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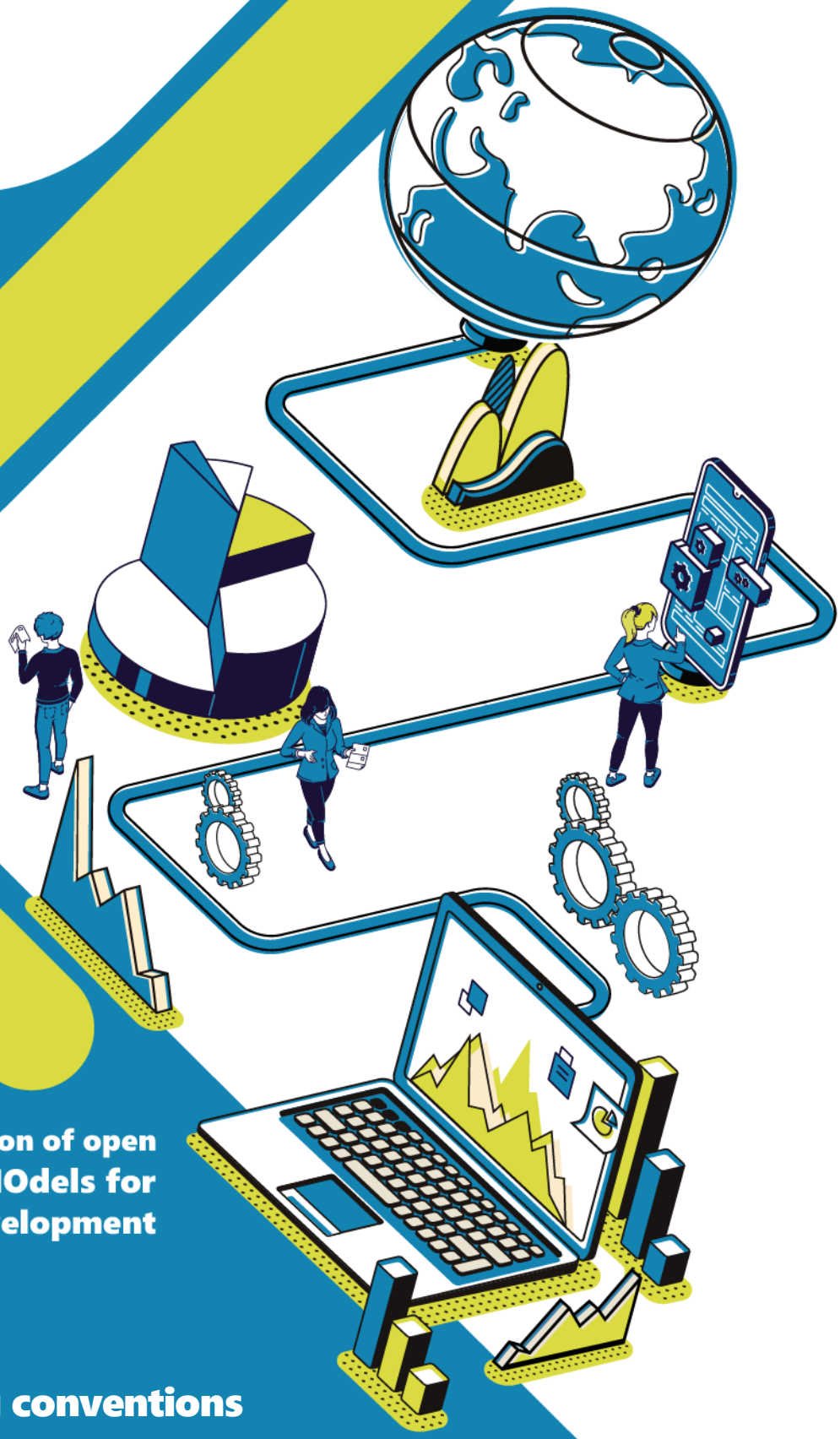

Delivering the next generation of open Integrated Assessment MOdels for Net-zero, sustainable Development

OMNIA Model naming conventions

WP3 – WP Update & Upgrade

19/05/2023

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Contents

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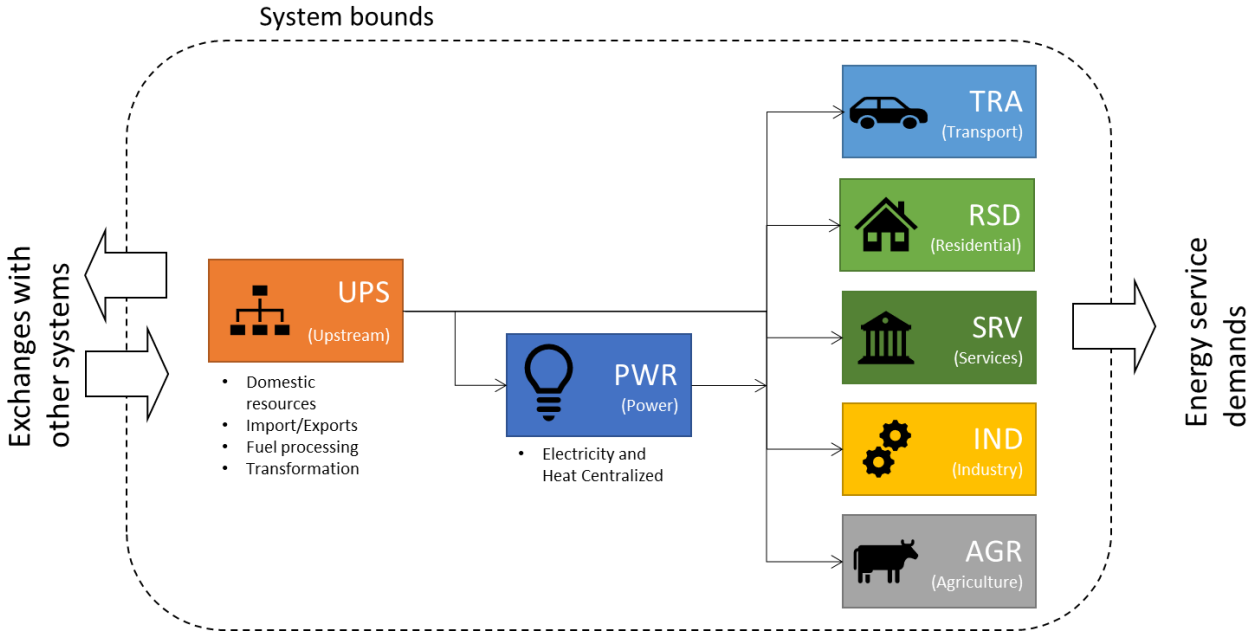
1. Naming conventions

High level model structure:



1.1 Energy commodities

General naming convention for sectoral commodities (excl. UPS):

AAAEEE

where
AAA = sector code (i.e. RSD, IND, UPS, PWR, SRV, TRA, AGR)
EEE = fuel code (e.g. GAS for Natural Gas, ELC for electricity, etc).

For UPS sector commodity names follows a different convention:

EEEBBB

where
EEE = fuel code (e.g. GAS for Natural Gas, ELC for electricity, etc).
BBB = Process/Step-related code (e.g. STG – Storage, PIP – Pipeline, etc.)

The description of these commodities always includes the full name and – in brackets – the sector to which they belong. For sub-sector specific commodities, the indication of the subsector is also included.

Examples of Codes / Descriptions: RSDGAS / Natural gas (RSD); OILPIP / Pipeline oil (UPS); IISHTH / Iron & Steel: Heat (IND)

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1.2 Material commodities and others

Material commodities are relevant only for the Industry sector. In general, these will follow the following naming convention:

- Materials originating from UPS sector (often as imports or mining):

  "M"**BBCCC**

  where
  BB = Sub-sector (e.g. IS for Iron & Steel, CM for Cement, etc.)
  CCC = commodity code (e.g. CMK – Clinker, SNT – Sinter)

- Intermediate materials produced within the sector:

  ABBCCC

  where
  A = sector (I for Industry)
  BB = Sub-sector (e.g. IS for Iron & Steel, CM for Cement, etc.)
  CCC = commodity code (e.g. CMK – Clinker, SNT – Sinter)

Other commodities may refer to emissions, or other dummy/proxy commodities (e.g. green certificates).
In the case of emissions, the following conventions are applied:

AAAFFF

where
AAA = sector code (i.e. RSD, IND, UPS, PWR, SRV, TRA, AGR)
FFF = emission code (e.g. CO2 for Carbon Dioxide, CH4 for Methane, etc).

The description of these commodities always includes the full name and – in brackets – the sector to which they belong. For sub-sector specific commodities, the indication of the subsector is also included.

Examples of Codes / Descriptions: MCMLST / Cement: Limestone (IND); ICMCLK / Cement: Clinker (IND); RSDCO2 / CO2 emissions (RSD); OILPIP / Pipeline oil (UPS)

1.3 Technology codes

1. **Residential naming code structure:**

A-BB-CC-DD_EEEXX

where
A = sector code (R for Residential)
BB = Energy Service (e.g. SH for Space Heating, WH for water heating, etc.)
CC = Building type (i.e. AB – Apartment Building, FH – Family House)
DD = Zone (e.g. Z1, Z2, etc.)
EEE = Fuel, based on the last 3 digits of the fuel used (e.g. GAS for Natural Gas, ELC for electricity, etc).

XX = 00 for BY techs; 01, 02, etc for new techs

Example: R-SH-FH-Z1_GAS00

Code used for residential dwellings technology:

A-"dw"**-CC-DD_XX**

where
A = sector code (R)
CC = Building type (i.e. AB – Apartment Building, FH – Family House)
DD = Zone (e.g. Z1, Z2, etc.)
XX = 00 for BY techs; 01, 02, etc. for new buildings

Example: R-dw-FH-Z1_00

2. Services naming code structure:

A-BB-CC-DD_EEEXX

where
A = sector code (S for Services)
BB = Energy Service (e.g. SH for Space Heating, WH for water heating, etc.)
CC = Sub-sector (e.g. PuHe – Public Healthcare, PrHo – Private Hospitality, etc.)
DD = Zone (e.g. Z1, Z2, etc.)
EEE = Fuel, based on the last 3 digits of the fuel used (e.g. GAS for Natural Gas, ELC for electricity, etc).
XX = 00 for BY techs; 01, 02, etc for new techs

Example: S-SH-PuHe-Z1_COA00

3. Industry naming code structure:

A-BB-CCCCCC_XX

where
A = sector code (I for Industry)
BB = Sub-sector (e.g. IS for Iron & Steel, CM for Cement, etc.)
CCCCCC = Process type (length can be flexible). For example, COKOV (Coke Oven), FINPRC (Finishing Process), BLAFUR (Blast Furnace)
XX = 00 for BY techs; 01, 02, etc for new techs

Example: I-IS-COKOV_00

4. Upstream naming code structure:

A-BBB-CCCCCC_XX

where
A = sector code (U for Upstream), excl. for mining and trade processes, where we will use MIN, IMP, EXP.
BBB = Subsector/Step (e.g. EXT – Extraction, TRF – Transformation, PIP – Pipeline, etc.)
CCCCCC = Process type (length can be flexible). For example, REFOIL (Oil Refinery), LNGSTOR (LNG storage), REFBIO (Bio-Refinery)
XX = 00 for BY techs; 01, 02, etc for new techs

Examples: U-TRF-REFOIL_00, MIN-OILCRD_00

5. Power sector naming code structure:

A-BB(B)-CC(CC)_EEEXX

where
A = sector code (P for Power)
BB = Plant type (e.g. TH – Thermal, CHP – Combined Heat & Power, RNW – Renewable)
CC/CCCC = Technology type (e.g. CCGT – Combined Cycle Gas Turbine, ST – Steam Turbine, etc.)
EEE = Fuel, based on the last 3 digits of the fuel used (e.g. GAS for Natural Gas, ELC for electricity, etc).
XX = 00 for BY techs; 01, 02, etc for new techs

Examples: P-TH(-CCGT)_GAS00, P-CHP_COA01

6. Transport sector naming code structure:

A-BBB-CC(CC)_EEEXX

where
A = sector code (T for Transport)
BBB = Mode (e.g. CAR for cars, BUS for buses, etc.)
CC = Technology type (e.g. Cnv – Conventional, Hyb – Hybrid, FC – Fuel Cell, BEV – Battery Electric Vehicle, etc.)
EEE = Fuel, based on the last 3 digits of the fuel used (e.g. GAS for Natural Gas, ELC for electricity, etc).
XX = 00 for BY techs; 01, 02, etc for new techs

Examples: T-CAR(-Hyb)_GSL00, T-CAR(-BEV)_ELC01

7. Distribution technologies naming code structure:

This set of technologies is used in the model to change commodity names (e.g. from UPS to endues sectors) and, in some cases, to introduce some elements related to distribution of commodities (e.g. capacities of distribution pipelines, delivery costs, losses, etc.).
For these technologies the following naming convention is used:

"FT-"**AAAEEE**

where

AAAEEE is the code of the commodity delivered (see section 1.1 for commodity rules)
Unless required (e.g. new/old infrastructures) no _XX dimension (00 for BY techs; 01, 02, etc for new techs) is included for these technologies.

Examples: FT-INDCOA; FT-RSDELC

1.4 Technology description

The description of technologies includes all relevant dimensions contained in the process code, i.e. the sector they belong, a basic description of the technology, and all other relevant dimensions (e.g. subsector, energy service, zone, etc.). When relevant, the description indicates whether it is an existing (BY technology) or a new technology.

Examples of process descriptions:

- Code: R-SH-FH-Z1_GAS00; Description: RSD Space Heating technology: Gas Family Houses in Zone 1 - Existing
- Code: S-SH-PUOf-Z1_COA01; Description: SRV Space Heating technology: Coal Offices (Public) in Zone 1 - New
- Code: I-CMKLNSW_00; Description: IND Cement technology: Semi-Wet-Kiln - Existing
- Code: U-TRF-REFOIL_01; Description: UPS Oil Refinery - New
- Code: MIN-OILCRD_00; Description: UPS Oil Mining - Existing
- Code: P-TH(-CCGT)_GAS00; Description: PWR Thermal Power Plant: Gas CCGT - Existing
- Code: T-CAR(-BEV)_ELC01; Description: TRA Cars: Battery Electric Vehicle - New
- Code: FT-INDCOA; Description: IND Fuel Tech: Coal