Summary Analysis Pilot Project Data Exchange End2End

The authors:
- Andreas Schneider, Managing Partner GCS Consulting GmbH
- Alexander Peterlik, Business and Development Manager, GS1 Austria
- Andree Berg, Senior Branch Manager Apparel & General Merchandise, GS1 Germany

Background:
GS1 Germany, in cooperation with Andreas Schneider, has jointly analyzed the results of its finalized **"Data Exchange End2End Pilot Project"** in terms of GS1 standards as to what extent similarities and differences exist, or common approaches are possible.

Our goal was to objectively illuminate the topic. One finding was that there is sometimes no wrong or right approach, but only different approaches and strategies. This is what we have tried to work out and the results are presented in this summary, so that the market participants can get an initial overview of current activities in the fashion industry.

This document is a summary of the analysis. The detailed results of our work are presented in the presentation "GS1 Analysis final version" on this landing page.

Main topics

Within the scope of the analysis we have addressed the following main topics:

1. Spectral color communication
2. Collaborative planning & projection
3. Master data automation

1. Spectral color communication

GCS version:
This is about replacing analog processes with digital processes. This means sending data instead of physical samples in order to reduce the high manual effort and the high costs, e.g. in lab dip development. In the project, rules for the use of the correct measurement method were clarified, depending on different scenarios.

According to the project community there are 2 basic methods to measure color with spectral measurement devices:

- The so-called "8 º diffuse" measurement
- The so-called "45º" measurement

The project has shown that there is no right or wrong measurement method, but that it depends on a concrete application scenario.

PaX from Color Digital GmbH is a new marketplace for retrieving data that has emerged from the DMIx cloud solution. In DMIx, suppliers and customers can digitally exchange material parameters in protected rooms - initially with a focus on colors for specific materials - and, at the request of large corporations, an increasing number of other parameters from the bundle of digital material parameters grouped together as "Digital Ready". As more and more descriptive (production) material parameters became available, PaX was born as

a quasi-digital marketplace. In the near future, for example, a twill woven cotton fabric with a weight of 200 grams could be sought there.

The PaX data structure is to be set up according to the Global Textile Scheme (which is discussed in more detail in the chapter Master Data Automation).

Feedback GS1:

- This is a very good development with a lot of optimization potential in the complete supply chain.
- In PRICAT the field color is filled in both coded and plain text.
- The developed D/A/CH Fashion data model contains 2 attributes as descriptive fields and one attribute with a code value table with 19 defined colors.
- Should digital color values become established on the market, this would be welcomed from a GS1 point of view.
- The attribute field is still COLOR.
- The GS1 application recommendation Product Images and Media Assets and Code Lists should then also be extended.
- If the fashion/shoes/sport and textile industry is interested and willing, we will gladly take on a possible work order from the community.

2. **Collaborative planning & projection**

It should be noted that the basis for this topic is the Global Upstream Supply Initiative (GUSI). See https://www.gs1.org/upstream for more information.

GCS version:
In the pilot project, a standard process for a system-based determination of demand was developed, which should allow suppliers to determine the current demand for their products in an automated way, and at the same time allow all connected customers to determine the current demand for their products and thus to deliver less stock faster.

The current degree of collaboration with suppliers leaves large time and cost potentials unused. Up to now, there has been no methodical approach that would allow suppliers to automatically and "at the push of a button" find out their customers' demand for their products.

Based on this, the group defined a specific set of data that could be used in the future in
In combination with the right technology. GTS-Cat should enable the vendor to find out in real time when and, above all, where their customers will need a given quantity of their respective products and at what time.

The pilot project participants concluded that we will only become faster in lead times if we work more closely with the suppliers. To do this, we need a standardized data format and technology that makes the demand data automatically accessible when the supplier needs it and provides it in such a way that the supplier can use the data in his systems immediately.

Feedback GS1:

- As described, the basis for the project work is GUSI (Global Upstream Supply Initiative).
- GUSI is about improving processes by exchanging master data and transaction data (among others including EDI messages) in the precursor. The aim is to optimize the procurement and logistics processes along the value chain.

- The most important steps in collaborative planning are clean master data, clear processes and the necessary documents.
- The Inventory Report (INVRPT) in combination with the Sales Report (SLSRPT) is a potential source of "**a small part**" of planning-relevant data along the value chain.
- The goal is to avoid costly and time-consuming IT integration.
- If the fashion/shoes/sport and textile industry is interested and willing, we will gladly take on a possible work order from the community.

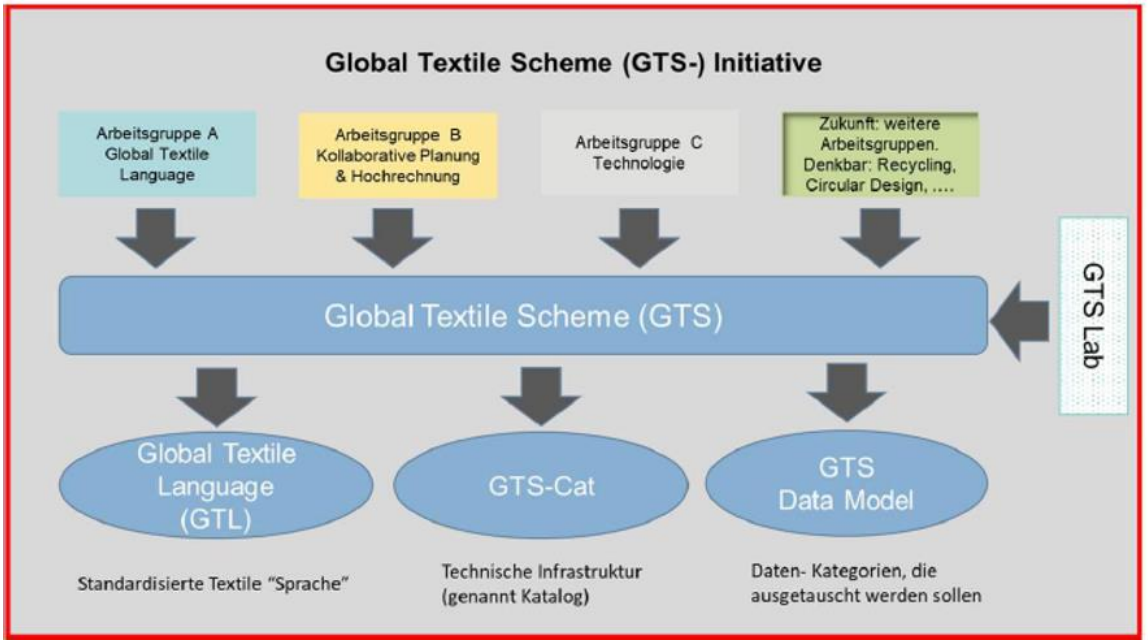
3. **Master data automation**

GCS version:
During this analysis, the decision was made by the Crowdfunding project participants to complete the project and establish a Global Textile Scheme Initiative as a framework for the creation of an implementation concept that includes the previous two topics. The implementation structure is to be implemented as follows:

I. Foundation of a so-called Global Textile Scheme Initiative on August 1, 2020 by GCS Consulting GmbH and a separate organization. This initiative will provide a space for interested companies to work with like-minded people on cross-sectoral topics, of which there are many, all of which are related to data, such as supply chain transparency and recycling.
II. In 2020, the Global Textile Scheme GmbH will be founded as the operative implementation unit and system head of the Global Textile Scheme Initiative and GTS-Cat.
III. Development/operation of the GTS-Cat infrastructure by the company Pranke GmbH (an experienced EDIFACT service provider with reputation and industry experience).

Feedback GS1
Our focus was not on the planned foundation of the new company and the continuing working groups, but on the results of the finalized pilot project. The working groups are a continuation of the paid pilot project and each company has to decide for itself if it wants to get involved or not.

The Global Textile Initiative looks as follows:



A. Global Textile Language (GTL) (Version GCS):

Within the scope of the project, the project participants developed a scheme e.g. to catalog and code all product descriptive attributes listed in the FEDAS-, DTB- and BTE recommendations in a standardized list of characteristics.

This will enable every market participant to describe products with harmonized, coded product descriptive attributes in their own language. The real data exchange then takes place via the codes assigned to the characteristics selected for description. The executing personnel has nothing to do with the codes.

Initial pilots have shown that the cross-stage GTL approach can be used for 138 product classes from the following areas

- raw materials (e.g. wool, cotton, polyester, etc.)
- Production materials (e.g. fabric, buttons, etc.)
- And finished products (currently clothing and shoes)

From the perspective of the pilot project participants, a basis for an "End2End" data exchange, from sheep to recycling, is strictly a "pull data" oriented approach.

As an important GTS element, the data catalog should contribute to the collection of labour-intensive data when the user of the data actually needs it. In addition, attributes that are important for greater sustainability or a higher recycling rate, such as water consumption, can be specifically included in the GTL list so that they can be recorded in a structured manner in the future.

Feedback GS1:
The GS1 authors asked themselves the following questions:

1. **What are the challenges of global standards in general?**
   - Global standards are rather slow and long-term oriented development cycles with mostly 2 publications p. a. (summer/winter), but they are global.
   - There is no guarantee that submitted requirements will be implemented 1:1 due to the right of other stakeholders to have a say (see EU negotiations with 27 member states).
   - As a result, the GTL approach provides at most a proprietary standard that is more flexible than a global standard, taking market acceptance into account.

2. **Does a new classification have to be developed for the upstream area, which is also to be applied in the downstream area and includes existing goods classifications such as DTB or BTE goods classifications, which is a particular challenge, especially with updates?**
   - Upstream classifications should be the same and that is the real challenge if they are to be globally aligned!
   - Possibly the GTS approach is one way, but currently we only know that what has been developed by GTS.
   - If these classes are accepted on the market, they can be transmitted, as it is already happening today in the downstream area with BTE, DTB and FEDAS.

The GS1 approach:
From our point of view it makes sense to develop a basic master data model in the fashion industry analogous to the Global Data Model (GDM) approach (see glossary on the landing page), i.e. according to the onion pattern principle from local to global:

- a country layer - e.g. Germany, Austria, Switzerland
- a regional layer - e.g. Europe
- a Global Layer - that is global

In the GDM there is an attribute set "additional classification", which can map further classifications in addition to the GPC (GS1 Global Product Classification). With this attribute set we have a link to further classifications.

Possible new values or code lists can be integrated for different classifications analogous to the GPC figure (**see figure 1**).

This can be offered by the data sender on his own or by "Data Service Provider" as a service. It is not part of the standard or the standardization.

An approach on a global level would be to develop an attribute set similar to the True Code/UUID approach or the "Verified by GS1" approach, which is not a data model but an approach comparable with the True Code approach (see glossary on the landing page).

Execution GCS:
The GTS approach will probably work with the True Code/UUID approach.

True Code/UUID approach in short form (see glossary on the landing page)
The True Code/UUID approach combines a standardized set of data fields similar to a passport, divided into a public and a private part of the article passport. Thus, the participating forms should achieve that one can expect a defined data set, which is advantageous from several points. The GLN can be used but does not have to be - hence the UUID.

UUID in short form (see glossary on the landing page)
A Universally Unique Identifier (UUID) is a 128-bit number used to identify information in computer systems. The generation and use of a UUID is free of charge.

"Verified by GS1" in short form (see glossary on the landing page)
The trademark owner enters 7 attributes for a GTIN (Global Trade Item Number) into the GS1 registry. Retailer can query the provided attributes via the GS1 Registry.

3. **Can the GPC not be used for the upstream area instead of the new GTS approach?**
   - As of today, the GPC is not End2End capable (complete coverage of the value chain from fiber to recycling) and is only intended for downstream.
   - It would take significant effort to extend and complete the GPC classification for End2End. For the dynamic fashion industry (2 releases p. a.) it would be rather slower in implementation and there would be no guarantee that requirements would be implemented 1:1 due to co-determination of other stakeholders.
   - One approach could be the Dutch "Fashion Base Approach", which uses the already existing GPC bricks from the fashion/shoes sector, i.e. mirrors the GPC and translates them into own codes. A

brick code is not required; the service provider assigns its own codes for this purpose. New requirements can be quickly adapted and incorporated, GS1 Standard (GPC) is at least partially used, but remains proprietary.

4. Can sustainability be integrated into this "End2End" data model?

Clear data on the material is important to make a statement about the product and its sustainability. This happens on the brand side during design. It must be clear in the design, i.e. PIM and PLM, as to whether the finished product is made of sustainable materials or not. In addition, when selecting a producer, the company then looks to see whether the producer complies with CSR guidelines, i.e. fair wages and working conditions. Once this has been clarified, procurement and master data maintenance can begin. An organic wine is only organic if the vines are organic and the winemaker meets all requirements. So, also here the decision is made long before the harvest!

In the whole consideration of End2End we do not believe that a standard is the solution.

In the process, from the time of an order, there is an Ident. This can be the customer-, supplier- or GTIN. It is clearly structured between the customer and the supplier.

From our perspective, EPCIS (Electronic Product Code Information Services) is a good approach.
(see https://www.estandards-mittelstand.de/estandards-wissen/prozesse-und-standards/transaktion/epcis/)

EPCIS enables the exchange of information about **what, where, when**, and **why** along each supply chain. EPCIS handles **event data** and **master data** and is an ideal complement to the EDI process.

A further development of the approach could be the Circular Economy approach, which aims to integrate sustainability attributes such as energy, resources, and emissions into an extended EPCIS standard (EPCIS-ECO extension) - this is currently being analyzed by a pilot project group. Information will be provided on results.

According to GS1, sustainability is a project in its own right and the approach of GS1 Germany **(see Figure 2 Roadshow Pilot Project)** is the start in which we will implement the defined approach want to work with the community and CSR professionals, and then develop it further as described above.

Here, the GTS approach at product level could be a possible basis, but this should be decided by the project group or community.

B. GTS-Cat the technical infrastructure

GCS version:
From the point of view of the pilot project participants it makes sense to build up individual technical infrastructures in the coming implementation phase. Since such approaches are always called "Cat" (e.g. ICECAT, BMEcat), the developed approach was named GTS-Cat.
Despite all the hype about the current "platform economy", no new platform
which would easily create additional interface complexities should emerge in the market.
GTS-Cat is neutral and therefore explicitly open to other platforms and will
enable the following core functions:

- Download the GTL attribute list.
- Upload product descriptive attributes based on the GTL attribute list,
- Upload and download of demand data and exchange of other labor-intensive data.

- The GTS approach will orient the design of GTS-Cat towards a data port approach from the outset.

DataPort in short form:

- A complete standardization of product master data beyond the core attributes is difficult and slow (see our note on global standards on page 4).
- Dataport seeks solutions with low barriers to entry and costs that are accepted and trusted globally and offer full flexibility to choose between commercial service providers.
- This makes DataPort a largely free alternative to GDSN data pools (for GDSN see glossary on landing page), while GDSN data pools can provide the same service.
- The key design principles for the DataPort solution are decentralized: Peer-to-peer and many-to-many through a simplified & unified client and a centralized search function
- The cornerstones are open standards to ensure interoperability of single solutions as well as scalability and frequent reuse of capacities and capabilities.
- The data between the DataDocks is transported via DataContainers.

Feedback GS1:
This is a new technical infrastructure, with the core functions described, which we did not examine and evaluate in detail in our analysis. As described above, the market should decide which alternative to use for electronic data exchange.

C. The dynamic GTS Data Model (data categories to be exchanged)

GCS version:
From the perspective of the pilot project participants, a completely new territory is being entered. Therefore, a rigid scheme does not make sense. The following categories are currently planned:

- For master data, existing standards are to be used.
- The product characteristics part is covered by the Global Textile Language (GTL) and also includes certificate data.
- Sensitive trading conditions such as minimum quantities, special prices etc. do not belong in an open attribute list (GTL).
- In the case of documents, the concrete documents should be in focus: Certificates such as GOTS, EUR1, supplier declarations etc.
- In the case of transaction data, only the requirement data and certificate transaction data are currently planned and, if possible, none of the usual functions of ERP systems should be touched.

The GS1 approach:

- We want to pursue the technologically independent approach of the Fashion Pilot and focus on this in the upstream area as described in the following github documentation:
- https://github.com/boernard/fashion-data-model
- This means that market participants should decide which communication standard they want to use and whether they want to do this bilaterally on their own or via a data service provider. This can be a GDSN data pool (see glossary on this landing page), but does not have to be, it can be individual data service providers.
- In this pilot data model, the attribute set "addtional classification" is included, so that in the first step, the link to different classifications and product group keys can be established.
- The goal should be similar to how the GPC is anchored in the GDSN data model to map further classifications in a similar way (see figure 1).
- Our long-term vision is to develop connectors for this data model that can be used by the community.

Conclusion on this point:
Master data, product descriptive attributes and different classifications are mapped in this data model, including documents, images, PDFs, etc., which is standard for all data service providers at different service levels today.

The market must decide whether sensitive trading conditions are to be exchanged via a data pool in the future. Technically, GDSN data pools, for example, can already control this today via a public and non-public area, or via a GLN.

Regarding transaction data we refer to our feedback in the chapter Collaborative Planning & Extrapolation.

Thus, the dynamic GTS data model is in competition with other data service providers and has to face this competition.

Final conclusion:
In our view, all these initiatives do not replace or complement the global standardization work of the GS1 organizations.

The valuable advantage of the GS1 numbering system is that it is unique throughout the entire supply chain, so that articles and companies can be assigned at every stage.

By taking a Technologically Independent Data Model approach and assuming that there will be and possibly will be a need for different data models and forms of data communication along the value chain, we see the new approaches as more than a complement.

However, one thing is certain: article and company identities are needed for the different data models.

Also, the newly introduced Global Model Number (see the glossary on the landing page), a GS1 identification key that identifies the model of a product from which the retail unit is derived, will help to better structure data in the supply chain.

Throughout the downstream area, both the GTIN and the most common EDI messages are still "state of the art" in the area of master data for both PRICAT and database models, so that in all processes and approaches there are, in our view, more similarities than differences.

Further procedure:
All the initiatives mentioned are very good approaches, but some are only partially. In general, structured data are very good, but the challenges with global standards represent, as described, a great deal of hard work.

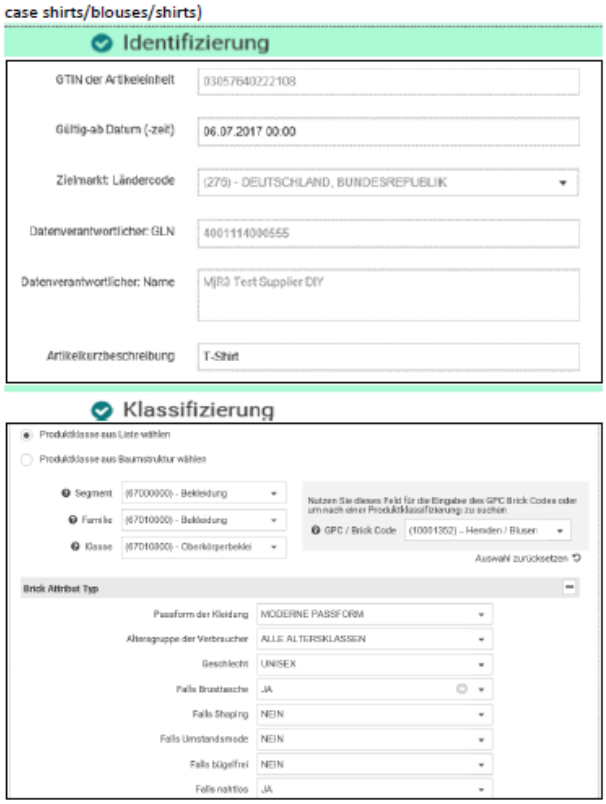
GS1 AT and DE will, as a first step, approach the two GS1 organizations known to be active in this area - GS1 US and the Netherlands, and discuss the results of the analysis and explore whether joint follow-up projects are possible. We will inform the community about the results.

Real partnership starts with open and equal communication; let us continue to work together on the digitalization of the supply chain.

Andreas Schneider - Alexander Peterlik - Andree Berg

Figure 1)

The web interface of a GDSN data pool, which shows the link between the article Ident (in this case the GTIN) and the company Ident (in this case the GLN) to a corresponding GPC brick code (in this case shirts/blouses/shirts)



In the same way, there is a link to further classifications, with the two attributes that are already contained in the Global Data Model:

- Additional Product Classification Type Code (z.B. 59 für DTB oder 56 für e@Class) und dem entsprechenden
- Additional Product Classification Value

Figure 2 Roadmap Pilot Project Sustainability