# Webinar | WP4 Webinar #2

## Data Semantics, Formats and Quality

**DG CNECT**
Directorate-General
for Communications
Networks, Content and
Technology

**DG GROW**
Directorate-General
for Internal Market, Industry,
Entrepreneurship and SMEs

**DIGIT**
Directorate-General
for Informatics

# AGENDA

1. Welcome
2. Meeting objectives
3. Roles and domain experts
4. Approach & terminology
5. Design of data models
6. Review of data models
7. Timeline and milestones
8. Conclusion

# 1. Welcome

**Speaker: Seth van Hooland**

# 2. Meeting objectives

**Speaker: Seth van Hooland**

# Meeting objectives

1. Present the approach to develop common data models [methodology step]
2. Discuss the birth certificate example
3. Present the review approach [GitHub]
4. Confirm expectations & contributions from Member states
5. Agree on immediate next steps

# 3. Roles & domain experts

**Speaker: Bart Hanssens**

# Roles and domain experts

Countries (MS & EFTA) 30

MS representatives 10 BE | CZ | DK | EE | FI | NO | PT | SK | ES | DE

Rapporteur

Domain experts 1 BE

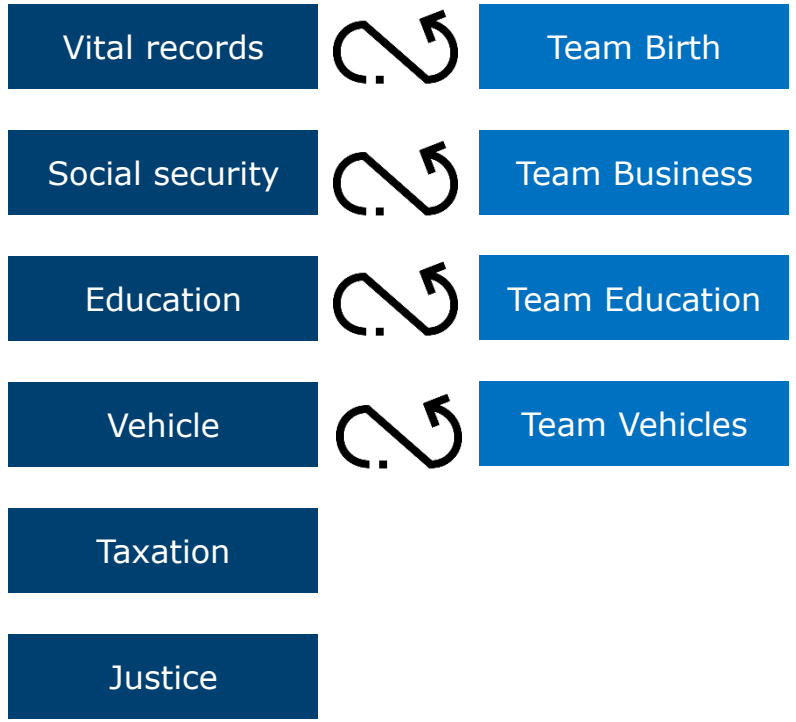
# Roles and domain experts

**General information related to the evidence**

| | EU / EEA Member State | Domain Experts | Confirmed authentic source *(lawfully issuing evidences)* |
|---|---|---|---|
| 1 | Austria (AT) | | Federal Ministry for Education, Science and Research |
| 2 | Belgium (BE) | (tbc)<br>• Tessa Mouha / Ann Webers (NL)<br>• Bénédicte Champagne (FR)<br>• Catherine Reinertz (DE) | Schools / Communities:<br>▪ Flemish Community: http://leerenervaringsbewijzendatabank.be/<br>▪ French Community: http://www.enseignement.be/<br>▪ German-speaking Community: http://www.ostbelgienbildung.be/ |
| 3 | Bulgaria (BG) | | Schools |
| 4 | Croatia (HR) | | Schools |
| 5 | Republic of Cyprus (CY) | | Directorate of General Secondary Education – Ministry of Education, Culture, Sports and Youth |

- Education
- Taxation
- Vehicles
- Vital records and personal public documents

## Types of evidence and potential synergies with WP2



# 4. Approach and terminology

**Speaker: Seth van Hooland**

# Overall approach to develop common data models

ISA² You click, we link

## DATA MODEL

A data model is an abstraction that organises elements of data and standardizes how they relate to one another. It specifies the entities, their attributes and the relationships between entities.

## APPLICATION PROFILE

A data model defining for a particular application or use case which entities and attributes to use, what the cardinalities of the attributes are and recommending core vocabularies to be used.

## XSD DISTRIBUTION

```
<xsd:element name="FormMarriageBelgium" type="FormMarriageBelgiumType"/>
<xsd:complexType name="FormMarriageBelgiumType">
  <xsd:sequence>
    <xsd:element name="Header" type="forms_commonPart:FormHeaderType"/>
    <xsd:element name="Marriage" type="ms2forms_Marriage:MarriageType"/>
    <xsd:element name="SpouseA" type="SpouseType"/>
    <xsd:element name="SpouseB" type="SpouseType"/>
    <xsd:element name="Witnesses" type="WitnessesType" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation xml:lang="en">
          Pos. 6A: WITNESSES
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
```

## DOCUMENTS & DATA

Both the evidence-based & criteria-based approach can make use of the application profiles


European Commission

ISA² You click, we link

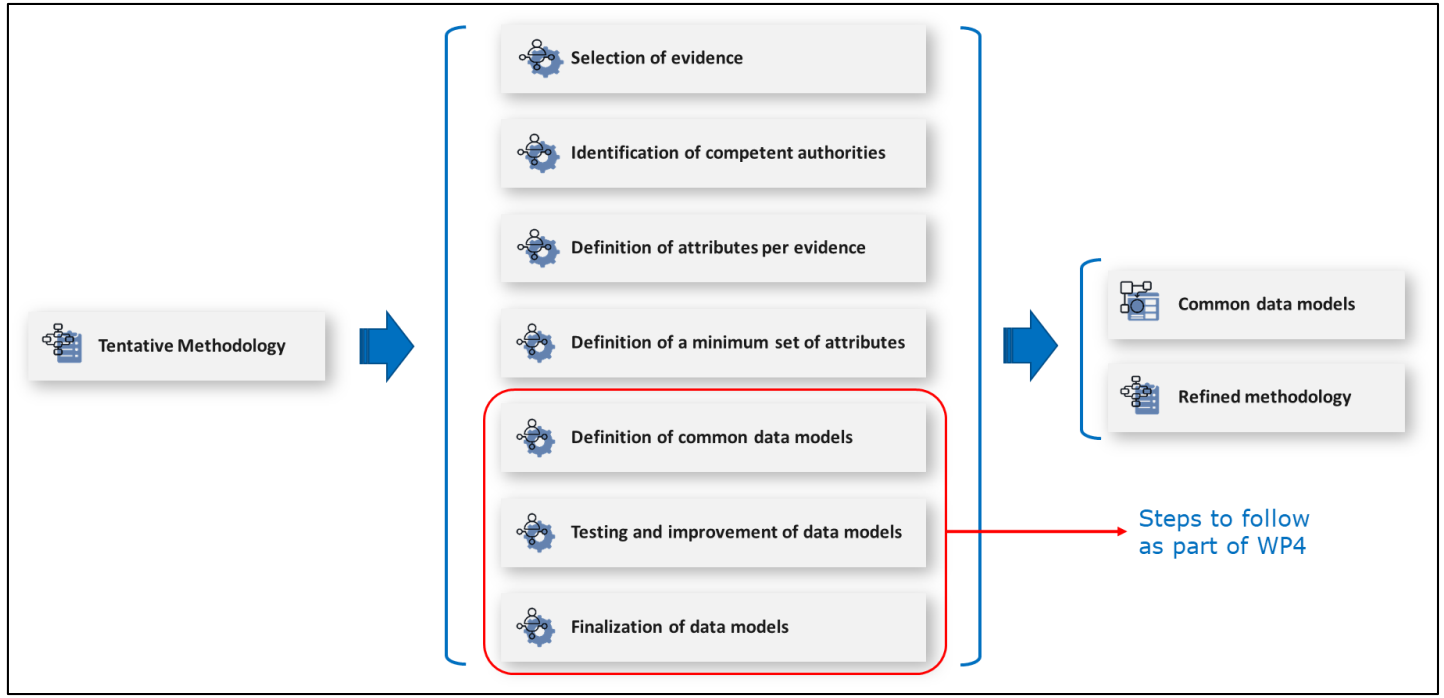
# 5. Design of data models

**Speaker: Makx Dekkers**

European Commission

# Design of data models | Methodology

*Tentative methodology presented during the first webinar*




## How to define common data models

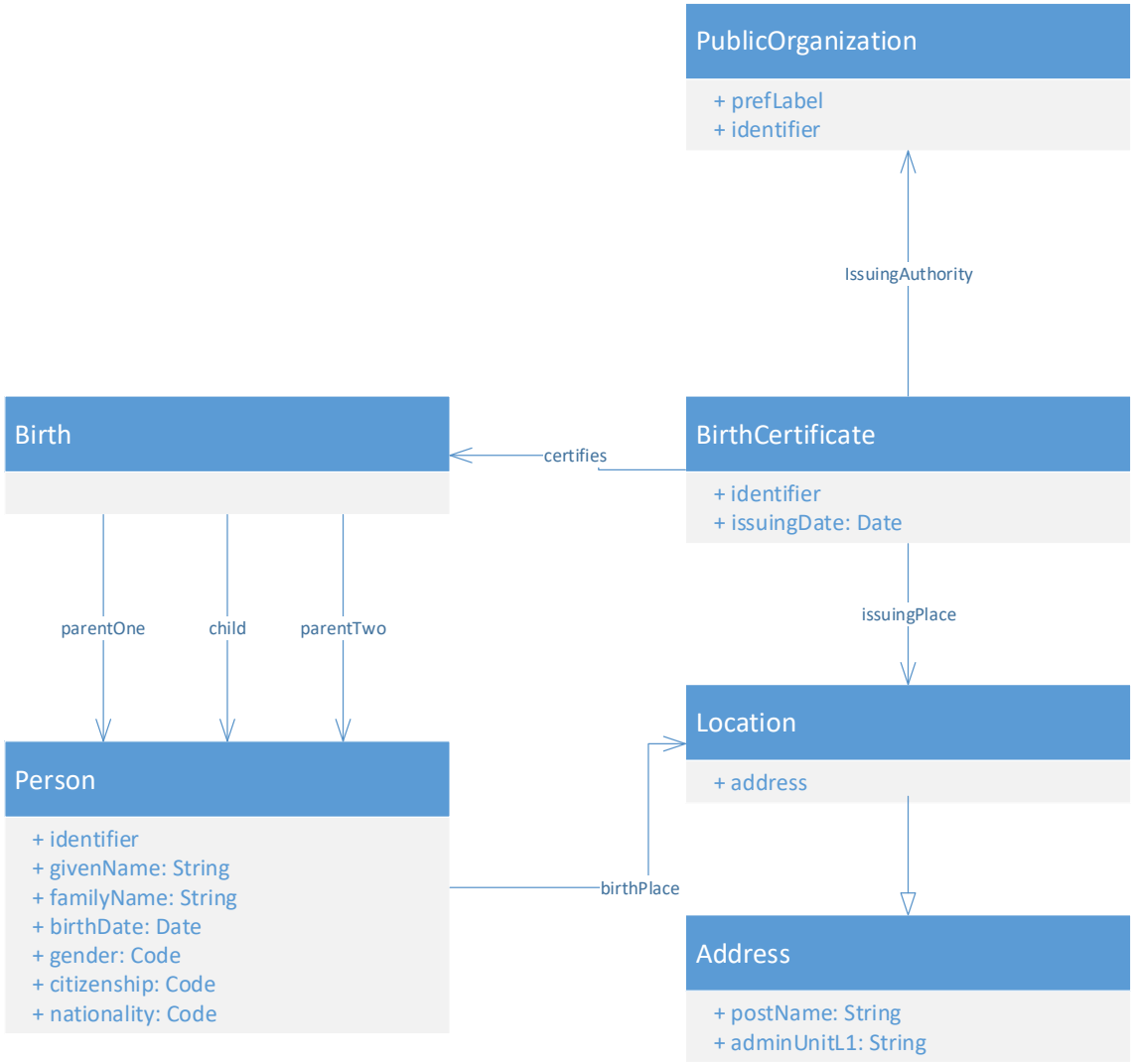
1

Semantic aspects (e.g. entities, datatypes, definitions, etc.)

2

Mapping to core vocabularies and creating XSD distributions

# Design of data models | Birth certificate




## Diagram

- Entities (Location, birth, birth certificate, person and public organisation)
- Attributes (e.g. identifier, birthDate, etc.)
- Relationships (e.g. certifies, etc.)

# Design of data models | table

## **Table of attributes** (Source: Core Person Vocabulary)

| **Entity: Person** | | | |
|---|---|---|---|
| **Definition: An individual person who may be dead or alive, but not imaginary.** | | | |
| attribute 1 | Expected type 2 | definition 3 | cardinality 4 |
| given name | string | A given name, or multiple given names, are the denominator(s) that identify an individual within a family. These are given to a person by his or her parents at birth or may be legally recognised as 'given names' through a formal process. All given names are ordered in one field so that, for example, the given name for Johan Sebastian Bach is "Johan Sebastian". | [1..1] |

1. Attributes are the most atomic part of the data model
2. Specifies the datatype of the attribute or the relation(s) of the entity
3. A statement that explains the meaning of a word or phrase
4. The cardinality is the number of times an attribute needs to be provided at a minimum and maximum

# Design of data models | XSD

20200703_BirthCertificate_v0.01.xsd

```xml
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">

    <xs:element name="BirthCertificate" type="BirthCertificate"/>
    <xs:complexType name="BirthCertificate">
        <xs:sequence>
            <xs:element name="certifies" type="Birth" minOccurs="1" maxOccurs="1"/>
            <xs:element name="identifier" type="Identifier" minOccurs="1" maxOccurs="1"/>
            <xs:element name="issuingAuthority" type="PublicOrganisation" minOccurs="1" maxOccurs="1"/>
            <xs:element name="issuingDate" type="xs:date" minOccurs="1" maxOccurs="1"/>
            <xs:element name="issuingPlace" type="Location" minOccurs="1" maxOccurs="1"/>
        </xs:sequence>
    </xs:complexType>

    <xs:element name="Birth" type="Birth"/>
    <xs:complexType name="Birth">
        <xs:sequence>
            <xs:element name="child" type="Person" minOccurs="1" maxOccurs="1"/>
            <xs:element name="parentOne" type="Person" minOccurs="1" maxOccurs="1"/>
            <xs:element name="parentTwo" type="Person" minOccurs="1" maxOccurs="1"/>
        </xs:sequence>
    </xs:complexType>

    <xs:element name="Person" type="Person"/>
    <xs:complexType name="Person">
        <xs:sequence>
            <xs:element name="birthDate" type="xs:date" minOccurs="1" maxOccurs="1"/>
            <xs:element name="citizenship" type="Jurisdiction" minOccurs="1" maxOccurs="1"/>
```

## XSD distribution

- Hierarchical structure
- To be discussed and agreed with WP7


# Questions?

ISA² You click, we link

# 6. Analysis of data models

**Speaker: Miguel Alvarez Rodriguez**

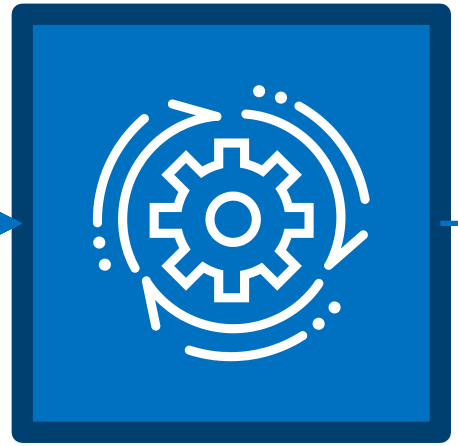
European Commission

# Review of data models | MS state contribution

ISA² You click, we link

## Member states domain experts are tasked to…

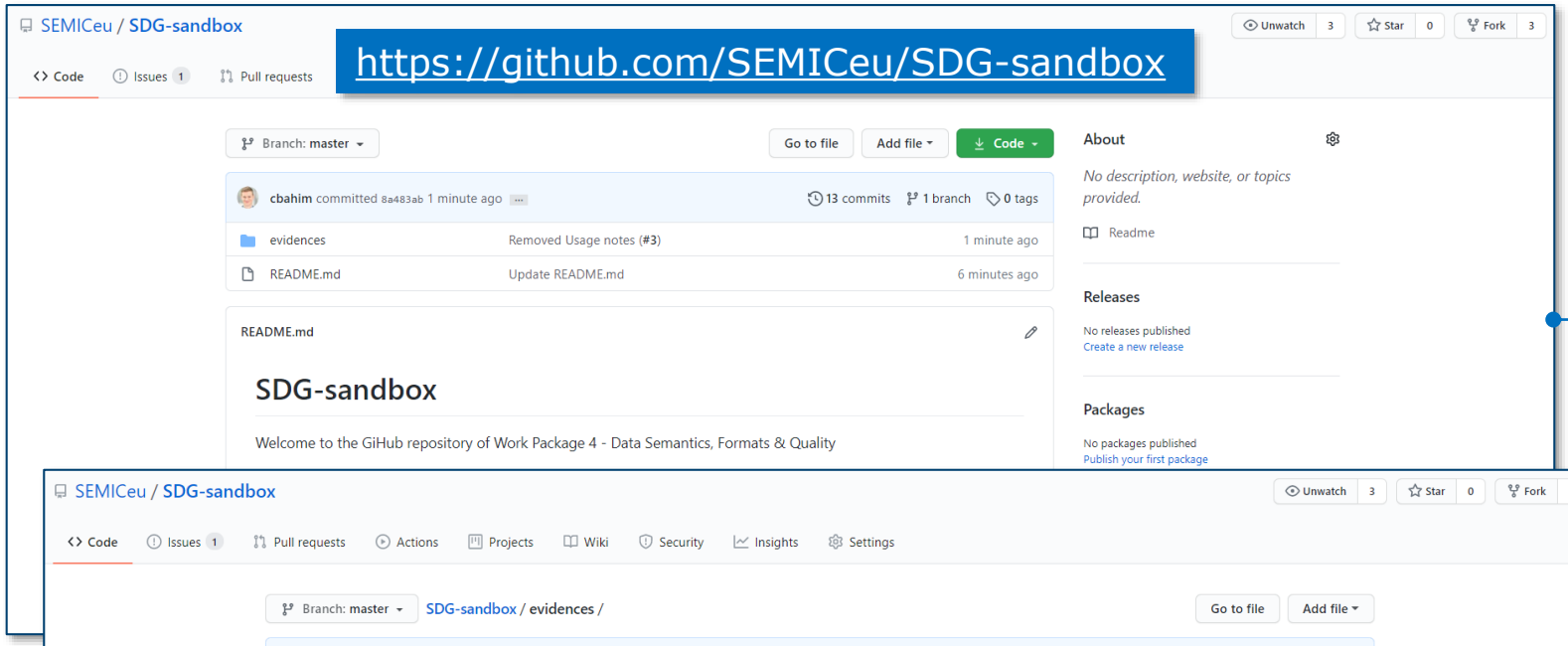
- Review the models
- Validate all entities and attributes
- Validate all the datatypes, definitions, etc.
- Collect and share additional attributes (per MS) to identify additional common elements
- Mapping entities and attributes provided to the ones in common models



Minimum set of mandatory attributes

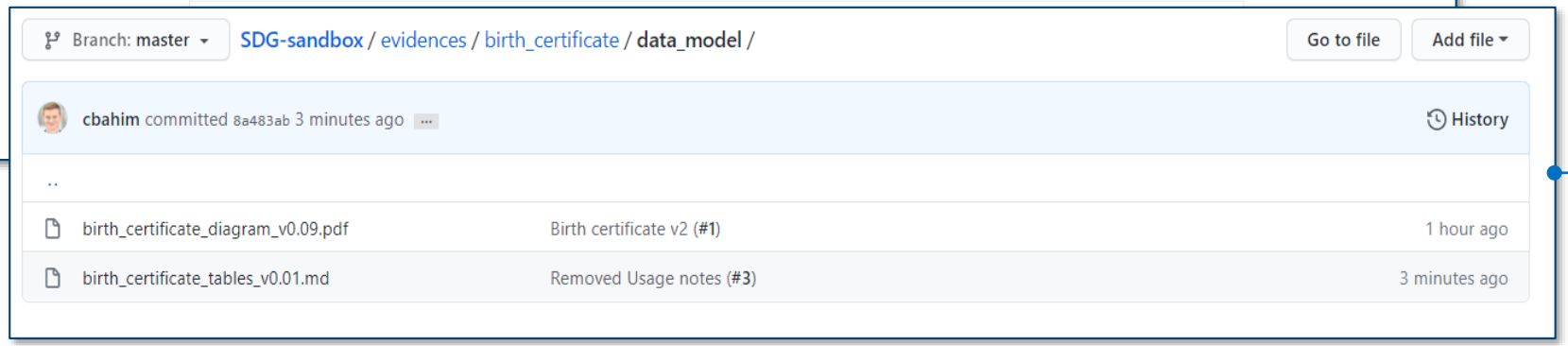
European Commission

# MS contribution to the models | GitHub







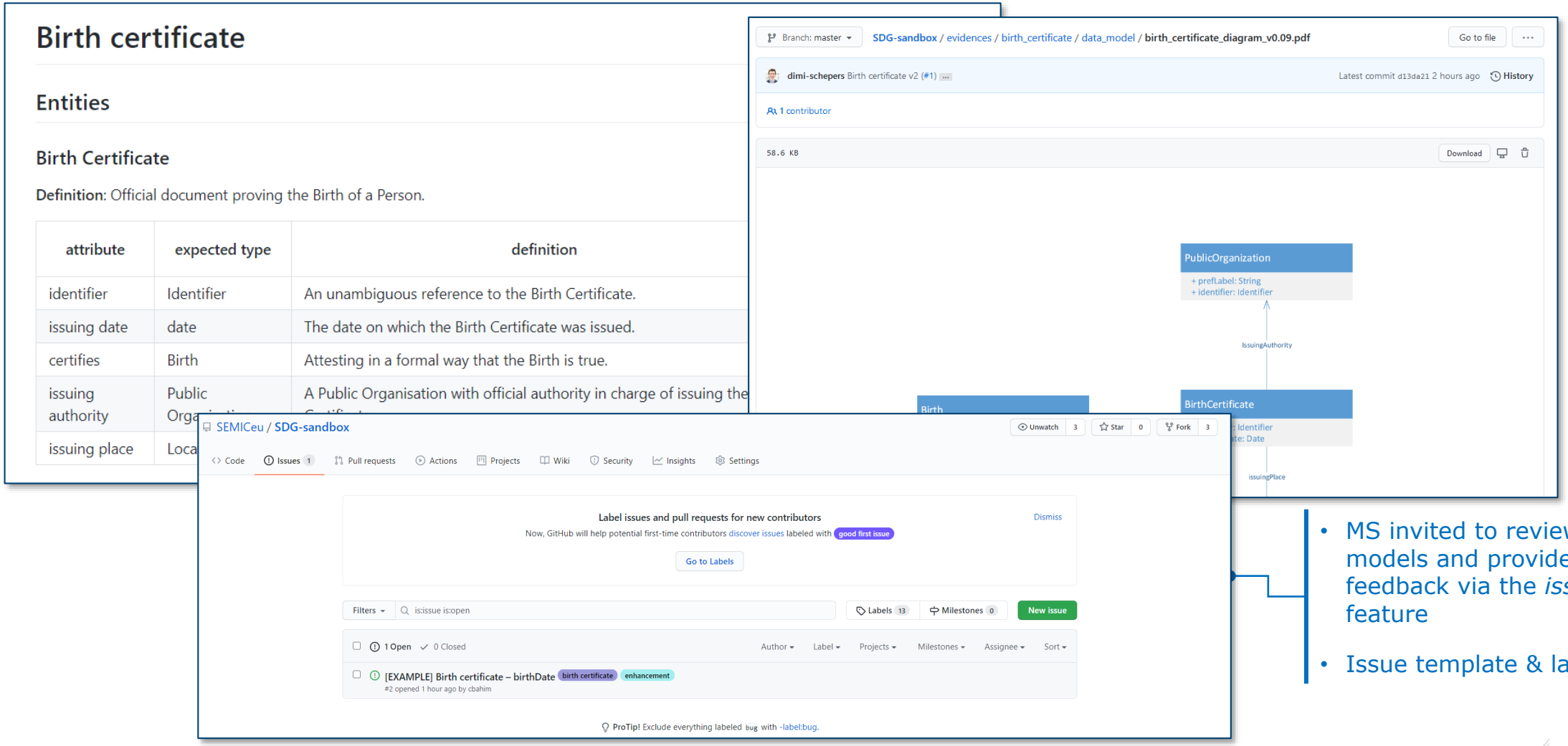



- Platform for code development, sharing, & code reviews
- Landing page **SEMICeu/SDG-sandbox**
- Registration needed
- 'Watch' the repository to receive notifications

- Repository structure
- Folder per evidence (diagrams, tables and soon XMLs)

- Diagrams illustrating the data models
- Tables representing the entities, attributes and relationships in tabular (markdown) format

# MS contribution to the models | Feedback

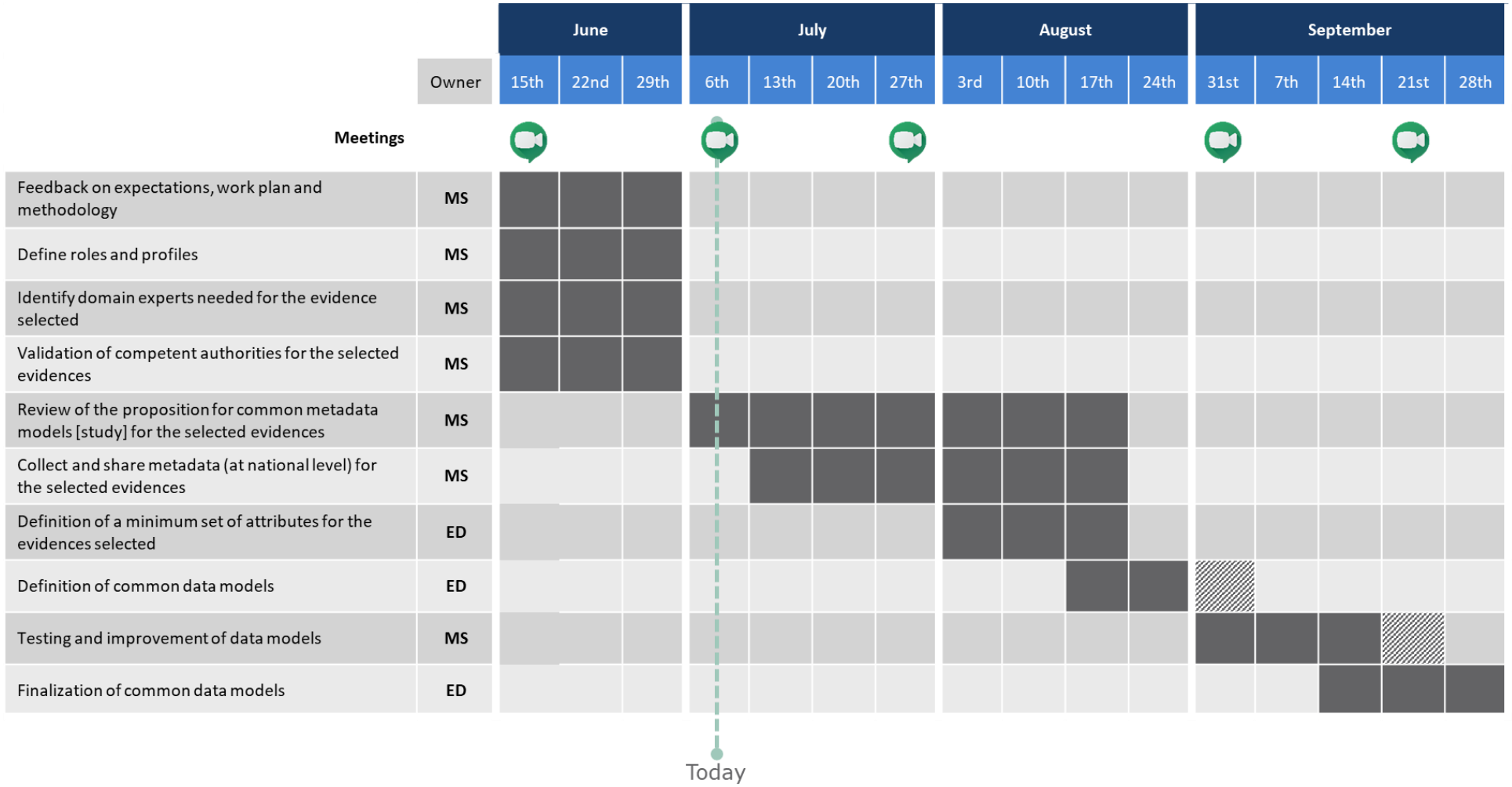



- MS invited to review the models and provide feedback via the *issue* feature
- Issue template & labelling

# 8. Timeline and milestones

**Speaker: Makx Dekkers**

# Timeline and milestones



# 9. Conclusion

**Speakers: Miguel Alvarez Rodriguez and Seth van Hooland**

# Action items and next steps

## Action items by the 24th of July

- Review the five data models [GitHub]

## Next webinars

- 29th July 2020
- 2nd September 2020
- 25th September 2020 [*Closing webinar for the first round of evidences*]

# Any other business?

# ISA² programme

*You click, we link!*

Stay in touch

ec.europa.eu/isa2

**@ EU_isa2**

**ISA² Programme**

**DIGIT-ISA2-COMM@ec.europa.eu**

Run by the Interoperability Unit at DIGIT (European Commission) with 131€M budget, the ISA² programme provides public administrations, businesses and citizens with specifications and standards, software and services to reduce administrative burdens.