Gaining Interoperability in the Digital economy

GS1 Industry & Standards event – Brussels

TECHNICAL INDUSTRIES

Enzo Blonk (GS1 global)

Tuesday, October 4th, 2016
## Today

<table>
<thead>
<tr>
<th>#</th>
<th>Topic</th>
<th>Speaker</th>
<th>Time (CET)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Welcome</td>
<td>Enzo Blonk / GS1</td>
<td>13:45 – 14:00</td>
</tr>
<tr>
<td>1</td>
<td>Technical Industries – intro &amp; update</td>
<td>Enzo Blonk / GS1</td>
<td>14:00 – 14:35</td>
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<tr>
<td>2</td>
<td>Update ABB &amp; Deutsche Bahn</td>
<td>Daniel Dünnebacke / GS1 (DE)</td>
<td>14:35 – 14:50</td>
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<tr>
<td>3</td>
<td>How to Make products traceable and tamper-proof with GS1 standards</td>
<td>Mario Giese / Schaeffler</td>
<td>14:50 – 15:15</td>
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<tr>
<td>4</td>
<td>GS1 Helps Construction Industry Shape the Future of Equipment Hire (Speedy Services)</td>
<td></td>
<td>15:15 – 15:25</td>
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<td></td>
<td>Coffee Break</td>
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<td>15:25 – 15:45</td>
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<tr>
<td>5</td>
<td>Industry 4.0, Smart Manufacturing or Digital Economy ?</td>
<td>Ulrich Brandenburg / Bosch</td>
<td>15:45 – 16:10</td>
</tr>
<tr>
<td>6</td>
<td>Engagement with the Australian Mining Industry</td>
<td>Bonnie Ryan / GS1 (AU)</td>
<td>16:10 – 16:35</td>
</tr>
<tr>
<td>7</td>
<td>Future Automation Developments in Technical Industries</td>
<td>Prof. Duncan McFarlane / IfM Cambridge</td>
<td>16:35 – 17:00</td>
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<tr>
<td></td>
<td>Upcoming events, next steps, Wrap-up &amp; Q&amp;A</td>
<td>Enzo Blonk / GS1</td>
<td>17:00 – 17:30</td>
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</table>
1. Technical Industries – intro & update

A Brief Refresh
Standards are.....
Technical Industries

Out of scope: B2C and finished consumer products, Transportation services, Raw materials

- **Sectors**: Defence, Energy, Engineering, Mass Transit, Mining (+ Construction?)

- **Use cases**: Parts identification (incl. Direct Parts Marking) for Inventory Management & MRO (Maintenance & Repair)

- **Solving challenges**: Counterfeiting, Part variations & software versions, Mass customisation, Predictive replenishment, preventative maintenance, remote servicing, regulatory (safety) requirements

- **Enabling**: Digitisation, Industry 4.0 (data collection on usage, reduced production downtimes), efficient product lifecycle management, full traceability, new service-oriented business models offering.

- **Note**: Construction and Metals might be added formally, for now we’ll just monitor these sectors

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**Status Sept 12th, 2016**:
**Committed**: Australia, Canada, France, Germany, Netherlands, Norway, Poland, Singapore, Sweden, Switzerland, Turkey (11)
**Involved** (assigned TI contact): Austria, Brazil, Czech Rep. Hong Kong, India, Ireland, South-Africa (7)
**Monitoring**: Belgium, China, Japan, Spain, UK, US (6)
Technical Industries is... 

...from a **Supply Chain** point of view
Technical Industries is...

...from a **Product Lifecycle** point of view
What specific challenges need to be solved?

A few examples
Technical Industries challenges

- Digital Disruption and Global Market Pressure
- Complex, **distributed models** and subcontracting
- Inconsistent/proprietary **parts identification** → how to authenticate?
- Poor **traceability**, issue with product recalls
- Changing part numbers, part variations and firmware versions
- Focus on individualisation and customer experience, without losing benefits of mass production → **mass customisation**
- **Lack of consistent data** to develop predictive replenishment models
- Preventative maintenance & remote servicing → new business models

<table>
<thead>
<tr>
<th>Long throughput times</th>
<th>Large stocks</th>
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</thead>
<tbody>
<tr>
<td>Extensive search efforts</td>
<td>Production errors</td>
</tr>
<tr>
<td>Parts/product loss</td>
<td>Unplanned production downtimes</td>
</tr>
<tr>
<td>Costly MRO <em>(Maintenance, Repair &amp; Overhaul)</em></td>
<td>Inefficient Quality &amp; Risk Mgt</td>
</tr>
</tbody>
</table>
GS1 can help key business processes in Technical Industries

<table>
<thead>
<tr>
<th>Production</th>
<th>Quality &amp; Risk mgnt</th>
<th>Logistics</th>
<th>MRO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass customisation</td>
<td>Item authentication for</td>
<td>Speed up goods in &amp; goods out</td>
<td>Using data to improve maintenance process</td>
</tr>
<tr>
<td>Predictive replenishment</td>
<td>• anti-counterfeiting</td>
<td>Smaller stocks &amp; cost reduction</td>
<td>Real-time condition monitoring</td>
</tr>
<tr>
<td>Performance / condition monitoring</td>
<td>• brand protection</td>
<td>Reduction errors</td>
<td>Increase safety (avoid incorrect use or unlawful substitutions)</td>
</tr>
<tr>
<td>Preventative Maintenance</td>
<td>Systems interoperability</td>
<td>Cost-savings across entire supply chain</td>
<td>Module-based smart maintenance strategies</td>
</tr>
<tr>
<td>Reduction of production downtimes</td>
<td>Regulatory compliance</td>
<td>Agile processes</td>
<td>Unambiguous identifications of parts and software versions</td>
</tr>
<tr>
<td>Stronger / Lean manufacturing organisation</td>
<td>Returns management / reverse logistics</td>
<td></td>
<td>Remote maintenance</td>
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</table>
Why focus on 5 sectors at once?

- It needs to be noted that there is a huge overlap in the major supplier structure of all 5 sectors.
- Agreeing on a unique identification system across sectors will benefit all trading partners.

<table>
<thead>
<tr>
<th>Company</th>
<th>Sector</th>
<th>Additional sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlas Copco</td>
<td>Construction</td>
<td>Mining, Railways, Manufacturing</td>
</tr>
<tr>
<td>ABB</td>
<td>Maritime, Energy</td>
<td>Automotive, Construction, Maritime, Mining, Railways,</td>
</tr>
<tr>
<td>Airbus</td>
<td>Aerospace, Defence</td>
<td>Oil &amp; Gas, Mining</td>
</tr>
<tr>
<td>Dassault</td>
<td>Aerospace, Defence</td>
<td>Mining, Automotive</td>
</tr>
<tr>
<td>Komatsu</td>
<td>Construction</td>
<td>Railways, Mining, Defence, Manufacturing</td>
</tr>
<tr>
<td>MTU</td>
<td>Defence</td>
<td>Maritime, Railways, Mining, Construction, Oil &amp; Gas</td>
</tr>
<tr>
<td>Henkel</td>
<td>FMCG</td>
<td>Mining, Automotive, Construction, Energy, Metal</td>
</tr>
<tr>
<td>3M</td>
<td>FMCG</td>
<td>Construction, Mining, Railways,</td>
</tr>
<tr>
<td>GE</td>
<td>Energy</td>
<td>Aviation, Manufacturing, Oil &amp; Gas, Railways</td>
</tr>
</tbody>
</table>
GS1 can help key business processes in other areas

- Order-to-cash management
- Catalogue management
- Product recalls
- After-market

- Inventory management
- Asset management
- After-sales & Services
- Product Data Management
Digital Industry operations processes

- In Internet of Things (IoT), devices are **automatically identified** by intelligent sensors, Internet being the communication infrastructure.

- IoT will be a huge boost for more efficient use of **robotics**.

- Linking all these elements will provide valuable data that can then be the basis for **analytics** and **process optimisation**.

- **Security of data** is essential for a successful and efficient Industry 4.0. It will enhance global supply chains → the Digital Economy.
Does GS1 have a role in IoT (Internet of Things) ?

- IoT can be **confusing**, even intimidating for companies.

- **Biggest challenge** for its adoption is lack of (consistent) **standards** or conflicting standards.

- Without a common communication method, including use of globally unique identifiers, devices will only be able to talk to their own brand.

- Currently companies rely on **interfaces** and more interfaces... → risk of **bottlenecks** and slowing introduction of products to market.

- **Standards** enable any device connected to “Internet” to talk to any other device.... regardless of chip, OS or device manufacturer.

- Should the **object itself** or the connecting **device attached/embedded to it** be uniquely identifiable?
GS1 in Technical Industries

Roadmap 2016-2017
1. Increase awareness / accountability **within GS1**, enhance involvement and **raise commitment**

- F2F meetings with MOs
- Workshops (Brussels, Sofia)
- Launch Technical Industries MO Steering Committee
- Launch Master Presentation Deck
2. Increase awareness with Industry stakeholders and raise level of commitment
   - Increased involvement of FMCG (production), Mining (GMSG), Industry 4.0 (IIC & EU)
   - Global Companies in focus (GS1 Top 10 in Technical Industries)

<table>
<thead>
<tr>
<th>#</th>
<th>Company</th>
<th>Sector</th>
<th>Country HQ</th>
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<tbody>
<tr>
<td>1</td>
<td>ABB</td>
<td>Engineering</td>
<td>Switzerland</td>
</tr>
<tr>
<td>2</td>
<td>ATLAS COPCO</td>
<td>Construction, engineering, mass transit</td>
<td>Sweden</td>
</tr>
<tr>
<td>3</td>
<td>BOSCH</td>
<td>Mass transit, engineering</td>
<td>Germany</td>
</tr>
<tr>
<td>4</td>
<td>GALIA (/PSA)</td>
<td>Automotive</td>
<td>France</td>
</tr>
<tr>
<td>5</td>
<td>GMSG</td>
<td>Mining</td>
<td>Canada</td>
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<tr>
<td>6</td>
<td>IIC</td>
<td>Industry 4.0</td>
<td>USA</td>
</tr>
<tr>
<td>7</td>
<td>MAN DIESEL &amp; TURBO</td>
<td>Mass transit</td>
<td>Germany</td>
</tr>
<tr>
<td>8</td>
<td>NESTLÉ</td>
<td>FMCG (production)</td>
<td>Switzerland</td>
</tr>
<tr>
<td>9</td>
<td>SCHAEFFLER</td>
<td>Engineering</td>
<td>Germany</td>
</tr>
<tr>
<td>10</td>
<td>SKF</td>
<td>Engineering</td>
<td>Sweden</td>
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3. Launch formal Technical Industries Advisory Group
Technical Industries – roadmap 2016-2017

4. Develop 4 new case studies

- Schaeffler – Engineering (DE) - published Aug. 19th
- HFG – Railways (DE) - published Sept. 20th
- Contitech – Railways (DE) - published Sept. 20th
- Speedy Services – construction (UK) - work in progress
- Volvo cars – automotive (SE) - under investigation
- LogisticHub – Energy (NO) - under investigation

5. Increase GS1 exposure at international events as joint GO-MO effort

<table>
<thead>
<tr>
<th>Event</th>
<th>Date (Location)</th>
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<tbody>
<tr>
<td>SMM (Maritime, Hamburg, 6-8 Sept)</td>
<td>GS1 Regional Forum Europe (all, Sofia, 17-21 Oct)</td>
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<tr>
<td>Industry of Things World (Industry 4.0, Berlin, 18-20 Sept)</td>
<td>Roundtable Industry 4.0 Initiative (Cologne, 3 Nov)</td>
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<tr>
<td>IIC Meeting (Industry 4.0, Heidelberg, 20 Sept)</td>
<td>RFID Journal Live Europe (all, London, 9-10 Nov)</td>
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<tr>
<td>Innotrans (Railways, Berlin, 20-23 Sept)</td>
<td>Swisstech (Engineering, Basle, 15-18 Nov)</td>
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<tr>
<td>MINexpo &amp; GMSG WG (Mining, Las Vegas, 24-28 Sept)</td>
<td>AusRAIL (Railways, Adelaide, 22-23 Nov)</td>
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<tr>
<td>GS1 Industry &amp; Standards event (Brussels, 3-7 Oct)</td>
<td>Hannover Industrial Fair (all sectors, 24-28 April 2017)</td>
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Technical Industries Advisory Team

...informal....for now
Agreed to focus on 3 use cases moving forward:

1. Parts Authentication (incl. Direct Parts Marking) for
2. Inventory Management and
3. MRO

- ...as part of (or separate from) Industry 4.0 / Smart Manufacturing / Digital Factory and
- ...as a facilitator for Quality & Risk Management
- Making full use of first learning from MRO in Rail

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<thead>
<tr>
<th>Participating companies:</th>
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<tbody>
<tr>
<td>Bosch</td>
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<tr>
<td>Honeywell</td>
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<tr>
<td>Siemens</td>
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<tr>
<td>Brainport</td>
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<tr>
<td>MAN Turbo Diesel</td>
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<tr>
<td>TNO</td>
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<tr>
<td>Deutsche Bahn</td>
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<tr>
<td>Nestlé</td>
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<td>VDMA</td>
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<tr>
<td>Ericsson</td>
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<tr>
<td>Schaeffler</td>
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TIAT – short term actions & next steps

- Increase **participation** in Industry Advisory Team
- Collect information / **feedback** on current challenges, solution needs (cross-sector)
- **Gap Analysis** (requirements ↔ current standards / solutions)
- Deep-dive into matter (standards development)
- Regular **meetings**
  - Monthly calls
  - October 5\(^{\text{th}}\) face-to-face meeting Brussels / Belgium
  - February 20\(^{\text{th}}\) – 24\(^{\text{th}}\) 2017 : GS1 Global Forum Brussels / Belgium
- GS1 ask to Advisory Team : “**We need your support to increase the team**”
Current standard development needs

a. GS1 DataMatrix

- See presentation later from Daniel Dünnebacke / GS1 Germany
Current standard development needs

b. Sensors and application identifiers

- See presentation later from Ulrich Brandenburg / Bosch
Engagement Material

Existing and upcoming
Existing

- **Landing page** on [www.GS1.org](http://www.GS1.org)

- **Value Proposition**

- **Brochure** Technical Industries:
  - *Gaining Interoperability in the Digital Economy*

- **GS1 Case studies** global

- **ATE**
- **Lenze**
- **MBDA**
- **Schaeffler**
- **HFG**
- **ContiTech**
Upcoming

Master Presentation Deck

• Modular
  - Depending on audience or business process in focus
• “Living” shared document
  - Regular updates incl. feedback from past presentations
• Short version “executive summary”

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<tbody>
<tr>
<td>1</td>
<td>Challenges in Technical Industries</td>
</tr>
<tr>
<td>2</td>
<td>Key business processes where GS1 can help</td>
</tr>
<tr>
<td>3</td>
<td>Intro to GS1 in Technical Industries</td>
</tr>
<tr>
<td>4</td>
<td>GS1 in Technical Industries – per sector</td>
</tr>
<tr>
<td>5</td>
<td>GS1 Q&amp;As for end-users &amp; supplier-manufacturers</td>
</tr>
<tr>
<td>6</td>
<td>Real-life examples</td>
</tr>
<tr>
<td>7</td>
<td>Who to contact</td>
</tr>
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</table>
Current Leads

Industry associations & more
Leverage Initial Contacts

• **Associations**
  - GMSG (Global Mining Standards & Guidelines organisation)
  - IIC (Industrial Internet Consortium)

• **Regulatory**: DG Connect & DG Move

• Current GS1 members in FMCG
  - Nestlé, Beiersdorf + Coca-Cola, Campbell, Mondelez, P&G, Smucker, Carlsberg, Mattel, Danone, Unilever, Sara Lee

• Members of MRO in Rail work group
  - Alstom, Deutsche Bahn, Harting, Siemens,...

• **Solution Providers** (RFID & other AIDC)
  - HP, GE,...
Associations

**GMSG - Global Mining Standards & Guidelines**

- globally operating organisation
- doesn’t develop standards, is a facilitator of increased collaboration
- **Corporate members** also active in other sectors we address within TI
- Autonomous Mining & Integrated Operations work group
  - ISO TC 127
  - Launch at MINexpo (Sept. 24th) GS1 participated and presented to 60+ senior level
  - Following meetings (GS1 invited to attend):
    - Tucson (13-14 Oct.) – WS
    - Toronto (24 Oct.) – WS
    - Singapore (31 Oct.-1 Nov.) – Forum
    - Montreal (15-16 Nov.) - Forum
    - Brisbane (13-14 Dec.) - Forum
Associations

**IIC – Industrial Internet** Consortium

- Open membership organisation formed to promote use of IoT at industrial level through best practices, dvlpt of test-beds (currently 9)
- Parent company is Object Management Group (OMG)
- Not a standards group, but facilitator
- GS1 global officially is a full member since Sept. 15th
- IIC will host the [IoT Solutions World Congress](#) in Barcelona from Oct. 25th to 27th.
Growing an international Network

Building together
How can YOU help? [1/2]

1. Who is the point person for Technical Industries in your MO?
2. Familiarise yourself with Technical Industries and subsectors
3. Make analysis of current Membership base for TI companies
4. Identify most appropriate companies in your country and provide TOP 10 list of global companies (with HQ) in your country. Focus:
   1. Globally active companies
   2. Active in at least 2 subsectors of TI (holistic view)
5. Identify (global) Industry Associations to be involved
6. Involvement in Industry 4.0 / Smart Manufacturing initiatives
How can YOU help? [2/2]

7. Share use cases you encounter….even if not GS1-compliant… *(it’ll help us understand the Industry)*

8. Support in *increasing awareness* within MO and within your region (trainings, regional forums, etc...)

9. Increase **GS1 exposure** at local/regional/international events
   - Congresses, exhibitions, speaker opportunities, presentation case studies, ....
   - Ask your members / prospects!

10. Check with FMCG members for their involvement in Industry 4.0 (smart manufacturing processes, leading to less unforeseen production failures)

11. Don’t be shy : ask us questions, ask for support, share leads
2. Update ABB & Deutsche Bahn

Daniel Dünnebacke / GS1 Germany
3. How to Make products traceable and tamper-proof with GS1 standards

Mario Giese / Schaeffler
4. GS1 Helps Construction Industry Shape the Future of Equipment Hire

Speedy Services
Speedy Services

Distribution Network

1 x National Distribution Centre
8 x Multi Service Centres
36 x Superstores
151 x Express Stores
Scope

- Tool and Equipment Tracking in Construction using GS1 standards
  - EPC Gen 2 & GIAI

- Fully automated asset tracking

- Benefits of using an ePod
  - Instant access to equipment
  - Reduced transport costs
  - Live movement reporting
  - Reduced rental charges
  - Instant geographical coverage
Control Centre

Power Management

Digital I/O

Computer

RFID Reader

Door Control, Sensors & Alarms

Audio & Video

GPRS Comms

The Global Language of Business
Case Study

MORGAN SINDALL

Substation Project
Newcastle UK

Case Study Dates
August 1st 2015 – October 21st 2015
Tagging the Assets

- Right tag
- Right place
Stock Checking Speeds

- Manual:
  - 24 secs per location ave

- Bar code:
  - 9.4 secs per location ave

- RFID:
  - 1.7 secs per location ave
Future

• Tagging at source (power tools OEM’s)

• Making assets smart
  - Am I broken / damaged / working fine?
  - Am I available for use / in use / in transit?
  - Am I about to fail?
  - How many hours have I been in use?
  - When was I last serviced?
Coffee Break
5. Industry 4.0, Smart Manufacturing or Digital Economy?

Ulrich Brandenburg / Bosch
6. Engagement with the Australian Mining Industry

Bonnie Ryan / GS1 Australia
7. Future Automation Developments in Technical Industries

Prof. Duncan McFarlane / Institute for Manufacturing Cambridge
Upcoming events, next steps, Wrap-up & Q&A

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