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Nordic Council of Ministers

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What cannot be measured will not be done

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THE PROJECT

OBJECTIVE

Enable the Nordic Council of Ministers (who commissioned the project) and the Nordic countries to take decisions on future monitoring of waste prevention

OUTPUTS

- A collection of 15 cases on digital monitoring of waste prevention
- Analysis of waste prevention monitoring in the Nordics
- Report on possibilities and prospects in digital measurement of waste prevention
- Recommendations on ways to improve digitalised monitoring of reuse and waste prevention in the Nordics

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WHAT IS WASTE PREVENTION?

Measures taken before a substance, material or product has become waste, that reduce:

- **The quantity of waste**, including through the re-use of products or the extension of the life span of products
- **The adverse impacts of the generated waste** on the environment and human health
- **The content of hazardous substances** in materials and products (WFD).

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WASTE PREVENTION AND CIRCULAR ECONOMY

THE CIRCULARITY LADDER		
Smarter creation and use of products	***R0 Refuse***	*Turning a product redundant by cancelling its function, or by substituting it with a different product*
	R1 Rethink	*Intensifying product use (e.g. via product sharing or multifunctional products)*
	R2 Reduce	*More efficient use or manufacture of products with use of fewer natural resources and materials*
Extending the lifespan of products and parts	***R3 Reuse***	*Reuse of discarded yet still usable product, for the same purpose, by a different user*
	R4 Repair	*Repair and maintenance of broken or malfunctioning product*
	R5 Refurbish	*Refurbishing and/or modernising an older product, so it can be used in its original function*
	R6 Remanufacture	Using parts of a discarded product in a new product of the same function
	R7 Repurpose	Using discarded products or their parts in new products with a different function
Useful application of materials	**R8 Recycle**	Processing of materials to achieve the original high-quality or reduce to low-quality
	R9 Recover	Incineration of materials, recovering their energy (most often not included as a circular strategy)

NORDIC WASTE PREVENTION MONITORING

	Existing indicators used to measure waste prevention
DK	- Resource productivity (RMC/GDP) - Revenue from and products certified with the Nordic Swan - Share of construction certified under the Nordic Swan, DGNB, LEED or BREEAM - Municipal waste/capita
FI	- EEE re-use volume (tonnes/year) - Municipal waste generation / cap - Waste generation/ GDP
NO	- EEE re-use volume (tonnes/year), - Municipal waste generation
SE	- Consumption of textiles/capita/year - Consumption of plastic carriers/person/year. - Municipal waste generation - Food waste generation - Public authorities carrying environmental management (certification with EMAS or ISO 140002).

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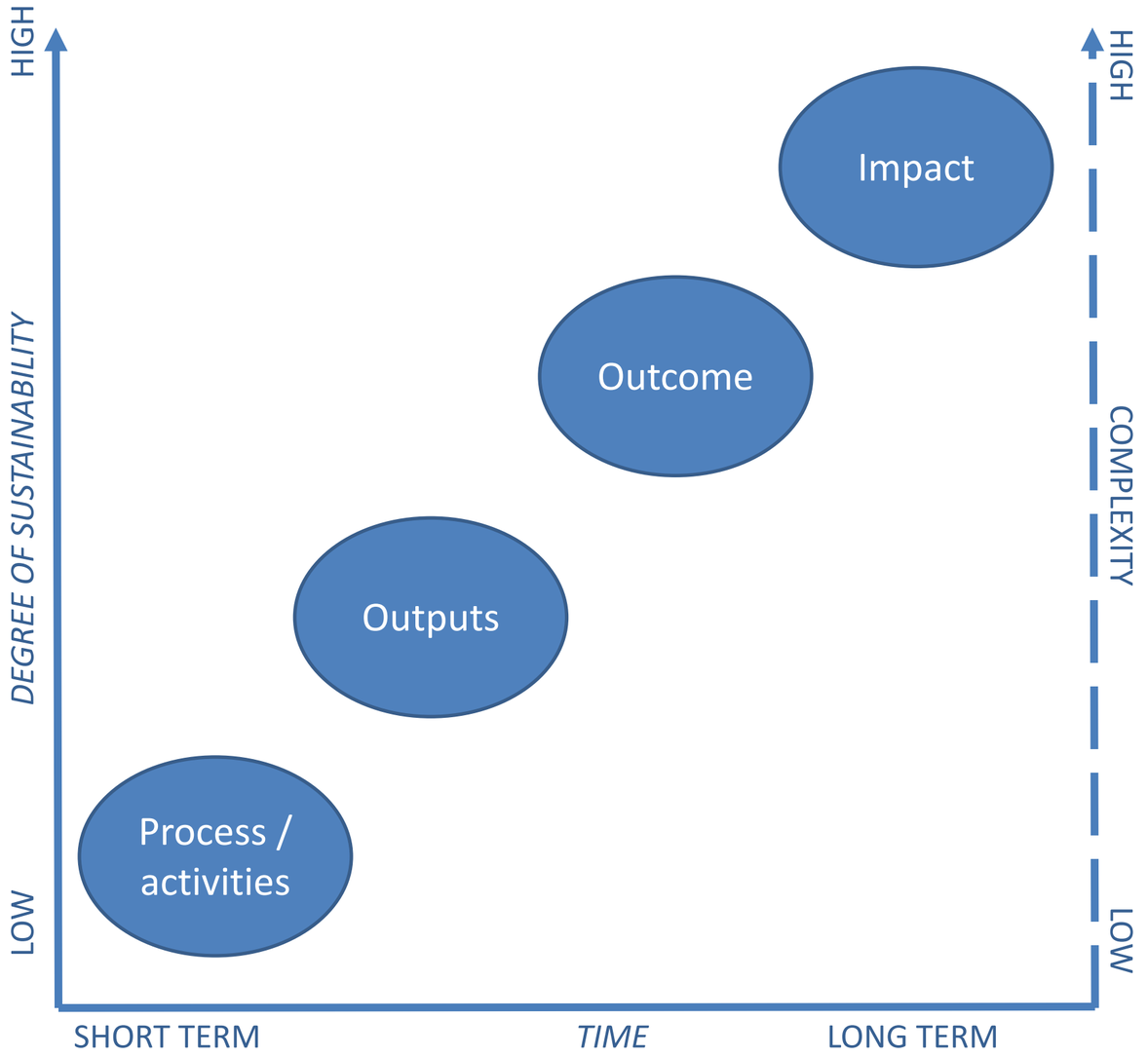
THEORY OF CHANGE



INNOVATIVE WASTE PREVENTION MONITORING

FOUR CHANNELS OF DATA

1. Second hand shops
2. Online platforms that mediate transactions and/or give-aways
3. Flea markets
4. Informal give-aways among friends and families

UNIT

Monetary or weight

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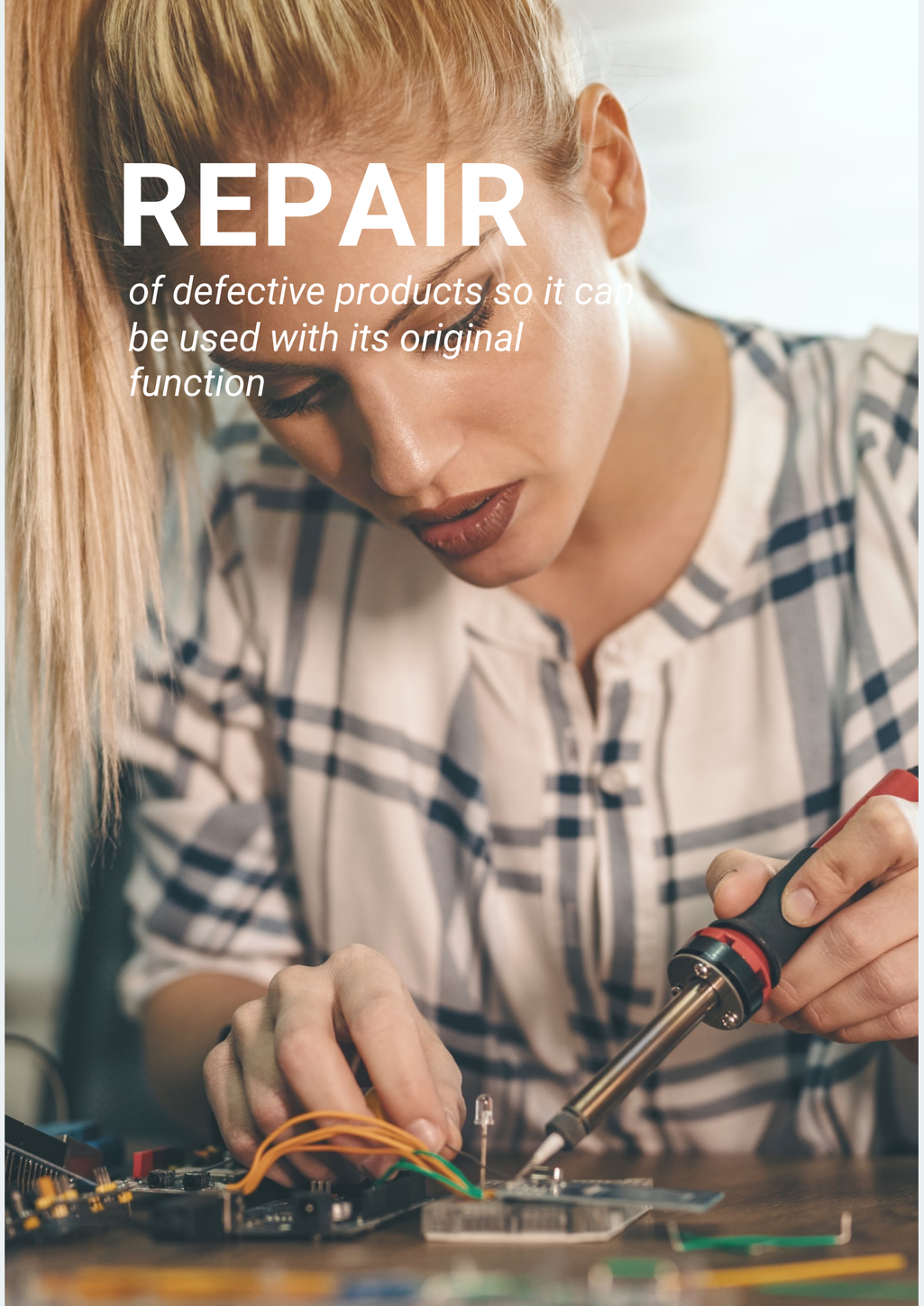

NO OFFICAL MONITORING STANDARD

REPAIRABILITY

- Availability of repair guides and remote assistance
- Information about updates and possibility to reset software
- Accessibility and price of spare parts
- Ease of disassembly / modular design
- Built in repair diagnostics

SHARE OF PRODUCS REPAIRED

- By households/ professionals

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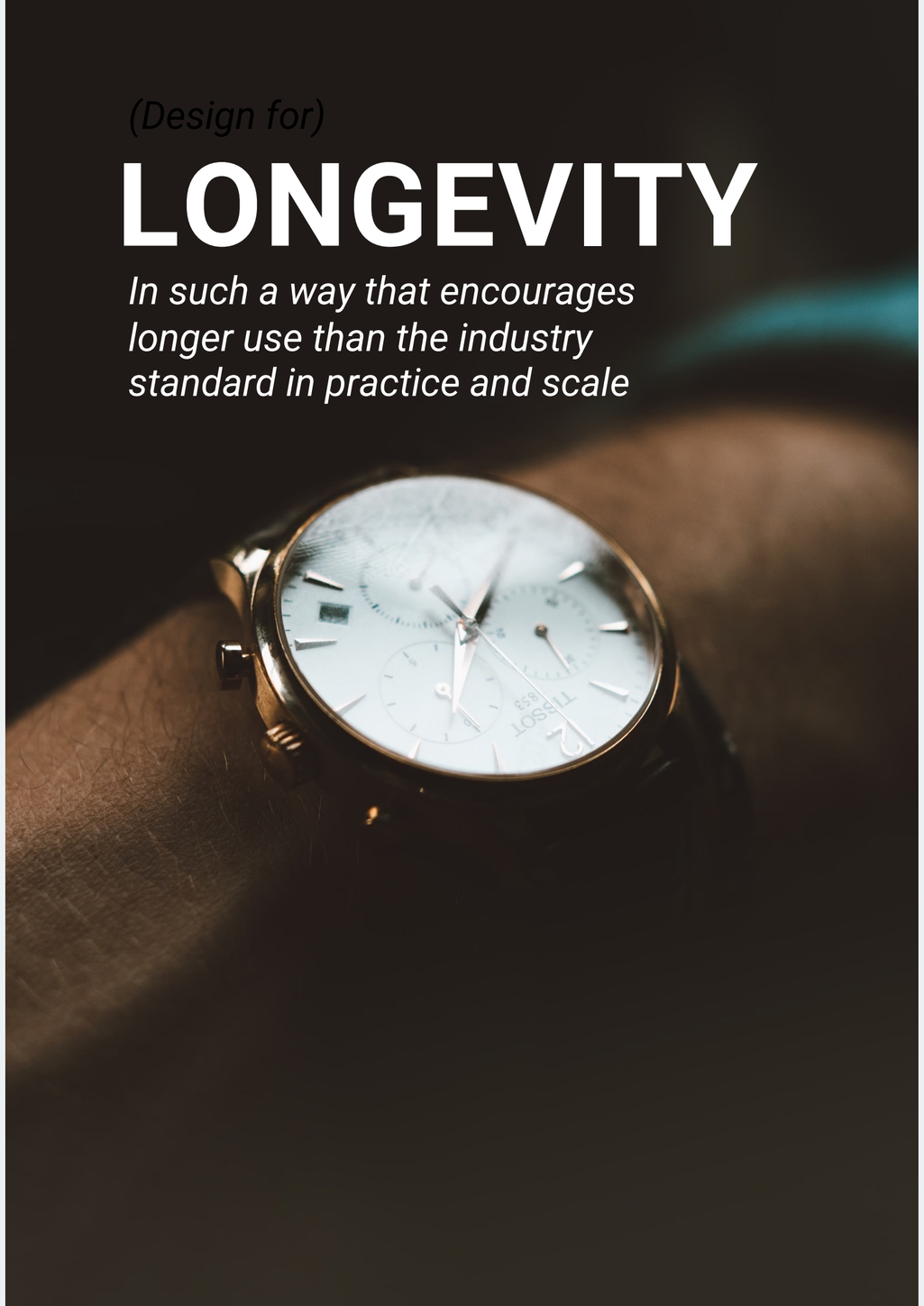

(Design for)

LONGEVITY

In such a way that encourages longer use than the industry standard in practice and scale

NO OFFICAL MONITORING STANDARD

PRODUCT LIFETIME

- What is the average lifetime of a product category?

DESIGN FOR LONGEVITY

- Timeless design
- Durable material choices
- Enable ‘circular treatment’ by the end of life

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DIGITAL
MONITORING OF WASTE PREVENTION

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DIGITAL DATA SOURCES

- E-COMMERCE
- DIGITAL BUSINESS MODELS
- SOCIAL MEDIA
- DIGITAL PASSPORTS
- PRODUCT DATA - FROM BUSINESS
- COMPANY WEBPAGES
- ONLINE MEDIA

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WEB-SCRAPING

TEXT MINING

SENSORS AND TAGS

IMAGE RECOGNITION

BUSINESS INVOLVEMENT

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DATA ANALYTICS

BIG DATA ANALYTICS

MACHINE LEARNING

ARTIFICAL INTELLIGENCE

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Key areas for future digital monitoring of waste prevention and reuse

Product lifespans and repair activities

- Digital product passports and product environmental footprints
- Product tracking and product ID through sensor and tagging technologies

Reuse activity (quantity and value), use rates for shared-use products

- Data detailing transactions - from online marketplaces, sharing platforms, PSS platforms, (public and private) procurement systems and potentially also payments systems.

Physical framework conditions for reuse

- Data on reuse and waste prevention infrastructure: reuse shops, flea markets, and reuse bins, repair shops and cafes.

The ‘transition process’ - actions taken, reuse and waste prevention discussions on popular culture and in research, how often people seek second-hand products.

- Internet publishing, including company web pages, social media, news outlets, libraries and journals, as well as analysing search trends in search engines like Google.

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MAIN CHALLENGES

- Basically: Identifying indicators and proxies of relevance
- Basically: Identifying data streams, setting up data harvesting and analytical systems
- Digital waste prevention monitoring competencies are not typically found within the responsible authorities.
- Much of the data identified is held in private hands or for other reasons not publicly available. Some data may be business sensitive.
- Data may be subject to GDPR and other privacy legislation.

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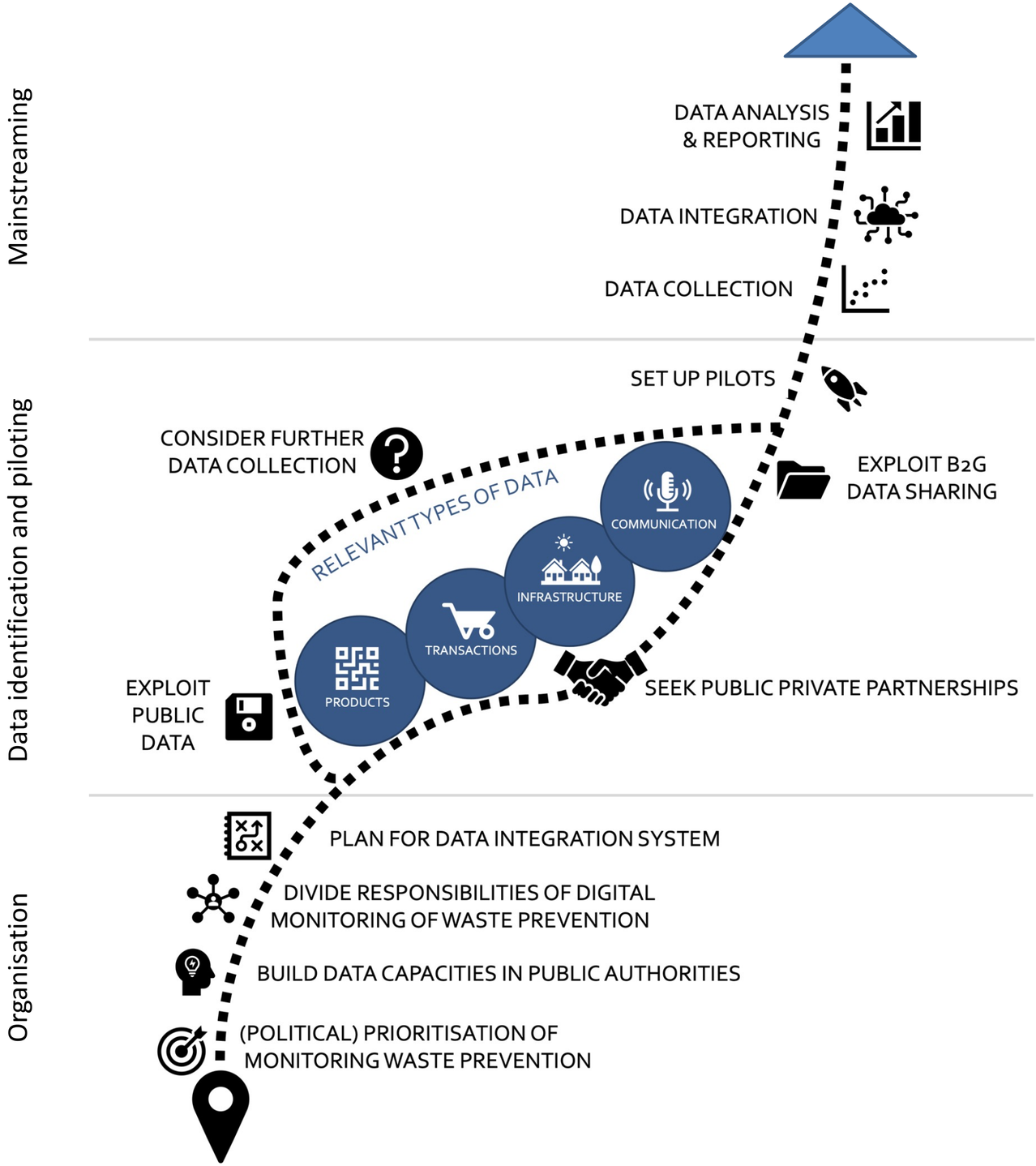
Roadmap

Digital monitoring of waste prevention



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Thank you!

SUSTAINABILITY CONSULTANCY

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