WP-1 / 24th community of expertise
Global alignment on substances based on the ISO IDMP and the SRS software

15 September 2023

Moderation:

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875299
SOME RULES FOR THE VIRTUAL MEETINGS
Our interactive session:

✓ Everybody is on mute
✓ You post your question in the Q&A facility
✓ When you speak, please keep concise
✓ You may show your approval!

After (and during) the introduction presentations, any UNICOM related question / comment may be shared with Q&A
Asking a question or making a comment: please use the Q&A facility

1. Move the mouse on the screen to have the options bar appearing

2. You then select «Q&A» and write your question
Showing support and providing a comment on a question or answer

You can support a question by clicking the «thumbs up» which moves it up on the list for the presenters.

You can comment on a question or answer to engage in a conversation.

Typing and sending a new question does not retain the context of your comment.
Security

- Security is our priority
- This session is password protected

Recording of this session is made available on UNICOM's youtube channel
https://www.youtube.com/c/UNICOM-IDMP

At the end of the virtual session, a questionnaire will be sent to the participants, to help us understand participant’s reactions and needs
Global alignment on substances based on the ISO IDMP and the SRS software

Olof Lagerlund, Magnus Wallberg (WHO-UMC)
Annet Rozema (or colleague) (EU-SRS team at CBG/MEB)
Norman Schmuff (FDA)
Introductions to our esteemed colleagues and today's speakers...

Olof Lagerlund  Magnus Wallberg  Annet Rozema

...and pannelist

Robert vander Stichele  Monica Harry  Norman Schmuff

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 875299
Questions, comments

► Please use the Q&A facility!
AGENDA

1. Background & status EU-SRS
2. Current benefits of EU-SRS
3. Next steps
1. BACKGROUND & STATUS EU-SRS
EU-SRS IMPLEMENTATION PATH

Feb/2019-Mar/2020
- Feb/2019: HMA approves PoC
- Implementation plan
- Mar/2020: HMA endorsement

Mar/2020-Jan/2023
- Go-live SVG-SRS
- EU-SRS Validation
- SVG implementation
- Manuals, process
- SMS data cleansing
- Data load
- EMA Hosting

Feb/2023 – Aug/2023
- Go-live EU-SRS
- Upgrade EU-SRS
- Prepare for roll-out NCA’s
- Transfer records to EU-SRS
- Training materials

Sep/2023 – Dec/2023
- Roll-out to NCA’s
- 3-y roadmap EU-SRS
- EU-SRS → R&D Value Stream
- Roll-out to NCA’s
- Promote/train use of EU-SRS
- Continue building rand cleansing records
- Prepare for integration SMS

Proof of Concept

Go-live SVG-SRS

Go-live EU-SRS

Roll-out to NCA’s
European Substance Registration System – EU-SRS

EU-SRS is the European Substance Registration System. The system is used by the Substances Validation Group (SVG) to capture scientific data on substances used in medicinal products. The database is making use of the open-source software from FDA/NCATS, called GSRS. EU-SRS allows the SVG ensure consistent definitions of substances, consistent with the ISO 11238 standard. The EU-SRS system is hosted and maintained by EMA. The substance data is maintained by the national substance experts of the SVG.

Total substances: 17,683

- Chemicals: 17,405
- Proteins: 79
- Polymers: 0
- Nucleic Acids: 0
- Structurally Diverse: 197
- Concepts: 0
Valganciclovir

Names:
Valganciclovir
(2RS)-2-[(2-amino-6-oxo-1,6-dihydro-9H-purin-9-yl)methoxy]-3-hydroxypropyl L-valinate

Codes:
SMSID: 100000089025
SVGD: 001649
xEVMPD: SUB00007MIG
FDA UNII: GCU97FKN3B
CAS: 175865-60-8
INN: 7650
PUBCHEM: 135413535
RMS: 100000075670, 100000000012

Relationships: 1
Mol. Weight: 354.36

 Substance Hierarchy

Valganciclovir

Valganciclovir hydrochloride

Show All Records Matching Search
CURRENT ACCESS / ROLL-OUT STRATEGY

• Roll-out **wave 1:**
  • Colleagues of agencies involved in the SVG
  • Current number of users in EU-SRS: n= 26
  • Timing: August/September 2023

• Roll-out **wave 2:**
  • EU NCA colleagues, not limited to those involved in the SVG
  • Targeted roll out, so use case-driven
    • Chemical assessors
    • Substance experts
    • Pharmacovigilance
    • IT-experts
  • Timing: October – December 2023
MANY NCA’S PARTICIPATE IN THE SVG

• Close collaboration with EMA, NCA’s, FDA/NCATS, and WHO-UMC
• The >20 SVG members come from a variety of NCA’s. They are assessors and/or substance experts
RESPONSIBILITIES EU-SRS

EMA
- Hosting
- Maintenance EU-SRS
- Collaboration with NCATS on software development

SVG
- Content EU-SRS
- Data management standards & agreements
- Collaboration with stakeholders, e.g. ISO
- In-kind contribution NCA’s

https://www.hma.eu/about-hma/working-groups/hma/hma-substances-validation-group.html
2. CURRENT BENEFITS
CURRENT BENEFITS FROM EU-SRS

• One-stop shop to feed national databases
  • Efficiency increase nationally
  • High quality data
• Feed data to SMS
• Flag SMS data issues
• Direct access for assessors to high quality substance information, e.g. structure information
• Enabling structured data submission
INTERNATIONAL COLLABORATION

Use of GSRS software is expanding
  • FDA/NCATS
  • USP
  • DE-SRS (BfArM)
  • EU-SRS
  • UMC-SRS

Interest in joining (global) management of substance data:
  • Kew Gardens
  • Industry
  • UMC
  • Swissmedic

Use of GSRS software is enabler of global substance management!
3. NEXT STEPS
EU-SRS NEXT PHASE

2024/2025 – Wave 1 (t.b.c.)
- Process improvements / efficiency SVG
- Upgrade to GSRS 3.1/3.x, e.g. staging area
- Interface SMS/SRS
- Improve accessibility EU-SRS
- Substances backlog, prio 1
- Globalization, incl GSID
- Support NCAs/EMA with using EU-SRS

2026 and further – Wave 2 (t.b.c.)
- Substances backlog, prio 2
  SSG2 (i.r.t. SPOR OMS)
  SSG3
- Software upgrades GSRS
- Public EU-SRS
- Product module
- Global substance management
FUTURE DIRECTION: GLOBALIZATION

• GIDWG (see next topic)
• GSRS
• Industry

GSRS software
• FDA-SRS
• NCATS-SRS
• USP-SRS
• DE-SRS
• EU-SRS
• UMC-SRS
• Industry-SRS
• ...

IDMP data submission
• Same dataset, multiple agencies
• Efficiency increase
• Preventing errors
Global alignment on substances based on the ISO IDMP and the SRS software

Olof Lagerlund and Magnus Wallberg CoE, September 15th
Agenda

Introduction
GSID
PhPID
FHIR
IDMP implementation is a collaborative project
Global PhPID

PhPID level

WHO UMC

PhPID: 0x073AF2E5B92AE19E8867635AFFB3D6CA
Global PhPID

Global Phpid lvl 4
28115CA95D4A4A5A37B9A5AD25E11B
GIDWG projects

Aim to identify and develop consensus on processes, best practices and operating model for maintenance of global identifiers for marketed medicinal products

www.gidwg.org
Why a Global substance identifier (GSID)?

- International naming organizations
  - INN, USAN, JAN...
- Pharmacopeias
  - Ph Eur, Korea, Brazil...
- Other identifiers/codes
  - UNII, SMS-ID, Ijoken...
Construction of GSID used in the GIDWG pilots

A unique and consistent code following the ISO/IEC 15459 - Part 3 (Ref ISO/IEC 15459). The code consists of 17 characters long text buildup of a Qualifier, Unique text, and Check character.

```
GSID9ST5UC24F36TN
```

- The first 4 characters is the qualifier and will always be the text GSID.
- The middle 12 characters are a unique text buildup of random digits and letters.
- The last character is a check character which is used as a redundancy check used for error detection on identification numbers.

The order for how substance combination are expressed in PhPID algorithm is: Order by GSID (not by substance name) where numbers precedes letters i.e. 9 before A.
GSID and PhPID - Business rules in the GIDWG pilot

GSID

• The GSID assignment is based on the ISO 11238:2018 and ISO/TS 19844.
• The GSID business rules should clarify the standards when needed.

PhPID

• The PhPID assignment is based on the ISO 11616:2017
• The PhPID business rules ensures using the appropriate GSID, when generating a PhPID, in a consistent manner.
How to deal with challenges in creating global substance ID?
How to deal with challenges in creating global substance ID?

Collaboration
How to deal with challenges in creating global substance ID?

We need a common view of the implementation of the substance standard.

1. Follow the standard
2. Global process for alignment when the standard is not clear
How to deal with challenges in creating global substance ID?

We need a common view of the implementation of the substance standard.

1. Follow the standard
2. Global process for alignment when the standard is not clear
3. Common SRS guide for substance registration
4. Common controlled vocabulary and relationships

Collaboration
PhPID GSID - GIDWG pilot Business rules

GSID can be assigned on the substance and SSG1 level.

For PhPID generation the GSID of the active ingredient, disregarding hydrates, is used. The SSG1-level is generally not used for PhPID generation.
How to deal with challenges using GSID in PhPID generation?

- Which substance should be used as active ingredient?
- How to deal with liposomal products?
- Do you generate an additional PhPID for the active moiety if that product is not marketed?
- Have you done anything on structurally diverse?
How to deal with challenges using GSID in PhPID generation?

Which substance should be used as active ingredient?

Regulators decides which is to be viewed as active. For PhPID assignment we use GIDWG pilot BR to harmonize.

How to deal with liposomal products?

The substance level is used for PhPID since the liposomal formulation is treated as an SSG1.

Do you generate an additional PhPID for the active moiety if that product is not marketed?

See next slide

Have you done anything on structurally diverse?

We started with discussion on vaccines and herbals and have agreed on a basic structure.
PhPID input for active ingredient

Connection between “active moiety” and salt available in WHODrug (with links to products) or SRS (only substances)

Amlodipine (GSID) → Used for PhPID
Amlodipine besilate (GSID)

An additional PhPID for the active moiety can be generated for aggregation and analysis purposes.

PhPID level 4 ... Input: Amlodipine besilate, 5mg, Tablets

PhPID level ? ... Input: Amlodipine, 5mg, Tablets
Statistics from the GIDWG pilots based on our BR

Between 92 and 99% of all products investigated in the GIDWG pilots can be assigned a PhPID.

- Selected dataset
  Products containing chemicals and proteins
- Three countries
Future perspective – Global Substance ID

GIDWG projects
Define substance for PhPID

Service development
Populates UMC-SRS for End-to-end test

End-to-end testing
Limited GSID dataset

Start of onboarding
 Expand GSID dataset

2022
Q4 2023
2024

UMC needs to have IDMP compliant data with a GSID to be able to assign PhPIDs.

Launch of 1st Global PhPID
Global substance process in the GIDWG pilots

- Substances in marketed products
- Non-confidential data export
- Assign GSID

UMC needs to have IDMP compliant data with a GSID to be able to assign PhPIDs.

Global non-confidential data:
- Global IDs and mapping to
  - UNII
  - SMS ID
  - Other NCA codes

No issue

Registration in UMC-SRS/Validation

Issue

GIDWG expert team

Assignment solved
GSID on FHIR

As part of the HL7 FHIR release 5 there are a number of resources with the aim to support IDMP. Some of those are:

- MedicinalProductDefinition
- AdministrableProductDefinition
- Ingredient
- SubstanceDefinition
<table>
<thead>
<tr>
<th>Name</th>
<th>Flags</th>
<th>Card.</th>
<th>Type</th>
<th>Description &amp; Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubstanceDefinition</td>
<td>TU</td>
<td></td>
<td>DomainResource</td>
<td>The detailed description of a substance, typically at a level beyond what is used for prescribing</td>
</tr>
<tr>
<td>identifier</td>
<td>Σ</td>
<td>0..*</td>
<td>Identifier</td>
<td>Identifier by which this substance is known</td>
</tr>
<tr>
<td>version</td>
<td>Σ</td>
<td>0..1</td>
<td>string</td>
<td>A business level version identifier of the substance</td>
</tr>
<tr>
<td>status</td>
<td>Σ</td>
<td>0..1</td>
<td>CodeableConcept</td>
<td>Status of substance within the catalogue e.g. active, retired</td>
</tr>
<tr>
<td>classification</td>
<td>Σ</td>
<td>0..*</td>
<td>CodeableConcept</td>
<td>A categorization, high level e.g. polymer or nucleic acid, or food, chemical, biological, or lower</td>
</tr>
<tr>
<td>domain</td>
<td>Σ</td>
<td>0..1</td>
<td>CodeableConcept</td>
<td>If the substance applies to human or veterinary use</td>
</tr>
<tr>
<td>grade</td>
<td>Σ</td>
<td>0..*</td>
<td>CodeableConcept</td>
<td>The quality standard, established benchmark, to which substance complies (e.g. USP/NF, BP)</td>
</tr>
<tr>
<td>description</td>
<td>Σ</td>
<td>0..1</td>
<td>markdown</td>
<td>Textual description of the substance</td>
</tr>
<tr>
<td>informationSource</td>
<td>Σ</td>
<td>0..*</td>
<td>Reference(Citation)</td>
<td>Supporting literature</td>
</tr>
<tr>
<td>note</td>
<td>Σ</td>
<td>0..*</td>
<td>Annotation</td>
<td>Textual comment about the substance’s catalogue or registry record</td>
</tr>
<tr>
<td>manufacturer</td>
<td>Σ</td>
<td>0..*</td>
<td>Reference(Organization)</td>
<td>The entity that creates, makes, produces or fabricates the substance</td>
</tr>
<tr>
<td>supplier</td>
<td>Σ</td>
<td>0..*</td>
<td>Reference(Organization)</td>
<td>An entity that is the source for the substance. It may be different from the manufacturer</td>
</tr>
<tr>
<td>moiety</td>
<td>Σ</td>
<td>0..*</td>
<td>BackboneElement</td>
<td>Moiety, for structural modifications</td>
</tr>
<tr>
<td>characterization</td>
<td>Σ</td>
<td>0..*</td>
<td>BackboneElement</td>
<td>General specifications for this substance</td>
</tr>
<tr>
<td>property</td>
<td>Σ</td>
<td>0..*</td>
<td>BackboneElement</td>
<td>General specifications for this substance</td>
</tr>
<tr>
<td>referenceInformation</td>
<td>Σ</td>
<td>0..1</td>
<td>Reference(SubstanceReferenceInformation)</td>
<td>General information detailing this substance</td>
</tr>
<tr>
<td>molecularWeight</td>
<td>Σ</td>
<td>0..*</td>
<td>BackboneElement</td>
<td>The average mass of a molecule of a compound</td>
</tr>
</tbody>
</table>

**Code**

- **Code**
  - 0..* BackboneElement
  - Codes associated with the substance

**Name**

- **Name**
  - 0..* BackboneElement
  - Names applicable to this substance

**Relationship**

- **Relationship**
  - 0..* BackboneElement
  - A link between this substance and another

**SourceMaterial**

- **SourceMaterial**
  - 0..1 BackboneElement
  - Material or taxonomic/anatomical source
Example:
Goserelin acetate
Example:
Goserelin acetate

http://localhost/SubstanceDefinition/GSID1S3C5XFC02

15.9.4 Search Parameters

Search parameters for this resource. See also the full list of search parameters for this resource, this resource. The common parameters also apply. See Searching for more information about search.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>classification</td>
<td>token</td>
<td>High or low level categorization, e.g. polymer vs. nucleic acid or linear vs. branched</td>
</tr>
<tr>
<td>code</td>
<td>token</td>
<td>The specific code</td>
</tr>
<tr>
<td>domain</td>
<td>token</td>
<td>If the substance applies to only human or veterinary use</td>
</tr>
<tr>
<td>identifier</td>
<td>token</td>
<td>Identifier by which this substance is known</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>The actual name</td>
</tr>
</tbody>
</table>
Requesting a new GSID

Requesting a new GSID is a process that involves human interaction. This is referred to as an Asynchronous Operation since the requester will not get an immediate answer to the request. This can be achieved in FHIR by using a special kind of resource - Task.
A FHIR Task

A FHIR Task is a resource that contains other resources on which some “actions” should be performed.

In our scenario a “draft” SubstanceDefinition is sent as Input with the purpose of generating a new (or assigning an existing) GSID. If a GSID can be generated or assigned the Task is updated with a reference to a SubstanceDefinition with the GSID as Output.
### Task

A task to be performed

- Rule: `Task.restriction` is only allowed if the Task is seeking fulfillment and a focus is specified.
- Rule: Last modified date must be greater than or equal to authored-on date.

Elements defined in Ancestors: `id`, `meta`, `implicitRules`, `language`, `text`, `contained`, `extension`, `modifierExtension`.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>identifier</td>
<td>Identifier</td>
<td>Task Instance Identifier</td>
</tr>
<tr>
<td>instantiatesCanonical</td>
<td>0..1</td>
<td>canonical(ActivityDefinition) Formal definition of task</td>
</tr>
<tr>
<td>instantiatesUri</td>
<td>0..1</td>
<td>uri Formal definition of task</td>
</tr>
<tr>
<td>basedOn</td>
<td>0..*</td>
<td>Reference(Any) Request fulfilled by this task</td>
</tr>
<tr>
<td>groupIdentifier</td>
<td>0..1</td>
<td>Identifier Requisition or grouper id</td>
</tr>
<tr>
<td>partOf</td>
<td>0..*</td>
<td>Reference(Task) Composite task</td>
</tr>
<tr>
<td>status</td>
<td>?! 1..1 code</td>
<td>Draft</td>
</tr>
<tr>
<td>statusBinding</td>
<td></td>
<td>Task Status (Required)</td>
</tr>
<tr>
<td>input</td>
<td>0..*</td>
<td>BackboneElement Information used to perform task</td>
</tr>
<tr>
<td>type</td>
<td>1..1</td>
<td>CodeableConcept Label for the input</td>
</tr>
<tr>
<td>value[x]</td>
<td>1..1 *</td>
<td>Content to use in performing the task</td>
</tr>
<tr>
<td>output</td>
<td>0..*</td>
<td>BackboneElement Information produced as part of task</td>
</tr>
<tr>
<td>type</td>
<td>1..1</td>
<td>CodeableConcept Label for output</td>
</tr>
<tr>
<td>value[x]</td>
<td>1..1 *</td>
<td>Result of output</td>
</tr>
</tbody>
</table>
Task to request GSID

```
"resourceType": "Task",
"contained": [
  {
    "resourceType": "SubstanceDefinition",
    "id": "a30ea785-c759-4c75-b8de-94c00ddd9cb1",
    "text": "",
    "status": "",
    "domain": "",
    "informationSource": [
      {
        "reference": "https://www.examplesource.com/123456"
      }
    ],
    "note": [
      {
        "text": "Description of substance..."
      }
    ],
    "name": [
      {
        "name": "Marvelol",
        "status": "",
        "preferred": true,
        "language": ""
      }
    ],
    "status": "draft",
    "intent": "proposal",
    "priority": "routine",
    "authoredOn": "2023-09-05",
    "lastModified": "2023-09-05",
    "requester": "",
    "input": [
      {
        "type": {
          "text": "Data for GSID request"
        },
        "valueReference": {
          "reference": "#a30ea785-c759-4c75-b8de-94c00ddd9cb1"
        }
      }
    ]
  }
],
"note": [
  {
    "text": "Description of substance..."
  }
],
"name": [
  {
    "name": "Marvelol",
    "status": "",
    "preferred": true,
    "language": ""
  }
]
```
POST this Task to the Maintenance Organization

After validating the Task using $validate
Response I
Response II

<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content-Length</td>
<td>2129</td>
</tr>
<tr>
<td>Content-Type</td>
<td>application/json</td>
</tr>
<tr>
<td>Date</td>
<td>Tue, 12 Sep 2023 21:55:52 GMT</td>
</tr>
<tr>
<td>Server</td>
<td>Kestrel</td>
</tr>
<tr>
<td>Cache-Control</td>
<td>no-store, no-cache</td>
</tr>
<tr>
<td><strong>Content-Location</strong></td>
<td><a href="http://localhost:8085/task/5b62a4bf-feee-48c7-9ba1-9187173bb">http://localhost:8085/task/5b62a4bf-feee-48c7-9ba1-9187173bb</a></td>
</tr>
<tr>
<td>Expires</td>
<td>-1</td>
</tr>
<tr>
<td>Pragma</td>
<td>no-cache</td>
</tr>
</tbody>
</table>
## Task status

http://localhost:8085/task/5b62a4bf-feec-48c7-9ba1-9187173bb208

<table>
<thead>
<tr>
<th>Body</th>
<th>Cookies</th>
<th><strong>Headers (8)</strong></th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Content-Length</strong></td>
<td>📸 2126</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Content-Type</strong></td>
<td>📸 application/json</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Date</strong></td>
<td>📸 Tue, 12 Sep 2023 21:56:06 GMT</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Server</strong></td>
<td>📸 Kestrel</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Cache-Control</strong></td>
<td>📸 no-store, no-cache</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Expires</strong></td>
<td>📸 -1</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Pragma</strong></td>
<td>📸 no-cache</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>X-Progress</strong></td>
<td>📸 ready</td>
</tr>
</tbody>
</table>
## Task status

http://localhost:8085/task/5b62a4bf-feec-48c7-9ba1-9187173bb208

<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content-Length</td>
<td>2410</td>
</tr>
<tr>
<td>Content-Type</td>
<td>application/json</td>
</tr>
<tr>
<td>Date</td>
<td>Tue, 12 Sep 2023 22:03:19 GMT</td>
</tr>
<tr>
<td>Server</td>
<td>Kestrel</td>
</tr>
<tr>
<td>Cache-Control</td>
<td>no-store, no-cache</td>
</tr>
<tr>
<td>Expires</td>
<td>-1</td>
</tr>
<tr>
<td>Pragma</td>
<td>no-cache</td>
</tr>
</tbody>
</table>
Completed Task

```
"resourceType": "Task",
"id": "5b62a4bf-feec-48c7-9ba1-9187173bb208",
"contained": [
{
  "resourceType": "SubstanceDefinition",
  "id": "597d64f4-c7ff-4c18-9fb0-145b477a496b",
  "text": "",
  "status": "",
  "domain": "",
  "name": "",
}
]
"status": "completed",
"intent": "proposal",
"priority": "routine",
"authoredOn": "2023-09-05",
"lastModified": "2023-09-05",
"requester": "",
"input": "",
"output": [
{
  "type": {
    "text": "Generated GSID (SubstanceDefinition)"
  },
  "valueCodeableReference": {
    "reference": {
      "reference": "http://localhost:8085/SubstanceDefinition/GSIDOA0LHNMPEC"
    }
  }
}
]
```
Summary of FHIR Substance Request

1. Create a `SubstanceDefinition` with "necessary" information
2. Add the `SubstanceDefinition` to a FHIR `Task`
3. Send (POST) the `Task` to the Maintenance Organization
4. Check for status of `Task` until completed
5. Retrieve the generated `SubstanceDefinition` using the reference in the `Task` output
Take home message

Collaboration and agreement is the key

Agreement and conformance to global implementation of consisting standards, for example ISO IDMP and HL7 is important

A first process on how to handle issues on a global level developed
Making medicines safer for patients
Questions in the Q & A facility, please
For feedback, please go to:
https://docs.google.com/forms/d/e/1FAIpQLSfztHb2tch0XyTK_uANl0JUvact00aNd57hM5PweXyAJsMdOG/viewform?usp=pp_url

Thanks for your time