Futu RaM

Future availability of secondary raw materials

Enable Secondary Raw Material Management by Data Governance

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Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs, Education and Research EAER
State Secretariat for Education, Research and Innovation SERI

EU Framework Programmes

Funded by the European Union

Empa
Materials Science and Technology

berlin

Starting with a common language

Enable Secondary Raw Material Management by Data Governance

Starting with a common language

Management Organization, preparation and execution of decisions

Enable Secondary Raw Material Management by Data Governance

Governance Process of making and enforcing decisions through laws, norms, rule, guidelines

Data Factual information used for calculation, discussions or reasoning

Data needs and data governance

decision

data demand

Go to America!

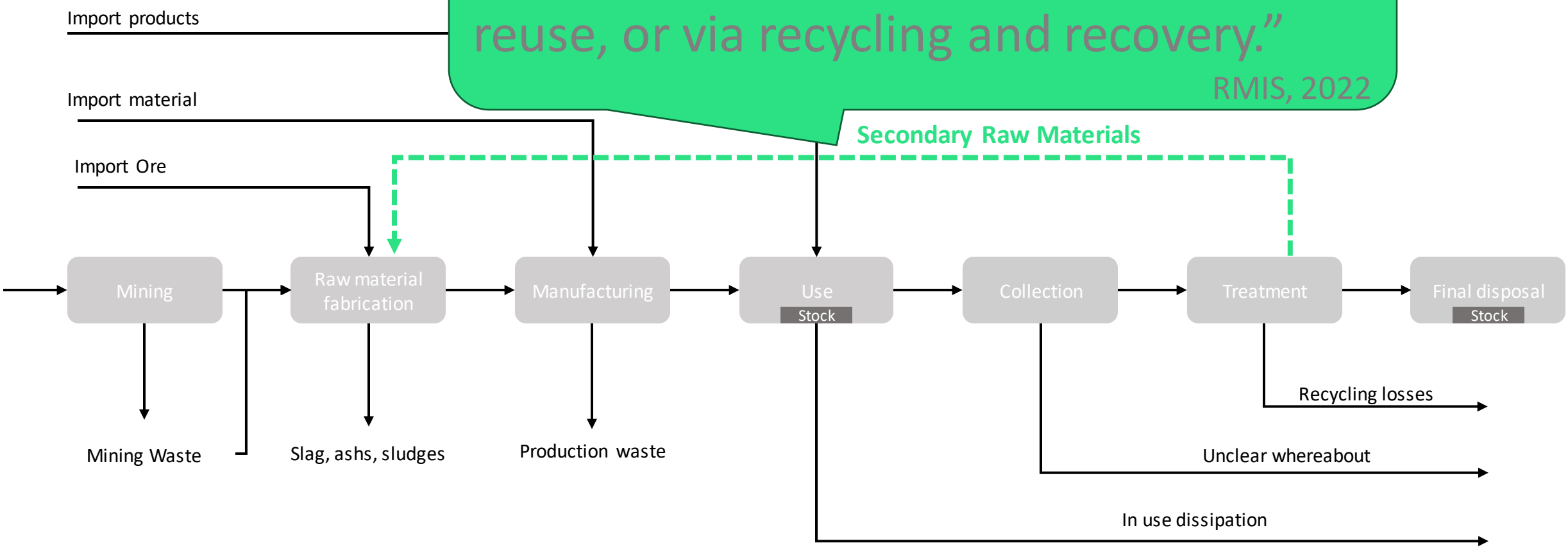
Go to America by autonomous driving/sailing!

Discover a new continent!

Managing materials in the value chain

SRM - Materials and products which can be used as raw materials by simple reuse, or via recycling and recovery."

RMIS, 2022



Waste Frame Directive & ERP policies

Article 1

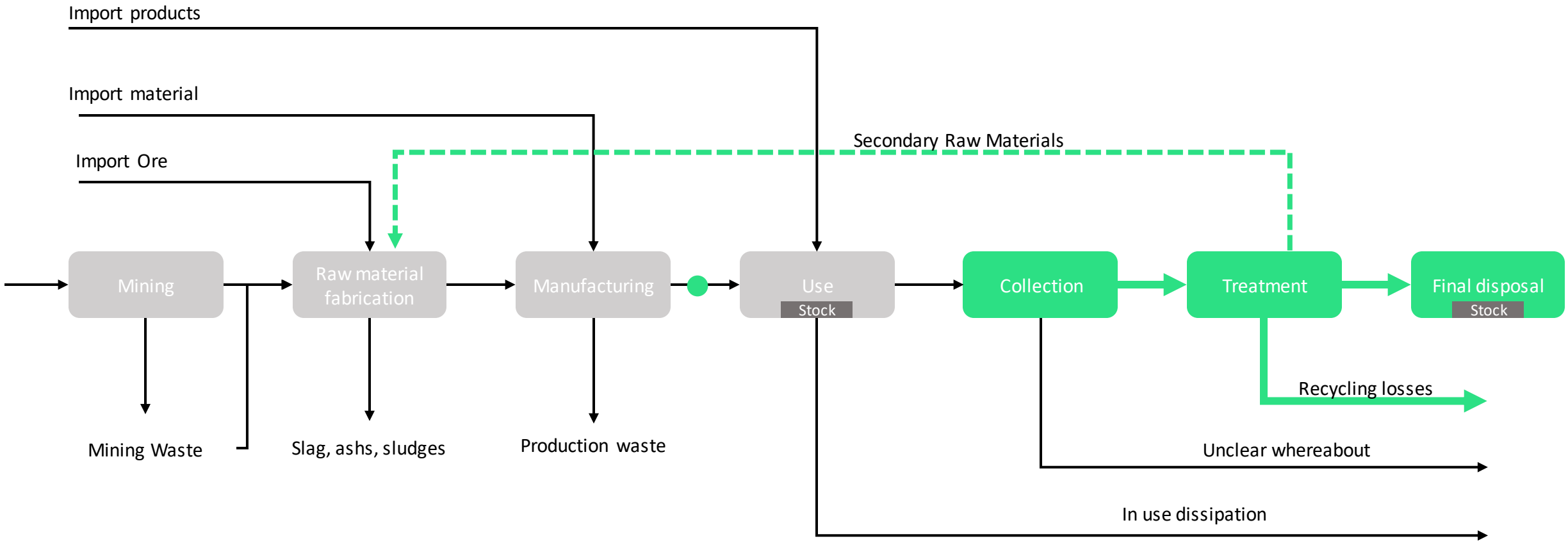
Subject matter and scope

This Directive lays down measures to protect the environment and human health by preventing or reducing the generation of waste, the adverse impacts of the generation and management of waste and by reducing overall impacts of resource use and improving the efficiency of such use, which are crucial for the transition to a circular economy and for guaranteeing the Union's long-term competitiveness.

Directive 2008/98/EC

+ packaging directive, WEEE directive, Batt directive, ELV directive

Waste Frame Directive & ERP policies



Ecodesign for Sustainable Products Regulation (ESPR)

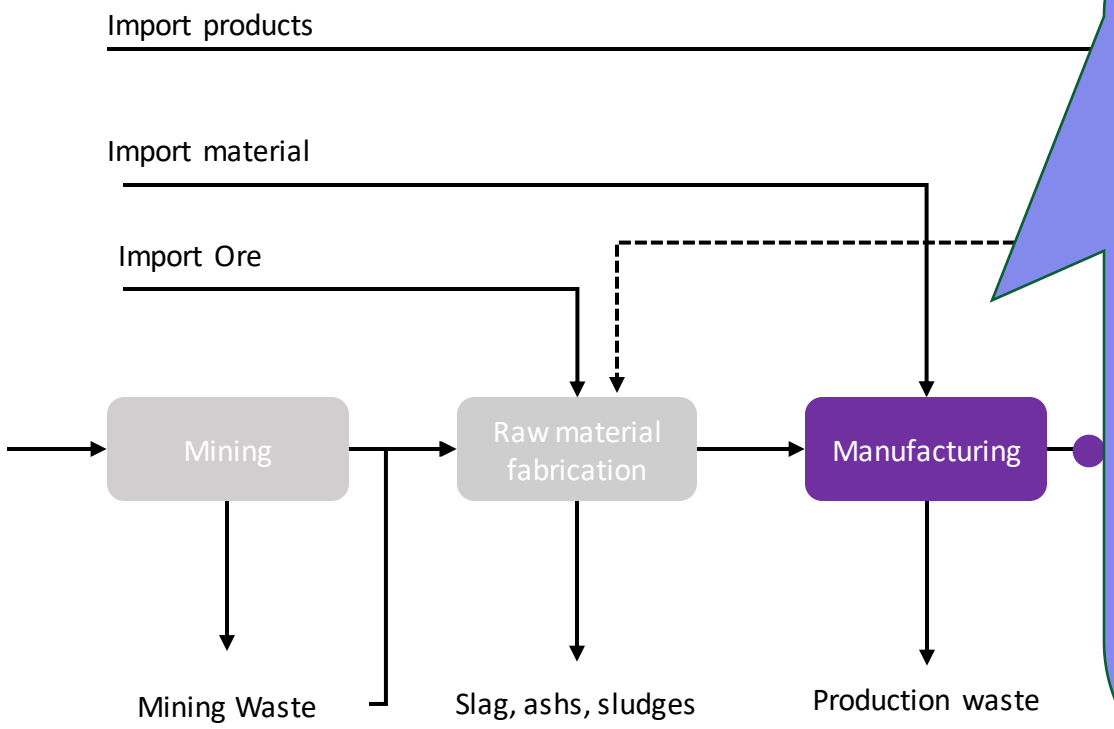
Article 1

Subject matter and scope

This Regulation establishes a framework to improve the environmental sustainability of products and to ensure free movement in the internal market by setting ecodesign requirements that products shall fulfil to be placed on the market or put into service.

Draft proposal from March 2022
ultimately replacing Ecodesign Directive 2009/125/EC.

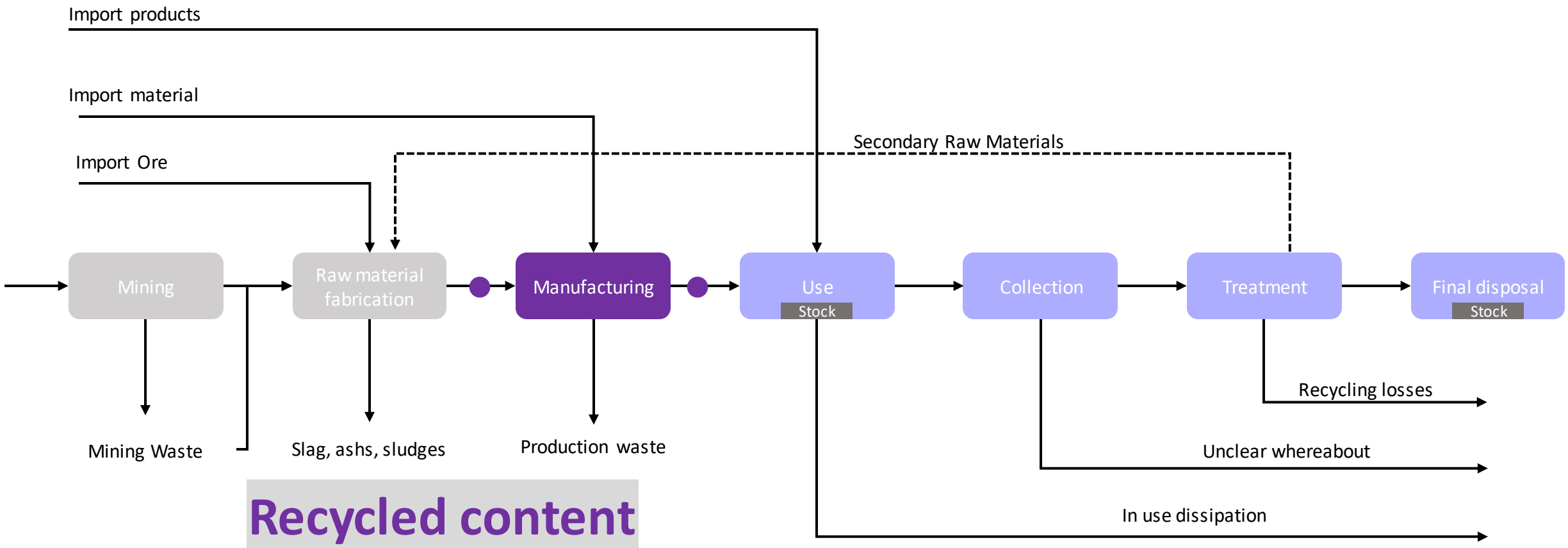
Ecodesign for Sustainable Products Regulation (ESPR)



Those ecodesign requirements, which shall be further elaborated by the Commission in delegated acts, relate to:

a) product durability and reliability;
b) product reusability;
c) product upgradability, reparability, maintenance and refurbishment;
d) the presence of substances of concern in products;
e) product energy and resource efficiency;
f) recycled content in products;
g) product remanufacturing and recycling;
h) products' carbon and environmental footprints;
i) products' expected generation of waste materials.

Ecodesign for Sustainable Products Regulation



Recycled content

Digital product passport

Ex-ante assessment

Critical raw material act

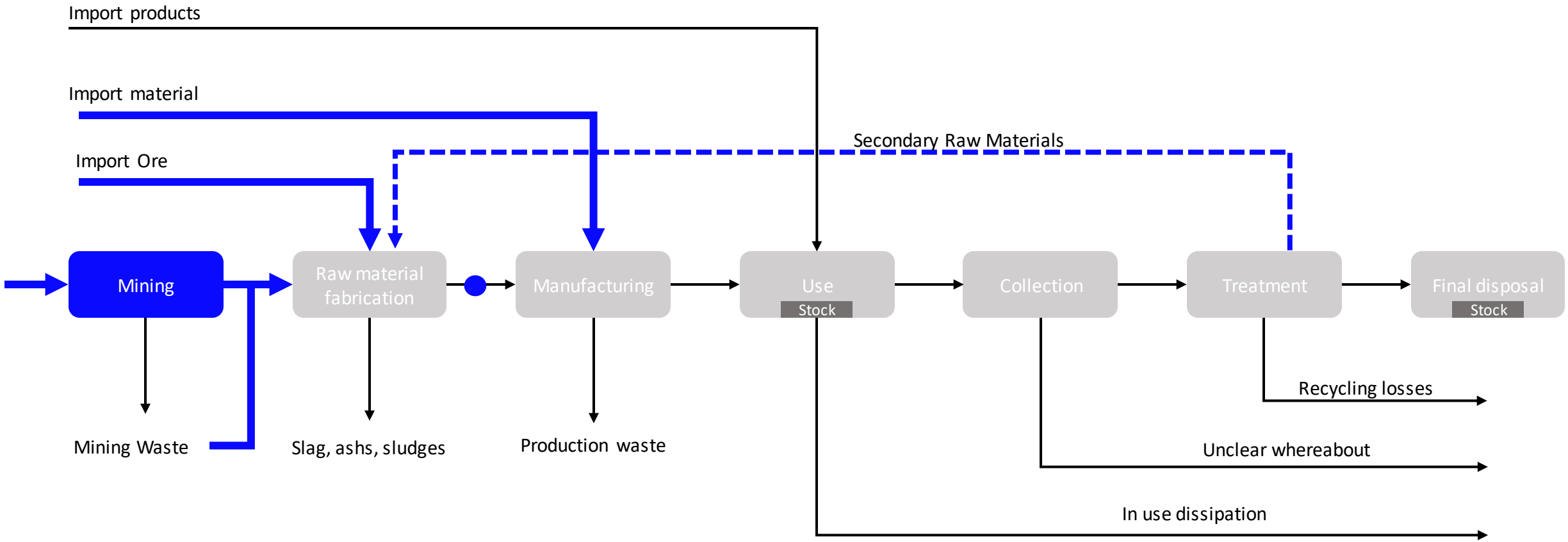
Article 1

Subject matter and scope

The general objective of this Regulation is to improve the functioning of the internal market by establishing a framework to ensure the Union's access to a secure and sustainable supply of critical raw materials.

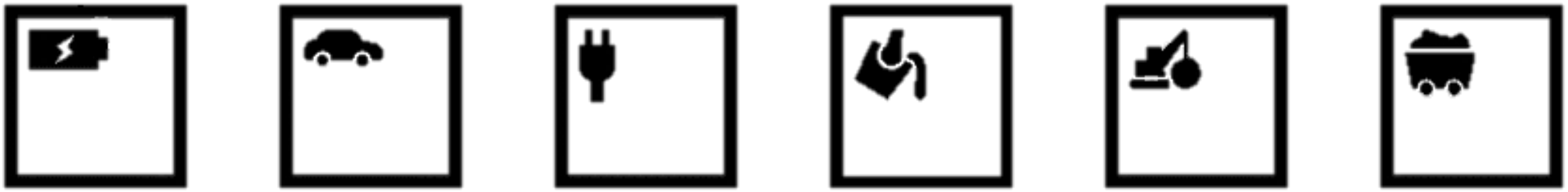
Draft from March 2023

CRM Act


Import products
Import material
Import Ore
Secondary Raw Materials
Mining
Raw material fabrication
Manufacturing
Use
Stock
Collection
Treatment
Final disposal
Stock
Recycling losses
Unclear whereabout
In use dissipation
Mining Waste
Slag, ashs, sludges
Production waste

FutuRaM

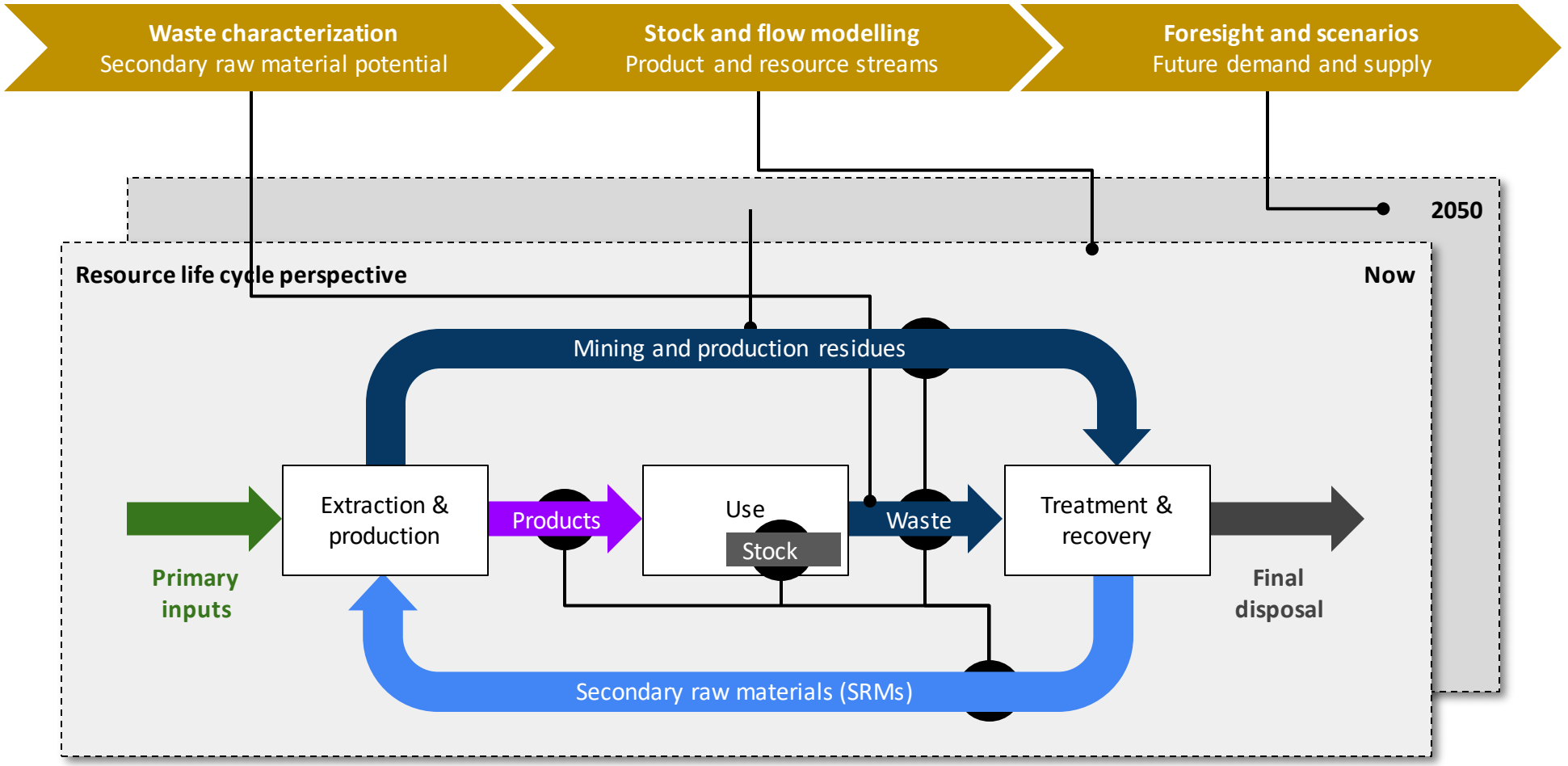
- Knowledge on the availability and recoverability of secondary raw materials within the EU
  - Special focus on critical raw materials (CRMs)
  - Scenarios: From now to 2050
- Disseminate via Secondary Raw Material Knowledge Base
- Enable fact-based decision-making
- Waste streams:



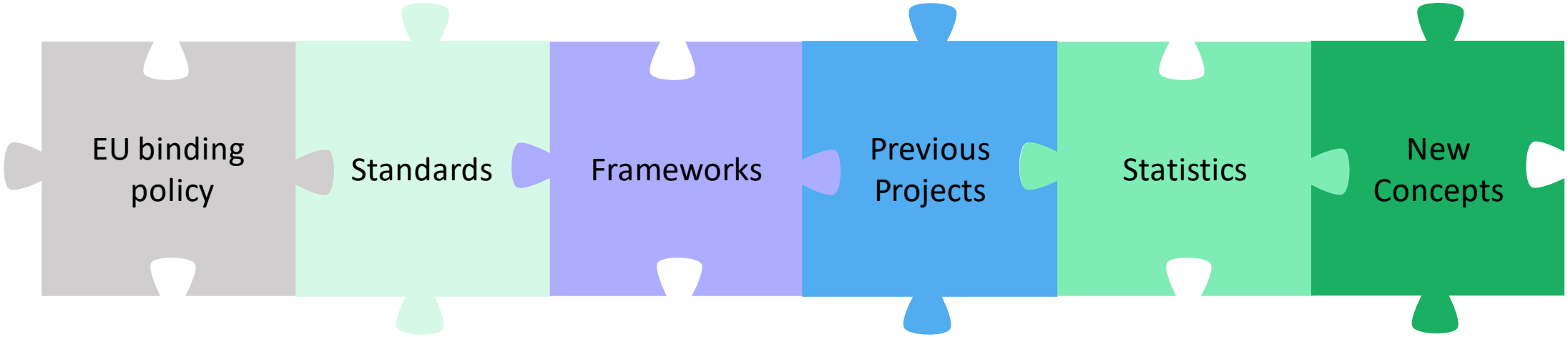
FutuRaM Scope

- Establish a methodology, reporting structure, and guidance to improve the raw materials knowledge base up to 2050
- Integrate secondary raw material and CRM data to model their current stocks and flows
- Considering economic, technological, geopolitical, regulatory, social and environmental factors

FutuRaM parts



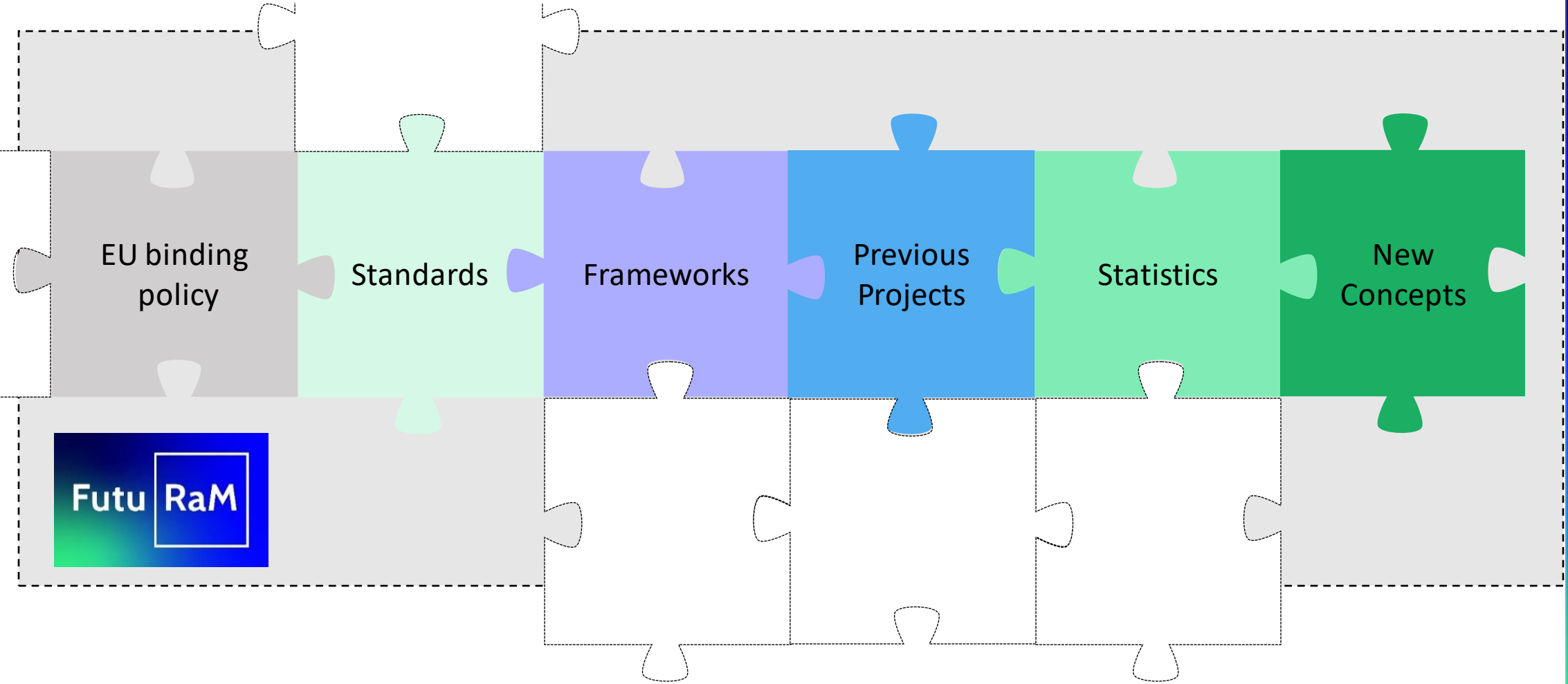
Definitions: Standardization & Harmonization



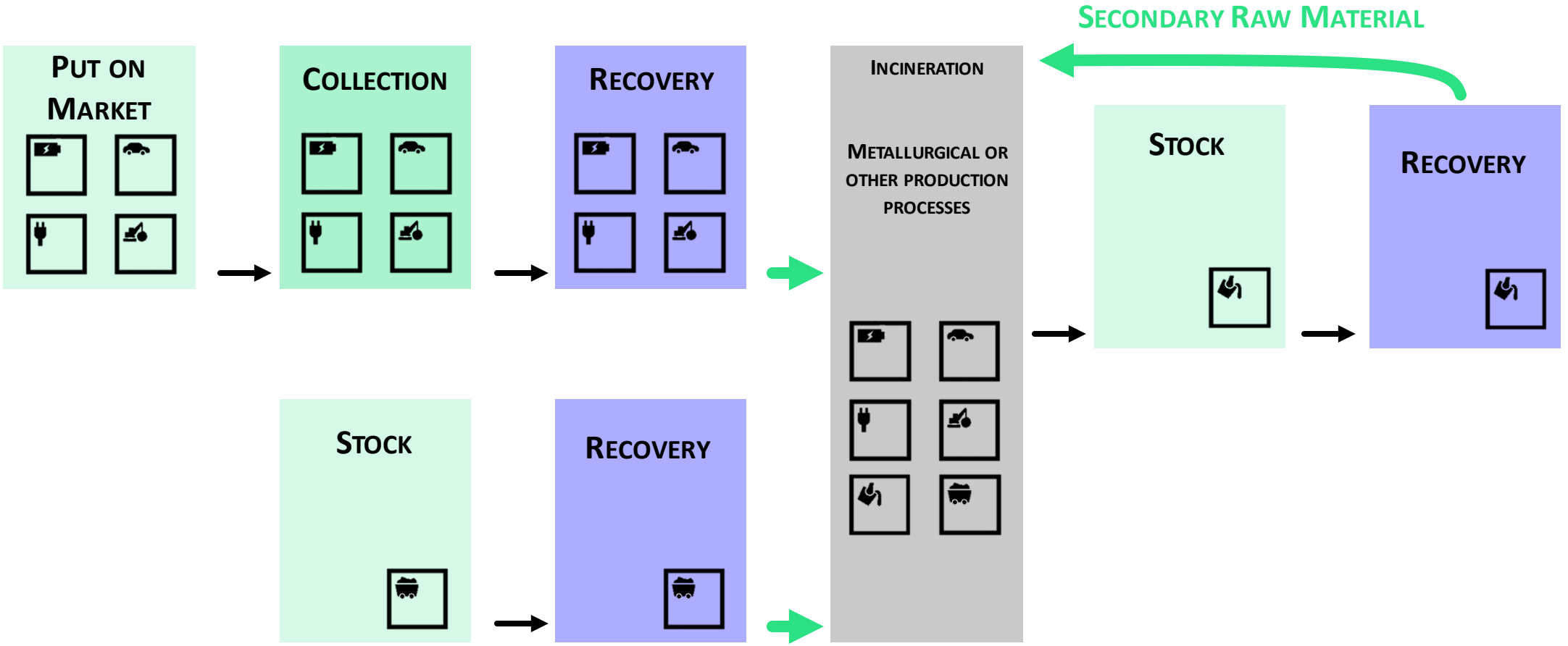
EXAMPLES

Waste Waste Framework Directive - Directive 2008/98/EC	**Recoverability** EN 45555:2019	**Supply** SEEA Central Framework **Viable** UNFC Guidance Europe	**Product keys** ProSUM	**Waste Statistics** European waste codes

Definitions: Standardization & Harmonization

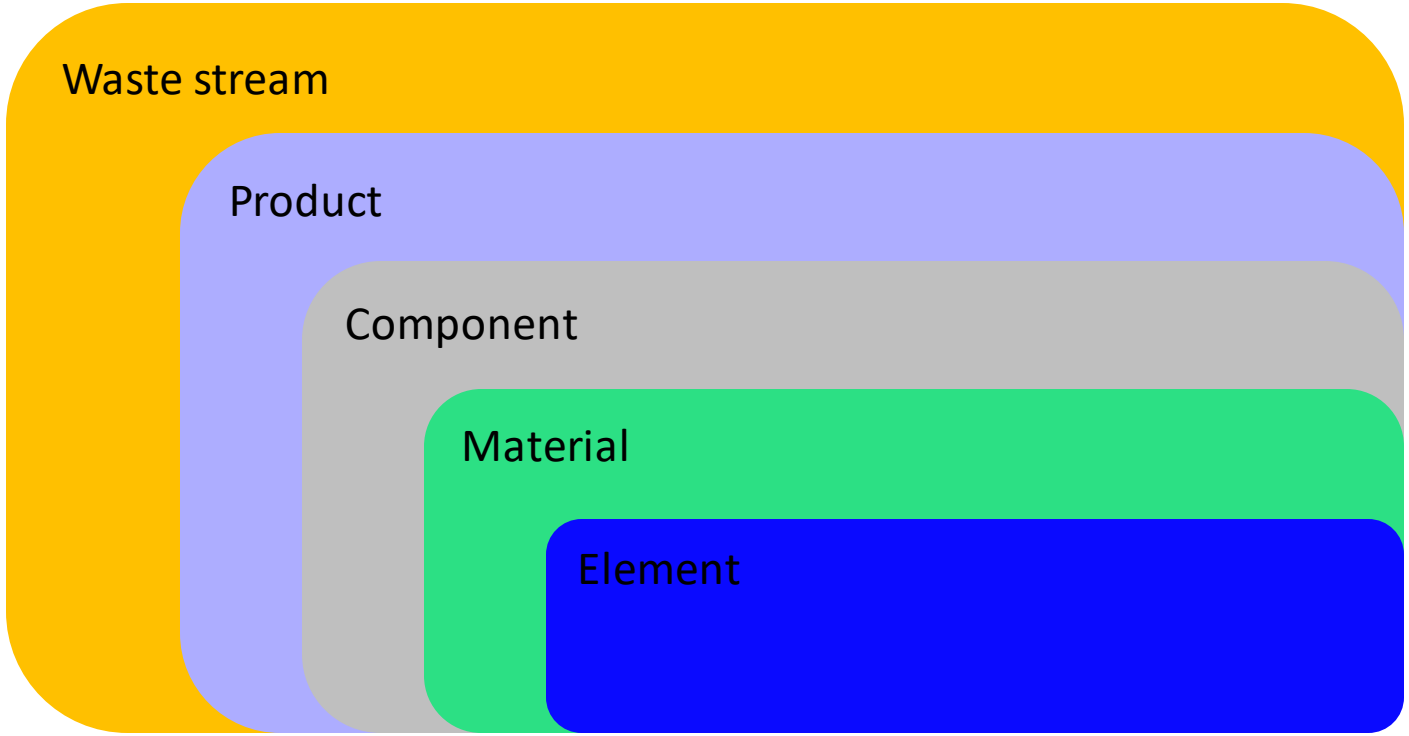


Models in FutuRaM Framework

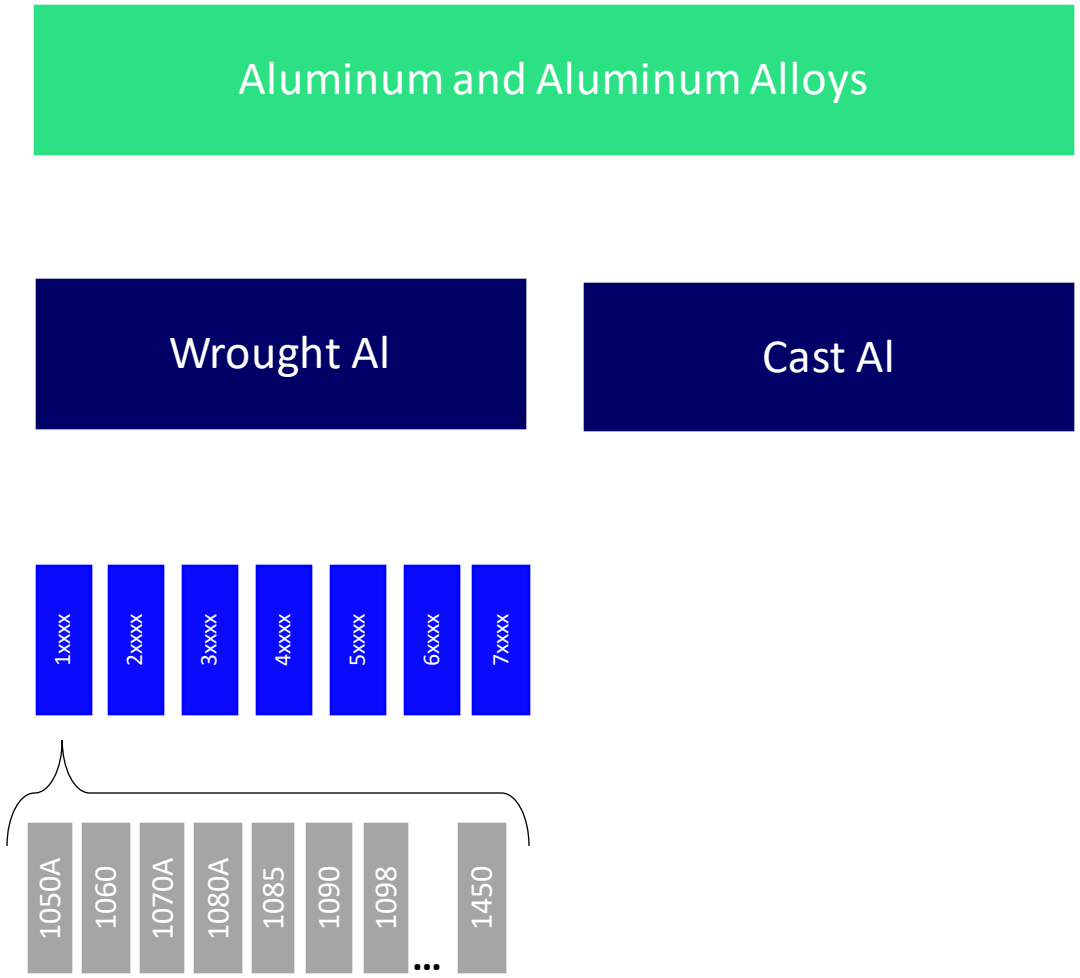


How to enable this framework?

FutuRaM – Composition data concept



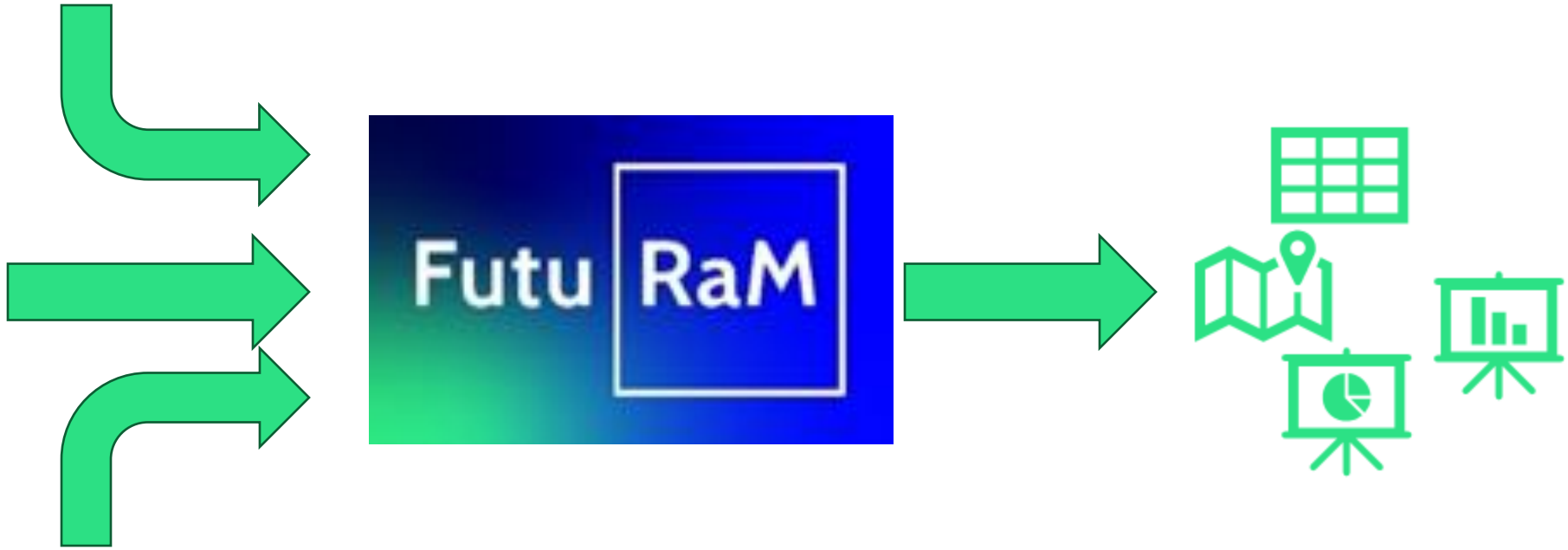
Key level – Example Aluminum



Al 2024

Element	%
Si	0.5
Fe	0.5
Cu	3.8 - 4.9
Mn	0.3 – 0.9
Mg	1.2 -1.8
Cr	0.1
Al	92.5

Data governance



Input data

Output data

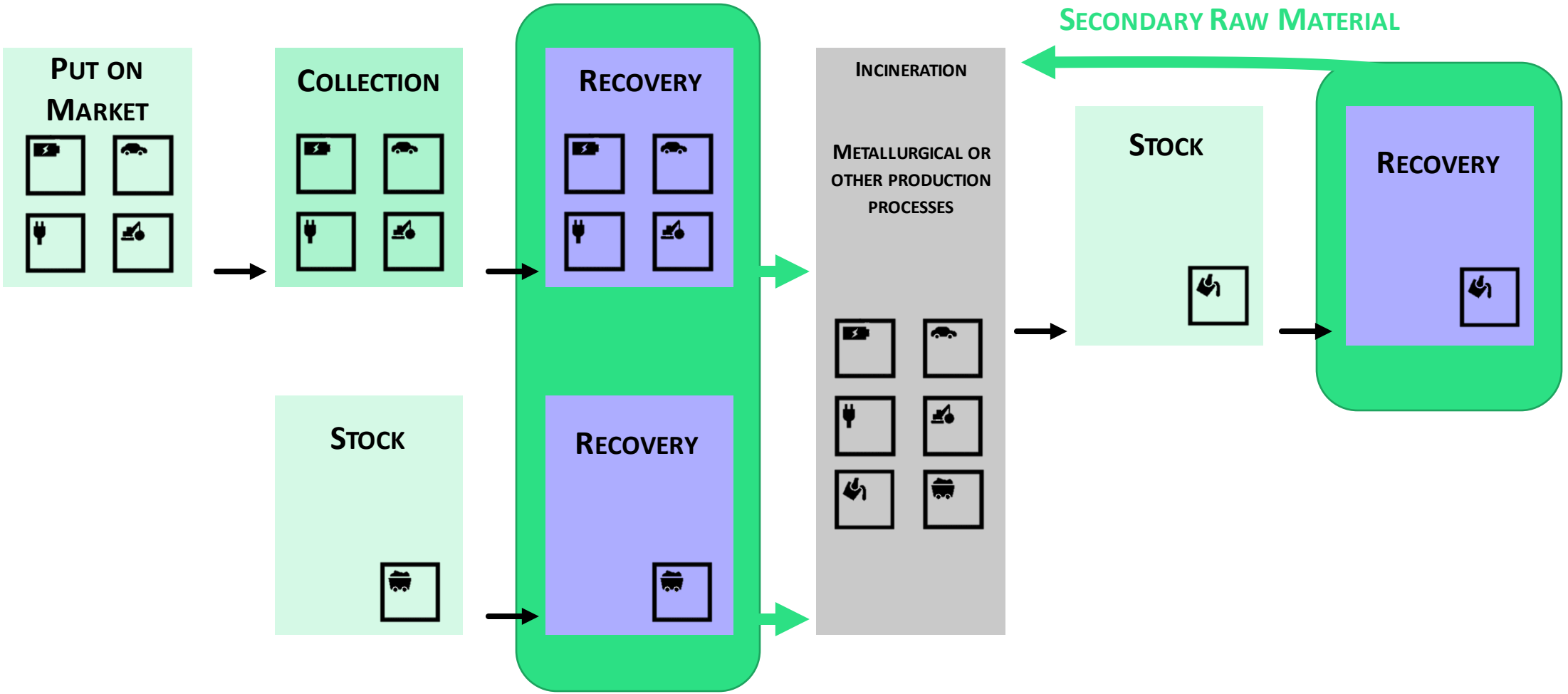
Painpoint: Data governance composition

Which data sources are available, reliable and accessible

- EPD/BOM databases
- Compliance data bases: e.g. SCIP,
- Digital product passport information
- Sampling campaigns
- Expert estimates, expert or market reports
- Scientific literature

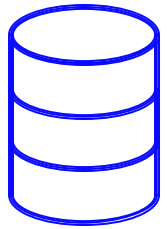
SWOT Data governance composition

Pain point: Recovery

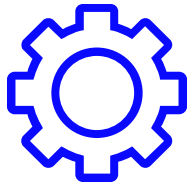


Data to describe recovery processes

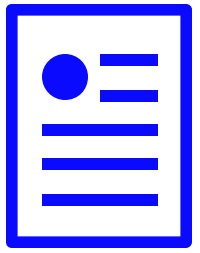
- Facility/process level not depicted in waste statistics
- What needs to be changed to derive useful recovery data to manage secondary raw material?
- What additional data would need to be collected?
- Who are the actors providing this data?



Tapping into other databases



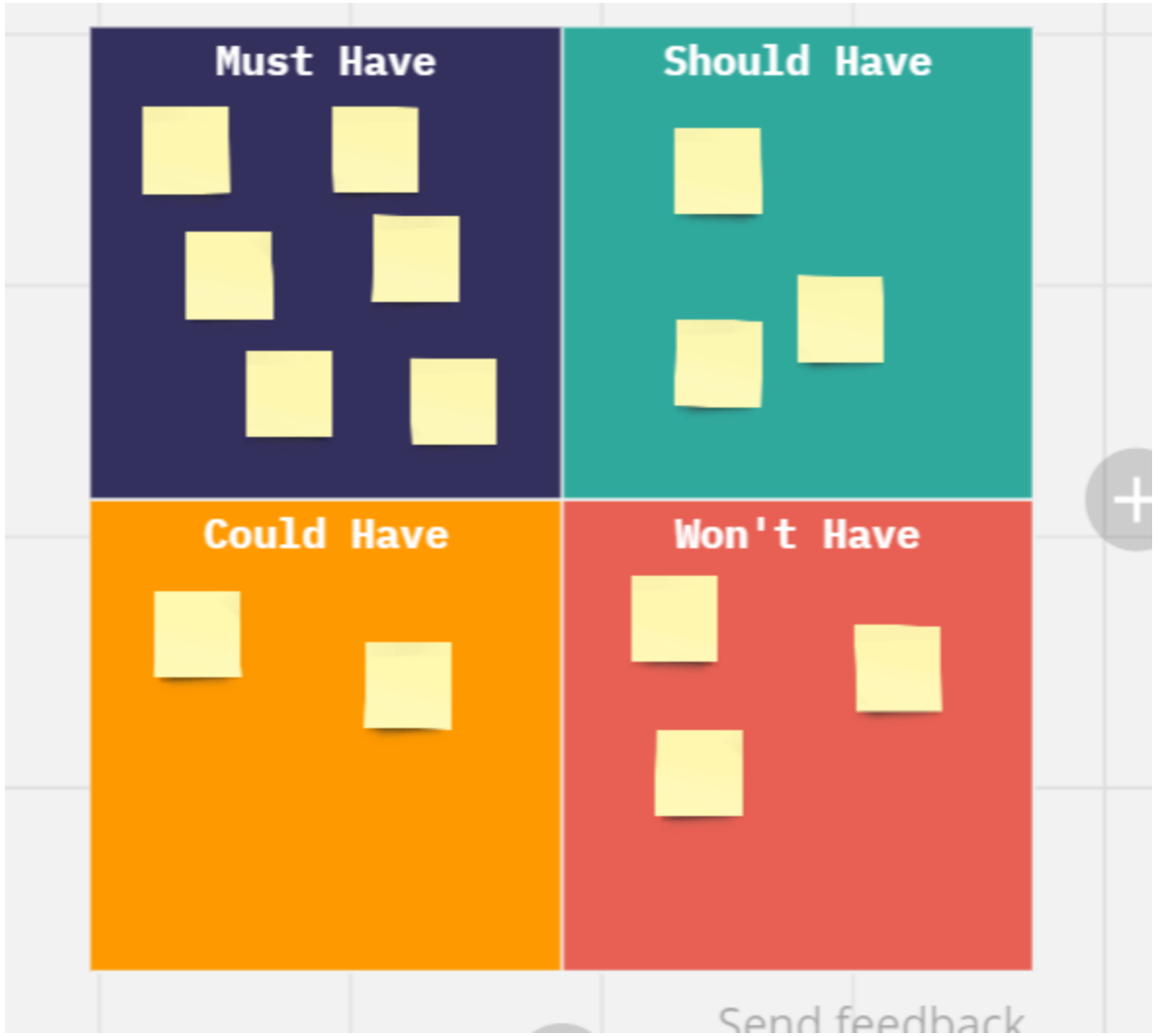
Process data



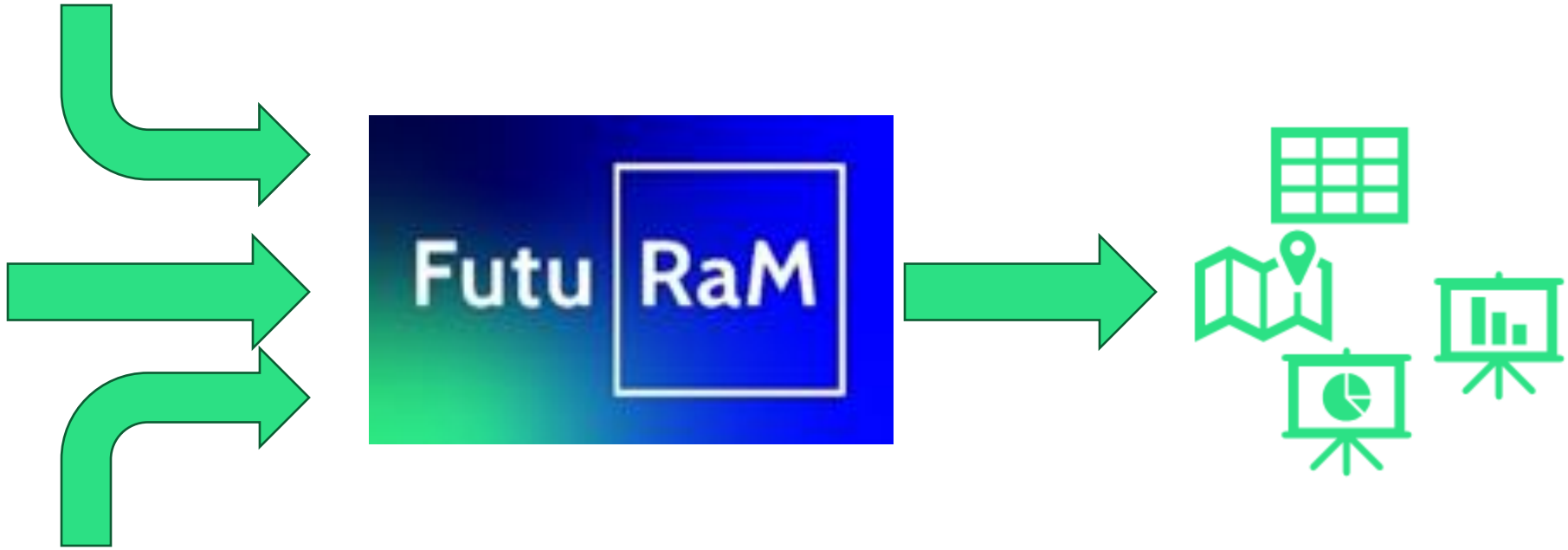
Standards

....?

Which data by whom?



From data management to data governance



Input data

Output data

How to combine and extend existing frameworks