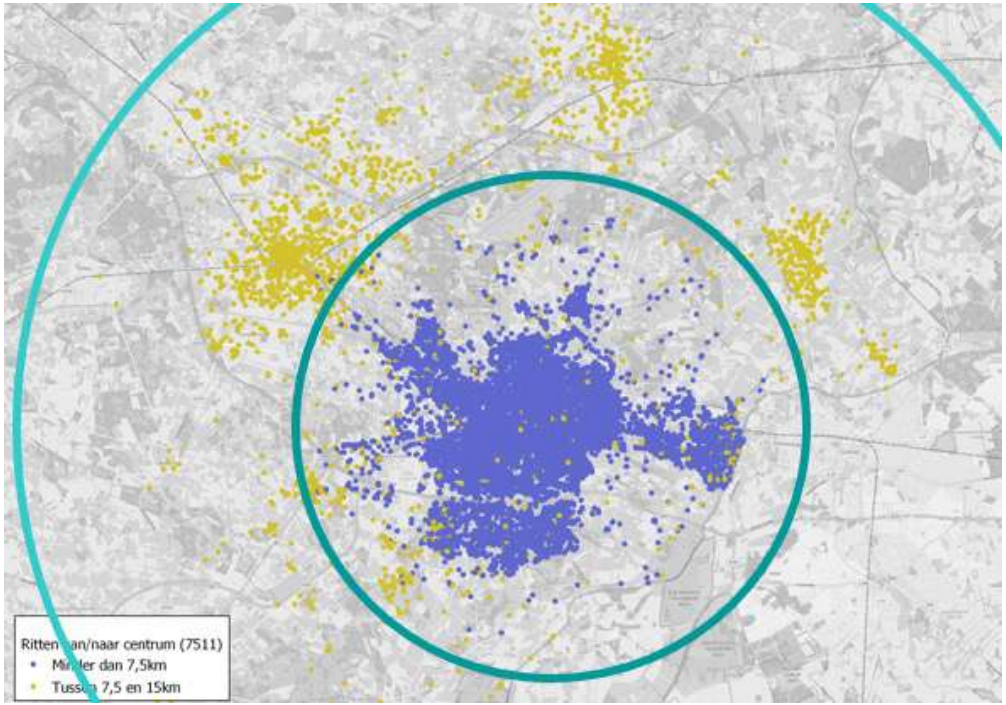
Casper Van Gheluwe

imec

Recommendations on Floating Bicycle Data

Why?

EnschedeFietst – Start points of trips to the city centre



Do you think this is floating bicycle data?

Recommendations on Floating Bicycle Data

Why?

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Recommendations on Floating Bicycle Data

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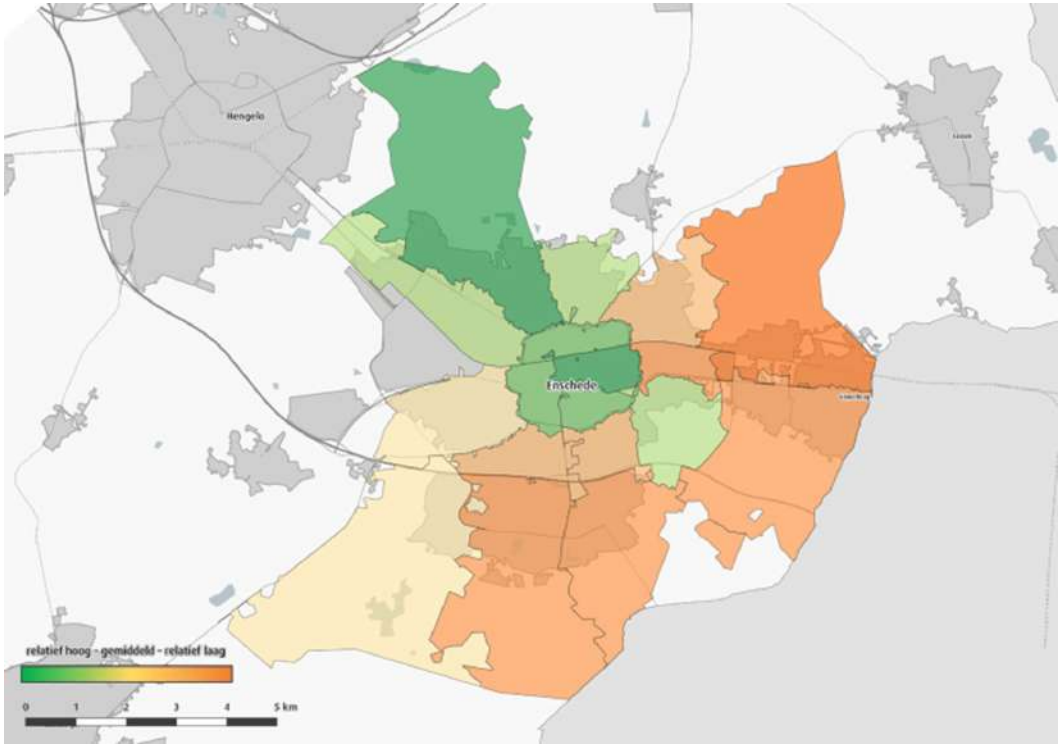

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Recommendations on Floating Bicycle Data

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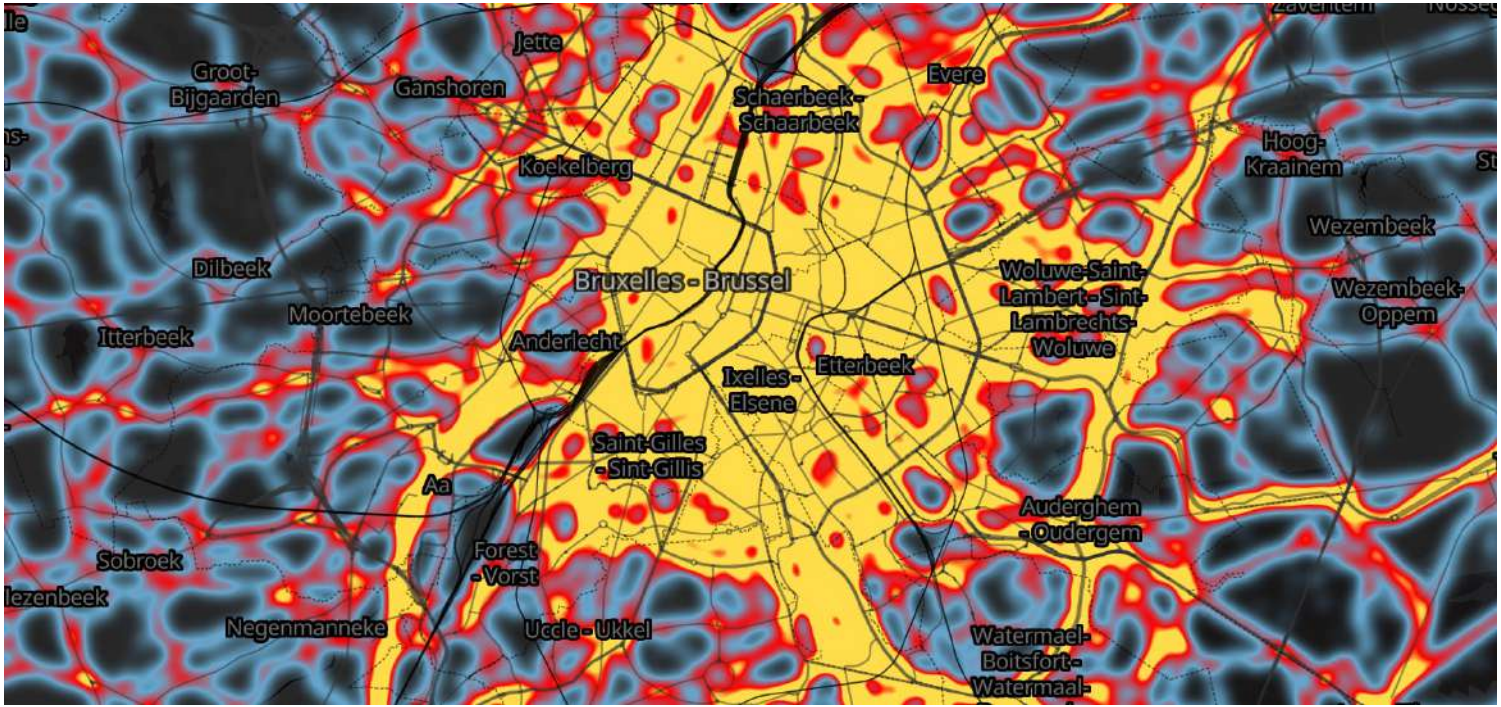

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Recommendations on Floating Bicycle Data

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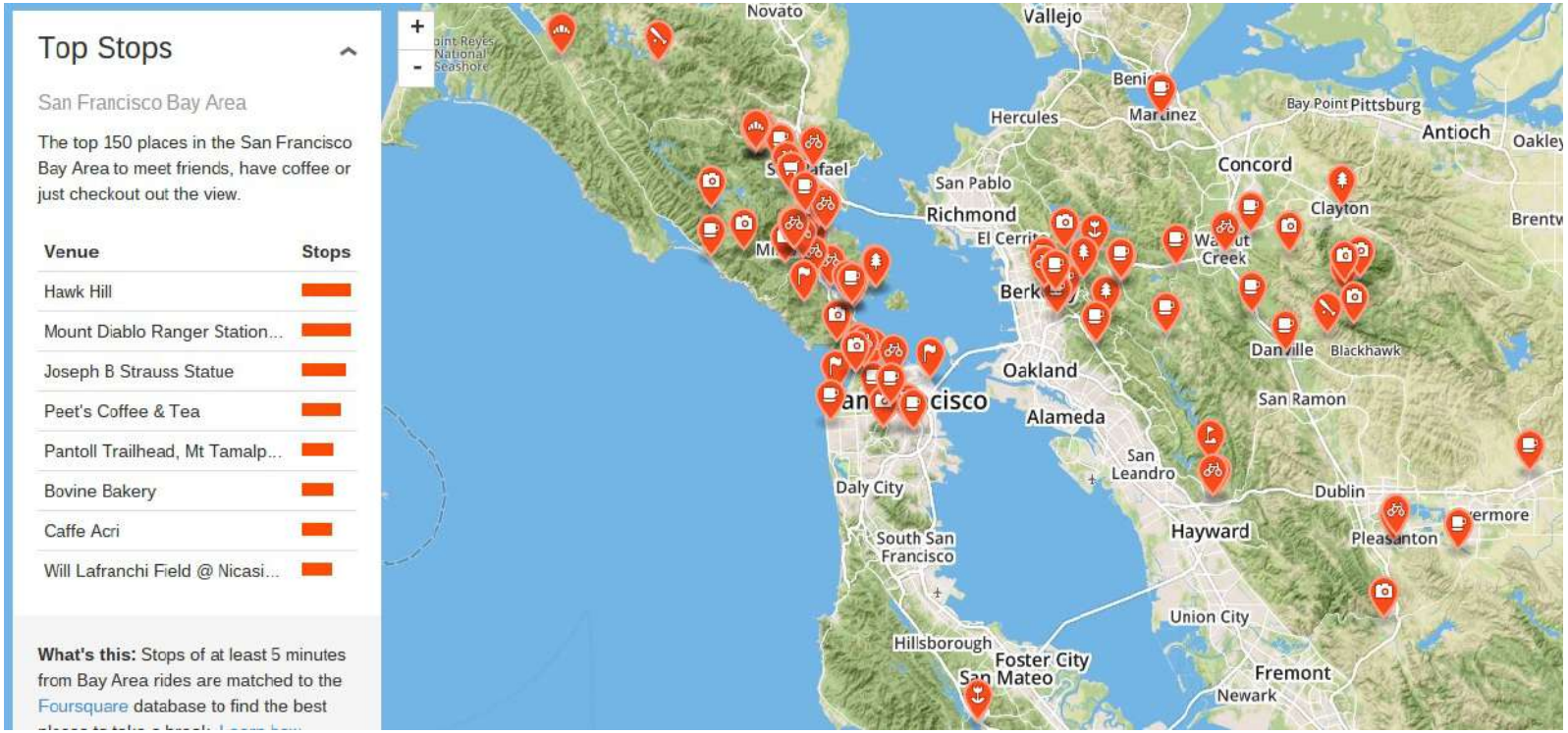


Do you think this is floating bicycle data?

Recommendations on Floating Bicycle Data

Why?

Do you think none of this is floating bicycle data?

Recommendations on a specification for FBD

Context

- MegaBITS aims to enhance bicycle mobility in Europe through ITS solutions
- Several pilot regions want to use Floating Bicycle Data for bicycle policy support

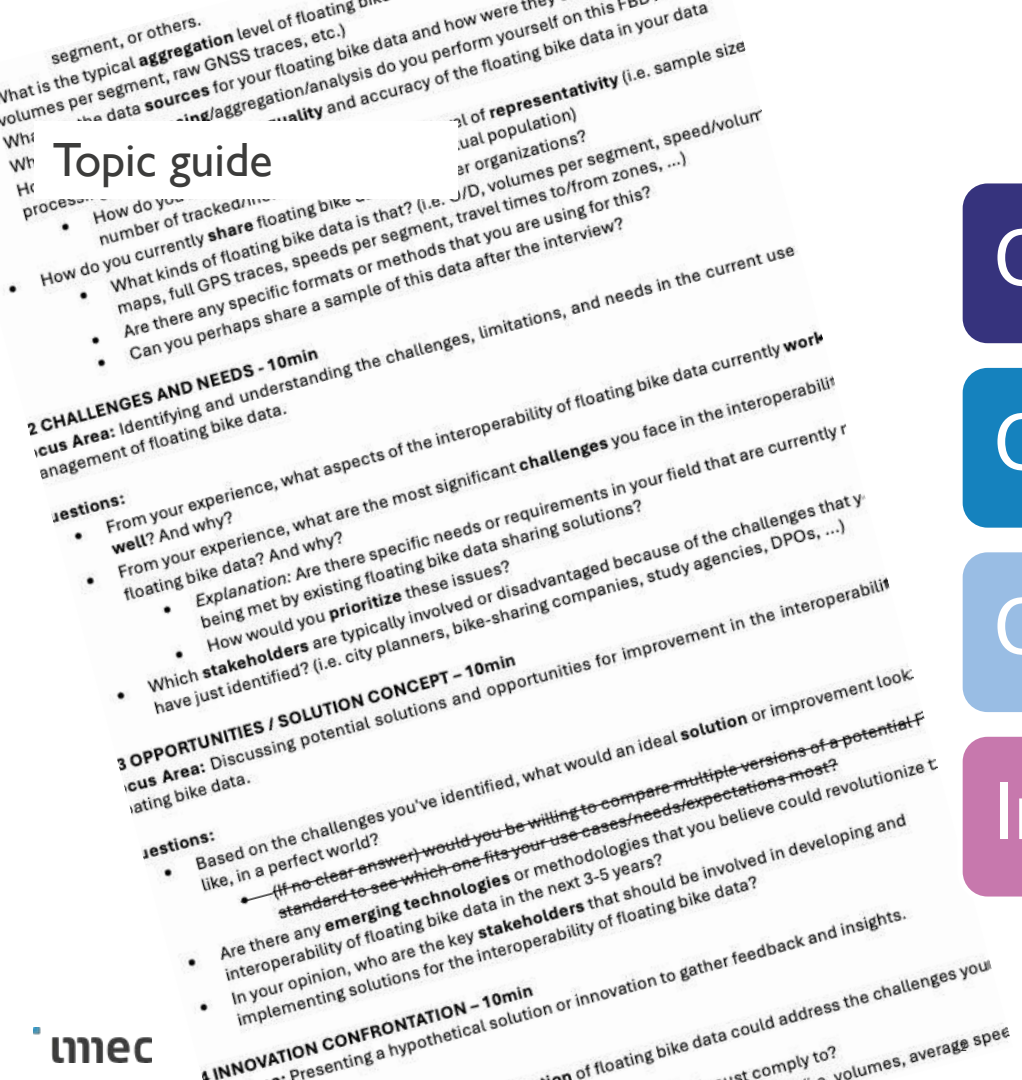
- **Challenge:**
  - Underutilization of FBD

- **Goals:**
  - Recommendations towards future standardization
  - Recommendations for next steps that MegaBITS and its pilot regions can undertake

Methodology

Expert interviews

- Academics
- Apps for cycling intelligence
- Bicycle manufacturers
- Bicycle logistics operators
- Data intermediaries
- Hardware for cycling intelligence
- Route planner providers
- Standardisation organisations



Topic guide

segment, or others.
What is the typical **aggregation** level of floating
volumes per segment, raw GNSS traces, etc.)
the data **sources** for your floating bike data and how were they
ing/aggregation/analysis do you perform yourself on this FBD
uality and accuracy of the floating bike data in your data
process
- How do you
number of tracked/
- How do you currently **share** floating bike
  - What kinds of floating bike data is that? (i.e. O/D, volumes per segment, speed/volum
  maps, full GPS traces, speeds per segment, travel times to/from zones, ...)
  - Are there any specific formats or methods that you are using for this?
  - Can you perhaps share a sample of this data after the interview?

2 CHALLENGES AND NEEDS - 10min
ocus Area: Identifying and understanding the challenges, limitations, and needs in the current use
anagement of floating bike data.

uestions:
- From your experience, what aspects of the interoperability of floating bike data currently **work well**? And why?
- From your experience, what are the most significant **challenges** you face in the interoperabilit floating bike data? And why?
  - *Explanation:* Are there specific needs or requirements in your field that are currently n being met by existing floating bike data sharing solutions?
  - How would you **prioritize** these issues?
- Which **stakeholders** are typically involved or disadvantaged because of the challenges that y have just identified? (i.e. city planners, bike-sharing companies, study agencies, DPOs, ...)

3 OPPORTUNITIES / SOLUTION CONCEPT – 10min
ocus Area: Discussing potential solutions and opportunities for improvement in the interoperabilit
ating bike data.

uestions:
- Based on the challenges you've identified, what would an ideal **solution** or improvement look like, in a perfect world?
  - ~~(If no clear answer) would you be willing to compare multiple versions of a potential F standard to see which one fits your use cases/needs/expectations most?~~
- Are there any **emerging technologies** or methodologies that you believe could revolutionize t interoperability of floating bike data in the next 3-5 years?
- In your opinion, who are the key **stakeholders** that should be involved in developing and implementing solutions for the interoperability of floating bike data?

4 INNOVATION CONFRONTATION – 10min
: Presenting a hypothetical solution or innovation to gather feedback and insights.
ion of floating bike data could address the challenges you
ust comply to?
volumes, average spee

Current practices

Challenges and needs

Opportunities

Innovation confrontation

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MegaBITS

“FBD encompasses various types of information that detail the movement and usage patterns of cyclists or bicycles”

Recommendations on a specification for FBD

Data sources

Mobile applications

- Primary source offering extensive data.
- Challenges in differentiating transportation modes.
- Apps tailored for cycling.
- Ensure anonymity and privacy?

Connected bicycles

- Integrated sensors and connectivity solutions.
- Provide comprehensive data on location, status, and usage.
- High coverage and granularity but limited representativity.

Dedicated sensor devices

- Provide accurate locational data.
- Installed on various bicycle components.
- Offer continuous sensing capabilities, including road and air quality.

Smart locks

- Track location and status of bicycles.
- Useful in shared bike schemes and fleets.
- Designed in-house or purchased from external vendors.

Recommendations on a specification for FBD

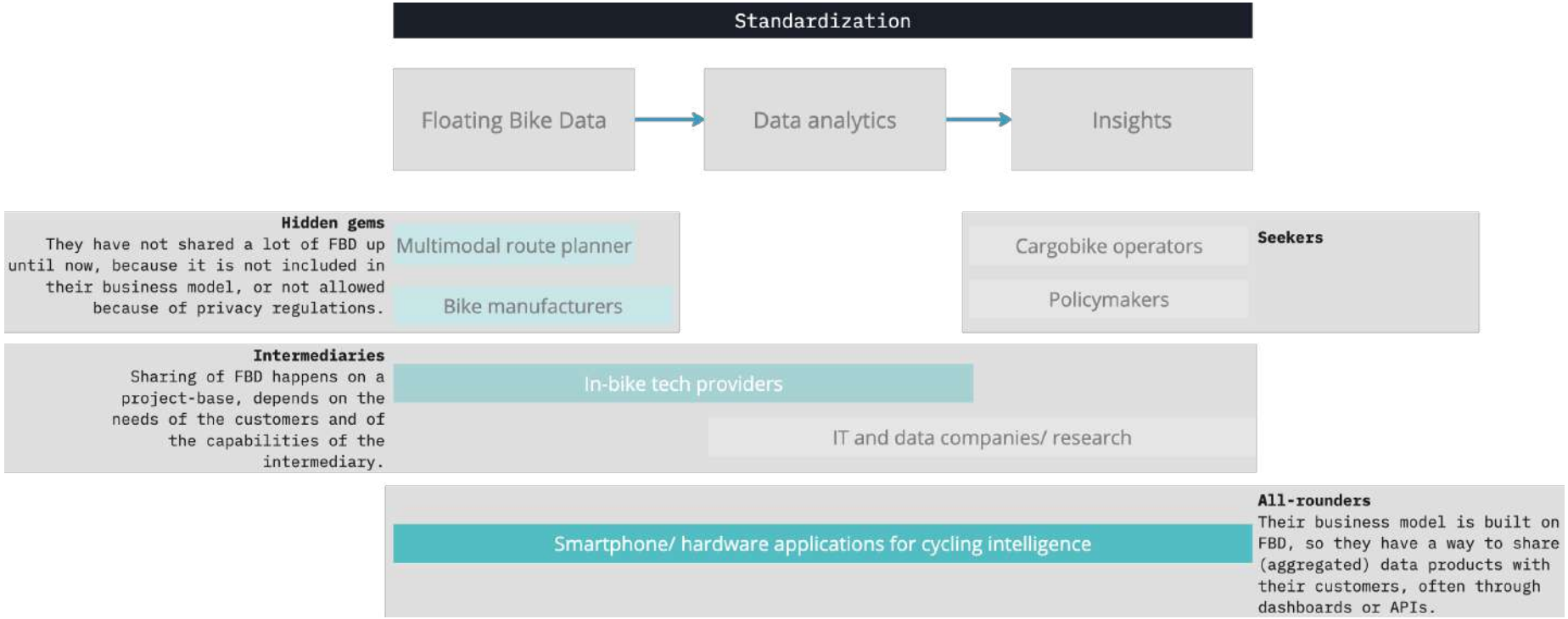
Data sources

- **Data integration challenges**
  - Supplementing with external data requires significant technical effort.
  - Legal and privacy alignment is demanding.
  - Quality differences between mobile app data and dedicated sensor data.

- **Conclusion**
  - Needs and best source are use case dependent
  - Diverse data sources with unique advantages and challenges.
  - Future standardization must consider data characteristics and integration complexities.

Recommendations on a specification for FBD

Data sharing



Recommendations on a specification for FBD

Challenges

Unclear expectations	Ambiguity in the ask and different expectations from the seekers.
Governance & privacy	Storage, access, and the lack of legal framework are critical issues.
Business model	Uncertainty about who will finance initiatives to bolster FBD.
Data needs & policy relevance	Difficulty in defining the exact requirements/data models Concerns about the limited applications of FBD in policymaking thus far
Lack of expertise	FBD underutilised due to a gap in expertise within public authorities, research agencies, and data suppliers.
Technical	Ineffective data utilisation and sharing.
Data sharing	Barriers to sharing data among manufacturers and across platforms due to fear for competitive (dis)advantages.
Lack of standards	There are no unified standards for FBD data sharing and use.

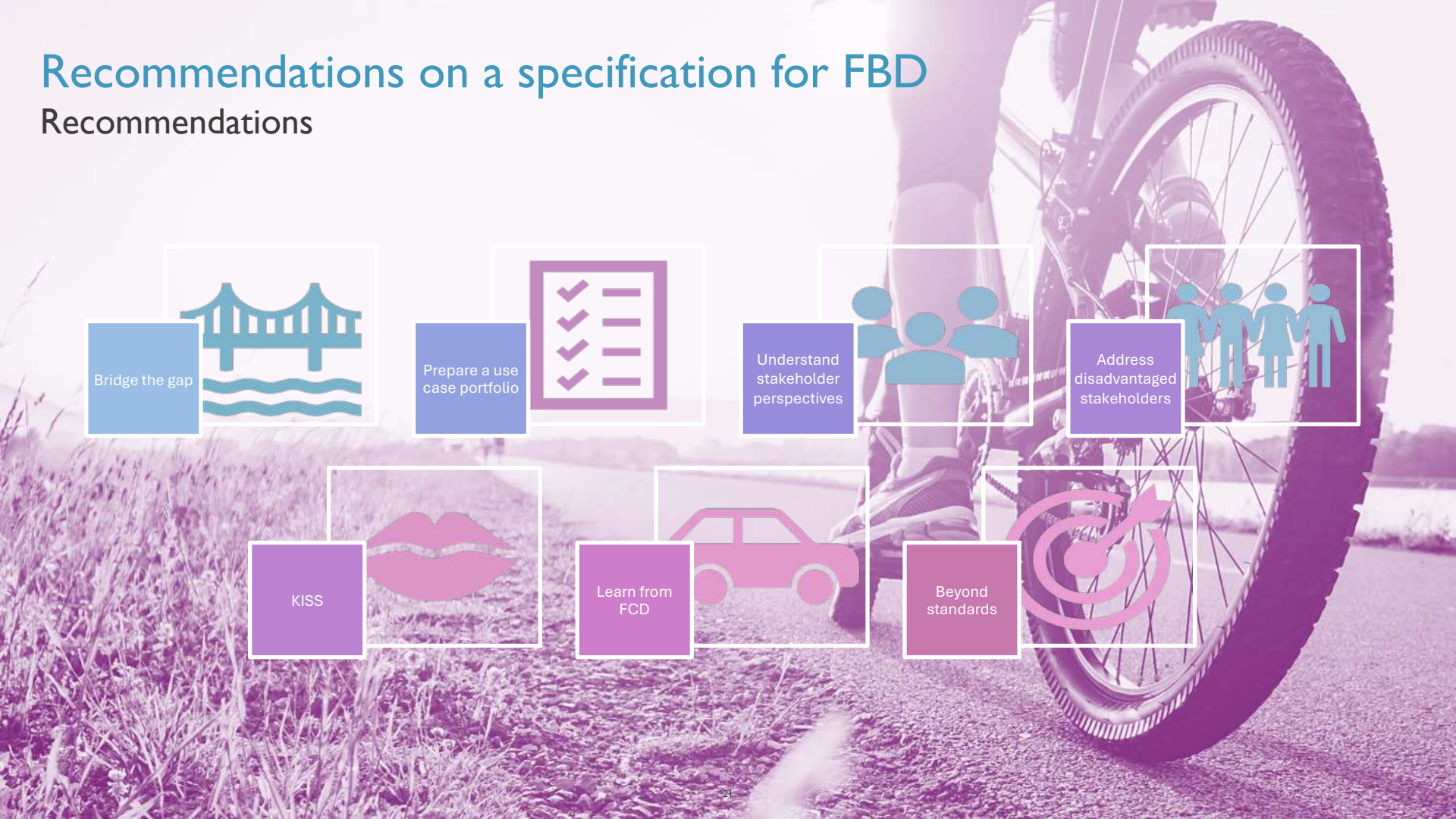
Recommendations on a specification for FBD

Opportunities

Standardisation	Key for FBD development Requires technical support mechanisms
Enhanced collaboration	Convergence needed Dismantle data silos for data sharing
Training and research	Improve FBD handling proficiency Establish municipal data teams
Centralised storage and access	Structured FBD repository for centralised research access
Legal frameworks	Standardised FBD sharing contracts EU involvement needed
Role for intermediaries	Companies to aid digitalisation Improve access to FBD-driven insights

Recommendations on a specification for FBD

Recommendations



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MegaBITS


Cooking with FBD
Floating Bicycle Data