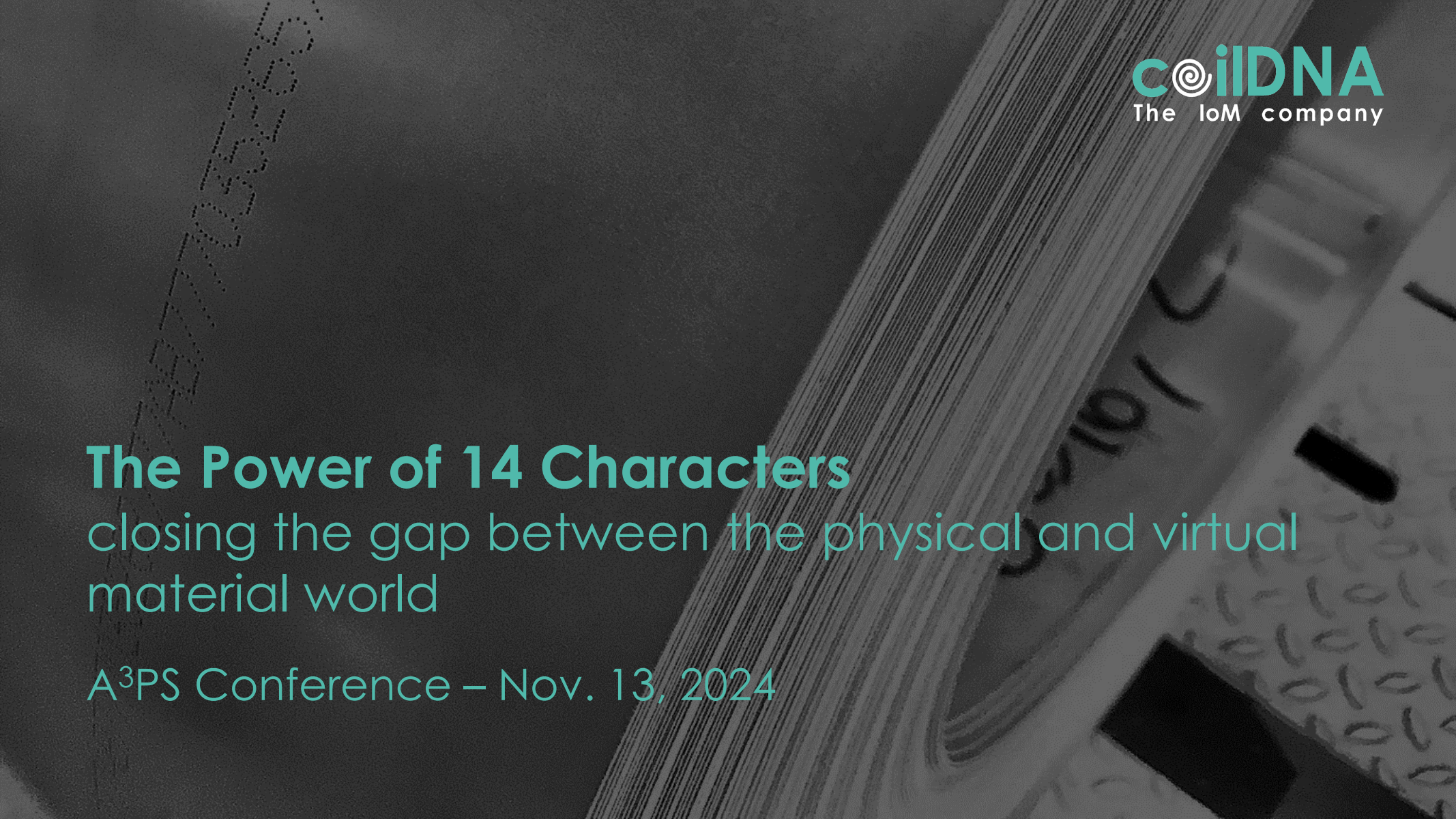


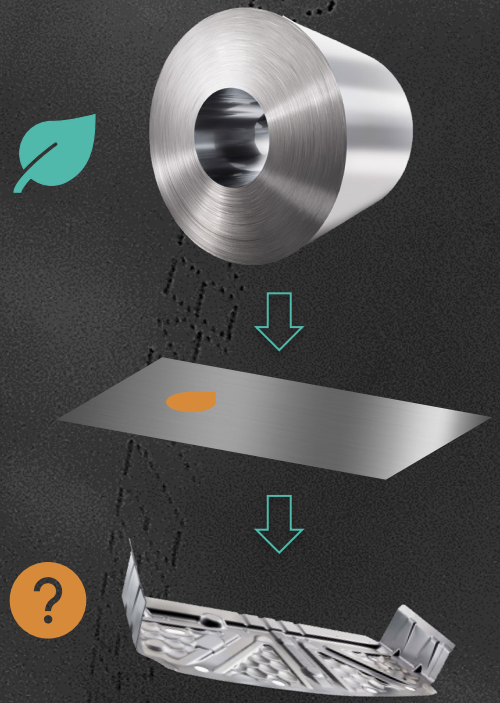
coilDNA
The IoM company

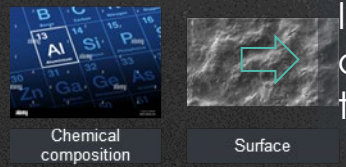
The Power of 14 Characters

closing the gap between the physical and virtual material world

A³PS Conference – Nov. 13, 2024

Challenges





In the further processing of semi-finished products – e.g. from coils to sheet metal or stamped parts – the original shape and thus the traceability of individual parts is usually lost

Coils have a digital twin, machined parts do not

The traceability of sustainability data down to the individual rt level is not guaranteed despite the 'green' starting oduct

cal quality deviations often lead to the rejection of the entire product. In the case of metals, this means melting down and renewing the use of materials and energy across the entire value chain

Without knowledge of the product history, it is difficult to identify and prevent causes of quality deviations and product failures

coilDNA
The IoM company

Starting point

Standard in everyday life - vision in the material world?

📦 Parcel tracking

- Real-time tracking: location tracking of the parcel during the entire shipping process
- Shipment status: Display of current shipment status such as "Sent", "In delivery", "Delivered"
- Consignment number & barcode: Unique identification for each parcel
- Notifications: Updates by e-mail, SMS or app push for status changes
- **How about traceability in press shop?**

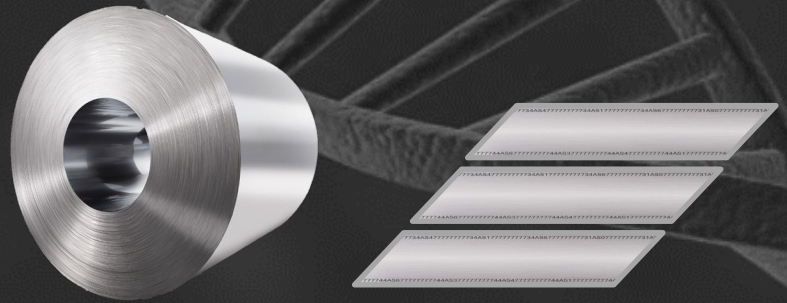
coilDNA
The IoM company

The coilDNA technology

Ideas - Analogy

coilDNA vs. Human DNA Sequencing

- Each individual component contains the entire data of the mother product (manufacturer,…)
- coilDNA code is structured similarly to the genetic information coding (C, T, A, G)

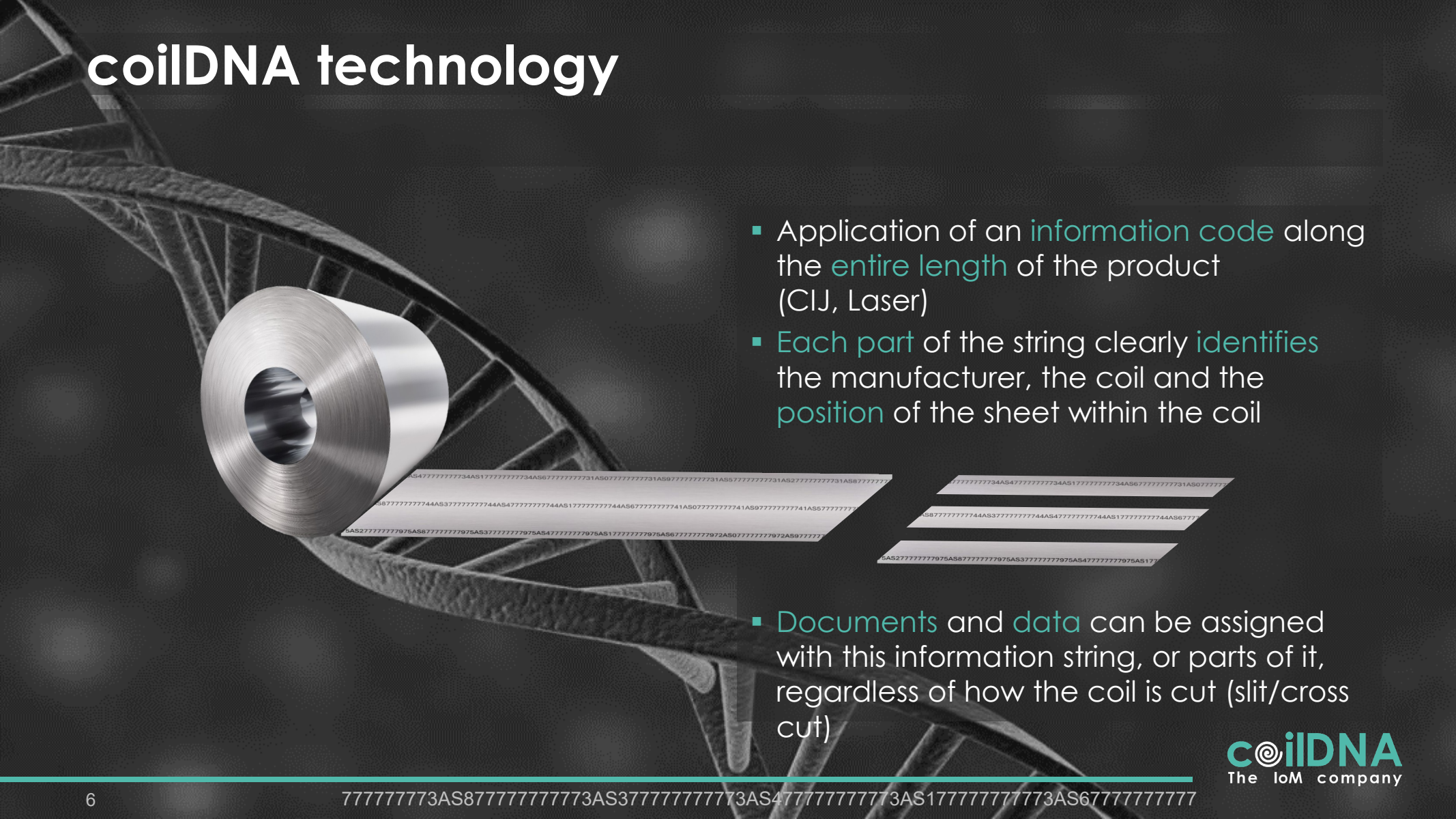


- Each human cell contains genetic information
- The entire DNA can be reconstructed from fragments (DNA-Sequencing)

coilDNA
The IoM company

777777773AS8777777777773AS3777777777773AS4777777777773AS1777777777773AS67777777777

coilDNA technology



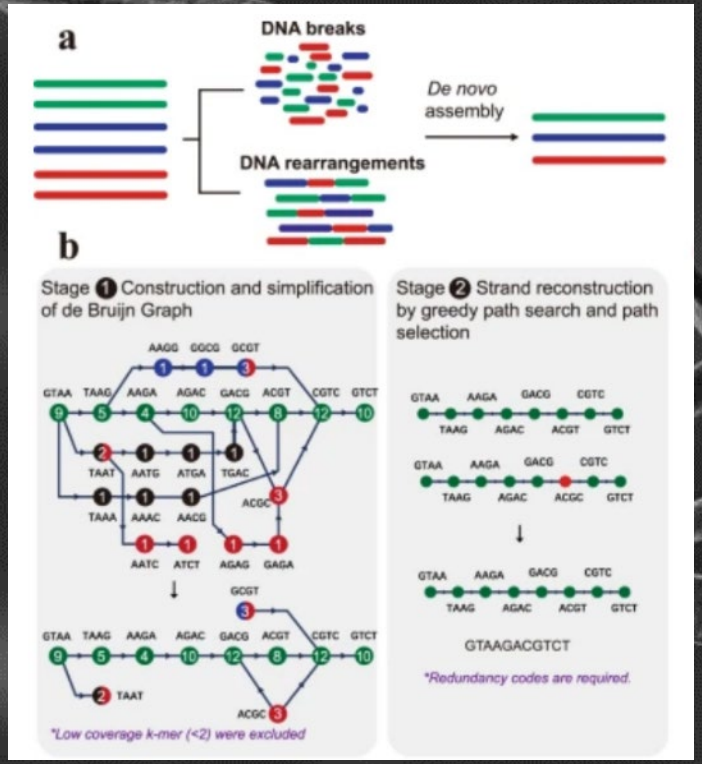
- Application of an information code along the entire length of the product (CIJ, Laser)
- Each part of the string clearly identifies the manufacturer, the coil and the position of the sheet within the coil

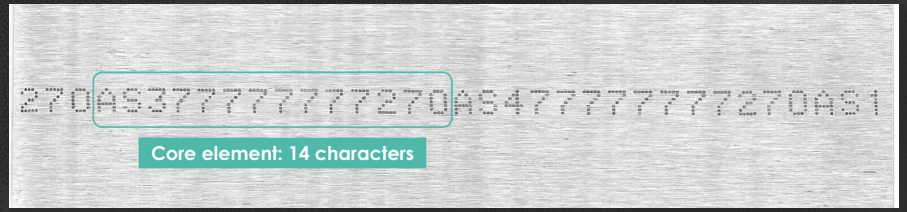
- Documents and data can be assigned with this information string, or parts of it, regardless of how the coil is cut (slit/cross cut)

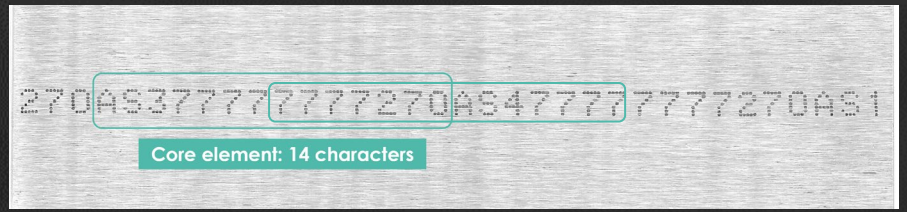
coilDNA
The IoM company

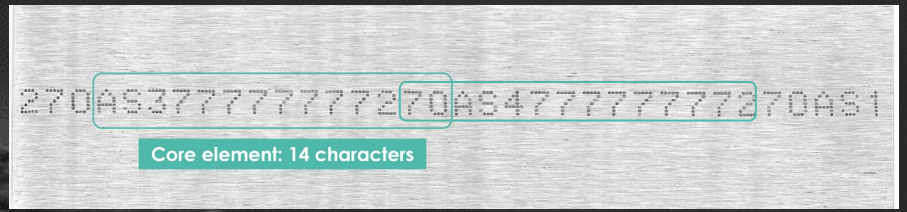
777777773AS8777777777773AS3777777777773AS4777777777773AS1777777777773AS6777777777777

De Brujin Graphs vs Sequences









777777773AS877777777773AS377777777773AS477777777773AS177777777773AS67777777777

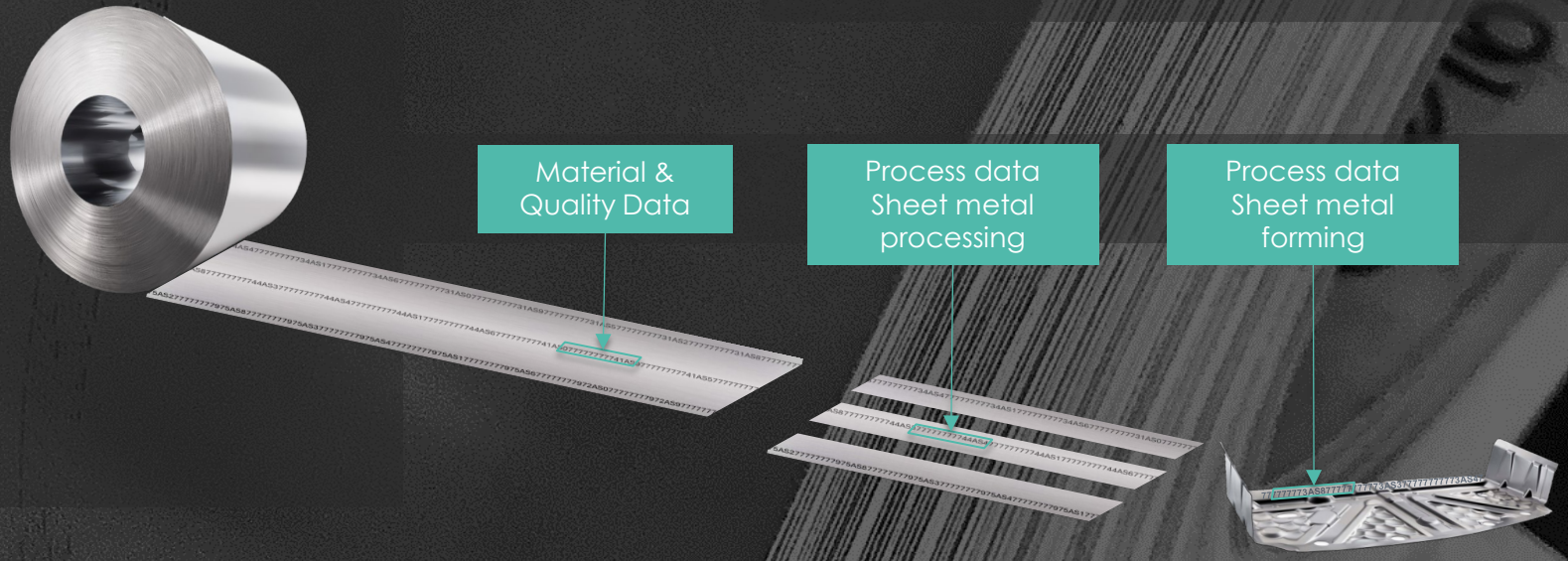
coilDNA
The IoM company

Challenges

Internet of Materials

Bridging the digital and physical world

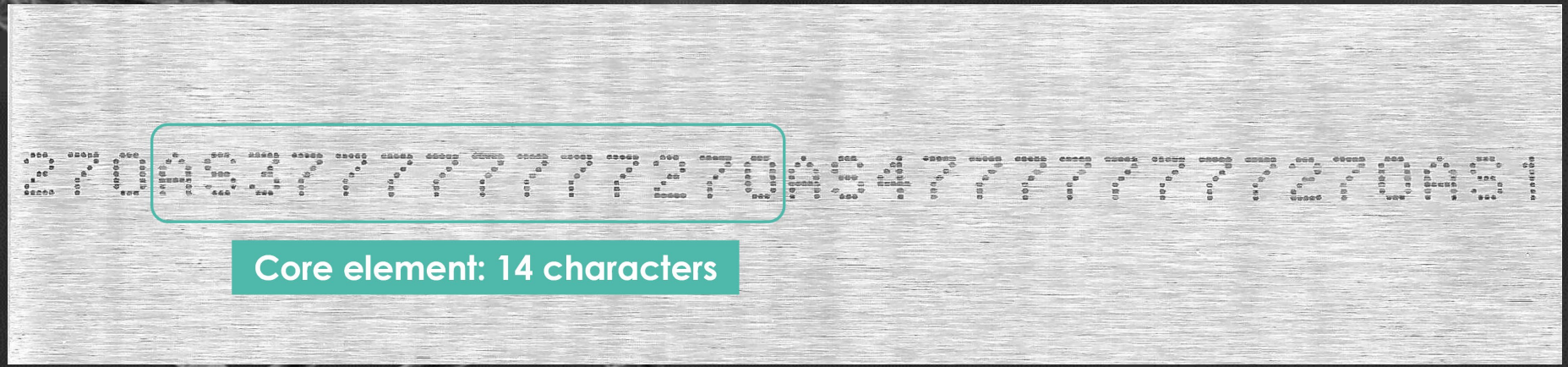
With its unique way of material coding, the patented coilDNA technology offers solutions to the above challenges



coilDNA The IoM company

Patented coilDNA code

Identity for product and its parts



14 characters are the key to the world of individual product information (DNA of the product)

777777773AS8777777777773AS3777777777773AS4777777777773AS1777777777773AS67777777777

coilDNA The IoM company

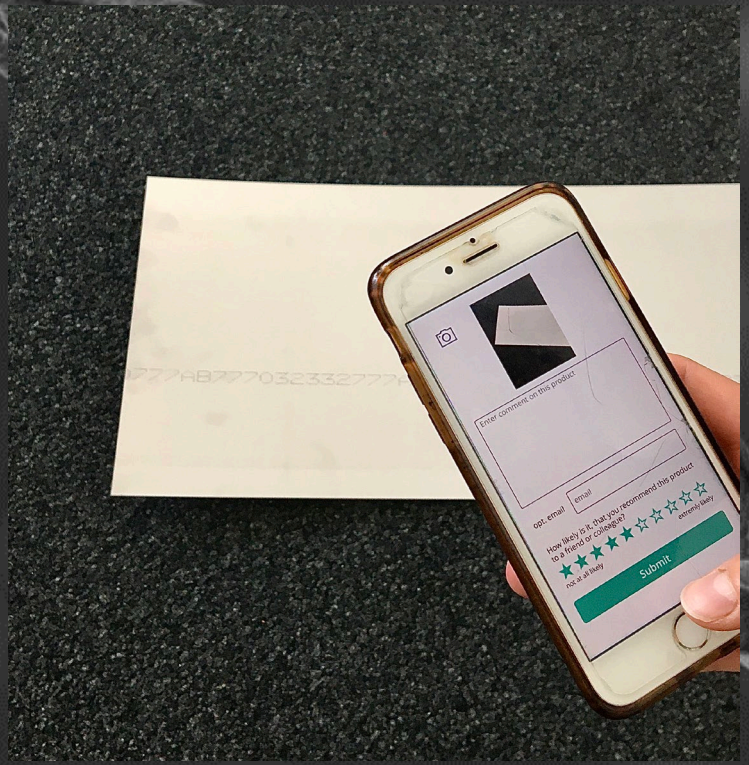
Other technologies

Why not traditional 1D or 2D barcodes?

- Correct position for barcode: The final position/dimension of the product is not known when the code is printed on the semi-finished product
- Barcodes are destroyed during cutting
- Barcodes are not printable at high production speeds

coilDNA communication tools

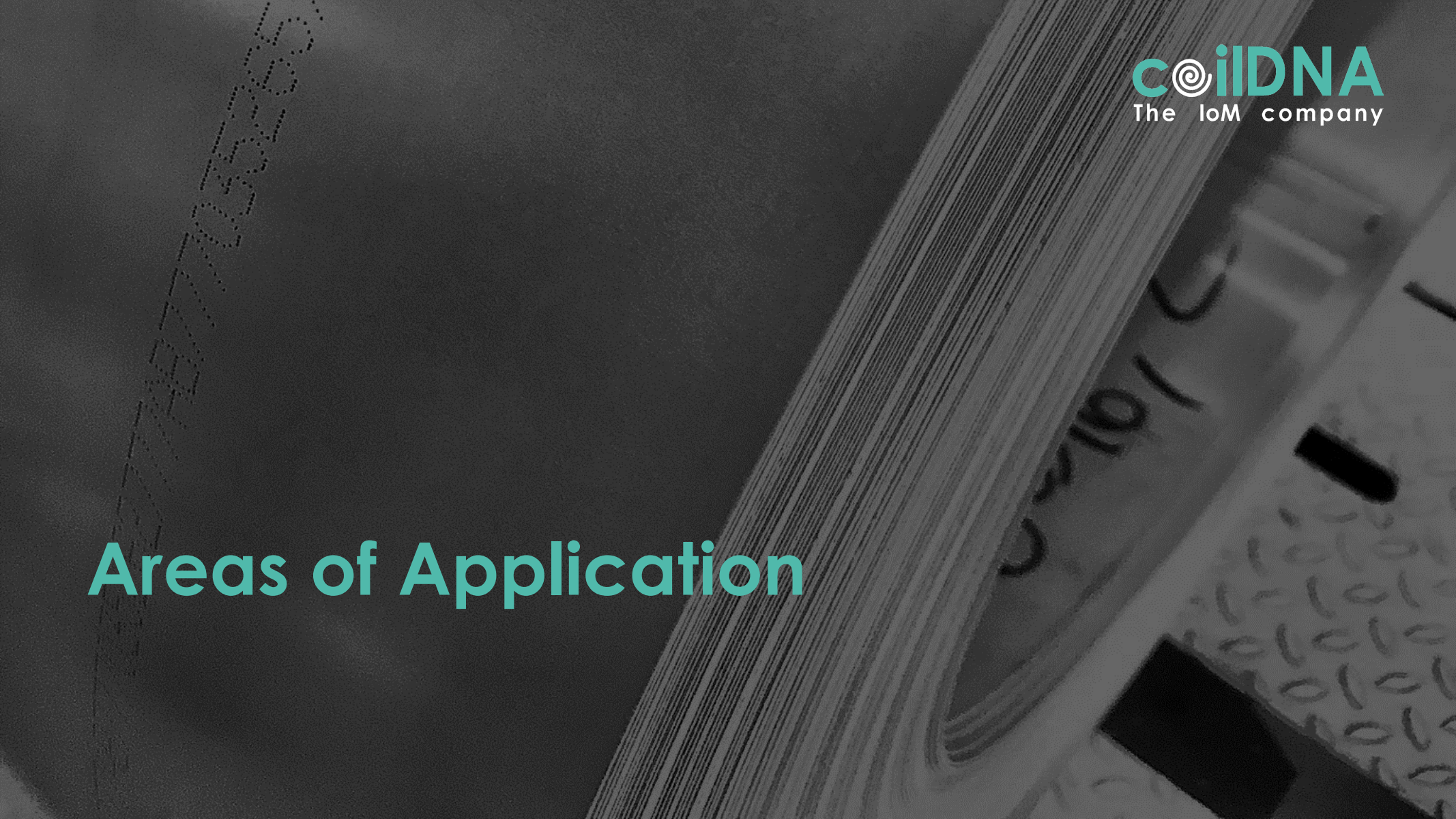
New ways of communication between producers and processors



- **coilDNA®*chat*** Immediate feedback on the product to the producer
- **coilDNA®*share*** Sharing / recommendation of product to third parties
- **coilDNA®*check*** Check validity of paper documents

coilDNA
The IoM company

777777773AS877777777773AS377777777773AS477777777773AS177777777773AS677777777777



coilDNA
The IoM company

Areas of Application

coilDNA areas of application

Advantage: Unique identification of materials / products

The coilDNA® technology brings countless advantages in various subject areas

- Protection against counterfeiting
- Protection against material mix-ups
- More efficient use of materials
- Optimization of processes
- Identification of materials for unmixed recycling
- No need of measuring twice
- Efficient communication with customers

coilDNA
The IoM company

777777773AS877777777773AS377777777773AS477777777773AS177777777773AS677777777777

Starting point

Tracking and data allocation

🏭 Press shop

- Tracking of individual parts in the press shop and allocation of material, process and quality data to the individual part is difficult / not possible
- Identification of rejects and determination of causes are complex / not possible
- Material and process data are often recorded separately

But

- Quality assurance becomes increasingly data-driven
- Need for automated real-time solutions

coilDNA solution concept

Description

Input material

- ideally already marked with coilDNA
- Material and quality data are available
- Alternative: coilDNA marking of the sheet metal blank after stacking

Sheet detection

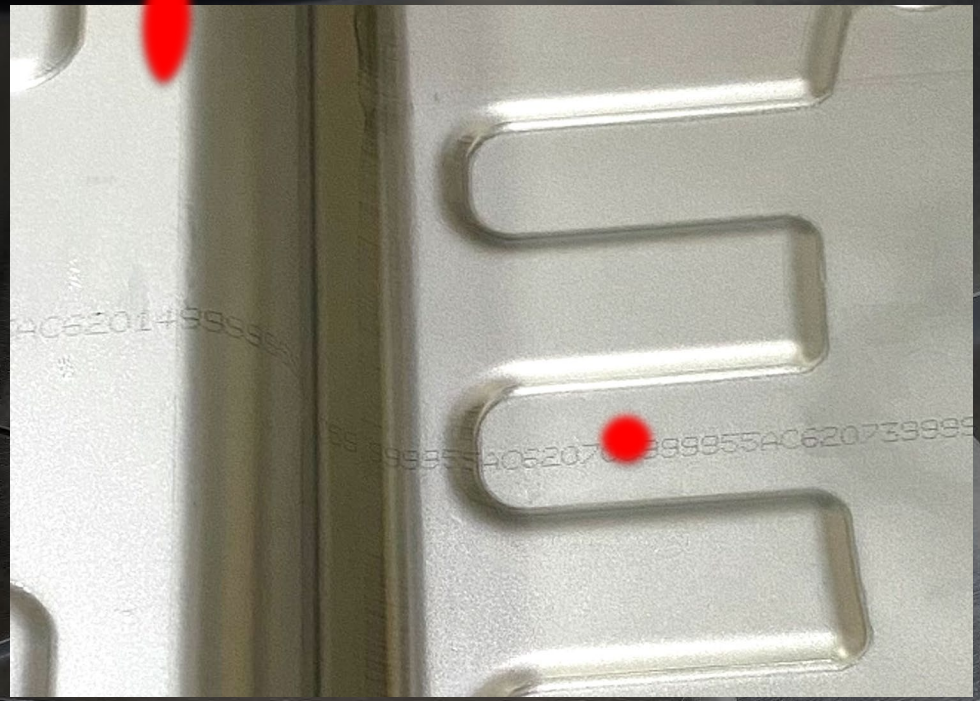
- using a camera and coilDNA code at the press entry area

Data allocation

- Assignment of the process data / data from inline measuring by producer or onsite, add local measured data from each process to the coilDNA code of the sheet metal blank

Identification

- Identification of faulty parts at the press outlet
- Process / material / tool optimization

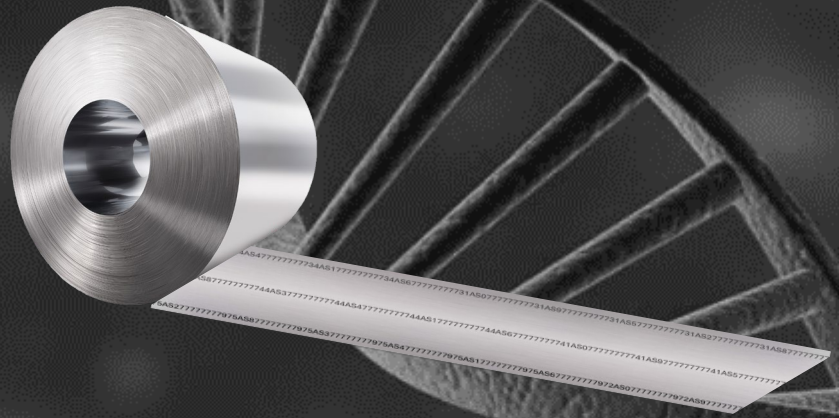


coilDNA
The IoM company

777777773AS87777777773AS37777777773AS47777777773AS17777777773AS67777777777

Applications / Benefits

Use case 1: coilDNA for identifying the materials at the press line entry



- Material data[1] are supplied (length-related) with coded material from the material supplier

Benefits

- No inline measurement necessary, resulting in cost savings (investment / operation)
- Traceability of parts back to the primary material

1) e.g. roughness, lubricant film thickness, mechanical parameters)

coilDNA The IoM company

777777773AS8777777777773AS3777777777773AS4777777777773AS1777777777773AS6777777777

Applications / Benefits

Use case 2: Reduction of rejects

- Direct assignment of material information and process data from the press to the blank

Benefits

- Precise rejection of defective parts
- Data basis for quality optimization in your own plant or together with the pre-material supplier

coilDNA
The IoM company

777777773AS877777777773AS377777777773AS477777777773AS177777777773AS67777777777

Applications / Benefits

Use case 3: Avoid product mix-ups by marking the coils consistently

- Coils bear a label which is normally lost during processing. Partial coils or sheets usually have no identity. There is a risk of mix-up, which is particularly important for safety-critical parts

Benefits

- Continuous marking ensures that sections of coils or parts made from them remain identifiable at every stage of processing, thus preventing mix-ups

coilDNA
The IoM company

777777773AS8777777777773AS3777777777773AS4777777777773AS1777777777773AS67777777777

Applications / Benefits

Use case 4: Efficient processing of complaints

- Normally, tracing faulty parts throughout the entire production process back to the primary material involves a great deal of effort

Benefits

- Scan coilDNA code, enter problem description and send via **coilDNA**®*chat* / **coilDNA**®*share*
- coilDNA transmits all information on the affected part precisely to the addressee (primary material manufacturer or expert in your own organization)

coilDNA
The IoM company

777777773AS877777777773AS377777777773AS477777777773AS177777777773AS677777777777

coilDNA
The IoM company

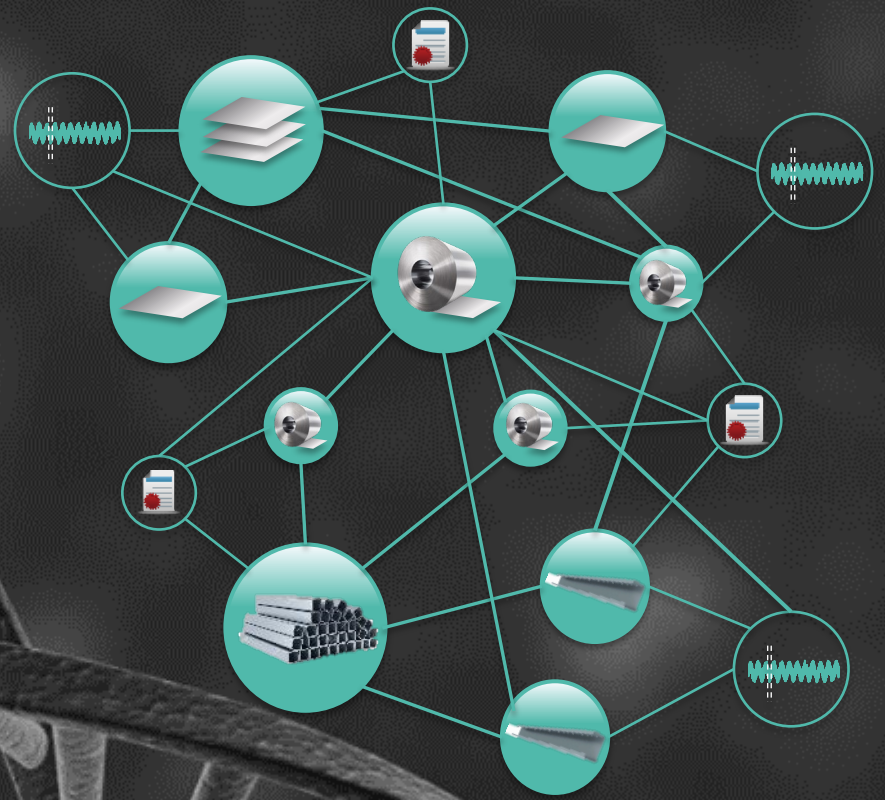
The coilDNA Vision

coilDNA Mission

Implementation of the principles of IOT for materials in the IOM

IOM – The Internet of Materials

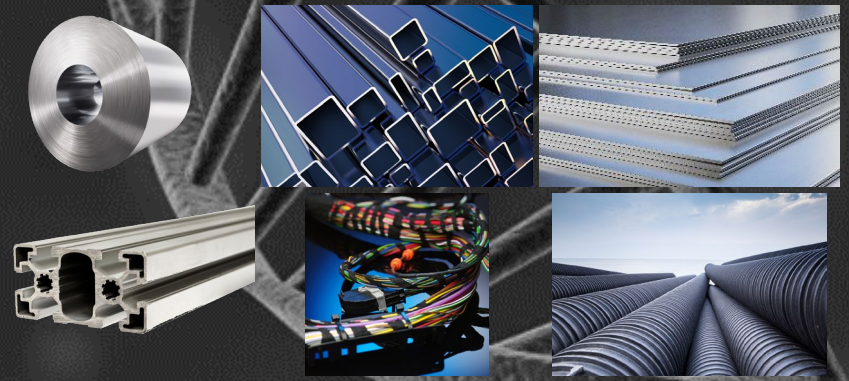
- Identity for material
- Connect material to the internet
- Connect data to material
- Communication from material to applications and humans



coilDNA
The IoM company

777777773AS877777777773AS377777777773AS477777777773AS177777777773AS67777777777

coilDNA – current projects



- Aluminium (Coil, Sheet, Extrusion)
- Steel (Coil, Sheet, Rollforming)
- Hoses
- Cable, Wire

coilDNA
The IoM company

Contact Werner Aumayr

www.linkedin.com/in/werner-aumayr-90110747/

coilDNA
The IoM company

Contact coilDNA

linkedin

www.linkedin.com/company/coildna/

coilDNA
The IoM company