Open Know-Where

conceptual data model

Recap

The Open Know-Where specification defines a data model to:

- Document the location of manufacturing capabilities globally.

- Share information about manufacturing facilities and the manufacturing capabilities.

- Improve networking within the manufacturing industry and maker communities.

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- Document the location of manufacturing capabilities globally.

- Share information about manufacturing facilities and the manufacturing capabilities.

- Improve networking within the manufacturing industry and maker communities.

Intended audiences:
- Mappers
- Maker communities
- Governments
- Non-Government Organisations
- Aid Agencies
- Platforms listing local manufacturing capabilities

Conceptual model

Open Know-Where provides a common way of describing key data that is important in mapping manufacturing capabilities.
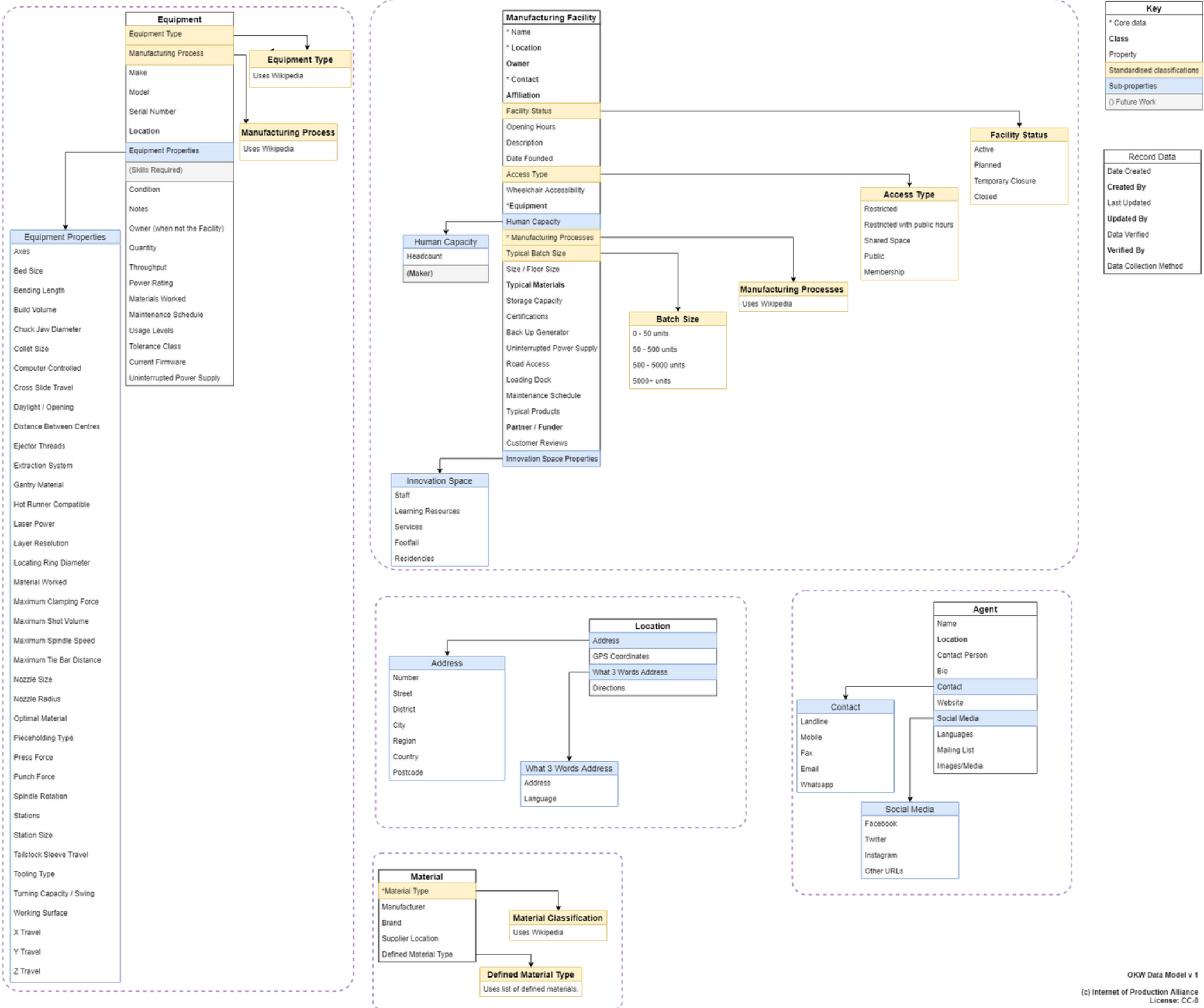
It's extensive to cover all the use-cases we identified in the discovery phase.

It does not provide a design for a database or information exchange format.

We avoided creating new conventions and instead reuse existing standards where possible.
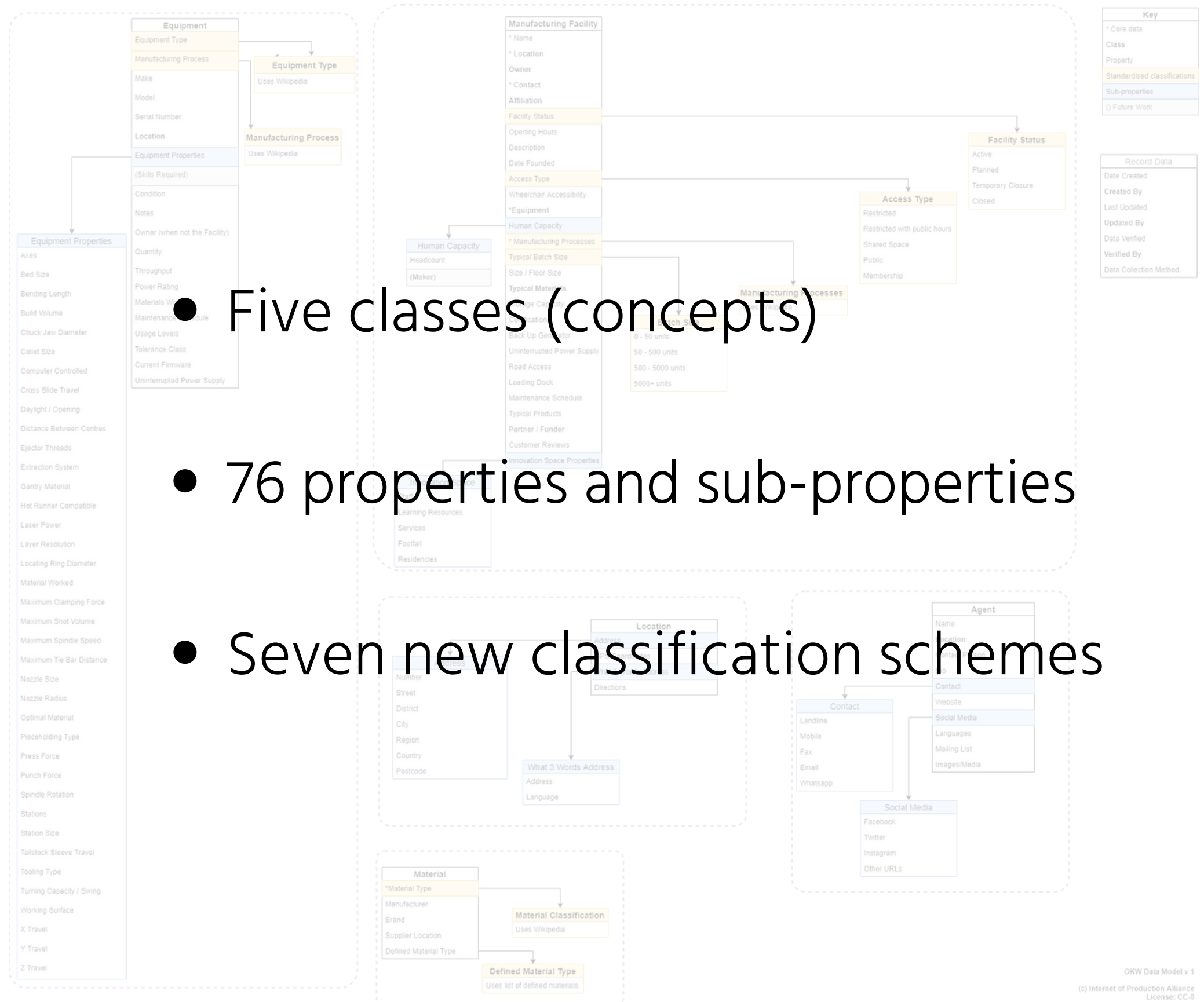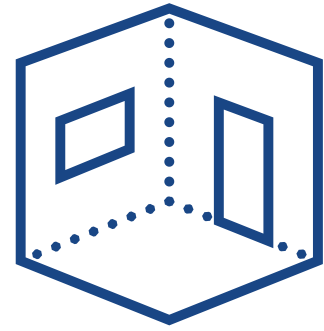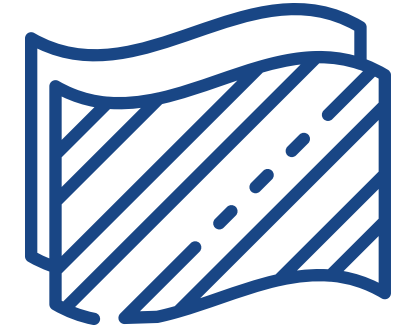
Conceptual model

Equipment
- Equipment Type
- Manufacturing Process
- Make
- Model
- Serial Number
- Location
- Equipment Properties
- (Skills Required)
- Condition
- Notes
- Owner (when not the Facility)
- Quantity
- Throughput
- Power Rating
- Materials Worked
- Maintenance Schedule
- Usage Levels
- Tolerance Class
- Current Firmware
- Uninterrupted Power Supply

Equipment Type
- Uses Wikipedia

Manufacturing Process
- Uses Wikipedia

Equipment Properties
- Axes
- Bed Size
- Bending Length
- Build Volume
- Chuck Jaw Diameter
- Collet Size
- Computer Controlled
- Cross Slide Travel
- Daylight / Opening
- Distance Between Centres
- Ejector Threads
- Extraction System
- Gantry Material
- Hot Runner Compatible
- Laser Power
- Layer Resolution
- Locating Ring Diameter
- Material Worked
- Maximum Clamping Force
- Maximum Shot Volume
- Maximum Spindle Speed
- Maximum Tie Bar Distance
- Nozzle Size
- Nozzle Radius
- Optimal Material
- Pieceholding Type
- Press Force
- Punch Force
- Spindle Rotation
- Stations
- Station Size
- Tailstock Sleeve Travel
- Tooling Type
- Turning Capacity / Swing
- Working Surface
- X Travel
- Y Travel
- Z Travel

Manufacturing Facility
- * Name
- * Location
- Owner
- * Contact
- Affiliation
- Facility Status
- Opening Hours
- Description
- Date Founded
- Access Type
- Wheelchair Accessibility
- *Equipment
- Human Capacity
- * Manufacturing Processes
- Typical Batch Size
- Size / Floor Size
- Typical Materials
- Storage Capacity
- Certifications
- Back Up Generator
- Uninterrupted Power Supply
- Road Access
- Loading Dock
- Maintenance Schedule
- Typical Products
- Partner / Funder
- Customer Reviews
- Innovation Space Properties

Human Capacity
- Headcount
- (Maker)

Facility Status
- Active
- Planned
- Temporary Closure
- Closed

Access Type
- Restricted
- Restricted with public hours
- Shared Space
- Public
- Membership

Manufacturing Processes
- Uses Wikipedia

Batch Size
- 0 - 50 units
- 50 - 500 units
- 500 - 5000 units
- 5000+ units

Innovation Space
- Staff
- Learning Resources
- Services
- Footfall
- Residencies

Location
- Address
- GPS Coordinates
- What 3 Words Address
- Directions

Address
- Number
- Street
- District
- City
- Region
- Country
- Postcode

What 3 Words Address
- Address
- Language

Material
- *Material Type
- Manufacturer
- Brand
- Supplier Location
- Defined Material Type

Material Classification
- Uses Wikipedia

Defined Material Type
- Uses list of defined materials.

Agent
- Name
- Location
- Contact Person
- Bio
- Contact
- Website
- Social Media
- Languages
- Mailing List
- Images/Media

Contact
- Landline
- Mobile
- Fax
- Email
- Whatsapp

Social Media
- Facebook
- Twitter
- Instagram
- Other URLs

Key
- * Core data
- **Class**
- Property
- Standardised classifications
- Sub-properties
- () Future Work

Record Data
- Date Created
- **Created By**
- Last Updated
- **Updated By**
- Data Verified
- **Verified By**
- Data Collection Method

OKW Data Model v 1

(c) Internet of Production Alliance
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Conceptual model

- Five classes (concepts)

- 76 properties and sub-properties
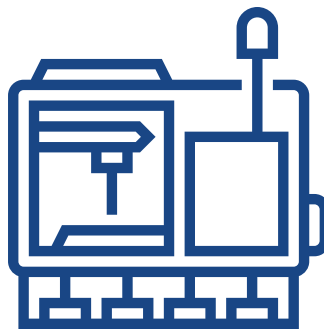
- Seven new classification schemes

Classes

Facilities

Materials

Location

Equipment
(tool / machine)
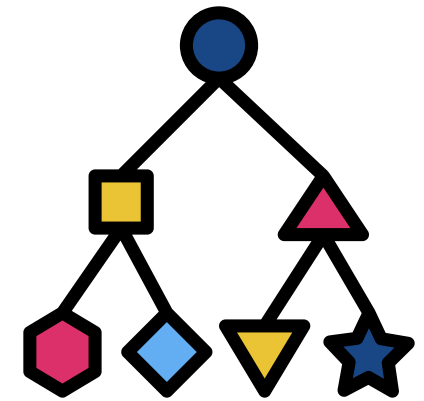
Agent
(person / organisation)

Standardised classifications
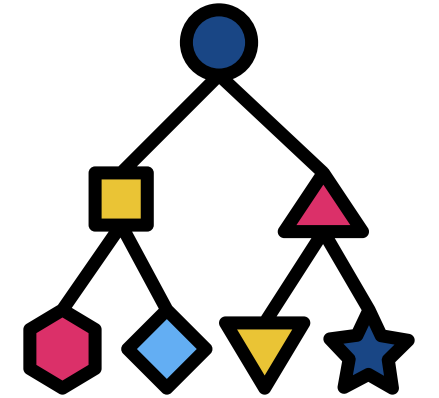
- Facility Properties
  - Facility Type
  - Facility Status
  - Access Type
  - Batch Size
- Manufacturing Processes
- Equipment Classification
- Material Classification

Standardised classifications

- Facility Properties
  - Facility Type
  - Facility Status
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- Equipment Classification
- Material Classification

Standardised classifications

3.5. How do I use the classification system?

To aid consistency, Open Know-Where recommends using an existing classification system for Equipment, Manufacturing Processes and Materials. This being Wikipedia.

To classify equipment:

To reference a facility has a piece of equipment, for example a soldering iron, you would simply copy and paste the Wikipedia URL for a soldering iron into the relevant field.

Wikipedia article: https://en.wikipedia.org/wiki/Soldering_iron

To classify a manufacturing process:

To classify a manufacturing process, for example soldering, you would simply copy and paste the relevant Wikipedia URL for soldering into the relevant field.

Wikipedia article: https://en.wikipedia.org/wiki/Soldering

To classify a material:

To reference a material, for example aluminium, you would simply copy and paste the relevant Wikipedia URL for aluminium into the relevant field.
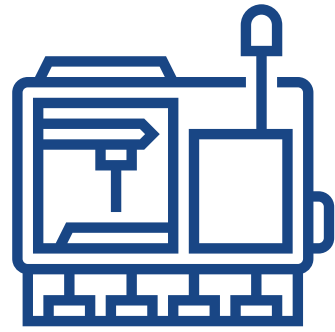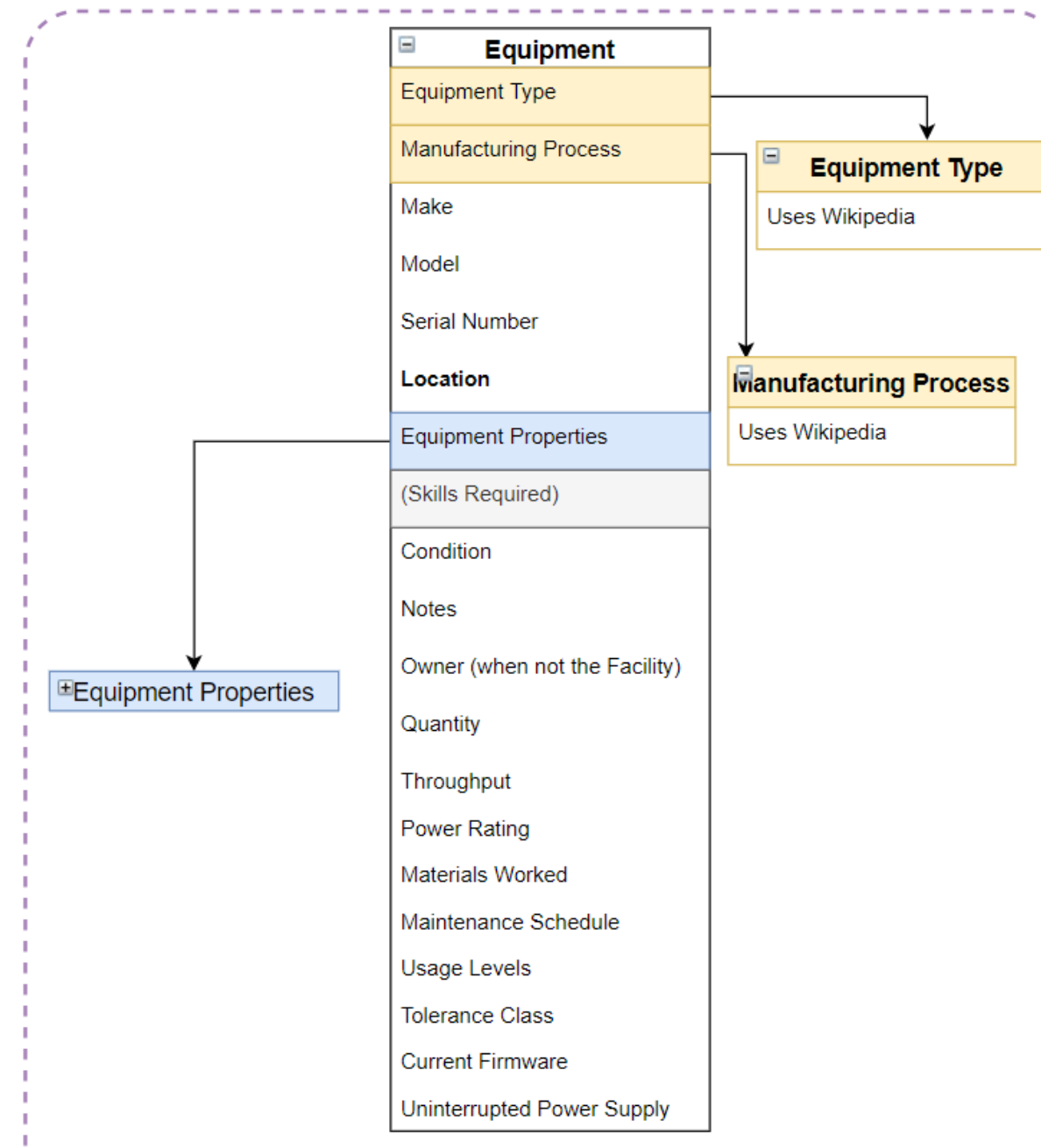
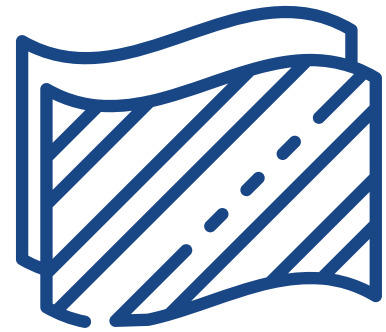Wikipedia article: https://en.wikipedia.org/wiki/Aluminium

Facility

Manufacturing Facility
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- * Location
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- Facility Status
- Opening Hours
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- Date Founded
- Access Type
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- Customer Reviews
- Innovation Space Properties

Facility Status
- Active
- Planned
- Temporary Closure
- Closed

Access Type
- Restricted
- Restricted with public hours
- Shared Space
- Public
- Membership

Human Capacity
- Headcount
- (Maker)

Manufacturing Processes
- Uses Wikipedia

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Equipment

Classified by Type & Process to enable search for equivalent capabilities

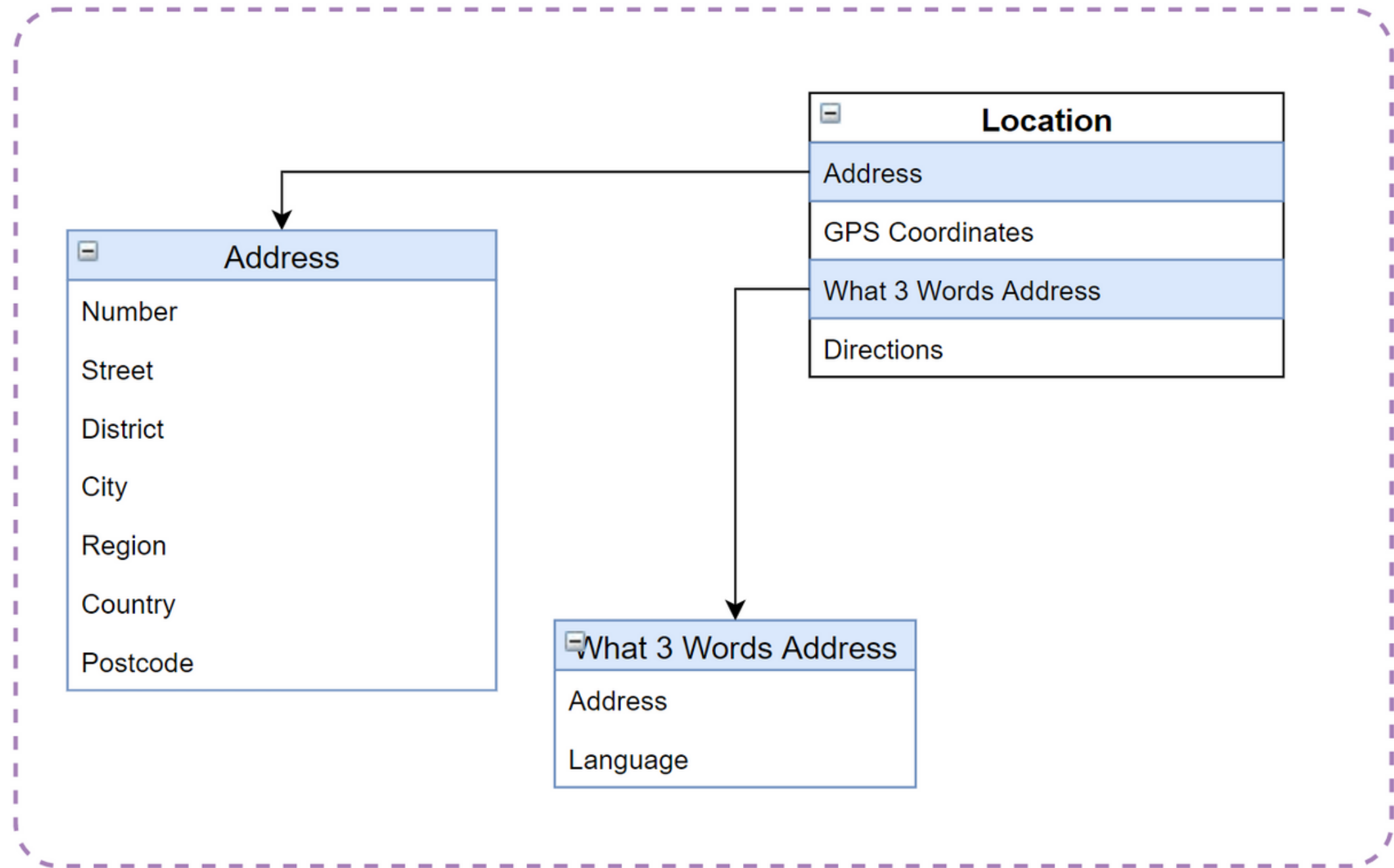38 recommended sub-properties mapped to equipment types

Material

Material

Material	
*Material Type	
Manufacturer	
Brand	
Supplier Location	
Defined Material Type	

Material Classification
Uses Wikipedia

Defined Material Type
Uses list of defined materials.
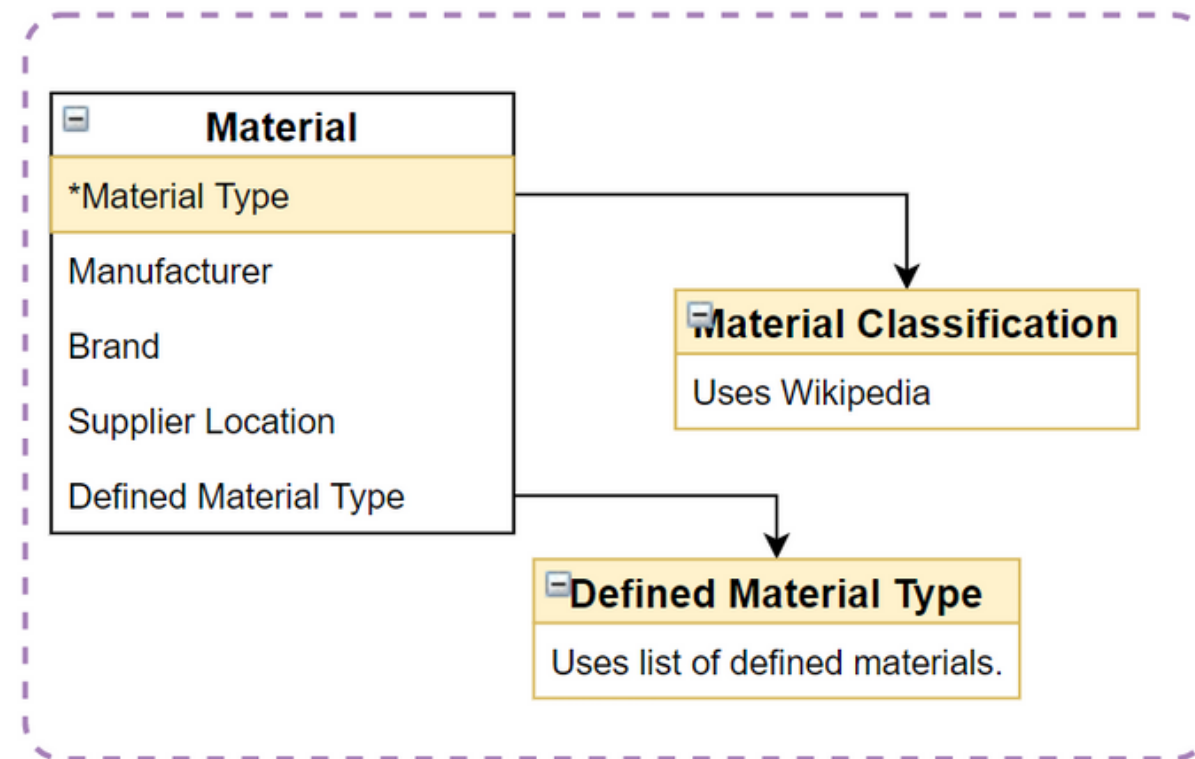
Not in scope for OKW, but basic properties included to support other classes

41 "defined material types"

Location

Classes

Facilities

Materials
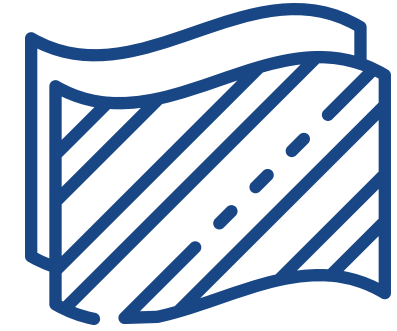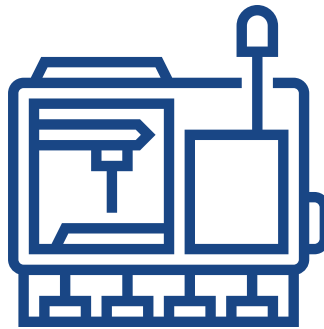
Location

Equipment
(tool / machine)

Agent
(person / organisation)