Rbanism

Building digital competence for reproducible, automated and scalable research in the urbanism research community

Reproducibility wrap-up event

12 April 2023

Claudiu Forgaci
Asst. Prof. of Urban Design & Analytics
Section of Urban Design, Department of Urbanism
Faculty of Architecture and the Built Environment
Delft University of Technology

URBAN DESIGN TU Delft

TU Delft Department of Urbanism
BK Bouwkunde

netherlands eScience center

OSCD
Open Science Community Delft

Rbanism

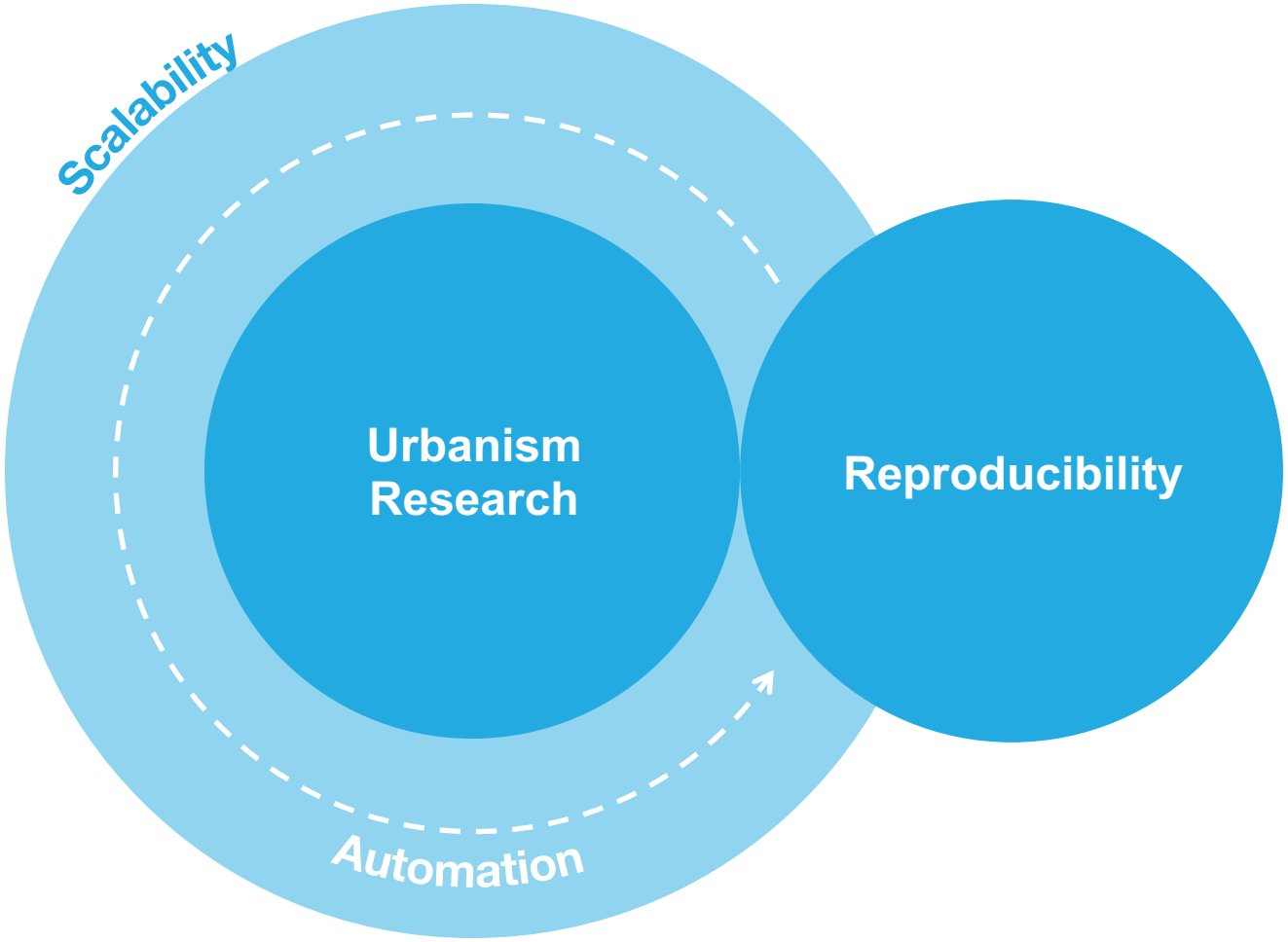
Challenges

Challenges in the urbanism research community

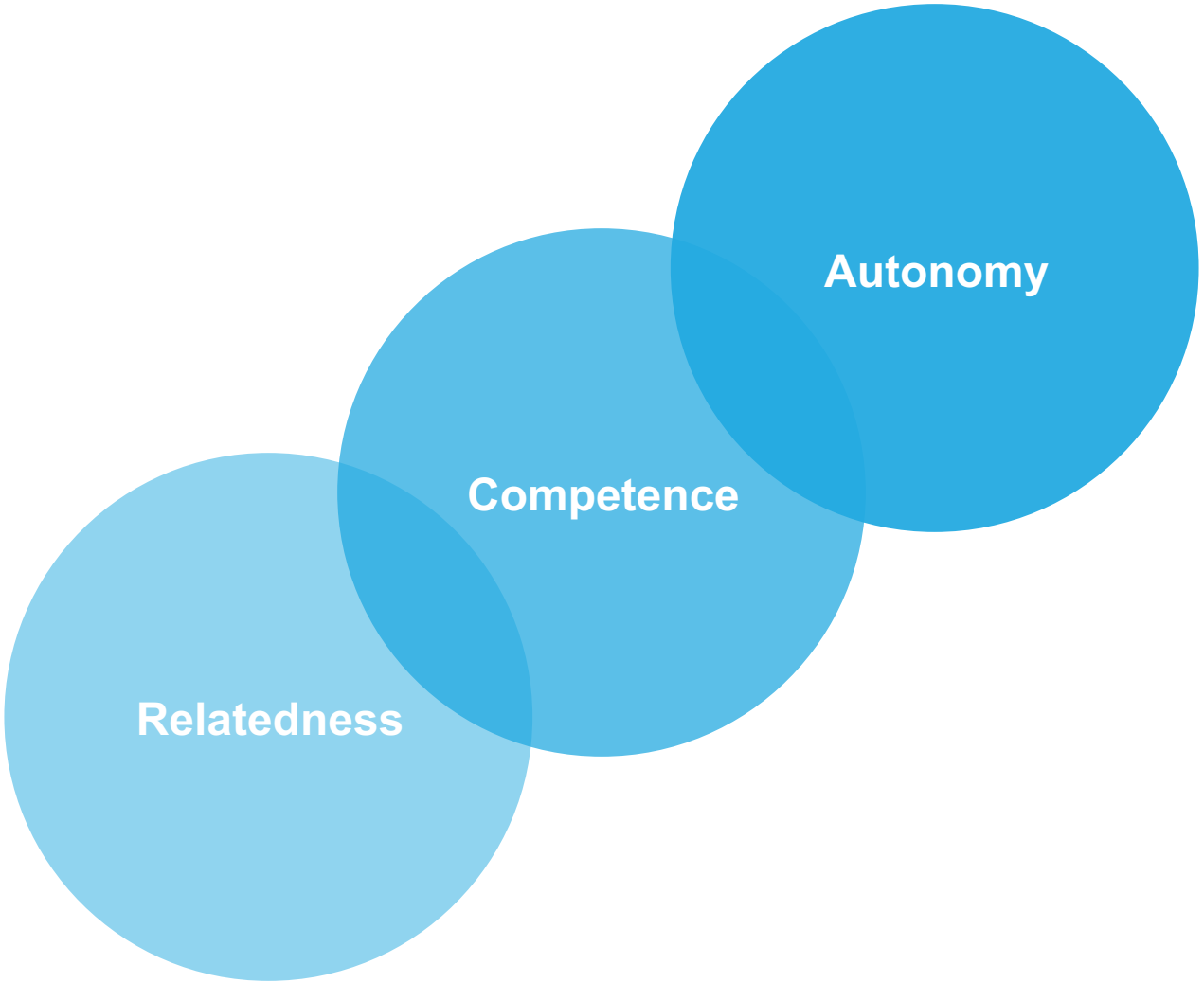
1. Limited awareness of state-of-the-art digital technologies
2. Scarcity of scientific computing and data science skills
3. Scarcity of computational thinking and software management skills

Approach

1. Improving awareness

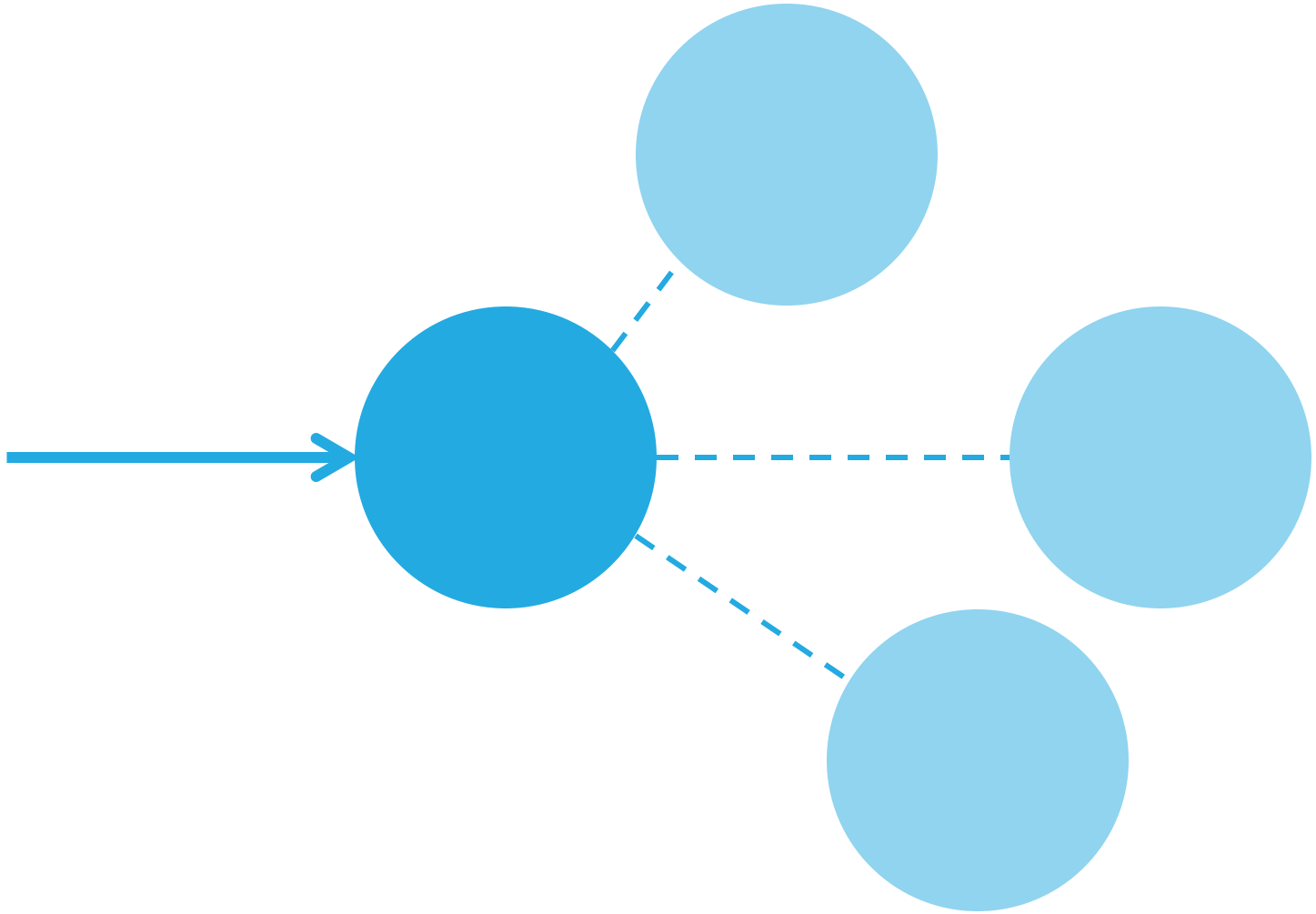


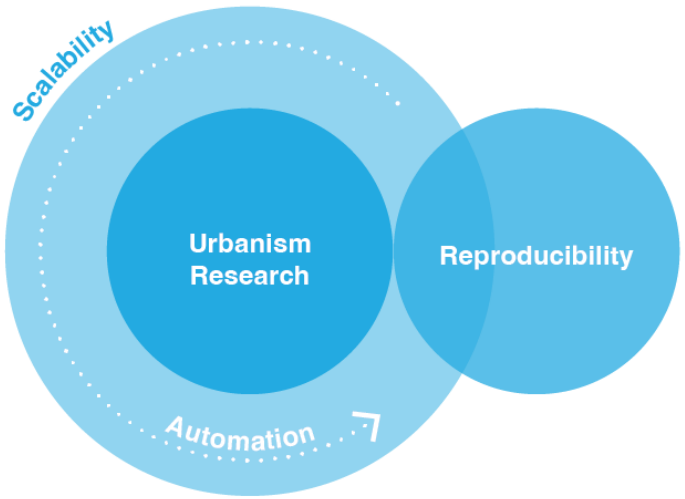
2. Stimulating engagement



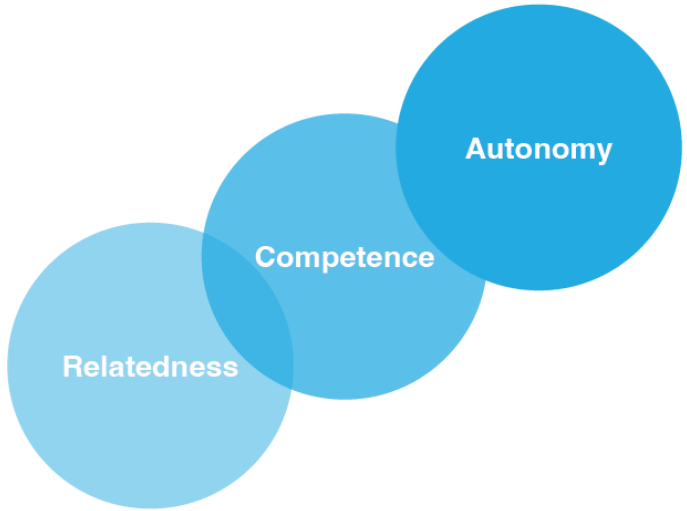
Based on Self-Determination Theory (see Niemiec & Ryan, 2009)

3. Building capacity

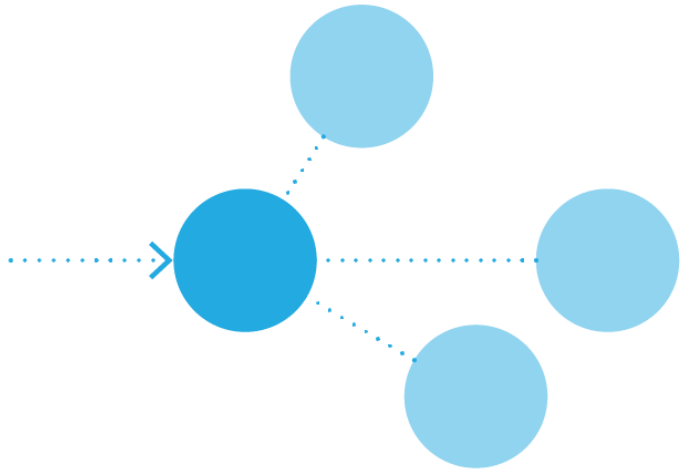




Improving Awareness



Stimulating Engagement



Building Capacity

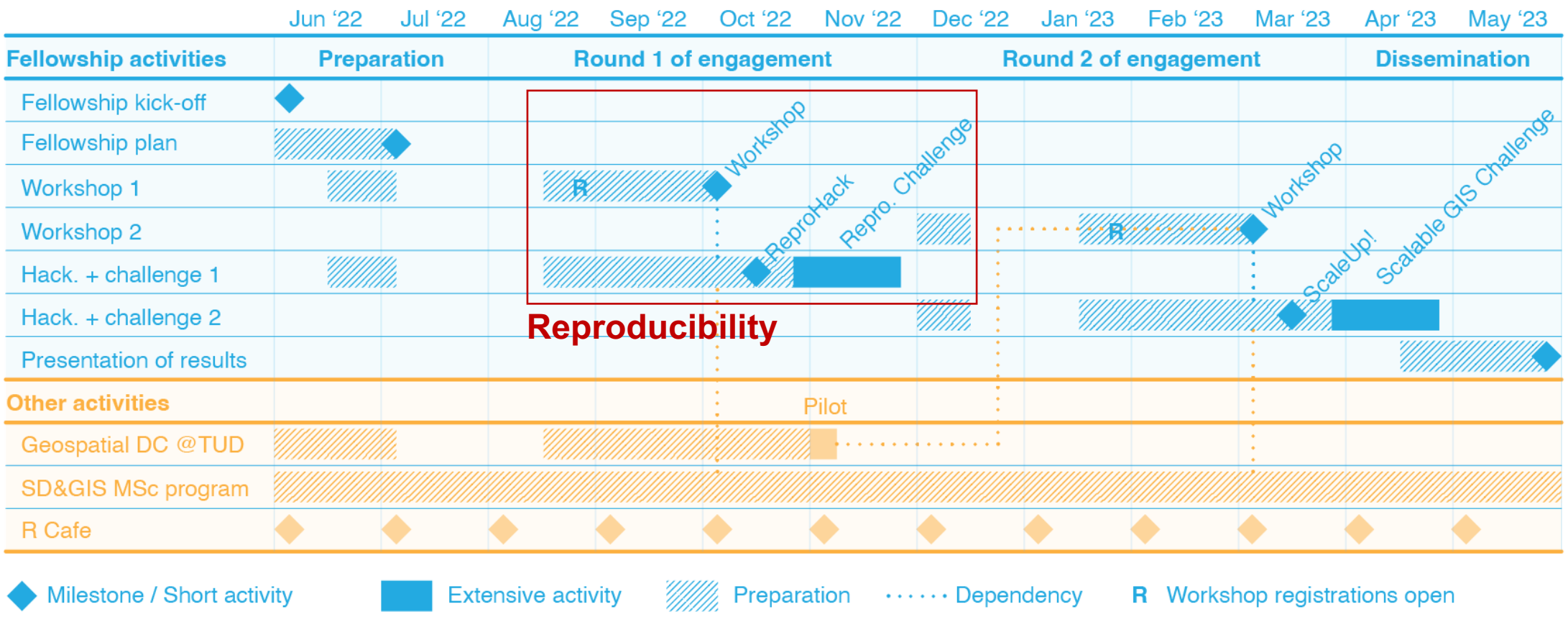
Activities

Workshops

Challenges

Supported by
Netherlands eScience Center
Open Science Community Delft
TU Delft Library & Digital Competence Centre

The Rbanism event series Jun ‘22 – May ‘23

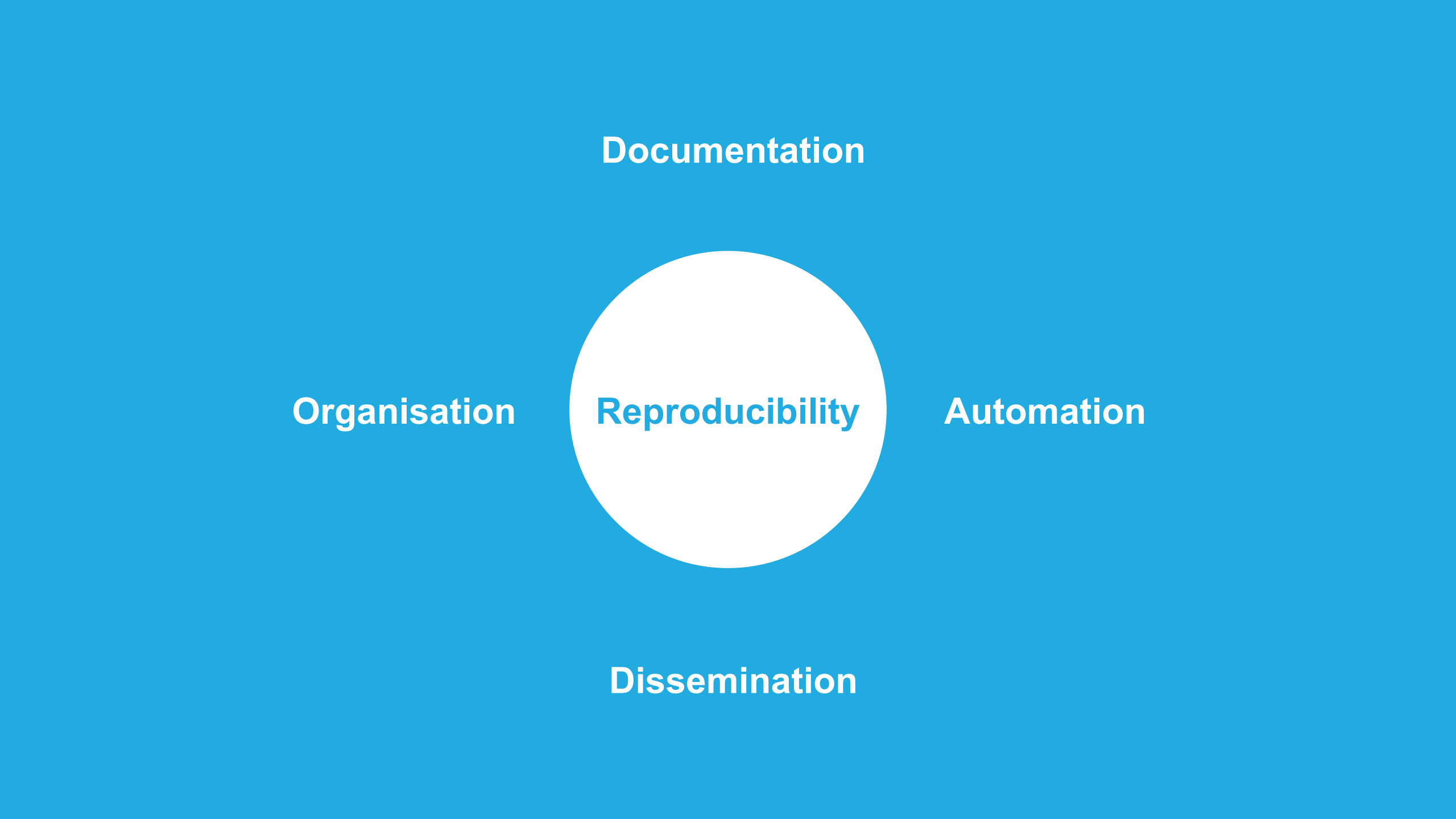



My awesome report

Reproducibility

Motivating reproducibility in urbanism research

- “**all urban planners benefit from basic quantitative literacy and an ability to reason critically with data.** This scholarly and professional imperative aligns with the growing importance of computational thinking in the urban context and parallel trends in geocomputation […], geographic data science […], and the open-source/open-science movements […].” (Boeing, 2019, p. 40)
- “**toolkits relying on point-and-click interfaces are inefficient in the era of big data.** […] the field [of urban morphology] needs a shift from dominant traditional geographic information system (GIS) environments based on a graphical user interface (GUI; e.g., QGIS or ArcMap) towards reproducible open code-based workflows.” (Fleischmann et al., 2022, p. 3)
- **Reproducibility can contribute to increasing the scientific legitimacy of design-focused urbanism research** often regarded as pseudoscientific (see Marshall, 2012)


Documentation
Organisation
Reproducibility
Automation
Dissemination

Lessons learned from the reproducibility events

- Reproducibility is a spectrum
- Reproducibility benefits from bottom-up practice
- Very low attendance, there is still work to be done
- We can all benefit from a culture shift towards higher adoption of reproducibility practices

How can urbanism researchers, students and practitioners benefit from reproducibility? Why is it worth running the last mile of reproducibility?

Introducing Daniel Nüst

The reproducibility challenge

Introducing the challenge reviewers

Rusne Sileryte

Hugo Ledoux

3rd prize – feedback summary

- Nearly reproducible
- Clear project structure
- Good self-evaluation, clearly pointing out missing components and challenges of reproducibility
- Sample data could be used to overcome the issue of data availability
- Code documentation could be more explicit
- Providing a list of dependencies and versions would improve reproducibility

3rd prize winner 

- Project title: Social segregation through the lens of big data on human mobility
- Submitting author: Yuan Liao
- Co-author(s): Laura Alessandretti, Jorge Gil, Sonia Yeh
- Type of work: research project (pilot study)
- Status: work in progress

2nd prize – review summary

- Great effort in achieving reproducibility in a complex workflow
- Clear folder structure and README files provided
- A diagram of the project structure would make the pipeline more understandable
- Code documentation could be more detailed
- Unit tests are recommended
- README files could provide more detail about the files included in each folder
- Metadata about data could be more detailed (sources, column descriptions, etc.)

2nd prize winner

- Project title: The limited employment benefits of XXL-logistics centres in Dutch regions
- Submitting author: Merten Nefs
- Co-author(s): Jeroen van Haaren & Frank van Oort
- Type of work: PhD thesis paper
- Status: finished but not published

1st prize – review summary

- Very good and explicit documentation
- Using a Jupyter Notebok makes the documentation easy to follow
- All datasets clearly referenced
- The list of dependencies should involve version numbers
- Sample data and unit tests can be used instead of the full dataset
- Relative project paths should be used in the code

1st prize winner 🚀

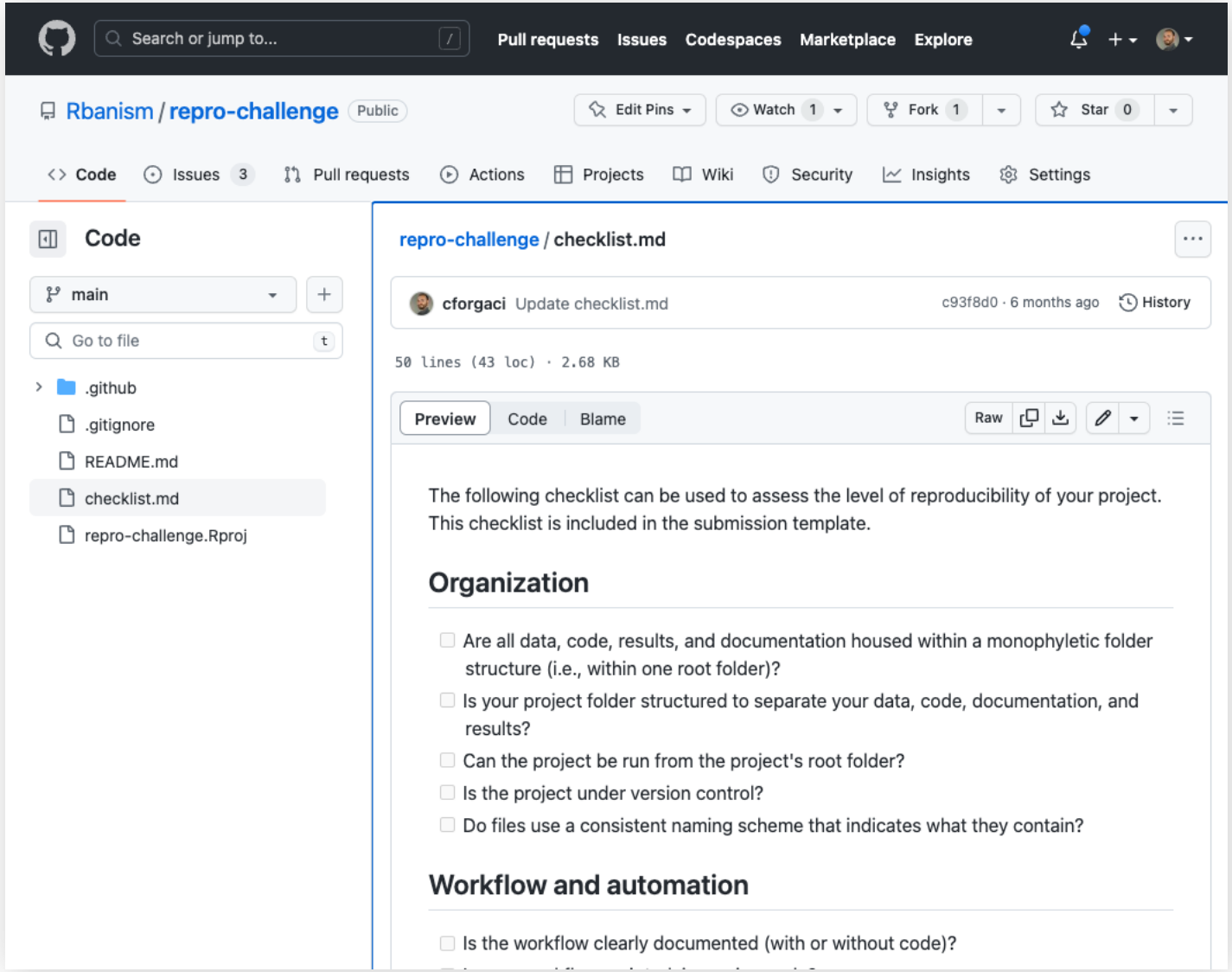
- Project title: Simplified GTFS models for integrated urban and transport planning
- Submitting author: Flavia Lopes
- Co-author(s): Jorge Gil
- Type of work: Research project (postdoctoral)
- Status: work in progress

To be **public** or not to be?

1st Prize: €500 + 2 mentoring hours
2nd Prize: €300 + 4 mentoring hours
3rd Prize: €200 + 6 mentoring hours

Reproducibility checklist

tinyurl.com/reprocheck



Upcoming events

- **WORKSHOP: Scalable GIS for Urbanists**, Mon 22 May 2023, 9:00-17:00, TU Delft Library Registrations are open for urbanism(-related) researchers in the Netherlands: https://www.eventbrite.com/e/596770435437

- **CHALLENGE: Scale Up!** starting on Mon 22 May 2023!

- **WORKSHOP: Geospatial Data Carpentry with R**, Mon 5 & Tue 6 June 2023, 9:00-17:00, TU Delft Library. Registrations are open for researchers at TU Delft: https://www.eventbrite.com/e/596933122037

- **Rbanism community event**, Thu 8 June 2023, 16:00-19:00, TU Delft Campus, open to all community members who can attend in person and partially in a hybrid format.

Rbanism

Building digital competence for reproducible, automated and scalable research in the urbanism research community

Become a member: