

Measurement of Physical Activity in older adults through Data Donation (MPADD)



Bella Struminskaya & Florian Keusch
NIMLAS Annual Plenary Meeting, January 26, 2024

Measuring Physical Activity in Older Adults

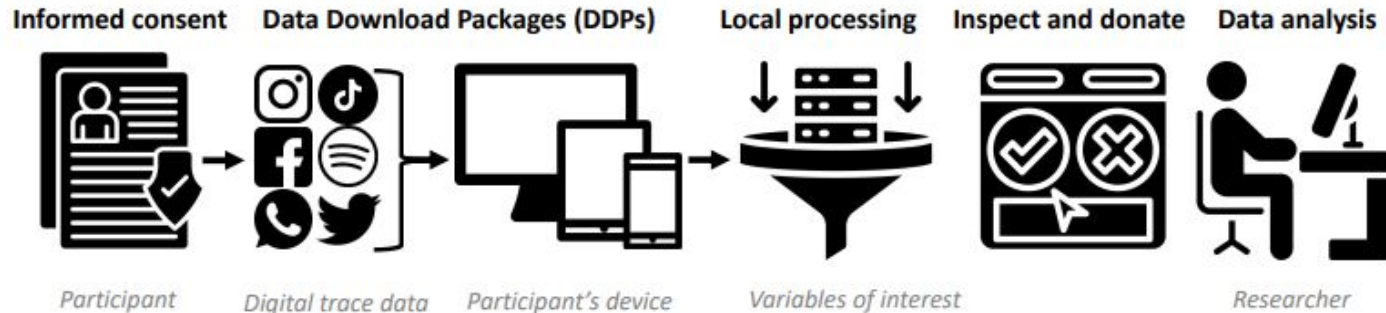
- Physical activity (PA) foundation of healthy lifestyle, elevated immune and psychological function, and decreased mortality (Pate et al. 1995; Warburton et al. 2006), especially for aging populations (DiPietro 2001)
- Accurate measurement of PA key to identifying determinants of health and developing appropriate interventions
 - *Self-reports* usually limited to global measures and misclassification (Bauman et al. 2009; Farrell et al. 2014)
 - More fine-grained *day-reconstruction methods* limited to short reference periods, burdensome, and prone to recall error (Kahnemann et al. 2004)
 - *Providing participants with wearables* to track PA reduces reactivity and measurement error but non-compliance and high device costs (Montoye et al. 2016; Schneller et al. 2017)

Potential Alternative: Data Donation

- Takes advantage of GDPR Articles 15 (Right of access by the data subject) and 20 (Right to data portability)
 - Receive personal data in structured, commonly used, and machine-readable format (“Data Download Package”; DDP)
 - Transmit data to another data controller

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- Privacy-preserving data donation platforms



Data Donation for PA Studies

- Study participants asked to download PA data from devices they already own (e.g., smartphones, smart watches, fitness bracelets) and share them with researchers
- Leverages advantages of passive data collection - high-frequency information - with study of PA in true longitudinal setting
- Cost-efficient because participants use own devices
- However, very little known about quality of donated PA data

Study Aims

Aim 1. Investigate determinants of consent and selection bias

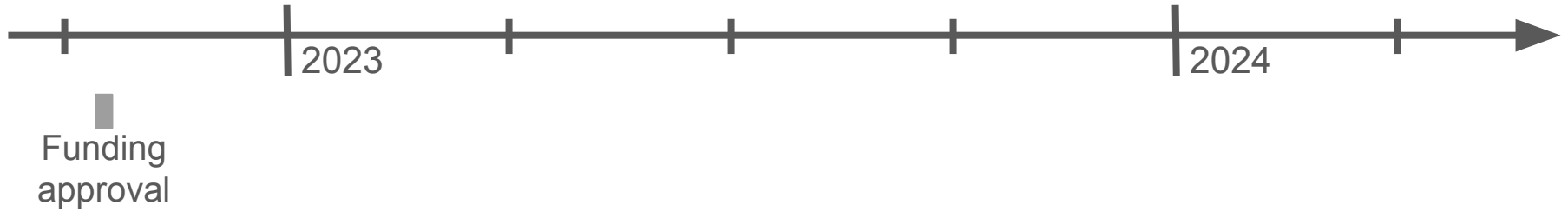
Aim 2. Assess the quality of donated PA data

Aim 3. Use multi-source PA data to predict health outcomes

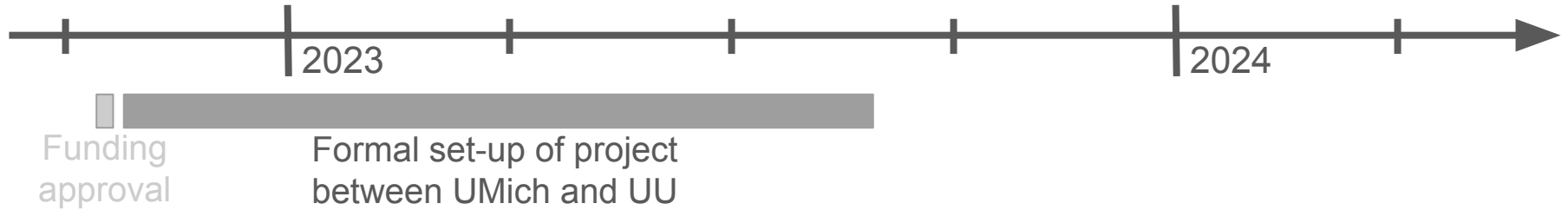
Design

- Baseline online survey with 2,000 adults aged 50+ in LISS panel - probability-based online panel of Dutch general population
 - Sociodemographics, self-rated health and health behaviors, chronic illness, (self-reported) PA, BMI, smartphone ownership and use, privacy concerns
- Smartphone owners asked to download passively collected PA data from 2018-2023 from their devices (Apple Health, Google Location History, or Samsung Health) and donate them via PORT

Timeline

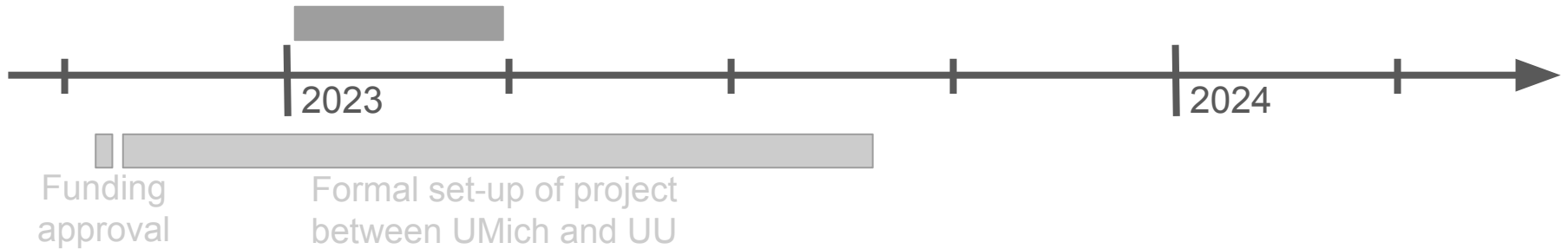


Timeline

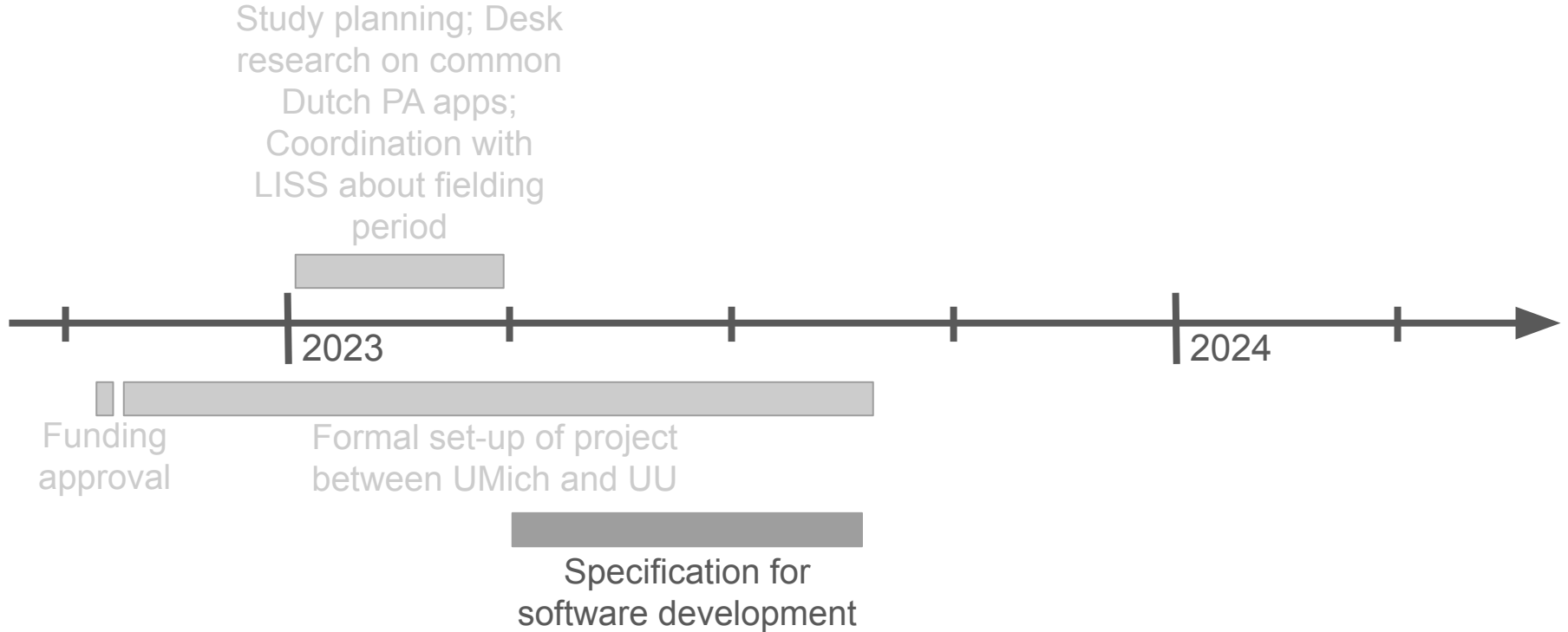


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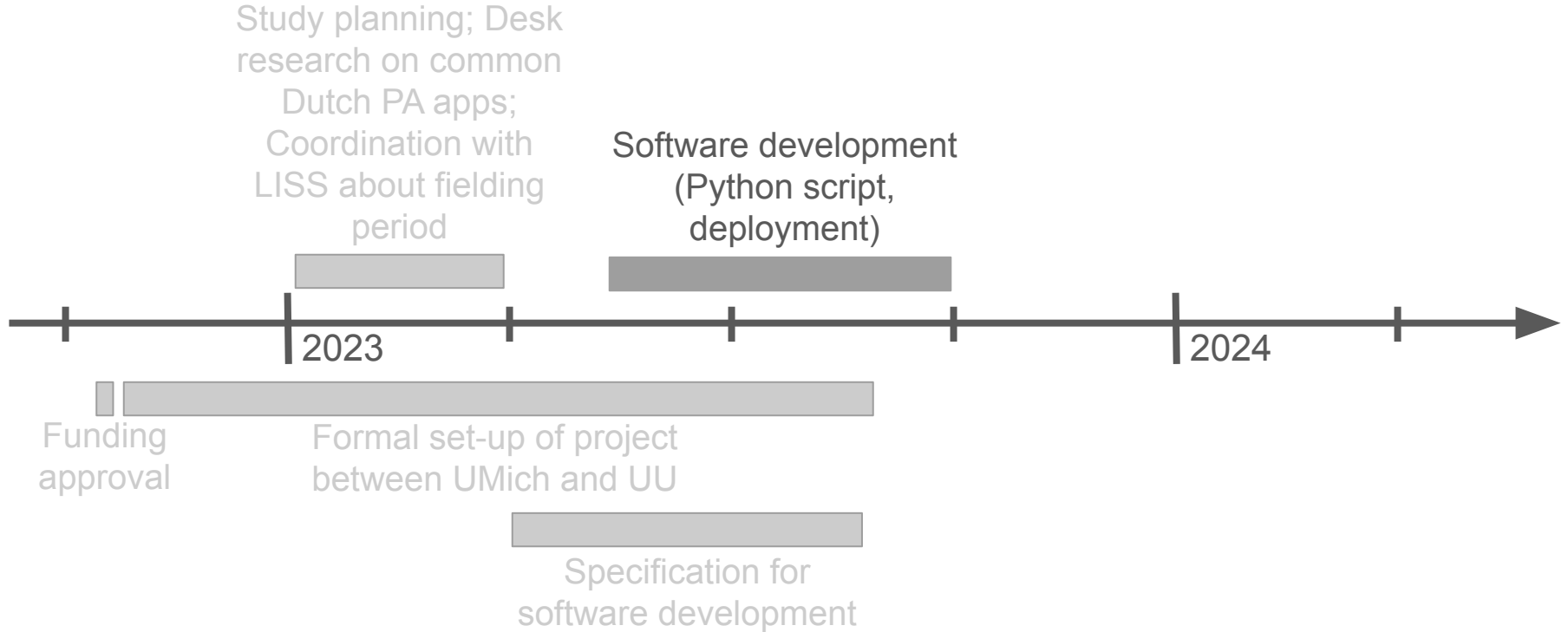
Study planning; Desk
research on common
Dutch PA apps;
Coordination with
LISS about fielding
period



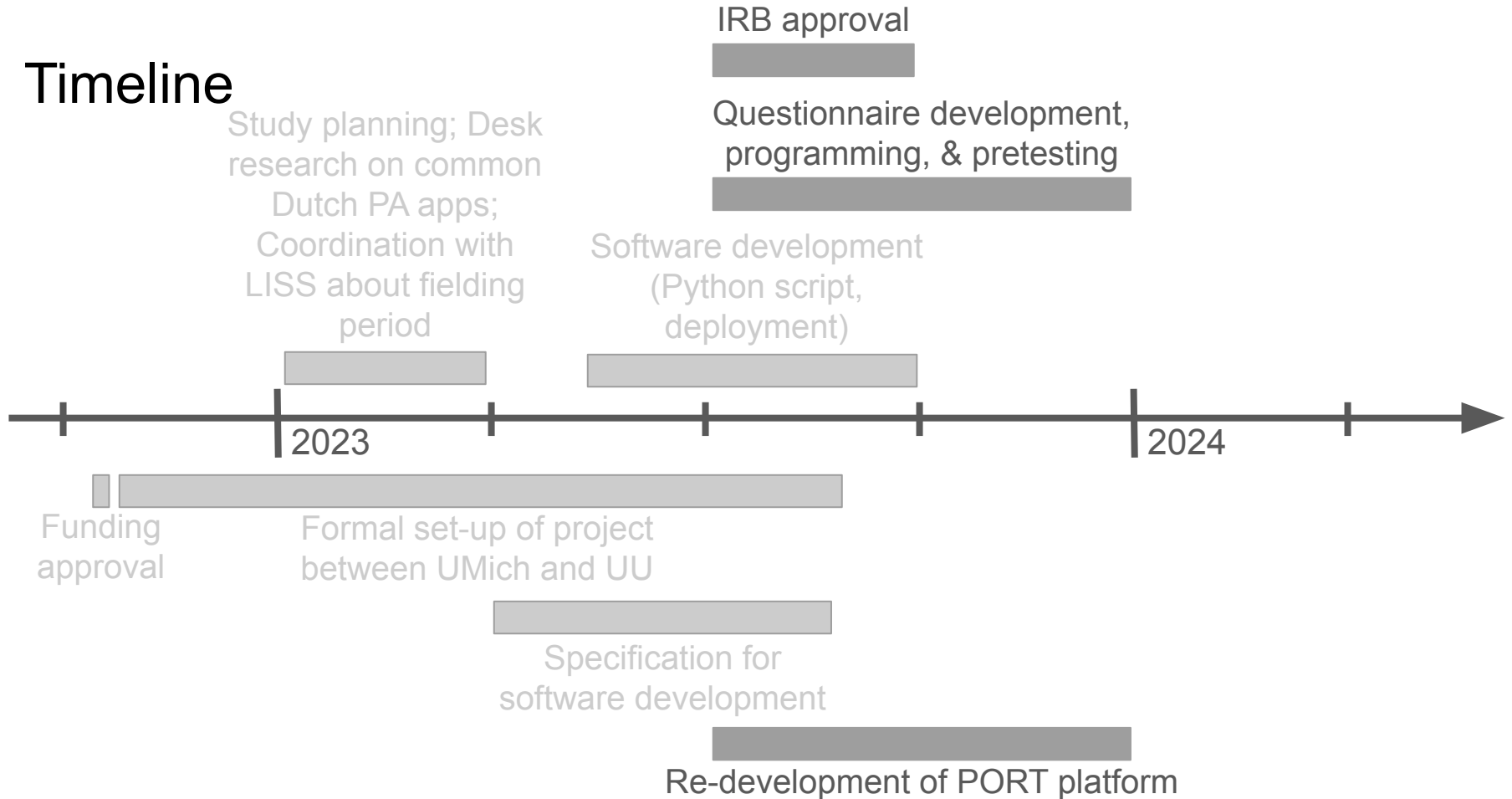
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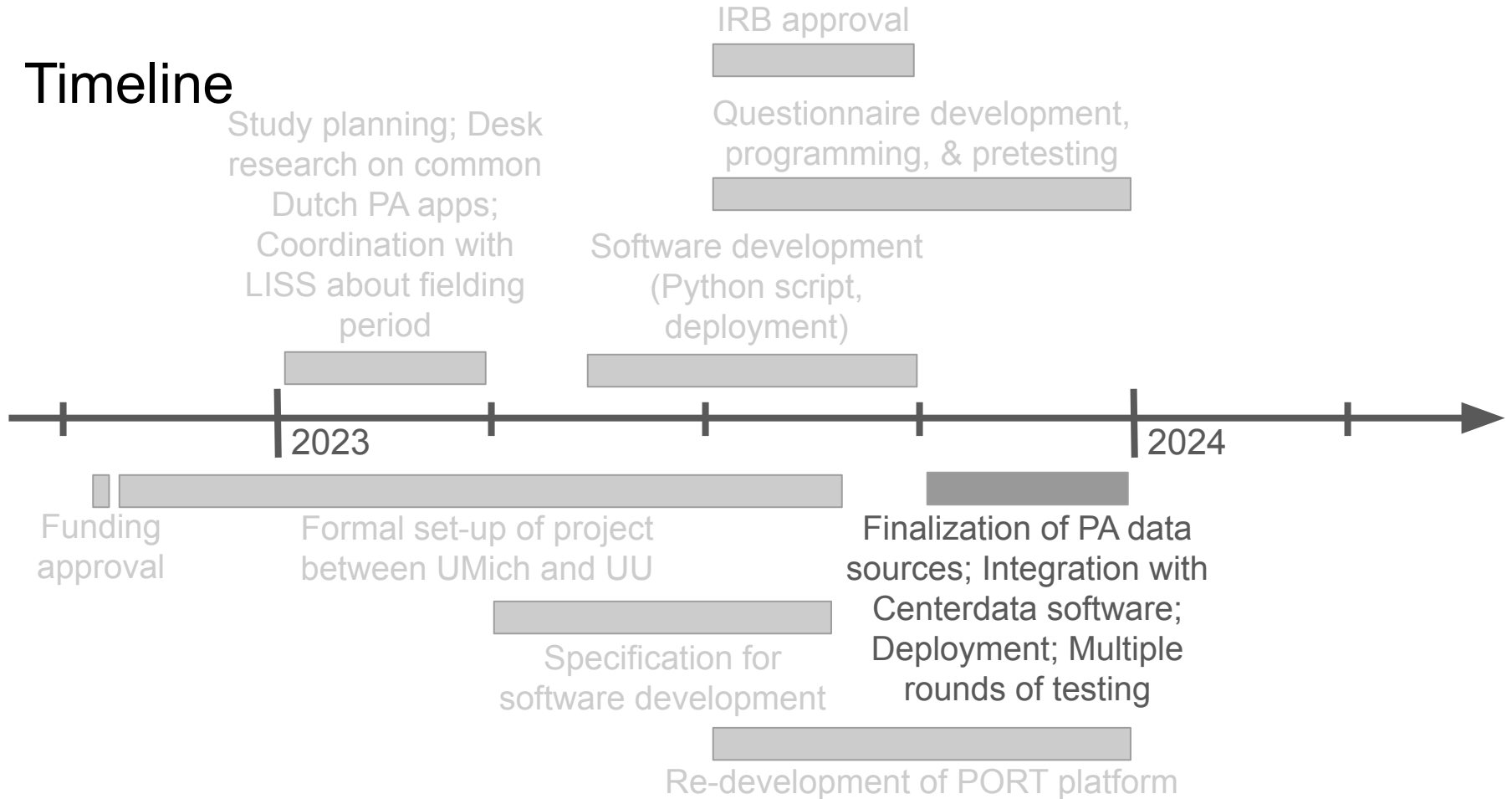
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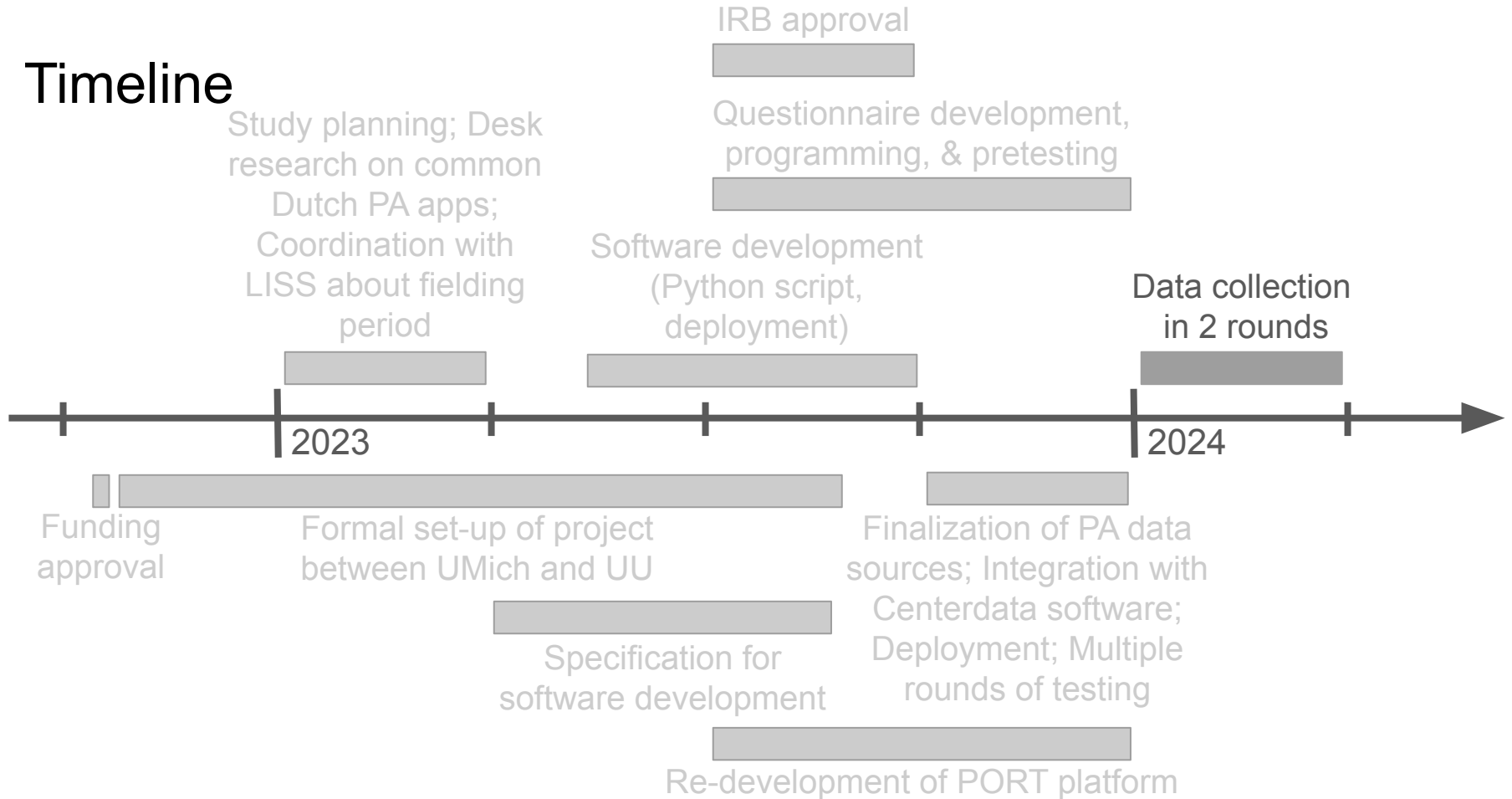
Timeline



Timeline



Timeline



First Results

Survey			Data donation						
			Apple Health		Google Location History		Samsung Health		
n	%		n	%	n	%	n	%	
Invited	399	100	Asked for consent	102	100	139	100	24	100
Completed	268	67	Consent given	45	44	38	27	11	46
Incomplet	34	9	Attempted donation	33	32	18	13	3	13
			Donated DDPs	20	20	2	1	2	8

Lessons Learned

- Complex study (methodological, technical, ethical, & legal sides)
 - Institutional support and pre-existing relationship with vendors paramount
- Multiple interconnected components introduce risks but for our pilot it helped...
 - ...to be involved in development of PORT redesign
 - ...to be integrated into the [D3I consortium](#)
 - ...to have done prior studies with PORT-Centerdata integration
- Soft launch learning: Google Location History (GLH) seems problematic - searching for a solution

Next Steps

- Main data collection starts on Feb 5 (given GLH-problem resolved)
- Data analysis
- Dissemination
 - Conferences (e.g., AAPOR)
 - Publication in methods and public health journals
- Potential implementation in larger-scale existing studies

More on D3I

- datadonation.eu
- [Symposium](#) May 30-31, 2024 (hybrid)

THANK YOU!



May 30-31
Roeterseiland
campus,
Building C,
C.001

Short course on
how to prepare
your own data
donation study
using Port!

Visit our website or scan
the QR code for more
information:
[https://datadonation.eu/
community/symposium-
2024](https://datadonation.eu/community/symposium-2024)

You will learn more about:

- Research projects making use of data donation to answer scientific research questions across multiple domains
- Methodological challenges and best practices regarding data donation
- Tools and infrastructures that facilitate and/or complement data donation pipelines
- Legal, ethical and normative considerations regarding data donation

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