENDIPITY ENGINE

Contradictio in terminis?

- "One cannot design serendipity."
- We can design our *environments* so that they **afford** serendipity.
  - We can **design for** serendipity.

Challenges and objectives

Project overview

Who are we?

- Vrije Universiteit Brussel
  - Studies in Media, Innovation & Technology (SMIT)

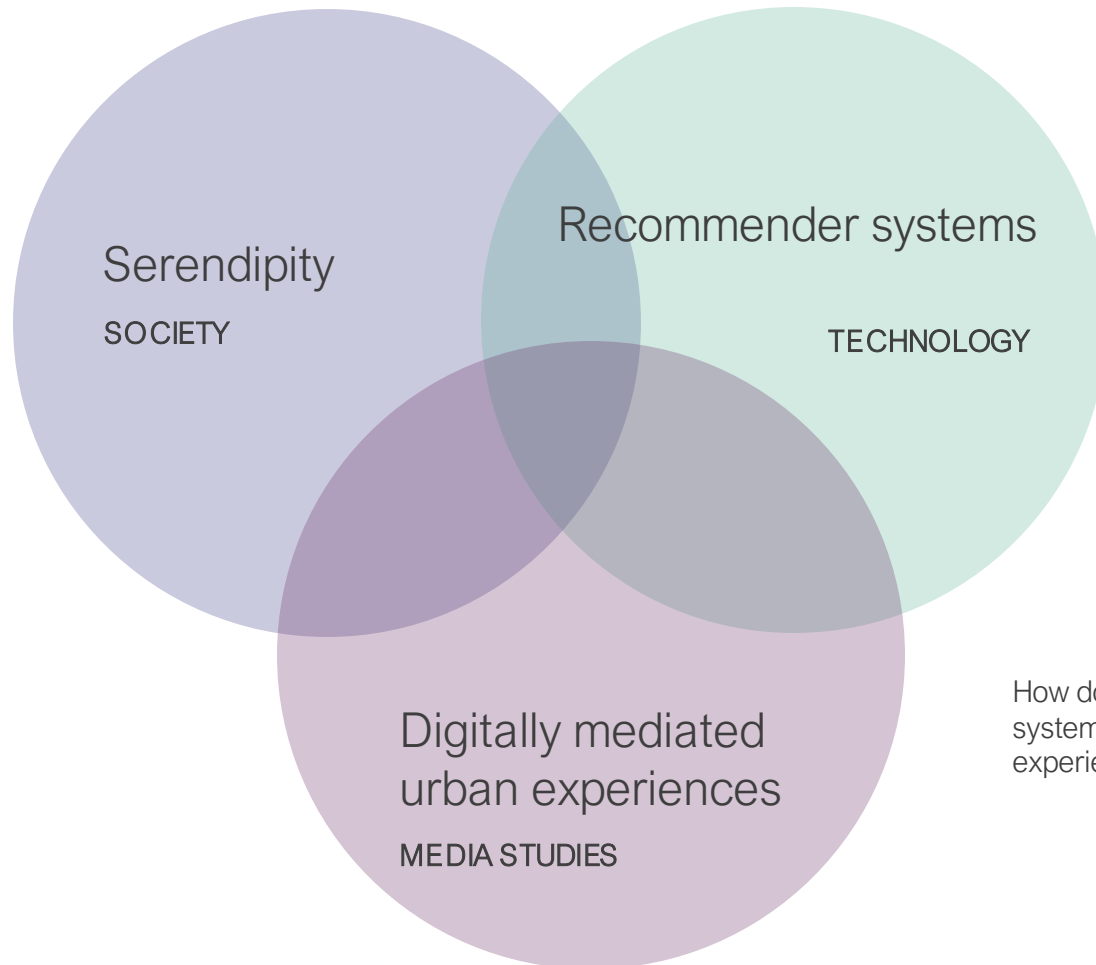

Brett Binst
PhD researcher SMIT

Annelien Smets
senior researcher SMIT
professor media economics VUB

Pieter Ballon
director SMIT
vice-rector research VUB

What will we do? (and what have we done)

Serendipity
SOCIETY

Recommender systems
TECHNOLOGY

Digitally mediated urban experiences
MEDIA STUDIES

What is urban serendipity?

Should we worry about urban filter bubbles?

How can serendipity be designed for?

How do recommender systems mediate urban experiences?

Serendipity as a Shared Value in Urban Recommender Systems

Annelien Smets

VUB VRIJE UNIVERSITEIT BRUSSEL

VUB SMIT STUDIES IN MEDIA, INNOVATION & TECHNOLOGY

SERENDIPITY ENGINE
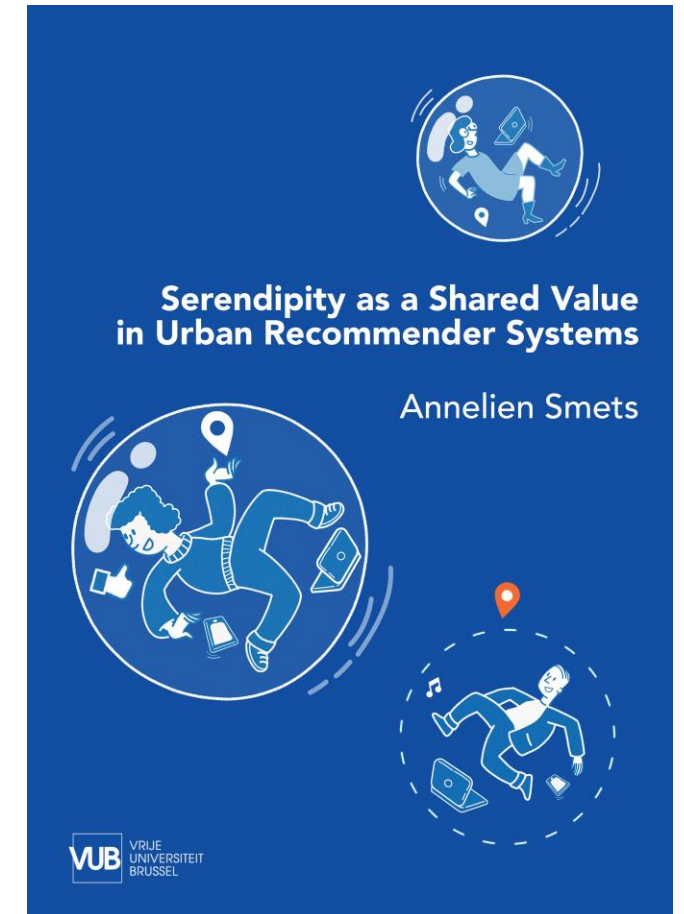
What will we do?

- Recommendation in multi-stakeholder environments
  - Value networks, business models, strategic fit

- Value of serendipity for different stakeholders
  - *Why* would you design for serendipity?
  - Is serendipity merely a public value or could it also have an economic incentive? What is the role of policy?

- What is serendipity anyway?
  - Diversity, discoverability, findability, …
  - Adverse effects? Unintended consequences?

What will we do?

- Serendipity Engine hub

  - Networking
  - Knowledge exchange
  - Across organizations, sectors and research projects

  - Website, (online) seminars, events, newsletter, …

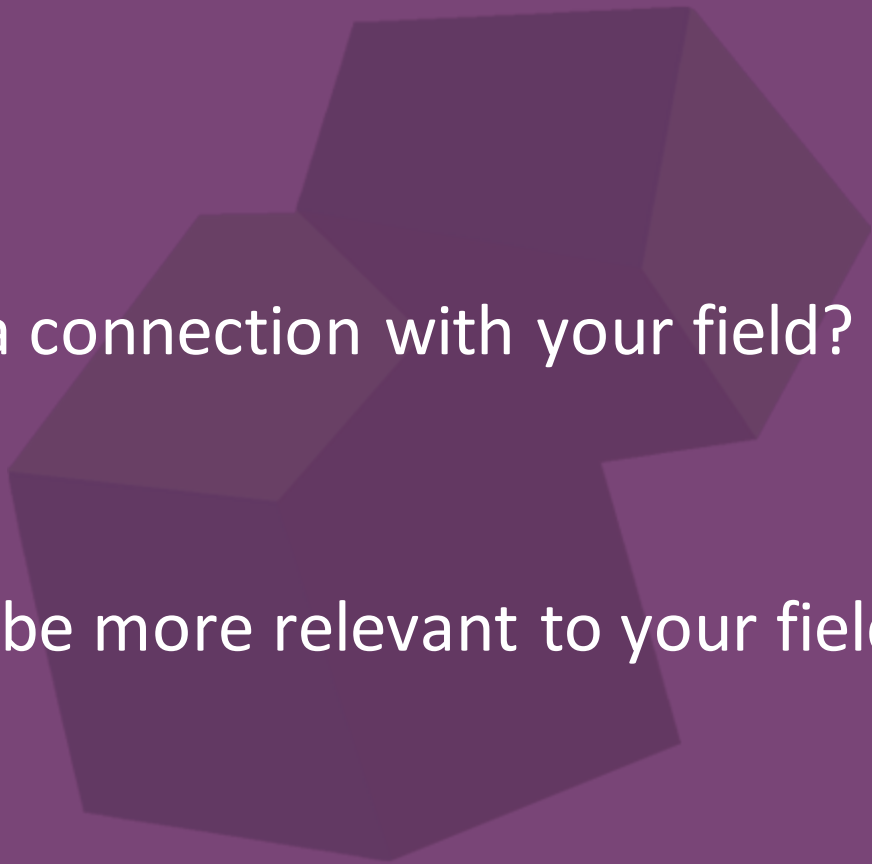Follow us on LinkedIn 'Serendipity Engine'

What will we do?

- Citizens' attitudes towards digital media to explore
  - 'Go with the flow' vs. 'Overplanner': Different needs and expectations?

- 'Guiding' towards serendipitous encounters?
  - Does a guide increase openness to serendipity?
  - What does this look like in a digital format?

- *Urban Serendipity Stories* platform

- Methodology to measure users' experienced serendipity
  - Insights on impact of contextual and socio-economic factors
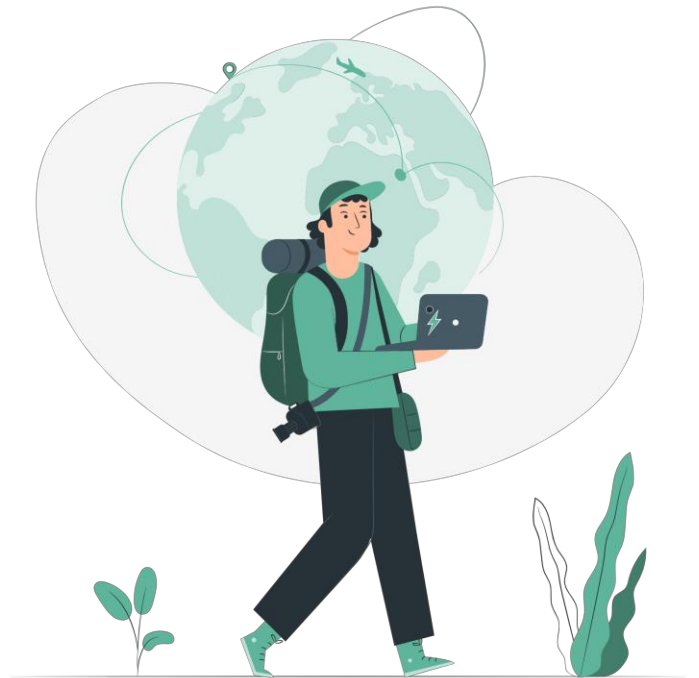
Why is our work relevant to you?

- Grasp the meaning and value of serendipity for your organization

- Catalog of serendipity use cases

- Insights in users' expectations and attitudes towards the use of digital applications to explore/navigate urban environments

- Design principles for serendipity

- Knowledge exchange ('hub')
  - Stay informed about the latest updates across sectors and organizations, topics, academic research, networking opportunities, etc.

VUB

SMIT
STUDIES IN MEDIA,
INNOVATION & TECHNOLOGY

1. Where do you see a connection with your field?

2. What inspires you?

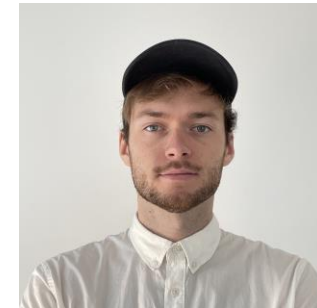3. What can we do to be more relevant to your field?

Who are we?

Prof. dr. Bart Goethals

- Lead Investigator
- Professor of Computer Science at the University of Antwerp and Monash University

Lien Michiels

- Exiting PhD Student
- Incoming Post-doc 🤞

Jens Leysen

- PhD Student

Who are we?

Research Group: *Adrem Data Lab*

- Part of the department of Mathematics and Computer Science at the University of Antwerp
- Research on both theory and practical applications of data mining, machine learning, and artificial intelligence
- 5 full professors, 7 postdoctoral researchers and 26 PhD students

SERENDIPITY ENGINE

What have we done?

- Serendipity, diversity and other normative values for recommender systems
- Development of novel recommendation algorithms
- Evaluation methods and techniques for recommender systems

What Are Filter Bubbles Really? A Review of the Conceptual and Empirical Work

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Serendipity in Recommender Systems Beyond the Algorithm: A Feature Repository and Experimental Design

Annelien Smets[1,*], Lien Michiels[2,3], Toine Bogers[4] and Lennart Björneborn[5]

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[2]Froomle, Antwerp, Belgium
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RecPack: An(other) Experimentation Toolkit for Top-N Recommendation using Implicit Feedback Data

Lien Michiels[*]
Robin Verachtert[*]
Froomle
Antwerp, Belgium
University of Antwerp
Antwerp, Belgium

Bart Goethals
University of Antwerp
Antwerp, Belgium
Monash University
Australia
Froomle
Antwerp, Belgium

What will we do?

- Development of a simulation framework for recommendation algorithms:
  - To conduct "sandbox" studies of diversity, serendipity and related normative values
  - To develop metrics and measurement techniques
  - To understand contextual influences on algorithms and their exerted behavior
- Audit studies of online platforms:
  - To quantify diversity, serendipity in real-world settings
  - To cross-validate results and reflect on the insights of our offline experiments
- And ... reflect on the intersection of computer science and relevant fields with our partners

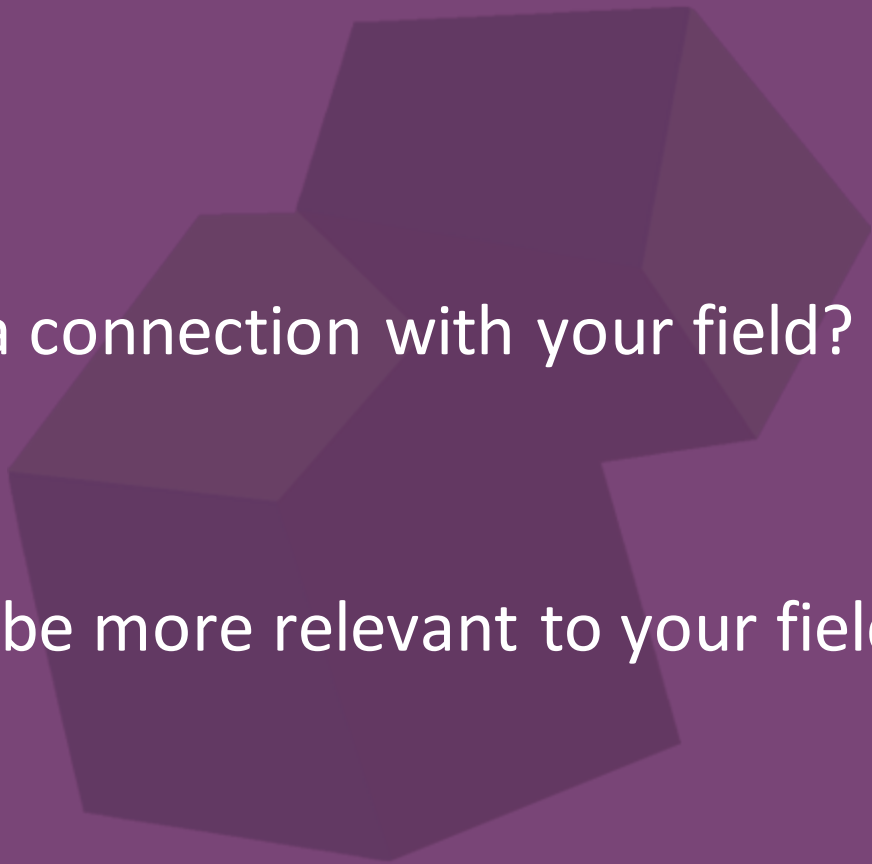SERENDIPITY ENGINE

What will we do?

- Organisation of two workshops on recommender systems:
  - NORMalize (Singapore, 18-22nd September 2023)
  - DBWRS (Antwerp, November 2023)

The First Workshop on Normative Design and Evaluation of Recommender Systems (NORMalize) will be co-located with the 17th ACM Conference on Recommender Systems, in Singapore, 18-22nd September 2023. Remote participation is possible.

SERENDIPITY ENGINE

Why is our work relevant to you?

- Increasing importance of surveying and auditing algorithms:
  - What kind of negative effects do we expose users to?
  - What kind of positive values do we want to promote?
- To study these effects and values, we first need to develop:
  - Quantitative evaluation methods
  - Actionable metrics
- Then, we can develop novel recommendation algorithms that reduce negative effects and are aligned with our shared values

SERENDIPITY ENGINE

1. Where do you see a connection with your field?

2. What inspires you?

3. What can we do to be more relevant to your field?

Who are we?

- IMEC
  - EDiT (Enabling Digital Transformation) / M&L cluster
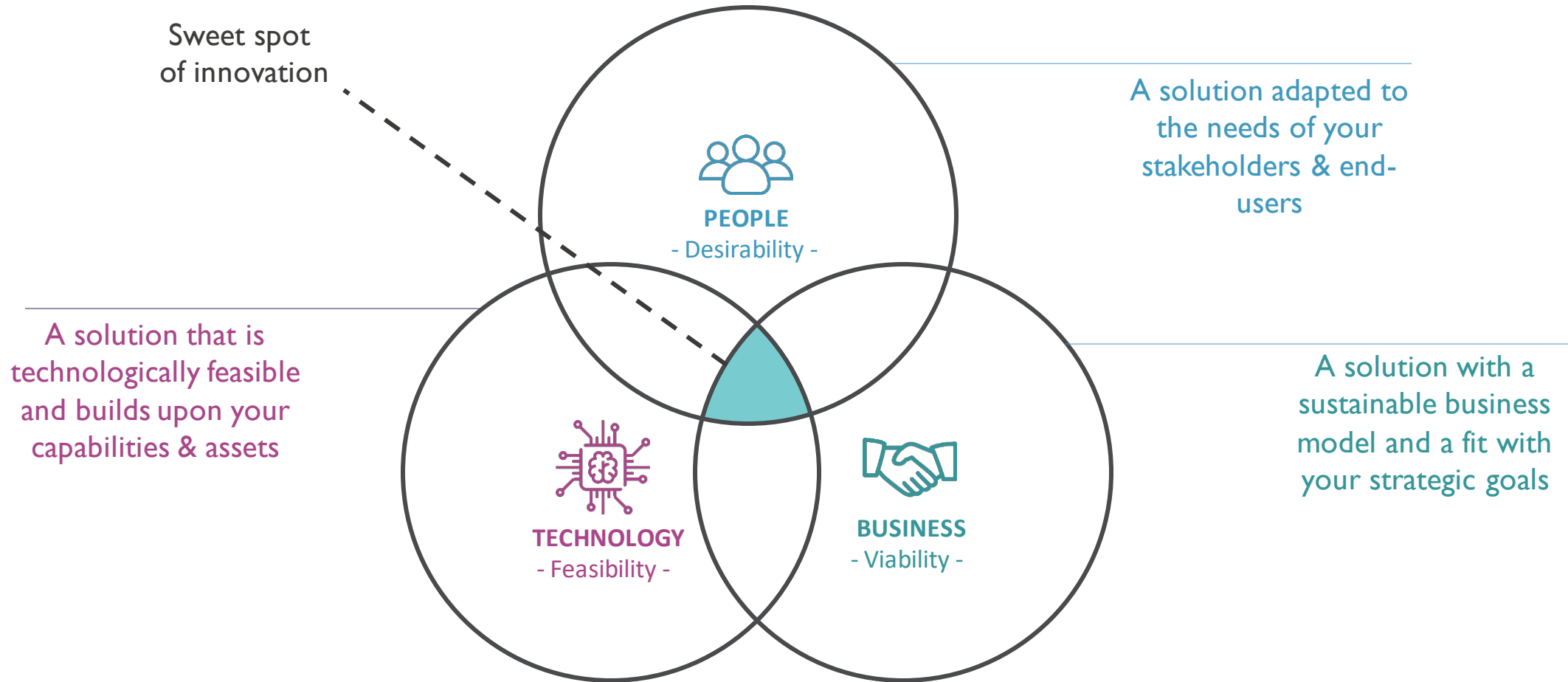

Casper Van Gheluwe
Software engineer
Senior researcher

Evelien Marlier
project manager Mobility Projects

Thomas De Meester
Application Prototyping
Engineer

EDiT's DNA

Sweet spot of innovation

A solution adapted to the needs of your stakeholders & end-users

PEOPLE
- Desirability -

A solution that is technologically feasible and builds upon your capabilities & assets

A solution with a sustainable business model and a fit with your strategic goals

TECHNOLOGY
- Feasibility -

BUSINESS
- Viability -

imec

What will we do?

- Develop an Information System Design Theory (ISDT)
    - Framework to evaluate the design and creation of prototypes
    - Facilitates the design of effective information
    - Allows to extract insights in a structured fashion
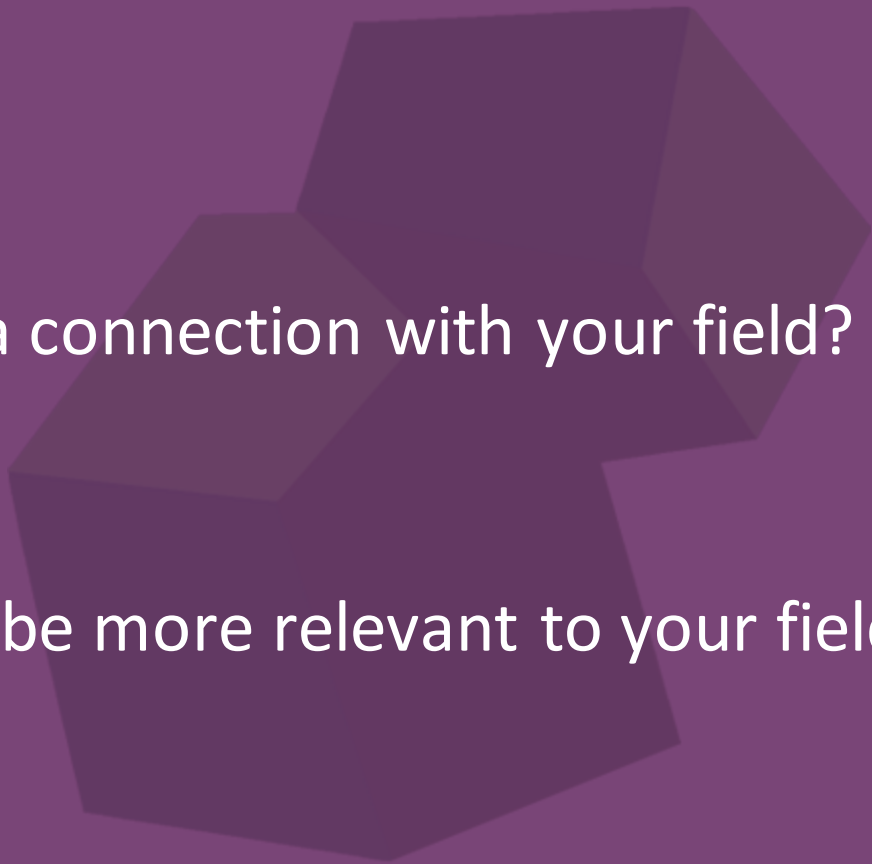   - Reusability by other parties as framework too

What will we do?

- Coordination of pilot on urban mobility and cycling

- Measure users' experienced serendipity along the cycle route

- Assist other research groups with research activities and implementation in different pilots

- Write policy recommendations and guidelines to support (local) policy makers and public actors

Why our work is relevant to you?

- More insights in users' experiences and users' behaviour -> validation research findings
  - can create added value for you too
  - investigate if serendipitous elements can help making the shift

- Lessons learned regarding design principles and patterns
  - improve U.I. and U.X. of digital solutions
  - keeping in mind the Universal Design Principles
  - offer you an easy-to-use-design framework

- Design of an SDK / API, recommender system for alternative route planning,

- Apply lessons learned in digital twins, design of smart cities and public place

SERENDIPITY ENGINE

1. Where do you see a connection with your field?

2. What inspires you?

3. What can we do to be more relevant to your field?

IDLab Ghent

Pieter Colpaert & Bryan-Elliott Tam

The Knowledge on Web-scale team

Pieter Colpaert
professor UGent

Bryan-Elliott Tam
PhD Student

SERENDIPITY ENGINE

What have we done?

- Combination of:
  - Clustering of points of interest in OSM
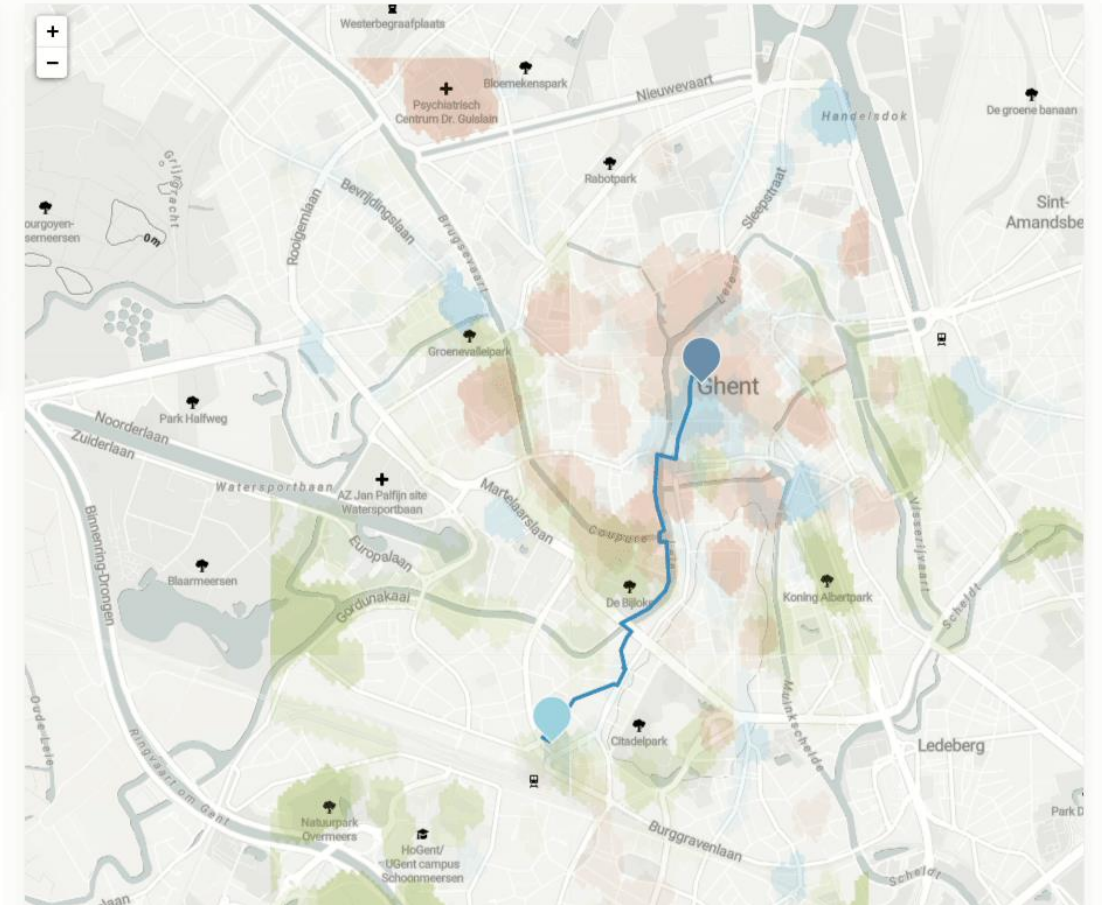 - Routable Tiles (Linked OSM PoC)
  - Weighted client-side route planning
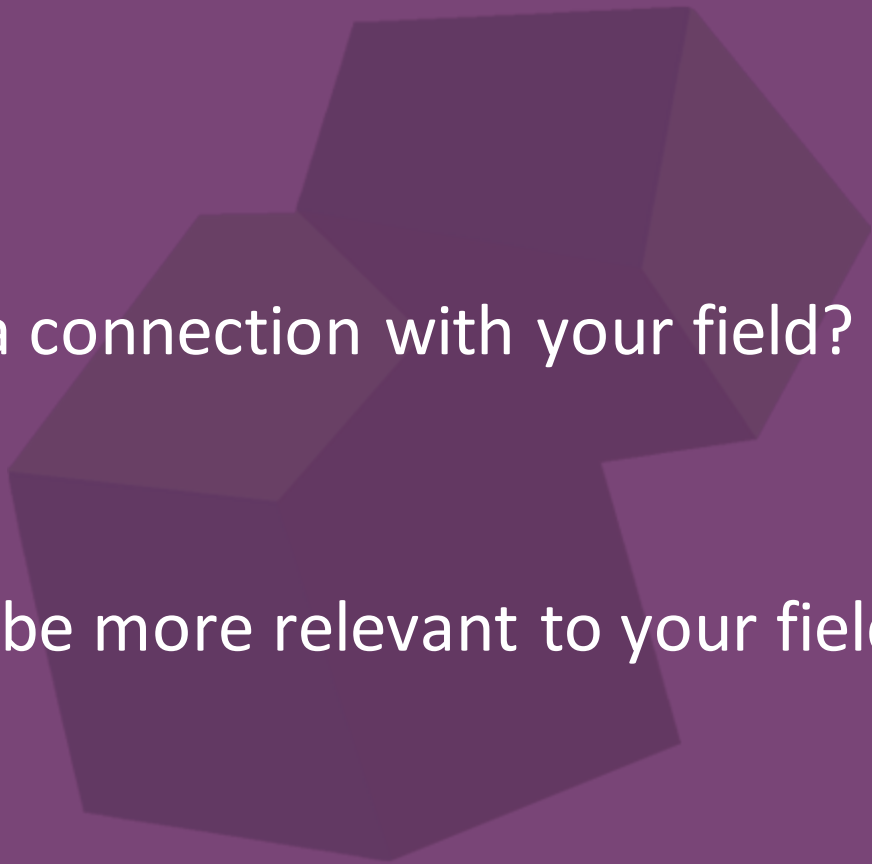
What will we do?

- **Comunica**

  - A querying engine querying the full web of data.
  - Different strategies can be configured: can this become more *serendipitous*?

- **Community Solid Server**
  - A reference implementation of the Solid protocol for storage providers that can be used for R&D

- **Linked Data Event Streams for route planning (very early stage)**
  - Linked OpenStreetMap (Routable Tiles)
  - Public transit timetables (Linked Connections)
  - Bike sharing datasets (Linked GBFS)
  - Context information and personal data influencing how you want to travel (Solid)

1. Where do you see a connection with your field?

2. What inspires you?

3. What can we do to be more relevant to your field?

Break

Participatory session

How can we work together?

Participatory session

- Intro (+/- 10min)
  - Plenair
  - Naam, organisatie
  - Waarom is Serendipity Engine relevant? Waarom ben je hier vandaag?

- Deel 1 (+/- 45min)
  - Parallelle gesprekken in groep (3)
  - ~ research

- Deel 2 (+/- 25min)
  - Doorschuif system posters
  - ~ valorsiatie

Discussion points (part one)

- Wat zouden jullie binnen 3 jaar graag willen kunnen doen en welke hindernissen zijn hier nog te overwinnen
  (waar wij mogelijks aan kunnen bijdragen)

  - Waarom is dit belangrijk voor jullie
  - Wie is hier best nog bij betrokken (andere organisatie)
  - Wat is de link met Serendipity Engine

SERENDIPITY ENGINE

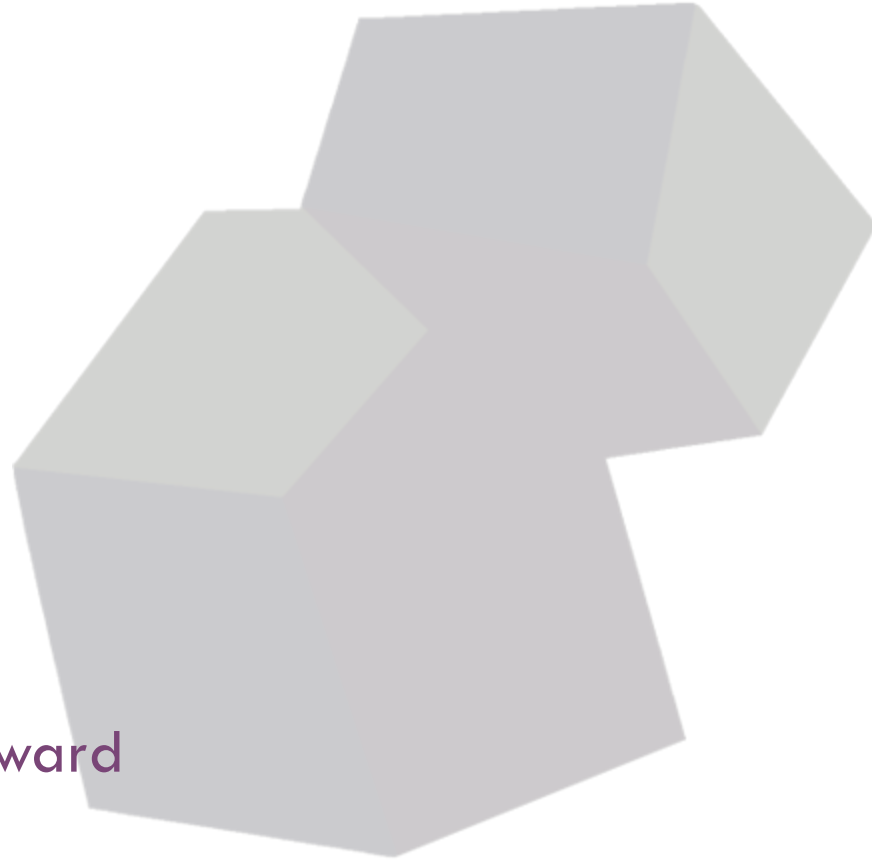# Discussion points (part two; post-it time)

Projects & applications

Clear your head

Communication

Wrap-up

Concluding and looking forward

Upcoming events that might be of interest

16-17 May 2023

ITF

6 June 2023

Hack de Stad: Serendipiteit in de stad - ism Stadsform (Antwerpen)

November/December 2023

DBWRS – First Dutch-Belgian Workshop on Recommender Systems

18 April 2024

Advisory Committee Meeting

Follow us on LinkedIn

SERENDIPITY ENGINE

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Illustrations by Storyset.

Thank you.