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1 Executive Summary

The strategy presented in this document represents a major shift.

Until now:

- GS1 strategy has been to drive adoption of EANCOM and GS1 XML.
- Each syntax uses data definitions that are not always consistent. Both standards evolved differently.

Proposed strategy:

- Simplification: we will define common business process models and identical data definitions. Interoperability amongst different syntaxes will be greatly facilitated.
- Getting ready for the future:
 - Accept UBL as a new syntax that will be supported by GS1 since it is widely endorsed by the some industry sectors and governments.
 - Start working on the new generation for EDI based on the adoption of APIs.
 - The key priority is to integrate the different attributes and definitions in the GDD and their correspondence with the different syntaxes (EANCOM, GS1 XML, UBL, APIs, X12, and others).
 - GS1 will seek to be recognised as the leading organisation in the adoption of EDI, both in the definition and maintenance of the semantics and the syntaxes.

The table below shows for the different GS1 EDI relevant areas the current status and the impact of the proposed strategy.

Areas covered	Current Strategy	Proposed Strategy
1. GS1 EDI standardisation		
a. Single content description for transactional data	Transactional data content is specified during standard development for each syntax	Business requirements leading to the development of a single model and data definitions
b. EDI standard Syntaxes <ul style="list-style-type: none"> • EDIFACT/EANCOM • GS1 XML • GS1 UN/CEFACT XML • UBL • Application Programming Interfaces (APIs) 	Independent development Independent development Independent development Non existent Non existent	Development derived from data model Development derived from data model Development derived from data model Add UBL syntax to GS1 EDI portfolio Add API standard components aligned with data model
c. Offering for SMEs <ul style="list-style-type: none"> • Web EDI • Hybrid EDI 	MOs guidelines and services MOs specifications	Global guideline (pending MOs need) Global guideline (pending MOs need)
d. Partnering with International Standards bodies	Active participation in relevant external standard bodies	Continue participation; additional partnerships pending needs assessment
2. GS1 EDI support		
a. Guidelines	Ad hoc guidelines by EDI syntax	Global guidelines per business process
b. Training	E-learning and classroom training	E-learning and classroom training
c. Guidance on standards to use	Report on current usage	Guidance per sector and region
d. Internet protocols	Guideline on AS1 and AS2	Global implementation guide including a GS1 technical profile
3. Services		
a. Certification	Certification service provided locally by MOs	Consider Global accreditation programme
b. Mapping services	Complex service by solution providers	Dramatic simplification of mapping processes
4. Marketing	Various marketing material	Updated comprehensive marketing toolkit
5. Industry engagement	No specific engagement actions per sector	Include GS1 EDI in engagement with sectors
6. Innovation	Ad hoc monitoring of new opportunities	Oversee market and technology trends and assess opportunity for new standards

2 Objectives

- **Global leader.** GS1 started addressing EDI standardisation at international level in 1988, building on the successful EDI projects initiated by several MOs. Our ambition is to maintain and develop a global leadership in the electronic exchange of transactional data.
- **Support.** GS1 will provide EDI standards to the GS1 community as requested by trade, industry and governmental organisations. The GS1 EDI standards will remain based on internationally accepted standards. Various tools and services to support implementation will complement the standards offering.
- **Harmonisation.** Different syntaxes are used and new technologies are being adopted to complement the traditional way to exchange business messages from one computer application to another in a batch mode. The increased automation of business processes requires more and more real-time information to increase visibility. It is of utmost importance that different EDI syntaxes and new technologies are based on the same vocabulary. GS1 will undertake a major initiative to provide a single content description for transactional data.
- **Guidance.** GS1 will provide guidance to members on which EDI syntax to use by sector, region and application area. This guidance will include recommendations on which standard should be adopted by companies starting with new EDI implementations.
- **Market trends.** GS1 will react to market and technology trends. Data on market and technology trends are available from GS1 EDI experts and from the GS1 innovation initiatives. These data will be reviewed and assessed on a regular basis, leading to specific actions and possible adjustments of the GS1 EDI strategy.

3 Benefits

The GS1 EDI strategy benefits the User community and GS1 itself.

The overall benefit for the GS1 User community is the operational excellence gained from the opportunity to implement the GS1 EDI standards meeting optimally their business needs. The GS1 EDI strategy also aims at enabling a cost efficient use of existing implementations.

For GS1, the GS1 EDI strategy is a reference providing a clear plan of what we want to achieve. It will help the GS1 community to focus on a consistent strategy and set of deliverables. We also expect that an agreed global GS1 EDI strategy will lead to increased implementations of the standards in terms of both depths of adoption, e.g. number of messages used by company and number of users.

4 GS1 EDI standardisation

4.1 Single content description for transactional data

4.1.1 Rationale

The exchange of transactional data is done today using different EDI syntaxes and more generally different technologies. This trend will continue in the future. The purpose of the transactions, that is, how they support business processes, and the definition of the exchanged data is actually more important than the syntax used to exchange the transactions.

GS1 will decouple business content from technical considerations so that business processes and data can be harmonized and standardised. This new approach will apply to all existing EDI syntaxes and to other and future technologies used to exchange transactional data.

GS1 will enable full interoperability between different EDI syntaxes by applying the following approach:

- Define the business process steps required between enterprises to accomplish a specific function, expressed in business process models.

- Define or reuse the data attributes needed to support those processes, expressed semantically and in a common data dictionary.
- The relationship between those data attributes including business rules, expressed in data models.

Message syntax is the last piece needed for exchanging transactional data. Multiple syntaxes can co-exist when they respect a common interpretation of the business process, data and data model. The strategy of syntax-independence will enable GS1 EDI to connect all users, regardless of the syntax they have implemented.

The harmonisation of GS1 semantics is required across all GS1 standards and services. This is a long term effort but it is critical to kick it off as soon as possible.

4.1.2 Principles

- **GS1 identification keys.** GS1 identification keys will be mandatory in the data model, business rules and processes defined under the harmonisation project.
- **Data alignment.** The alignment of master data prior to the exchange of business transactions will be a key feature of data models and processes.
- **Simplification.** An important characteristic of GS1's approach to business transactions exchange is to strive for simplification to facilitate harmonised implementations, i.e. transactions have single purposes in a specific business context, data are defined unambiguously, and options are left to a strict minimum.

4.1.3 Roadmap

The semantics harmonisation will impact all GS1 standards and services. The establishment of the requirements and business case will be a very important effort that will be supported by a cross-functional team involving experts from all subject matters.

After the establishment of the business requirements, the new approach will be implemented for the development and maintenance of all existing and upcoming GS1 EDI standards. The process for global standard development will be adjusted to follow the new methodology.

A centralised, syntax-neutral data repository is the cornerstone of interoperability. GS1 will investigate in detail the requirements for a data repository, including interfaces to the standard developers and end users. This repository might consist in an upgrade of the Global Data Dictionary that is currently used.

Lastly, the analysis will be expanded to include other GS1 technologies, e.g. AIDC, GDSN, SmartSearch and EPCIS/CBV.

4.2 EDI standard Syntaxes

4.2.1 EDIFACT/EANCOM

EANCOM is a fully aligned subset of the UN/EDIFACT standard. UN/EDIFACT, the United Nations' EDI standard from UN/CEFACT, is a set of internationally agreed standards, directories and guidelines for the electronic interchange of data.

With more than 20 years of development and implementations, EANCOM is currently used by more than 100,000 Member Companies in 43 countries. EANCOM displays an average net growth of 10 % usage per year. GS1 will fully support this user community by providing maintenance, training and implementation support.

There will be no overall migration of EANCOM to a more recent UN/EDIFACT directory. However, if the usage of a newer directory is required for some transactions, this need will be addressed. All development and maintenance activities of EANCOM will follow the new methodology described above.

4.2.2 XML

4.2.2.1 GS1 XML

The development of a suite of GS1 XML standards started in the early two thousands. At that time, there was no obvious international XML-based standards to refer to so it made sense for GS1 to develop its own set of XML business transactions. The thinking for many years was that GS1 XML would become the dominant and only EDI standard supported by GS1. This didn't happen and today we see also other XML-based EDI standards being used worldwide.

GS1 will continue fully supporting the maintenance and further development of GS1 XML. New business transactions will be developed as requested by the market. GS1 will investigate and assess the potential to deliver additional value-added standards based on the XML technologies.

4.2.2.2 GS1 UN/CEFACT XML

After UN/CEFACT started publishing XML-based standards, GS1 considered issuing GS1 EDI standards based on the UN/CEFACT deliverables. In 2012, GS1 published profiles of the UN/CEFACT XML standard for the order, order response, despatch advice and invoice. The intended application area is public procurement but the messages are usable also in the private sector.

In 2017, the European Union decided to mandate specific standards to be used with public authorities with a special emphasis on the invoice. UN/CEFACT XML is one of the selected base standards for public procurement in Europe.

GS1 will continue to maintain and further develop its EDI standards profiles based on UN/CEFACT XML in response to legal requirements and business needs.

4.2.2.3 UBL

The Universal Business Language, UBL, from OASIS is increasingly being implemented in some parts of the world, often recommended by authorities. As with UN/CEFACT XML, it is a recommended syntax for public procurement in Europe and some Latin American countries. UBL version 2.1 has recently become an ISO standard.

GS1 will adopt UBL as part of the GS1 EDI portfolio by providing GS1 profiles, training and other support services. The development will be carried out as required with an initial focus on e-Invoicing for public procurement.

4.2.3 Application Programming Interfaces

Businesses are more and more connected by collaborative software platforms. This provides opportunities for standardisation that can greatly complement EDI.

GS1 will identify the requirements for APIs standardisation. The data content will be based on harmonised semantic, i.e. business rules, attributes, identification keys, codes, etc. Technical aspects will be developed in collaboration with solution providers.

The initial focus will be on order-to-cash (O2C) processes and inventory management.

4.2.4 Offerings for SMEs

4.2.4.1 Web EDI

Web EDI is a technology that enables SME subscribers with limited technological capabilities to share business data with larger trading partners. In Web EDI, information is exchanged between business partners using the normal EDI standard files. However, the information is not integrated directly into the smaller company's ERP system. Instead, it is displayed in a human readable interface, like an electronic form on a web site, a PDF electronic form, etc. Web EDI does not provide all of the benefits of EDI. Nonetheless, any company in possession of a PC and an Internet connection can easily use it.

Several GS1 MOs do provide Web EDI guidelines and services to their membership. Pending a confirmation from MOs of their requirements, GS1 will develop a global guideline on Web EDI.

4.2.4.2 Hybrid EDI

If an information exchange is composed of both structured, machine processable files (EDI) and unstructured, human readable files (PDF), the recipients can use the one they can handle and the senders will have a single communication channel. This is done by including the EDI file, typically XML or EANCOM, in a PDF/A-3 (ISO 19005) or vice versa.

Pending a confirmation from MOs of their requirements, GS1 will develop a global guideline on Hybrid EDI.

4.3 Partnering with international standard bodies

One of the GS1 Architecture Principles states that "The GS1 System Architecture encourages normative references to and application guidance from ISO, UN/CEFACT, IETF and W3C. The work of standards bodies other than these four should also be considered and, if suitable, adopted."

The main areas where this must be applied for EDI include syntax, EDI messages, Internet transport standards, semantics and methodology. To ensure the needed alignment, GS1 will participate actively in the following organisations:

- UN/CEFACT, United Nations Centre for Trade Facilitation and Electronic Business
- ISO TC 154, The ISO technical committee on Processes, data elements and documents in commerce, industry and administration
- OASIS, Organization for the Advancement of Structured Information Standards
- W3C, the World Wide Web Consortium
- CEN TC 434 for the electronic invoice and TC 440 for other e-procurement messages
- Participation in additional organisations' standard activities might be needed to meet the objectives of the semantic harmonisation project

5 GS1 EDI support

5.1 Guidelines

The adaptation of the global standard to national needs has led to a proliferation of national and sector specific user guides. This renders cross-sector, cross-border, and cross-platform communication more difficult.

A better approach is to create guidelines that are based on business process modelling on a global or regional level. Apart from alleviating the above-mentioned problem, it will also facilitate message choreography, i.e. how the different GS1 EDI messages interact throughout a business process. GS1 will define a methodology to develop global GS1 EDI guidelines. The experience from the GS1 EDI Healthcare Harmonisation project will be used as a basis for producing global guidelines for various business processes.

5.2 Training

Training from GS1 Global Office will primarily be aimed at training the trainer and can be carried out in classroom session, using the e-Learn platform or both. Both basic and advanced training in the different supported syntaxes will be provided with sufficient number of Member Organisations demand.

5.3 Guidance on which current standard to use

For regions and sectors where EANCOM is well established, it remains the best choice of EDI standard. Since GS1 will fully support this user community for the foreseeable future it is a future proof option.

For new GS1 EDI user communities the recommended syntax is XML-based as this is designed specifically for the Internet and more easily adaptable with related standards such as middle-ware and style sheets. GS1 will assess the viability of supporting 3 XML based standards and consider the opportunity to promote globally only 2 or 1.

A document providing detailed guidance will be published and maintained. It will outline the preferred standards per sector and region.

5.4 Internet protocols for current GS1 EDI standards

The recommended protocol for GS1 EDI is EDIINT/AS2. EDIINT/AS4 will be considered and may be recommended in the future.

For protocols recognised by GS1, an implementation guide will be maintained including a GS1 technical profile.

5.5 Services

5.5.1 Certification

Conformance testing and certification services exist within several Member Organisations and for many EDI products and standards, including EANCOM and XML messages, Internet protocols and solution provider services. In most cases, certification is only valid within the country where the service is provided.

GS1 will study the feasibility to set up an Accreditation Programme within GS1 Global Office that would enable a certification performed within one MO to be recognised within all other countries participating in the programme. The cost would be significantly less than a third party certification programme, and the expected benefits would include increased cross-border interoperability, quality assurance of GS1 standards, and increased service offerings to Member Companies.

5.5.2 Mapping services

GS1 does not on a global level provide services to map from one EDI standard to another or between versions of the same standard; this is an area where independent solution providers have better resources and expertise.

GS1 will however increase the quality and decrease the cost for these services by providing a single content description for transactional data.

6 GS1 EDI marketing

GS1 will provide an up-to-date set of marketing material that can be used globally and re-used by GS1 MOs to communicate with their target user communities. This material will comprise value propositions, web site resources, presentation templates, brochures and other marketing tools.

7 Industry Engagement

Although an important principle of the GS1 EDI standards is their applicability across regions and industries, adaptations are required for each sector. This is primarily done with implementation guides rather than industry specific standards. GS1 will hence engage with the Industry Engagement function of GS1 to ensure that the required support per sector is fully attained.

8 Innovation

In close collaboration with the GS1 innovation network, GS1 will oversee market and technology trends with particular attention to Blockchain as well as assessing the need to develop GS1 standards using new technologies.