



International
Association
of Oil & Gas
Producers

Material Digital
Passport

An IOGP Joint Industry Sprint

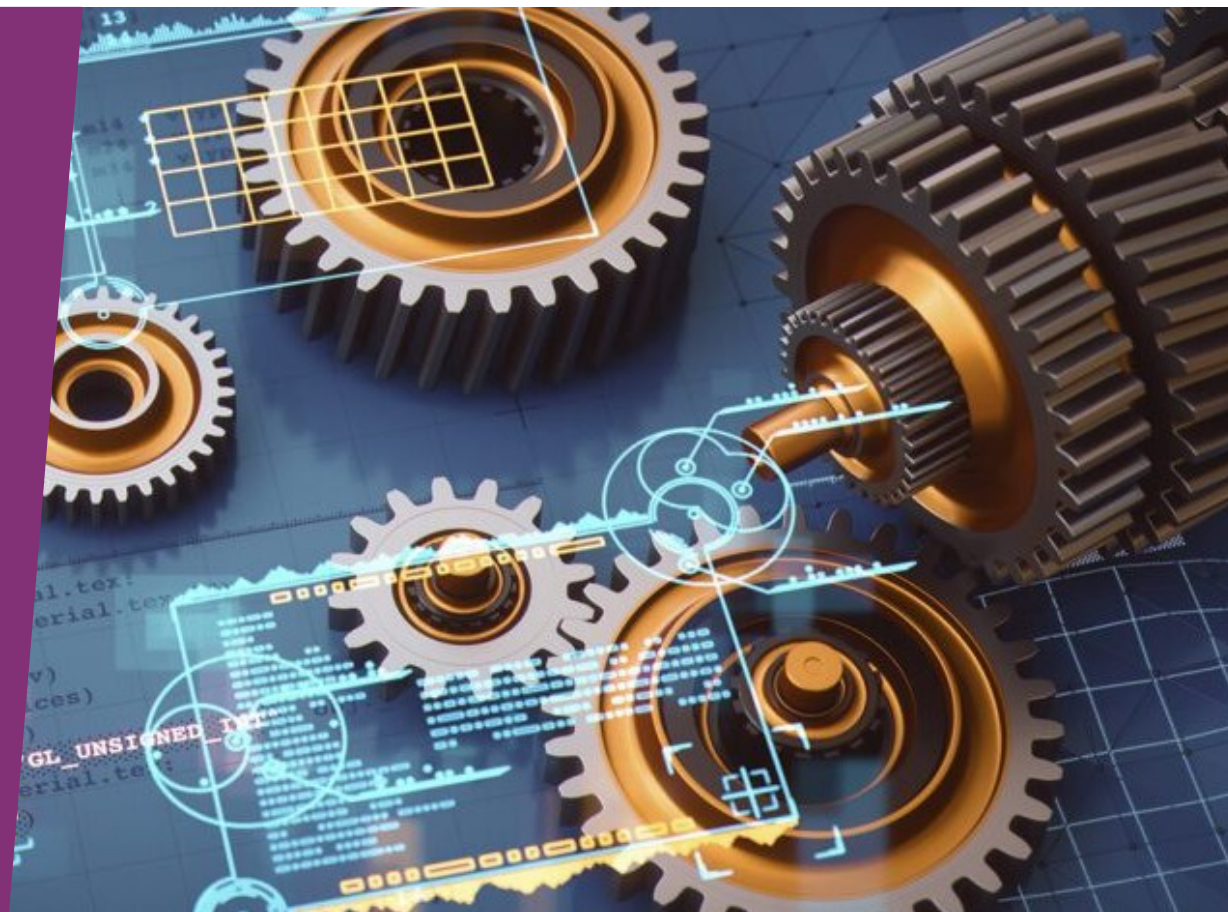


International
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Producers

IOGP Webinar

Material Digital Passport

5 December 2023



Housekeeping

This webinar will be recorded and made available to registered attendees

Please ensure your camera is turned off and your microphone is muted during the presentation

Please ask your questions in the chat box during the presentation

There will be a Q&A session at the end of the presentation. The Q&A will not be recorded.

The presentation will be made available after the webinar

There will be surveys run during the presentation, please participate!

Webinar Agenda

What is the Material Digital Passport?

What is the Joint Industry Sprint JIS01?

Which are the key elements in the Material Digital Passport?

What information are recorded in the MDP?

How the MDP process will work?

How can you participate further?

Who are we?

IOGP Joint Industry Sprint JIS01



The presenter

- Giovanni Buizza Avanzini, Ph.D.
- Senior Engineer at DNV
- JIS01 coordinator



giovanni.buizza.avanzini@dnv.com

What is the Material Digital Passport?

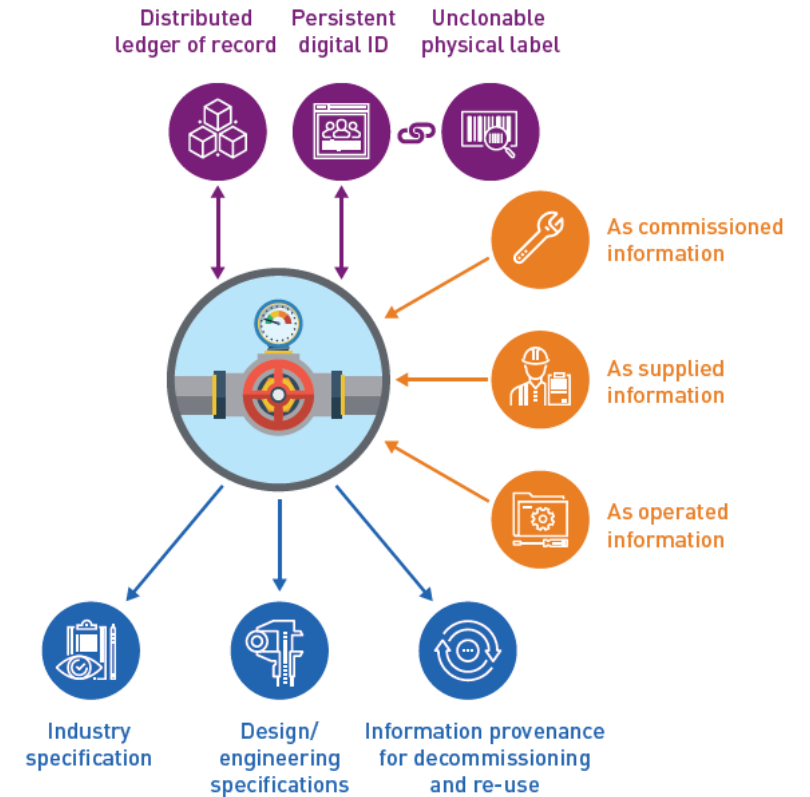
The Material Digital Passport (MDP) is a novel system aiming to reduce material fraud by enhancing material traceability and proof of origin of commodities relevant for the energy industry's supply chain

Each physical equipment will hold a unique MDP that can be initialized by equipment providers, verified by anyone and used to improve business workflows

The MDP will leverage component tagging, unique universal identifiers, and digital technologies

The value of the digital passport is based on two main pillars, namely trusted provenance (or traceability) and a more efficient workflow

The MDP can be used as a platform for registering additional information and providing additional services



JIS01 on Material Digital Passport



JIS01 is an IOGP initiative aiming to develop a specification for a Material Digital Passport system



The specification will cover procured items with end-to-end traceability across project execution



Material traceability reduces risk from quality issues and counterfeit materials.



Digitalized workflows reduce paper, errors, effort, cost and cycle time for clients and suppliers.

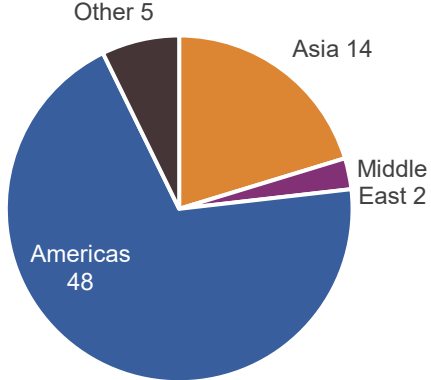


The system will improve trust between partners through data transparency

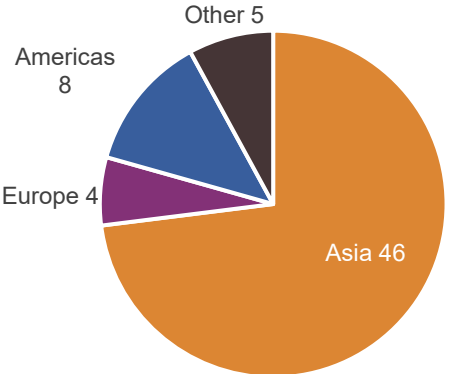
The counterfeit problem, a global phenomenon affecting international businesses

<p>10 cases/yr</p>	<p>Average number of fraud cases per year for any single IOC</p>
<p>95% Undetected cases</p>	<p>Average number of undetected cases per year*</p> <p>*1) Ass. Certified Fraud Examiners (ACFE): impossible to precisely quantify, likely to be underestimated</p> <p>*2) Transparency International Corruption Perceptions Index: up to 95%</p>
<p>Rectification Costs</p>	<ul style="list-style-type: none"> • Purchase new material • Site establishment and re-works • Shut-downs
<p>Operational Impacts</p>	<ul style="list-style-type: none"> • End User: loss production, revenue reduction, delayed start-up for projects • Suppliers: loss of sales, reputational damage
<p>Safety and Environmental Incidents</p>	<ul style="list-style-type: none"> • Risk to personnel safety • Loss of containment • Goodwill impact, reputational risk

Destination Location



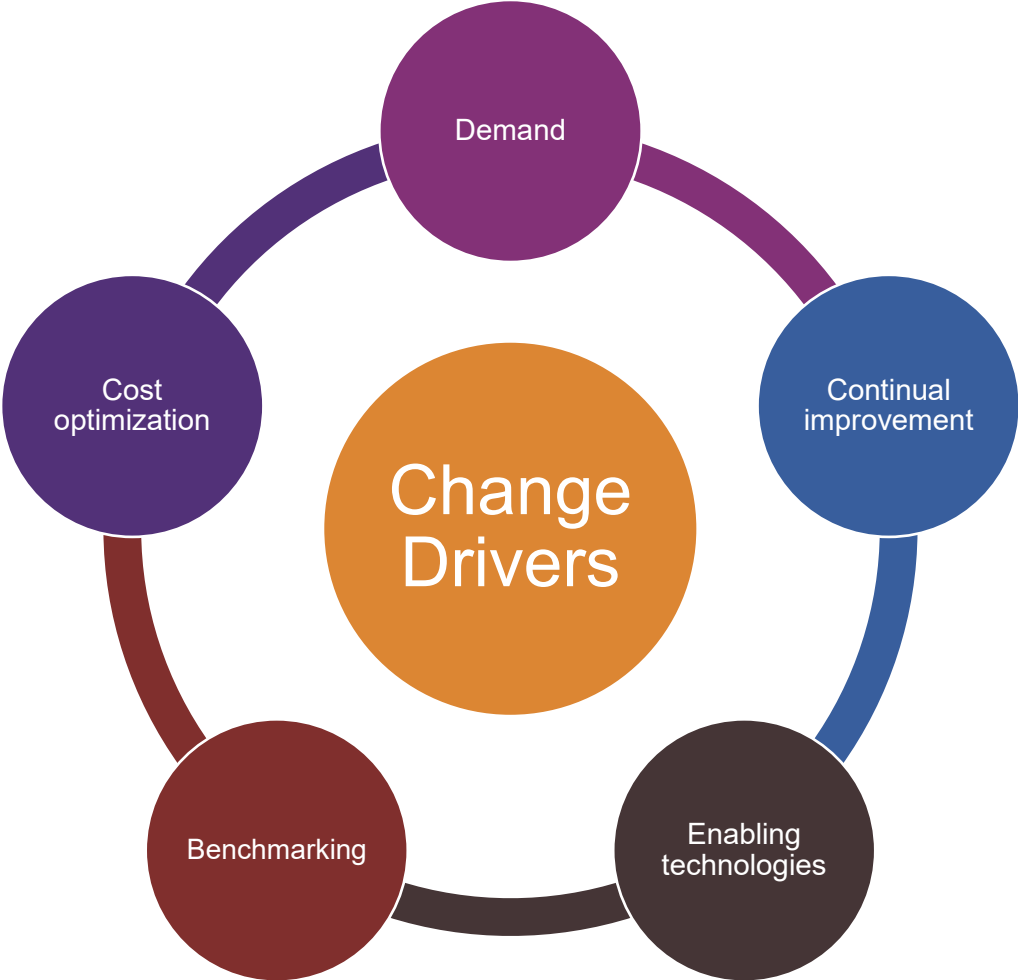
Source Location



Construction Industry Institute: Product Integrity Concerns in low-cost sourcing countries, 2010 (RS264-1)

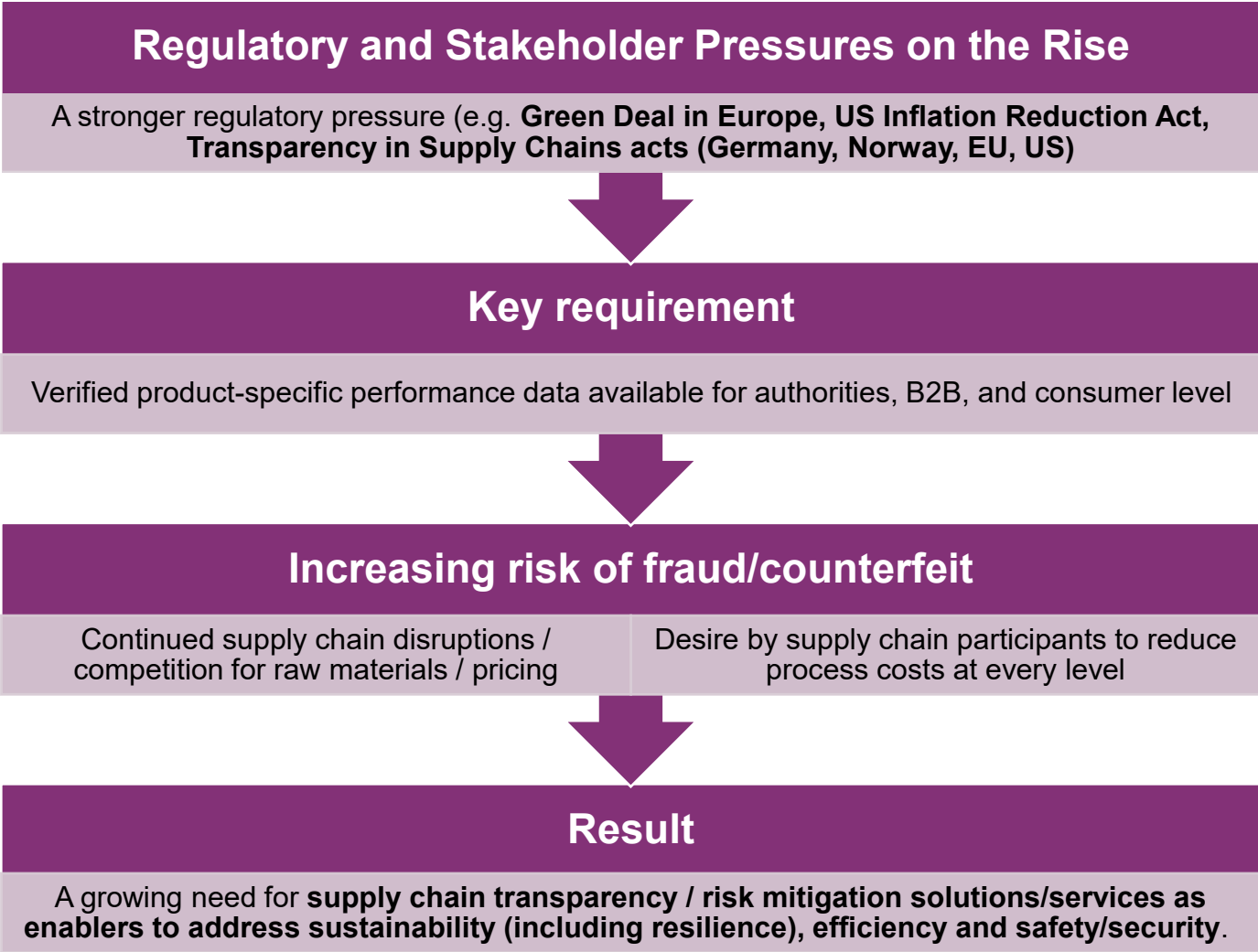
Why now?

The drivers for change



Demand	The industry is demanding better control
Continual improvement	Bad actors are improving their game, leading to more skilled fraud?
Enabling technologies	Enabling technologies in marking, labelling, and digital technologies (decentralized databases and identities)
Benchmarking	Feedback from other industries show a digital passport has been beneficial
Cost optimization	Cost optimization for both manufacturers and end users by reducing fraud and digitalized workflows

Digital Product Passport demand is increasing



Benefit for the supply chain



Become a preferred supplier of choice: trusted and compatible systems



Efficiencies through standardization



Minimize costs arising from replacements and warranty claims



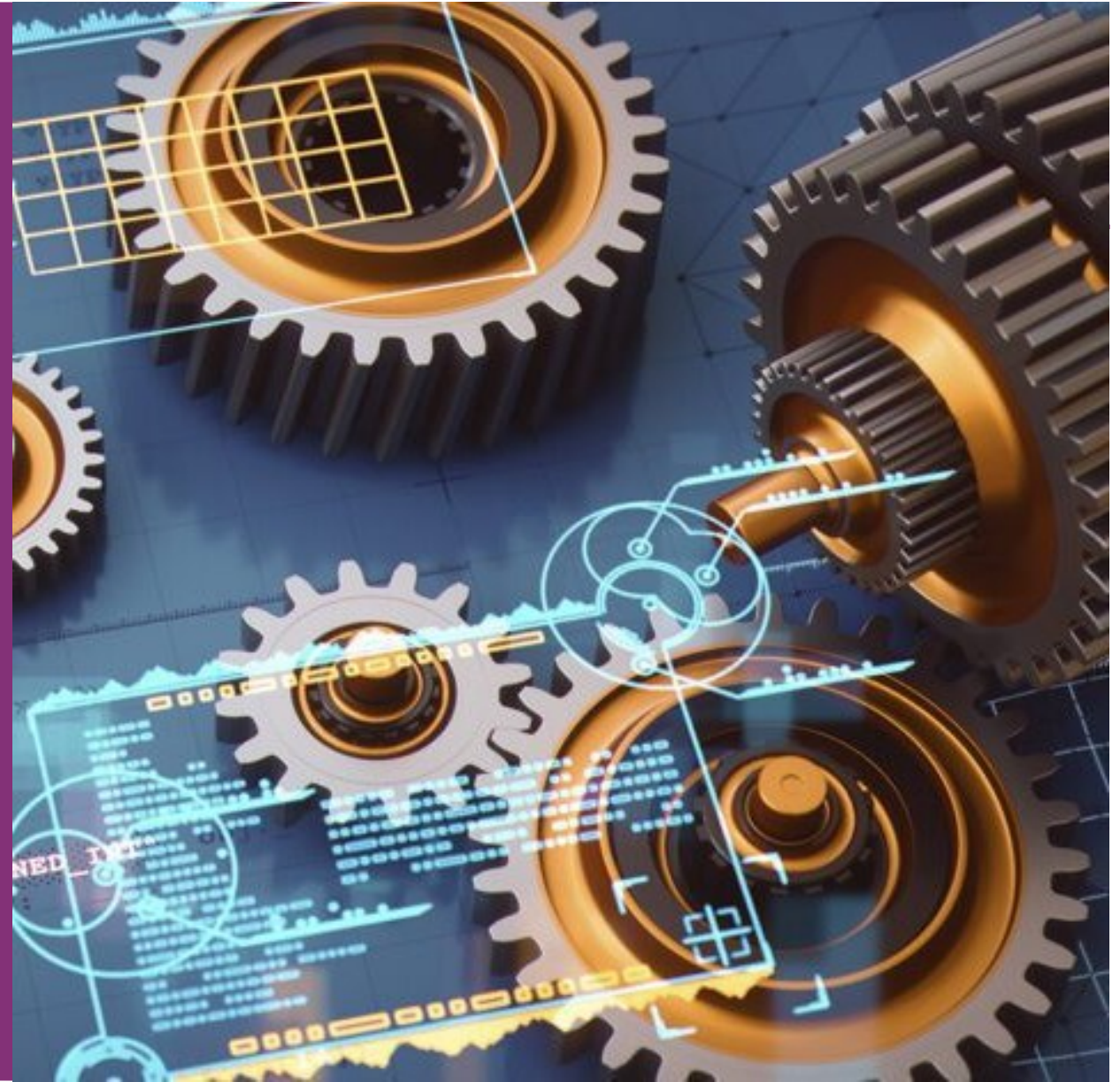
Minimize reputational damage

Survey time – Give your feedback!

- Please go to the first survey at:
- <https://forms.office.com/e/E7EDpiXYWf>



Material Digital Passport key elements



Items covered



Bulk Material

- ✓ No Identification
- ✓ Documentation at batch level

Examples

- Piping
- Small manual valves
- Gaskets
- Flanges
- Nuts and bolts
- Steel plates

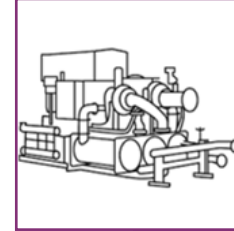


Individual Equipment

- ✓ Unique identifier (tag or stamp)
- ✓ Unique information

Examples

- Tagged valves
- Pumps
- Motor
- Vessels
- Exchangers



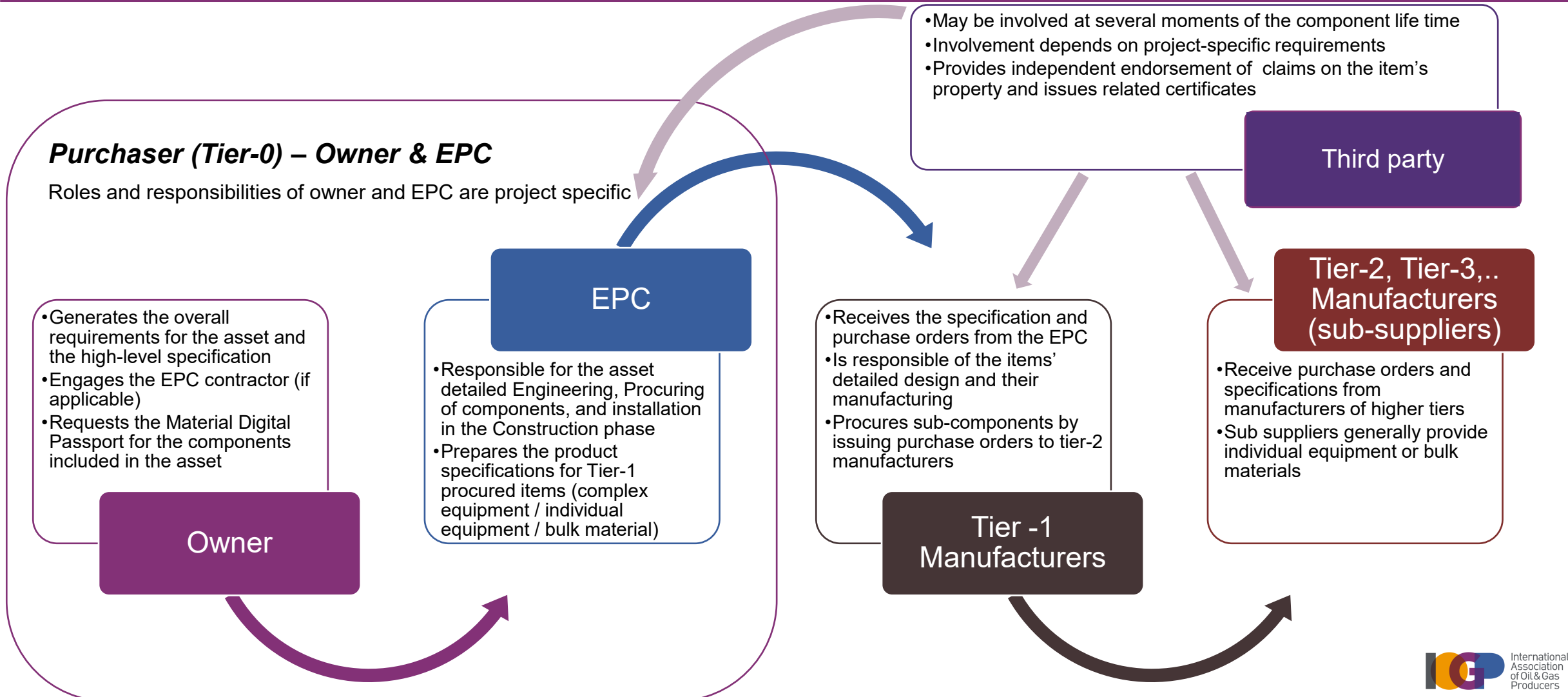
Complex Equipment

- ✓ Combining individually tagged equipment and materials
- ✓ Links to individual passport plus assembly information

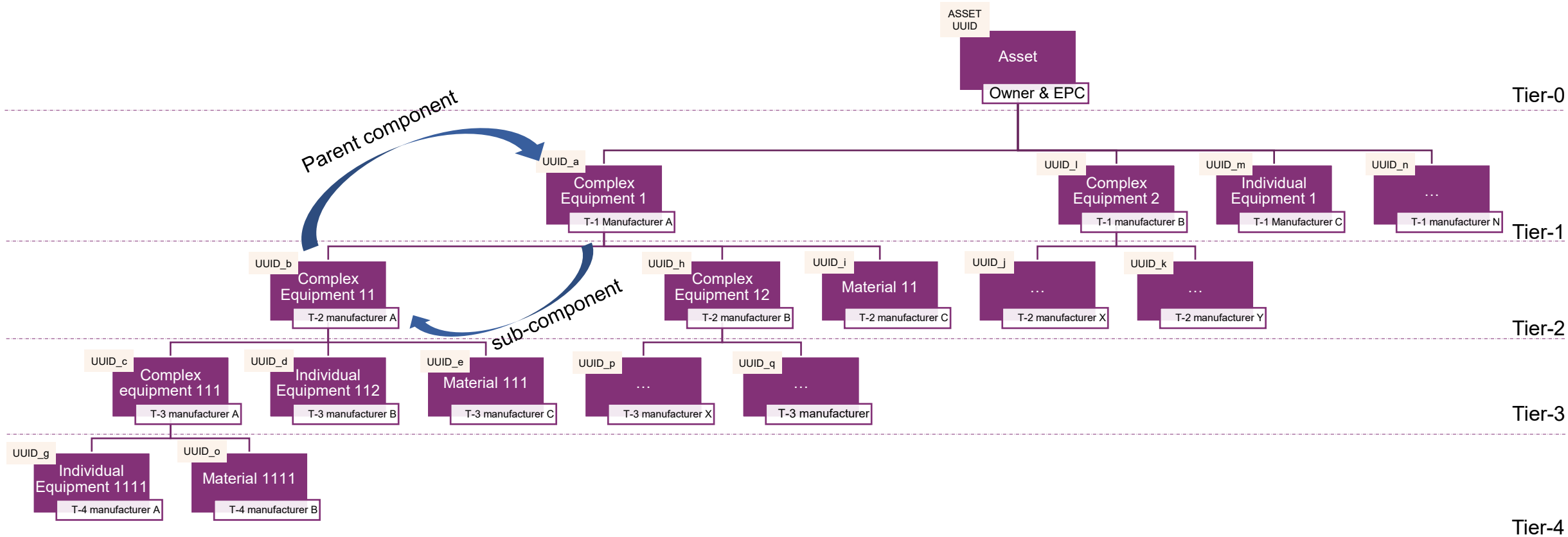
Examples

- Compressors
- Skids
- Turbine skids

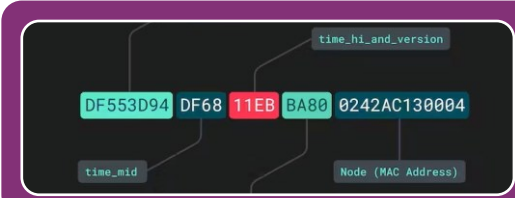
MDP Stakeholders



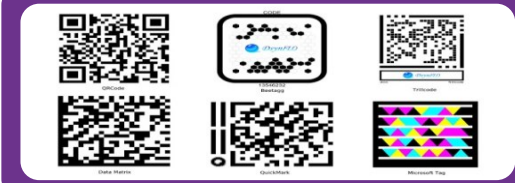
Relationship between items and asset



MDP Building blocks



Unique identifier



Data carrier



Digital Passport Content



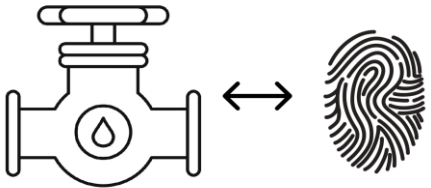
Digital platform

Unique identifier – UUID

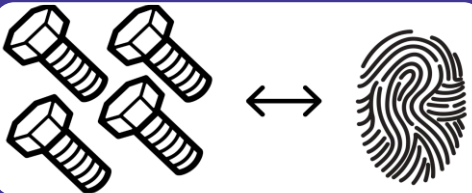


The ID takes the form of a UUID according ISO/IEC 9834-8 “Generation of universally unique identifiers (UUIDs) and their use in object identifiers”

- This allow the creation of new item’s ID’s without the need for a central authority



Individual equipment and complex equipment receives a unique identifier
one item – 1 ID



Materials belonging to the same batch are grouped together and are assigned a common ID

- The common identifier does not always cover the full batch, but only sub-set of the batch that is included in the parent item



The UUID will accompany the item until end of its lifecycle

Data carrier – link to the digital asset

The UUID is stored in a data carrier that takes the form of a QR code

According to ISO/IEC 18004

The QR code shall be readable by commercially available electronic readers

The QR code is applied to individual equipment or complex equipment

Either on the nameplate or affixed to the product by a separate label

For batch material, the QR code can be printed or attached on the item when possible

For smaller components, the QR code is attached to the packaging and referenced in the documentation

The QR code is also included in the component documentation

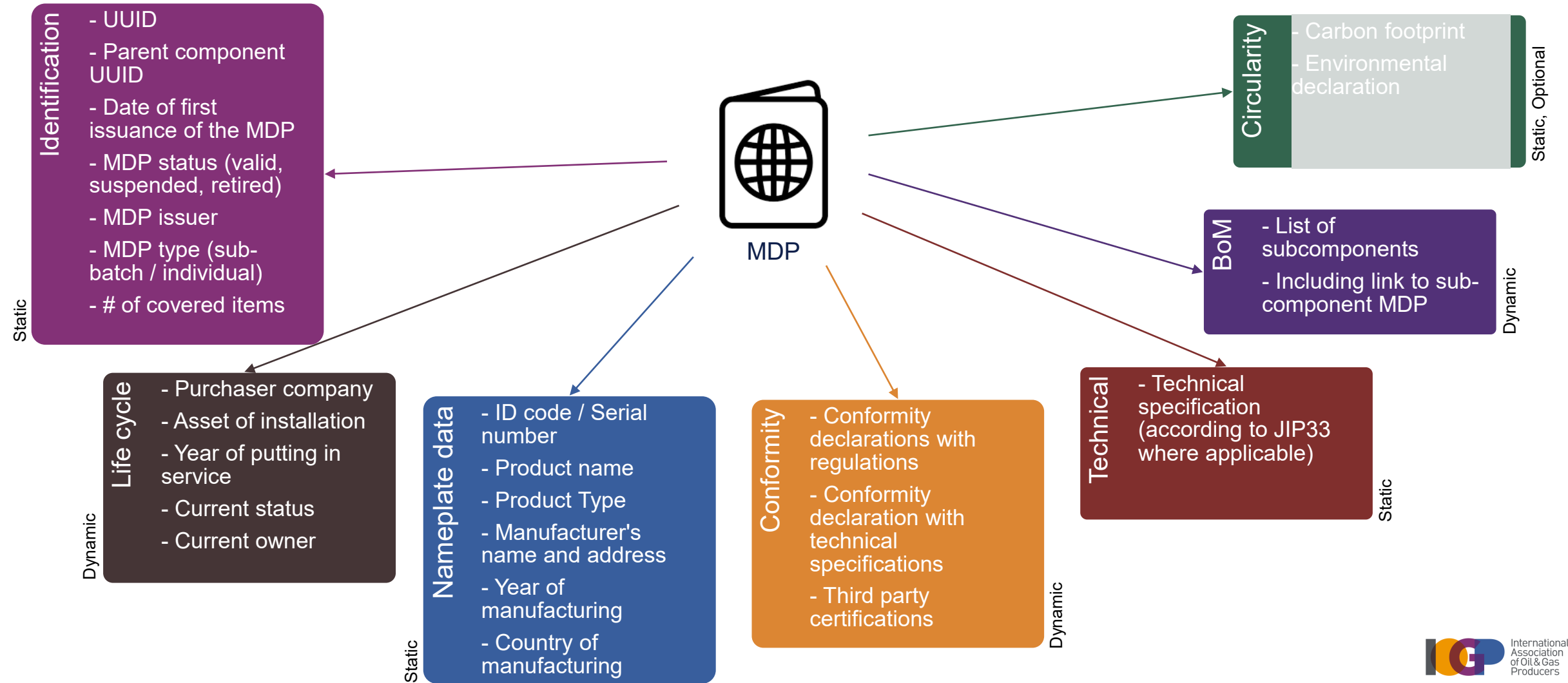
In order to allow recovery of the UUID without need to access to the component



IOGP MDP

Example of a QR code embedding
4167555e-8ee3-11ee-b9d1-
0242ac120002 as UUID

Information in the MDP

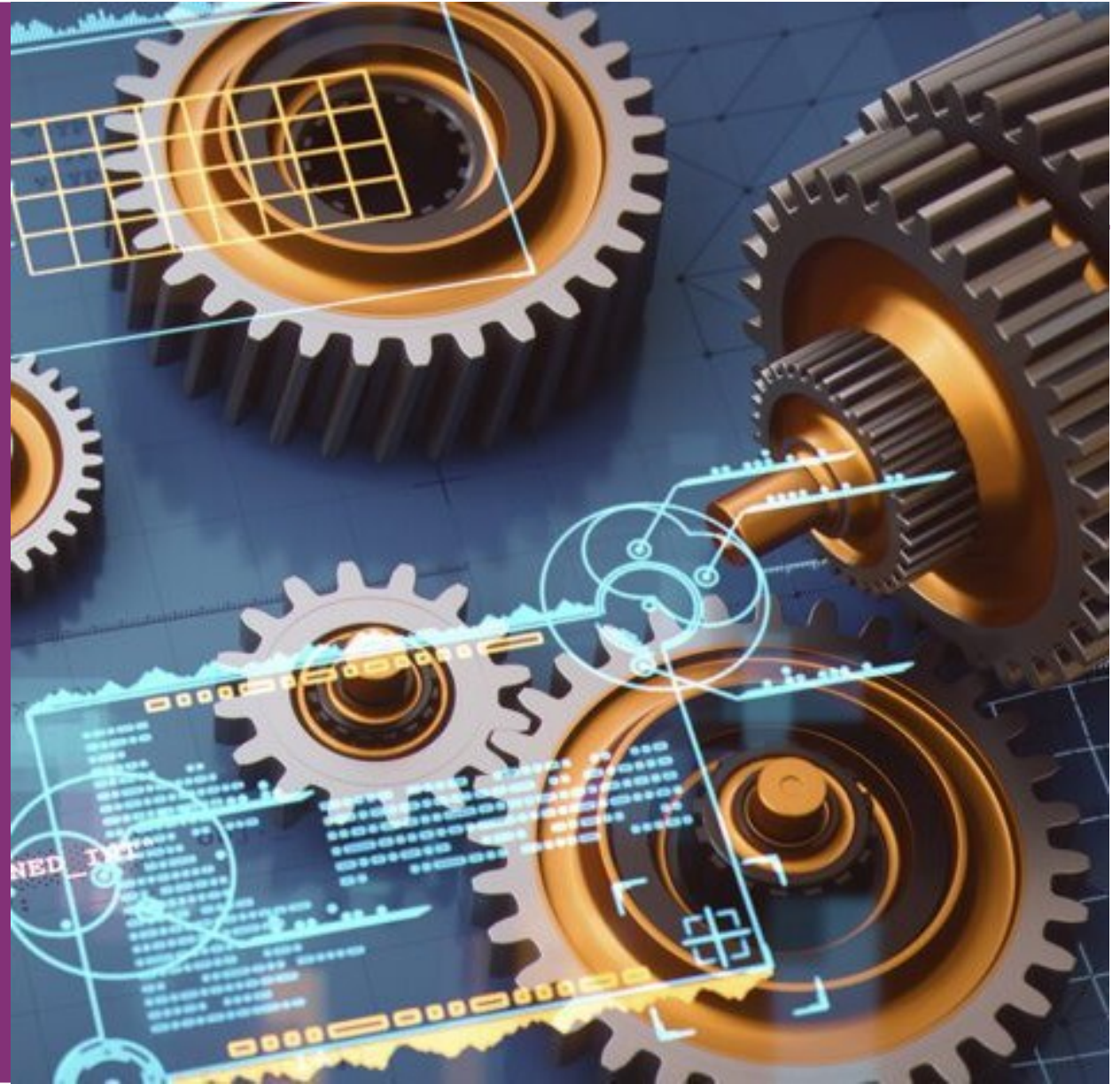


Survey time – Give your feedback!

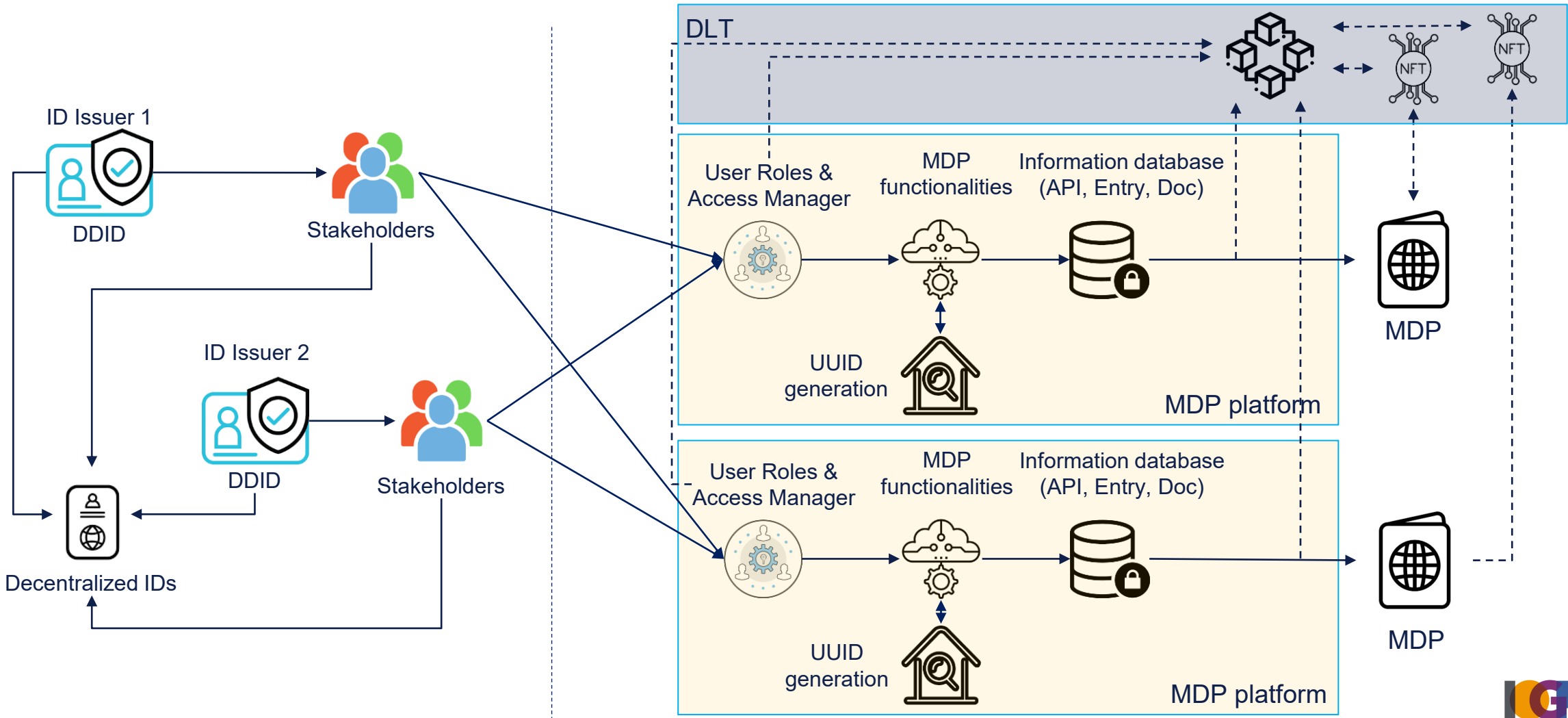
- Please go to the second survey at:
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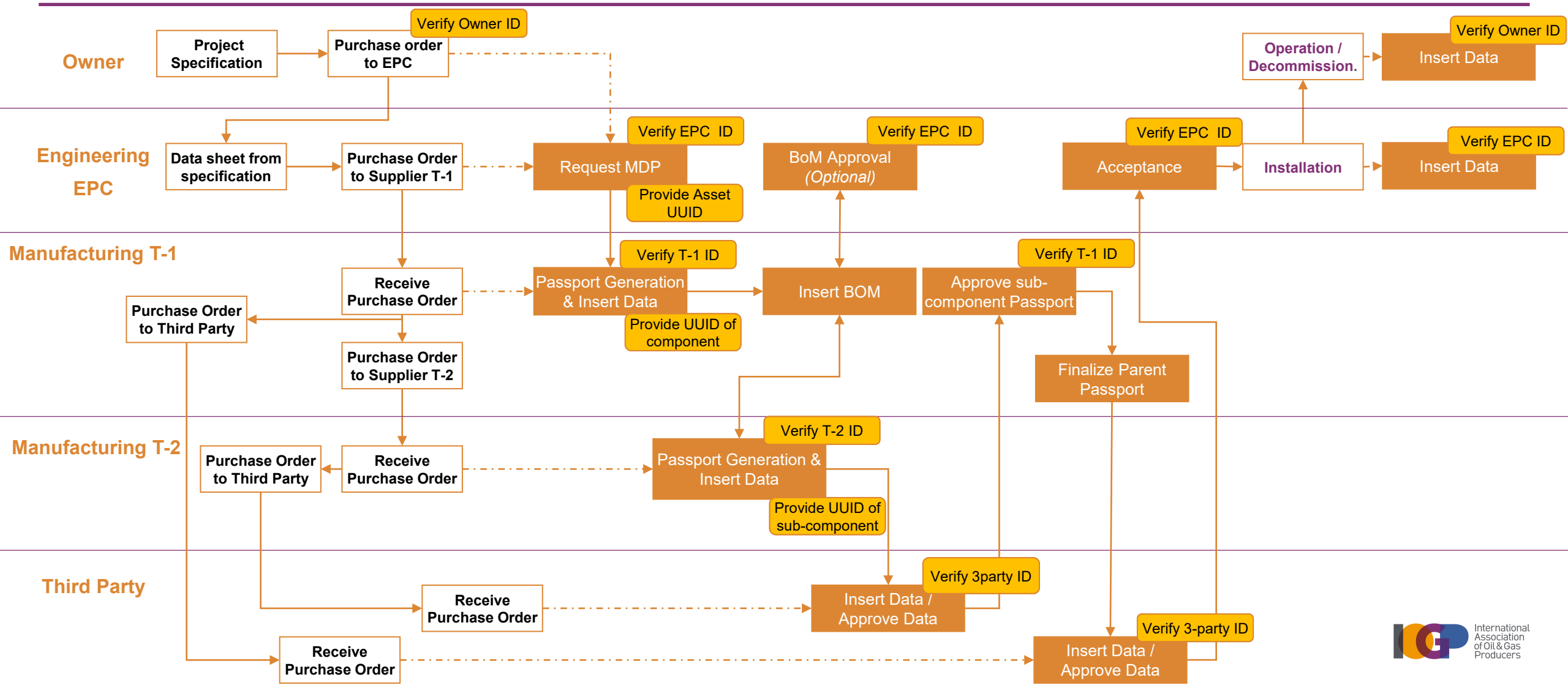
Ecosystem, Process and roles



Digital platforms ecosystem



Roles and responsibilities Reference process



Survey time – Give your feedback!

- Please go to the final survey at:
- <https://forms.office.com/e/LqeFUxujT9>



How to get
further involved



Get involved!

The specification will be issued in Q1 2024



Workshops for discussing the details of the MDP specification and process are planned for February 6th and 7th 2024



Reach out to us to get involved in the workshop and give your contribution!

Final Q&A





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For more information please contact:

- General question and participation in the JIS:
Lucyna Kryla-Straszewska, lks@iogp.org
IOGP Principal Manager – Digital and Geomatics
- Technical Questions and workshop participation
Giovanni Buizza Avanzini, giovanni.buizza.avanzini@dnv.com
JIS01 project coordinator



Read more:

<https://www.jis01-mdp.org/>

<https://www.iogp.org/workstreams/engineering/digital-transformation>

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