

BIM as leverage towards Digital Asset Management today and the Digital Twin of tomorrow

Natasha Blommaert

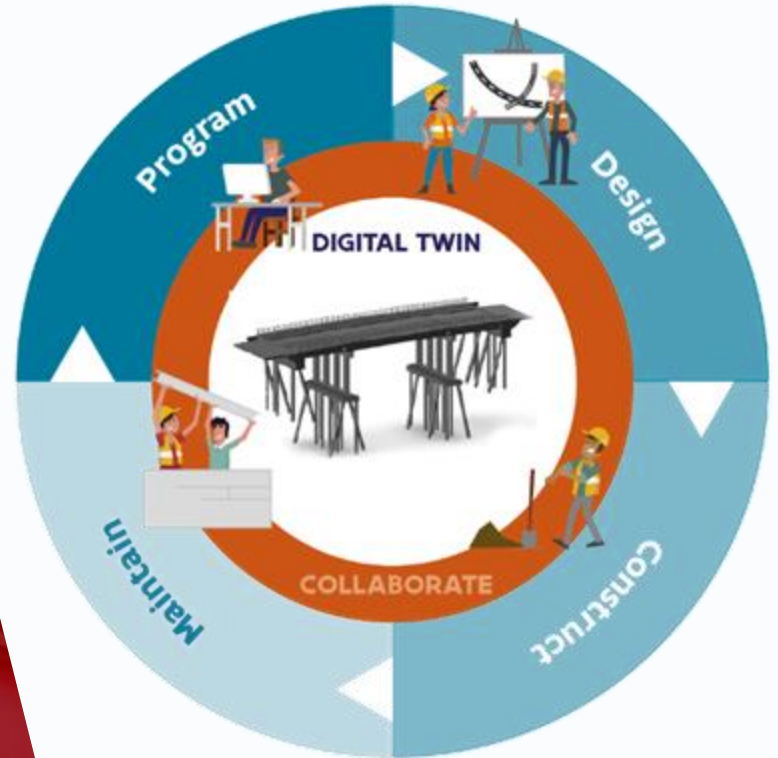
Agency for Road and Traffic, Belgium-Flanders



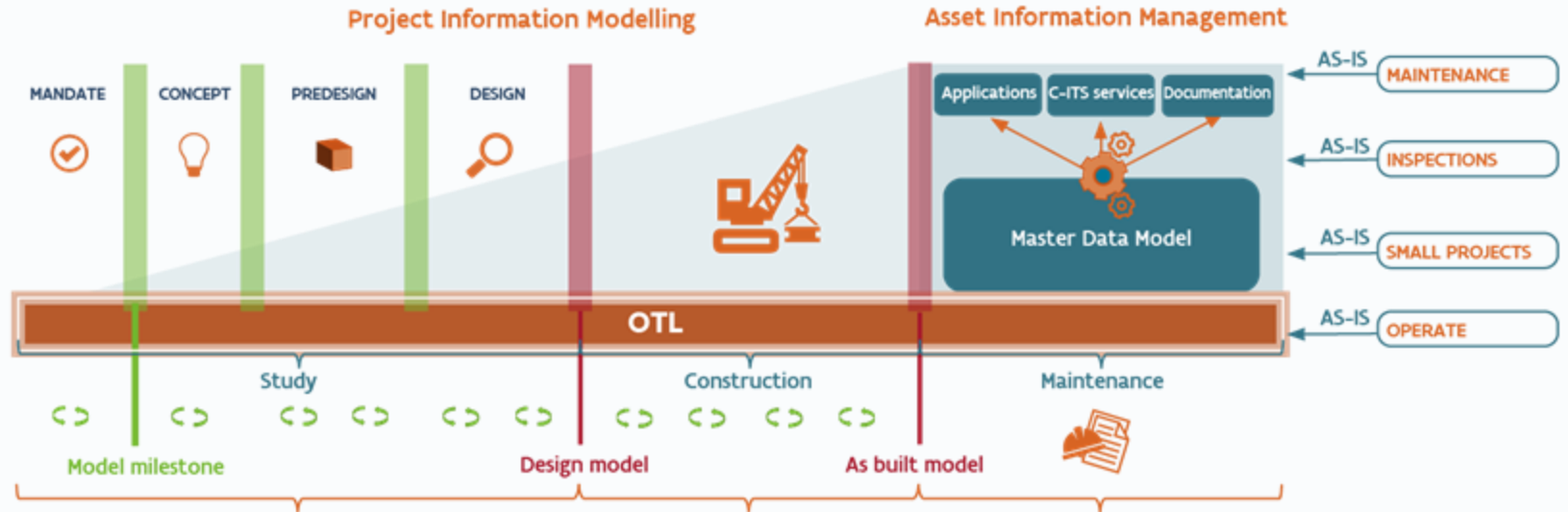
**AGENTSCHAP
WEGEN & VERKEER**



Life cycle asset management



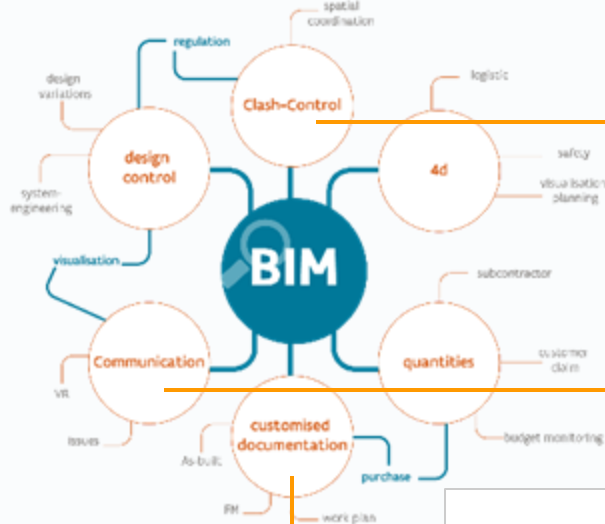
BIM process towards AIM



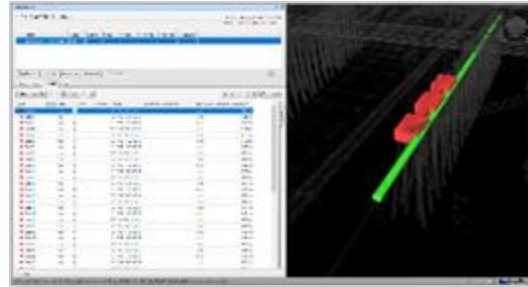
Based on ISO 19650-1:2018

BIM modeling in projects

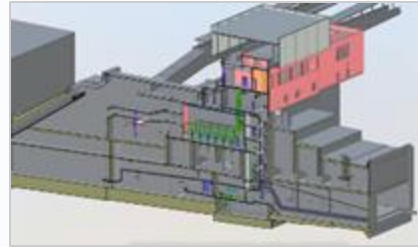
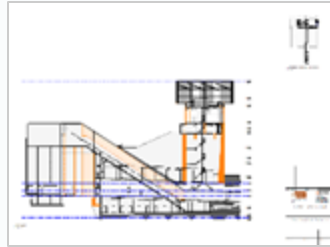
BIM in projects = higher project quality = Asset Information for the future



BIM Clash-control avoiding failure costs



BIM informatie-extractie



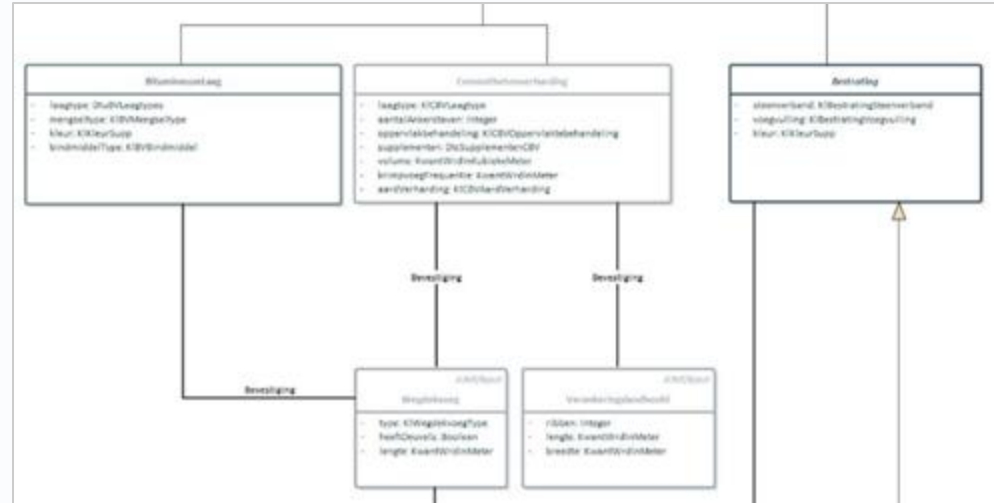
BIM as communication tool

Linking info and future images to location

OTL - Object Type Library

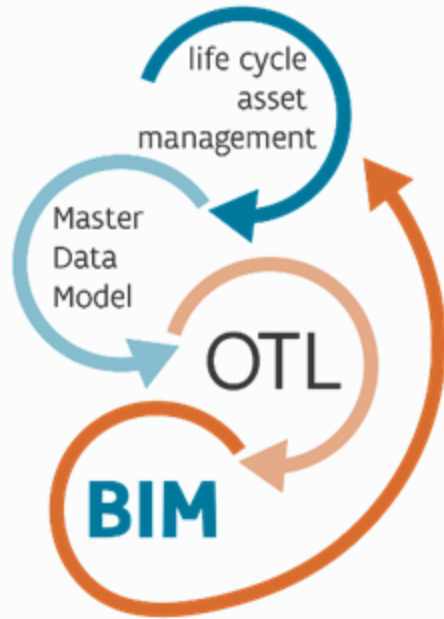
- Semantic data standard for BIM & AIM
- Facilitate data exchange
- Identify, define and standardize the information need for infrastructure assets
- Object types – Attributes - Relations
- Covering the whole life cycle

Wegenverkeer.data.vlaanderen.be



Partial extract as an example

BIM management ~ Asset Informatie Management systeem



objects and relationships in AIM db



coordination model in ACC

Migration of all asset data OTL compliant to the AIM system

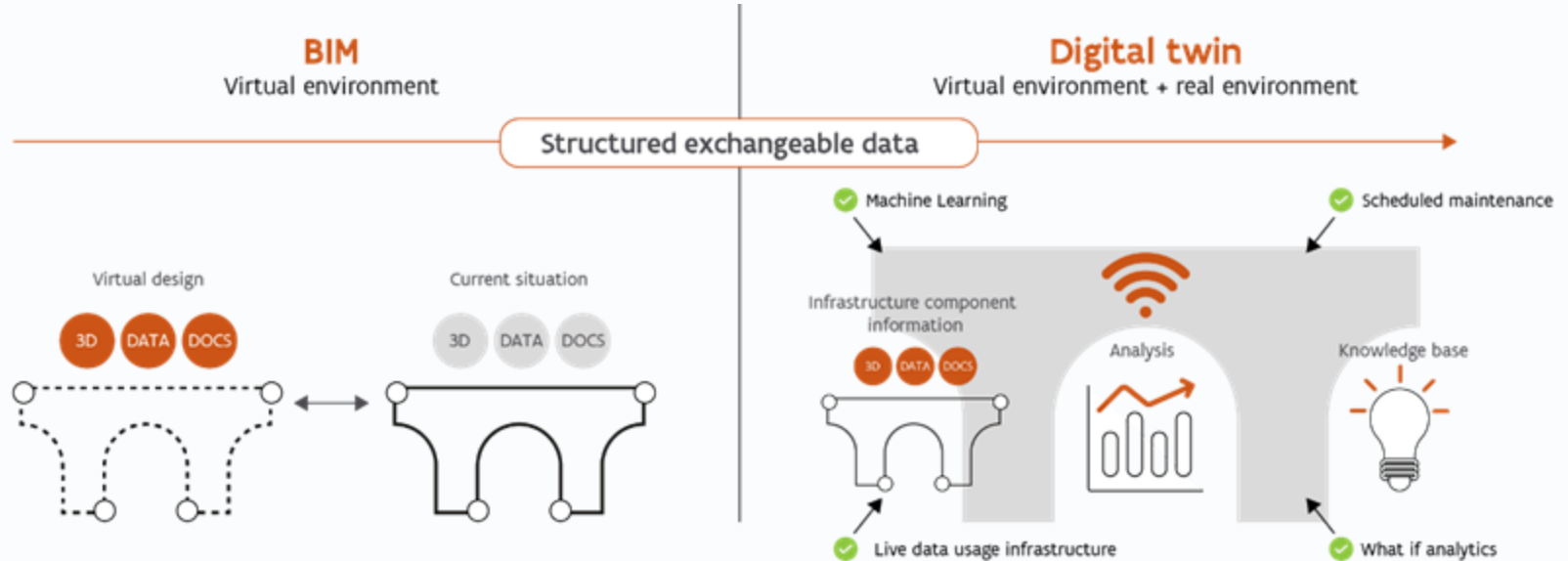
objects and relationships in AIM db



coordination model in ACC



Digital Twin voor Digital Asset Management



Draft design > Final design > Implementation > Administration and maintenance > Repurposed >

Life Cycle Asset Informatie Management

The screenshot displays a software interface for Life Cycle Asset Information Management. It features a map on the left with a search bar at the top left containing the text "Zoek op naam, naampad, wegnummer, adres". A search icon and a back arrow are also present. The map shows a street layout with a highlighted path and several red circular markers representing assets.

On the right side, there is a "Lagen selecteren" (Select layers) panel with a search icon and a list of asset types. The list includes:

- Fietslantaarn
- Fietstel display
- Fitscamera
- Fitspaal
- FM repeater box
- Galgpaal
- Gebouw
- Gelidestructuur
- Gelidingsverlichting
- Hoofdstrekte

Each item in the list has a small icon and a status indicator. Below the list, there is a "Bezig, Lit te voeren" (Busy, Lit to be run) dropdown menu.

On the far right, there is a details panel for a selected asset. It shows the following information:

- Oproep WO2023003126 Demo**
- Status: Uit te voeren
- Prioriteit: Kritisch
- Asset: WW0093/WW0093.WV/B11
- Bestak: o18112020140427 - o18112020140427
- Vaststelling DA-2023-01679 Aan te vullen vaststelling**
- Status: Uit te voeren
- Creëte tijdstip: 26-09-2023 20:49
- Vervaldatum: 26-09-2024 02:00
- Aangemaakt door: Dennis Schiepers
- Bezoek DA-2023-00018**
- Status: Uit te voeren
- Creëte tijdstip: 25-09-2023 13:13
- Vervaldatum: 25-09-2024 02:00
- Aangemaakt door: Alexander Van Hecke
- Oproep WO2023003126 Oproep jmeter_20230811B_002063 uitvoeren**

Digital Twin

Beverentunnel



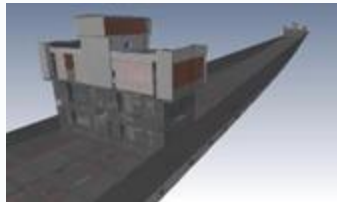
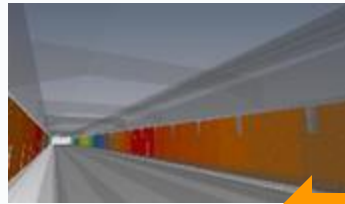
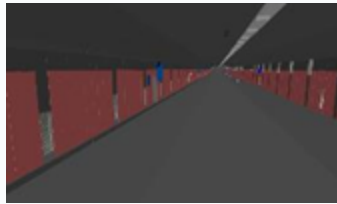
BIM-model

Virtual environment
Static Digital Twin



Digital Twin

Virtual environment + real environment
Dynamic Digital Twin



Realtime Air quality sensor data

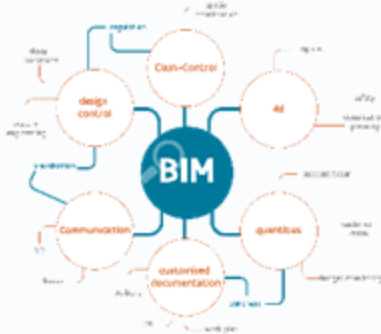
IRIS platform Traffic Center

- Every 15 minutes:
- Sight
- Temperature
- NO2
- CO
- Air quality gradient on wall panels of the tunnel via linear interpolation

Step-by-step evolution from BIM Modeling to a Digital Twin

BIM modeling in projects

Include BIM in our investment projects



BIM management / Asset Information Management

Collect BIM or OTL-compliant data from all assets

- All data in 1 Master db/model



Life cycle Asset Information Management

Link all observations, maintenance actions, alarms, remote monitoring systems, ... to the assets

- Preventive maintenance nudging

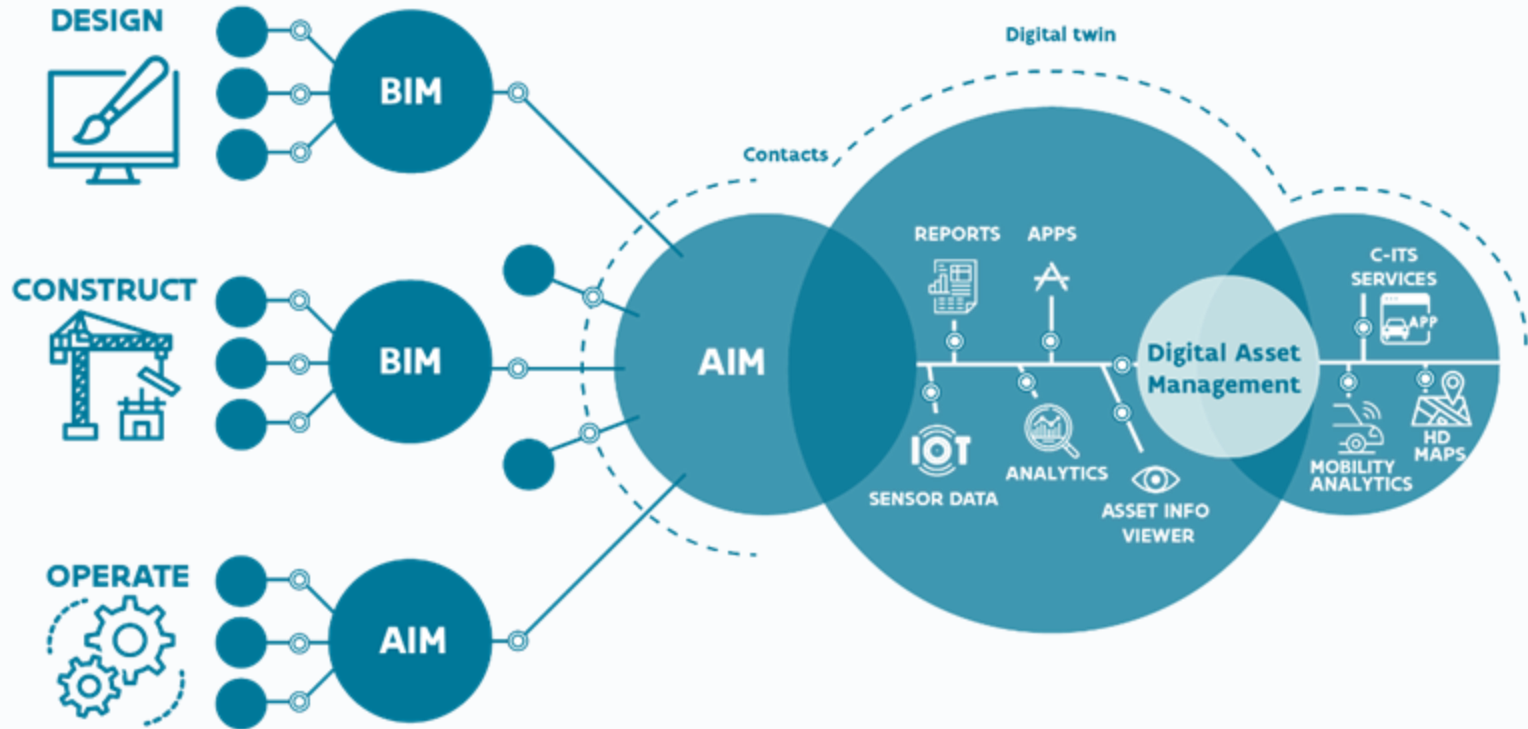
Digital Twin

Digital twin for AM decision making and as a policy support tool

- Predictive maintenance predictions
- C-ITS services
- CCAM



Vision



From BIM and AIM data to C-ITS services and the support of CCAM

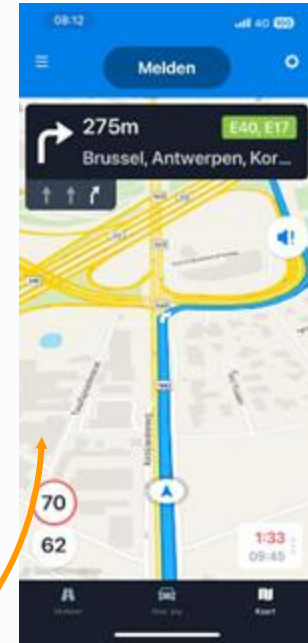
BIM-model



Digital Twin AIM



C-ITS services





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