



EuHPN – Seminar : BIM for Healthcare

Leiden (NL), 17 April 201, 10:15-10:45 hour

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TNO



BIM

- › Definition
- › Vision
- › Context
- › Scope
- › Goals
- › Beyond BIM
- › Trends
- › Q&A



Discussion Topic

- 20 minutes – Presentation #20sheets
- 10 minutes – Q&A



Definition

A Building Information Model is:

A digital description
relevant for a certain scope in a certain context
of an existing or in the future existing structure
you can or could point at



Definition

Characteristics

- › 1D (documents), 2D, 3D (drawings), nD Smart objects/properties
- › Structured (machine-processable)
- › Right, up-to-date, complete (multiple views/aspects)
- › Internal versus external: Little BIM <> Big BIM
- › Uniformity/interoperability: OpenBIM
- › Transparency: MetaData



Vision

BIM enables optimization and innovation in and over the life-cycle and supply-chain by improved information management & communication and thereby improved decision making by and cooperation between all relevant stakeholders



Vision

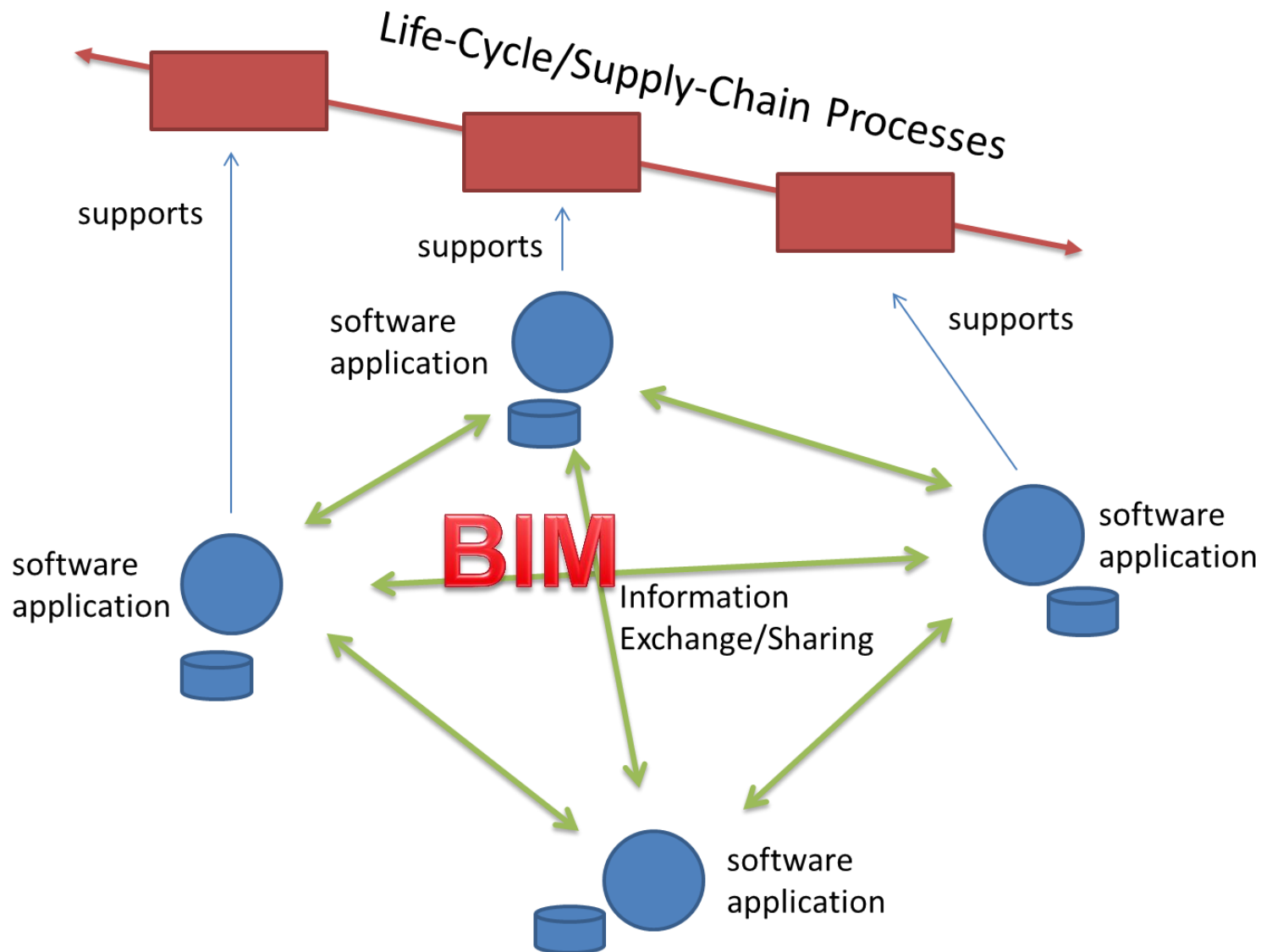
Optimization & Innovation

- › Optimization: Integrating Existing Functionalities
 - › Forward integration
 - › Forward Reuse of information
 - › Enrich data
 - › Backward integration
 - › Backward reuse of information
 - › Select iso define (i.e. object libraries)

- › Innovation: Introducing New Functionalities
 - › Multi-scale Energy Simulation/Analysis
 - › Multi-stakeholder/Multi-criteria Evidence-based design
 - › Parametric Hospital (reqs & design) Configuration

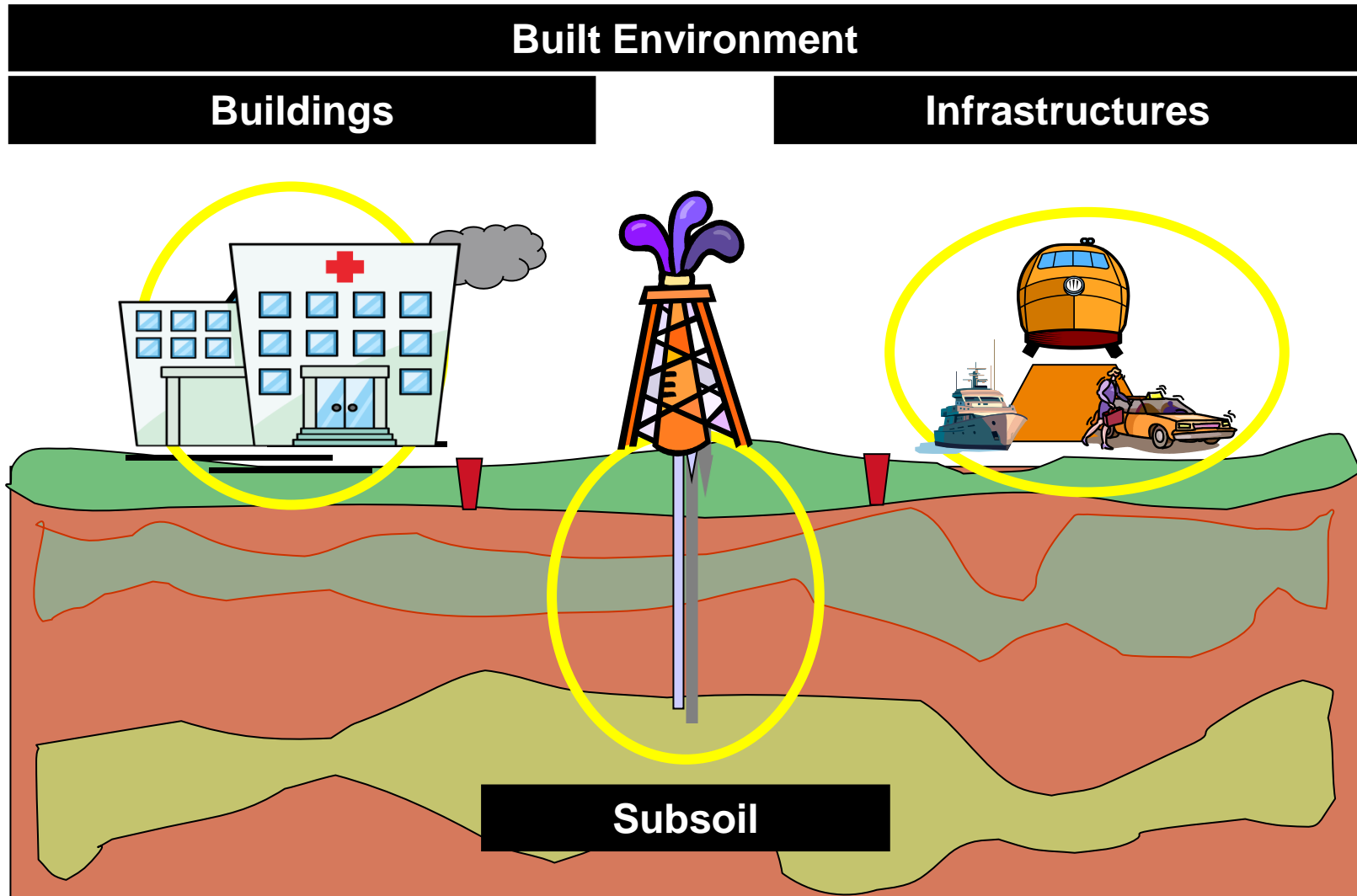


Vision





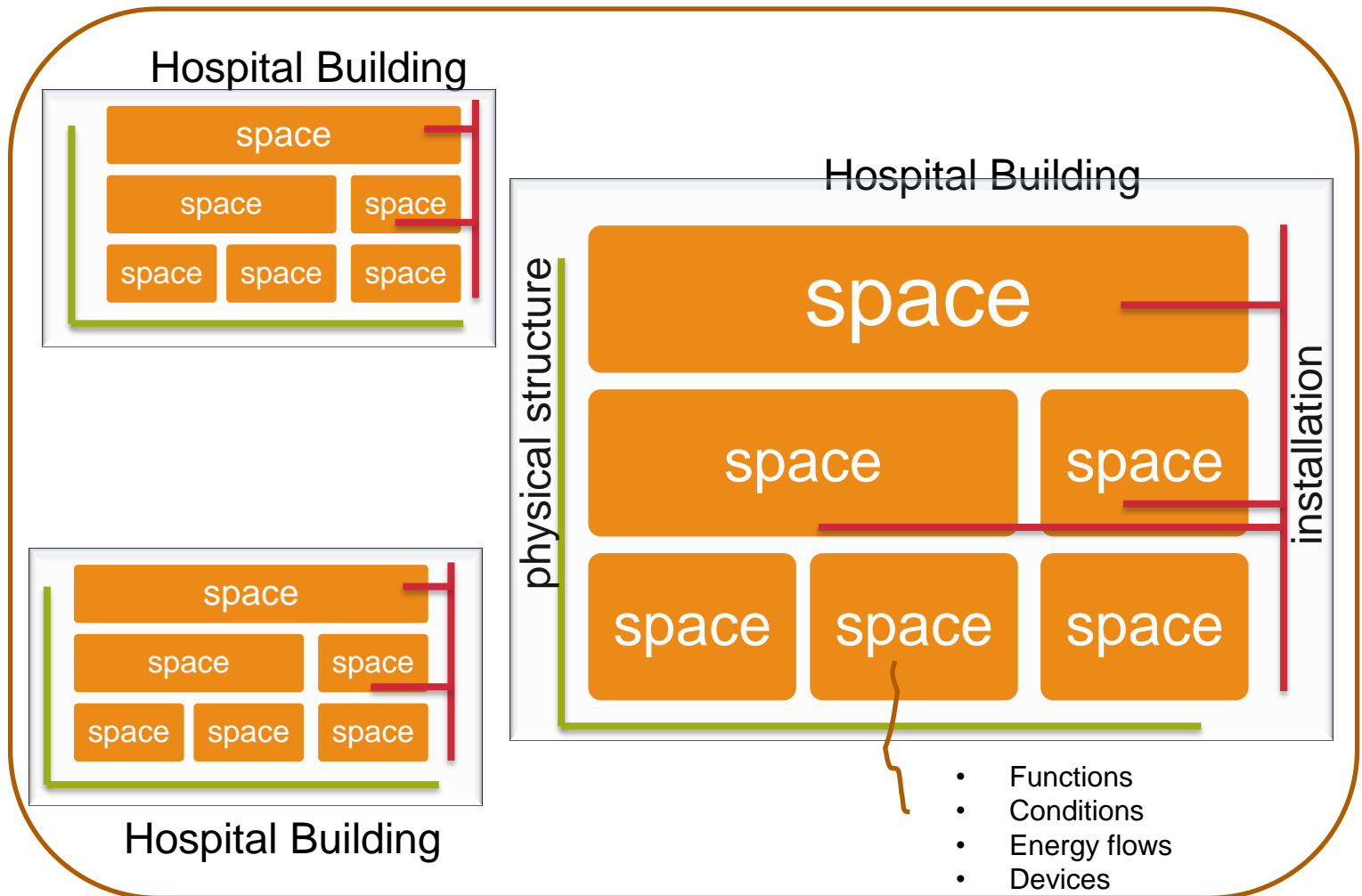
Context





Context



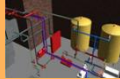



Hospitals Districts as typical health care asset






Scope: Life-cycle & Supply-chain

Development of new or Retrofitting of existing

Life-cycle Phase Supply-chain Level	Program * (‘specification’)	Design	Build (‘materialization’)	Operate *
Areas 				
Structures 				
Systems 				
Parts (“equipment”) 				
Components 				
Materials 				

time



* Covering both Asset Management , Asset Usage Management & Maintenance



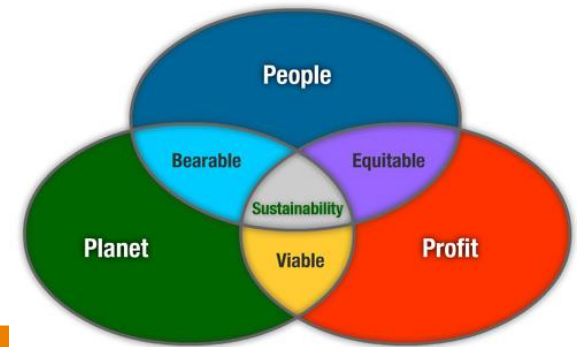
PDBO Consequence for BIM

- › BIM asRequired
- › BIM asProposed
- › BIM asBuild
- › BIM asOperated

- › All linked and kept in sync



Goals

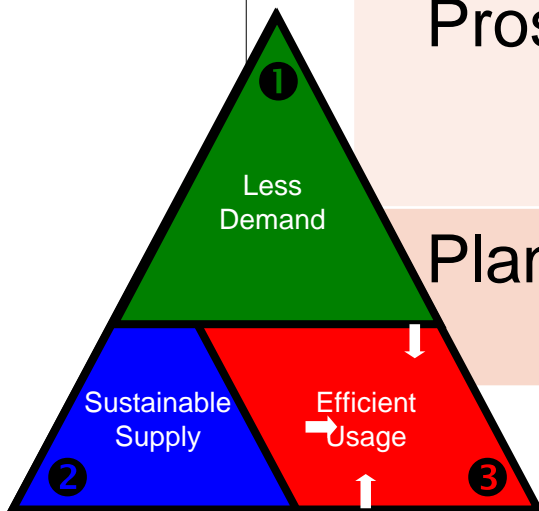


People (patients, visitors & medical staff)
*More Functionality, better Conditions
 Comfort, Safety ... in/over LC/SC*



Prosperity
Less Cost / Time ... in/over LC/SC

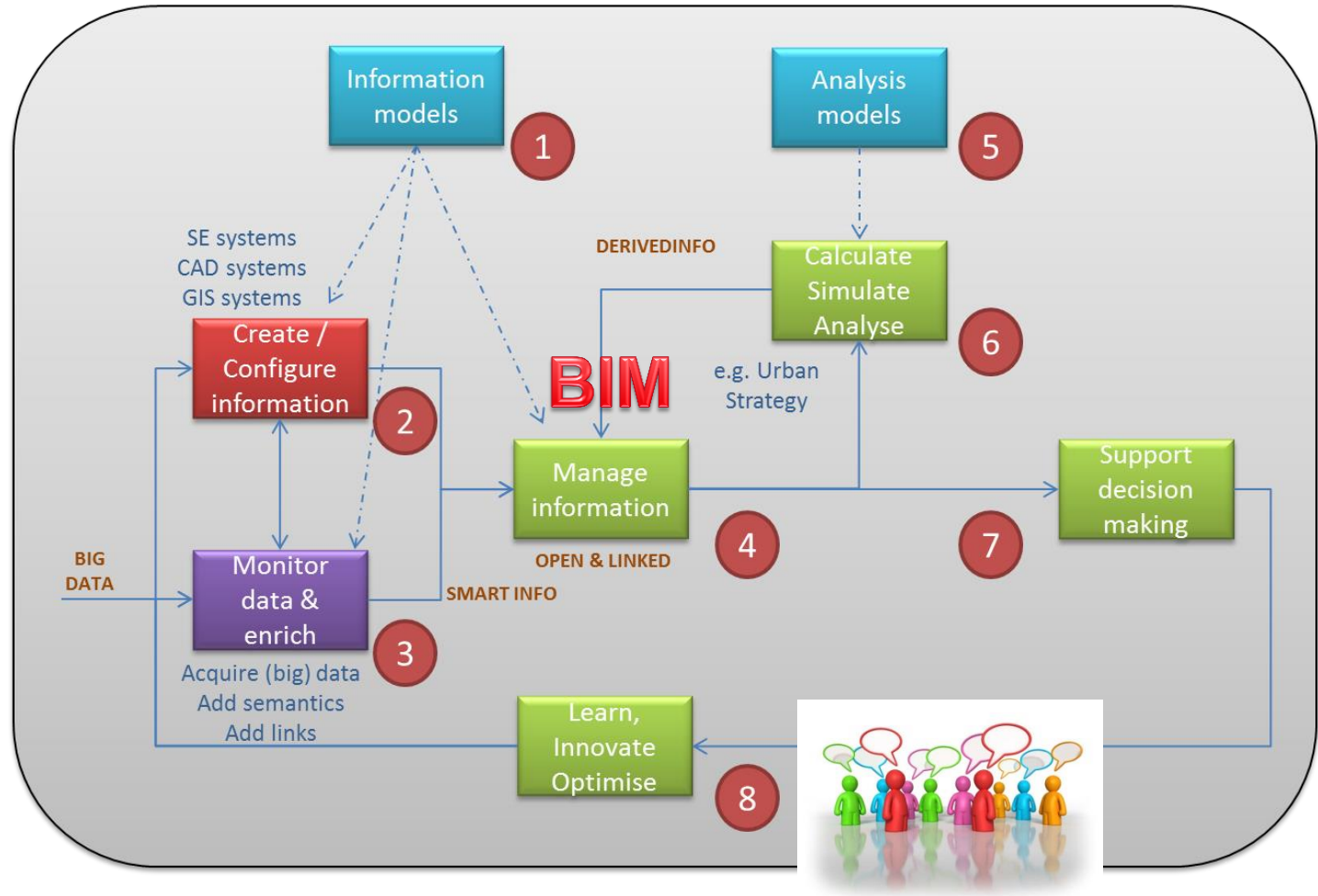
Planet
Less Energy/CO₂ ... in/over LC/SC





Beyond BIM

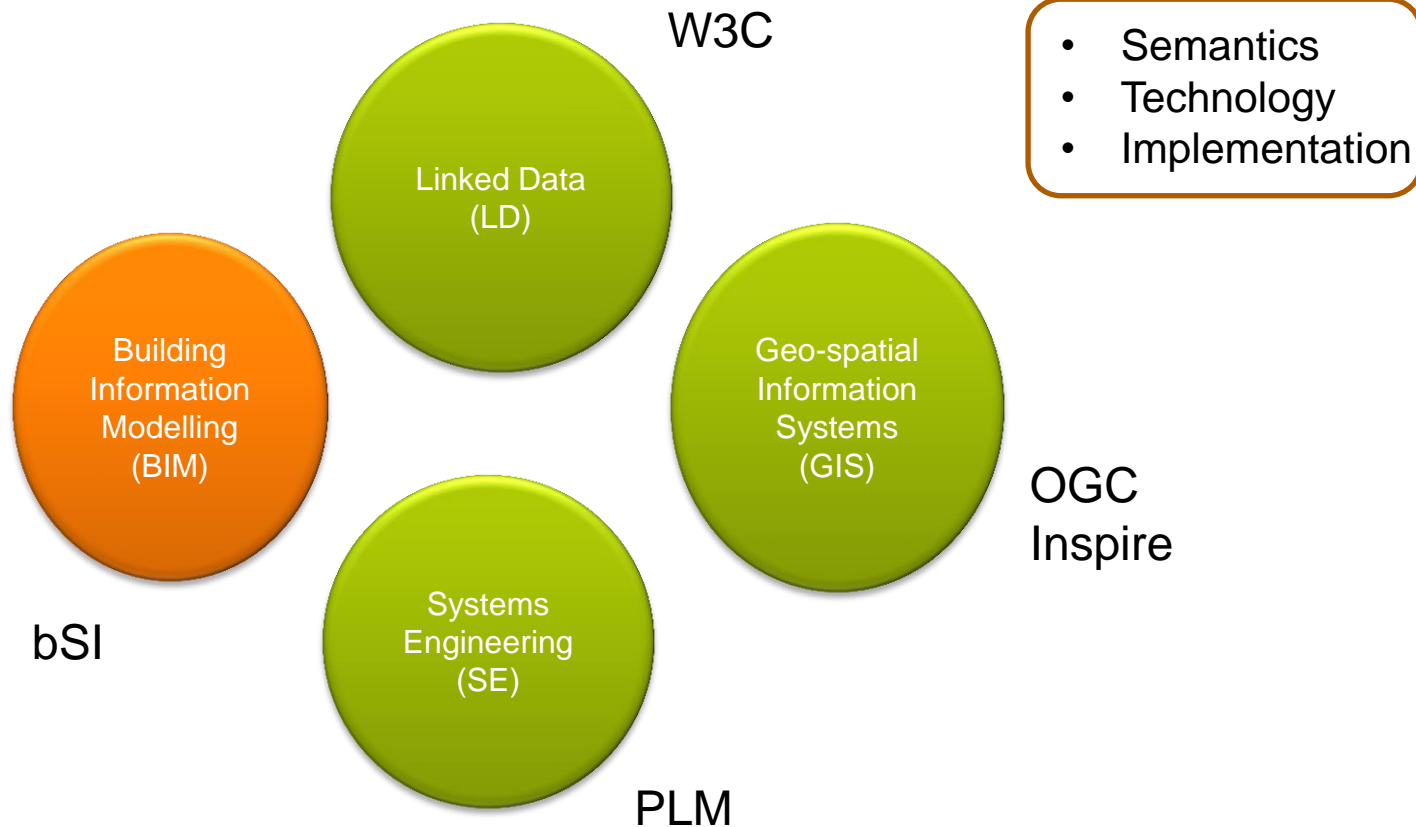
Information Life-cycle





Beyond BIM

Multiple worlds, hybrid solutions





Beyond BIM

Multiple worlds, hybrid solutions

- › Geographical Information Systems (GIS)
 - › areas, surfaces
 - › typically start from existing things (“describing”)
 - › “location”

- › Systems Engineering (SE)
 - › functions <> function fulfillers
 - › requirements <> performance
 - › “validation”

- › Linked Data (LD)
 - › flexible
 - › extensible, multiple views, strong semantics
 - › “web-based” & “dynamic”



Trends Changing HealthCare

- › Where, by whom & how is care delivered?
- › Simple <> Complex care
- › Common <> Specialized care
- › Preventive <> Curative <> Palliative care
- › Acute <> Chronic care

- › Patient Age
- › Accessibility
- › Financing

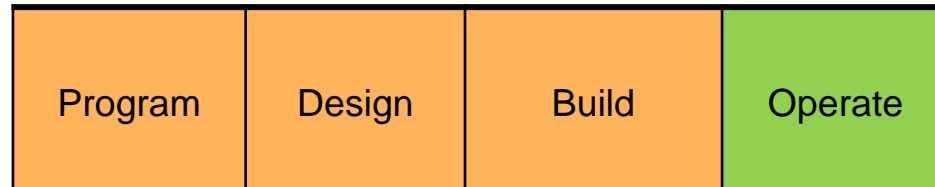
- › BIM interaction (2-way!) ? >>> Discussion Topic later



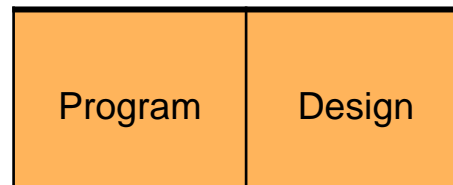


Trends Industrial Processes

FROM




TO



Product/Service Development



Trends Smarter Models

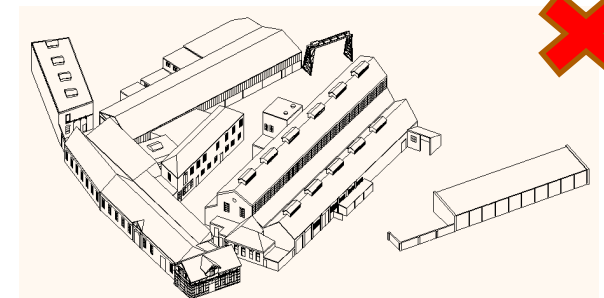
- › No paper
- › No pixels
- › No documents & drawings
- › nD Smart objects & properties (“semantics”)
- ›  Derived



```

ENTITY IfcWall
SUPERTYPE OF (IfcWallStandardCase)
SUBTYPE OF ( IfcBuildingElement);
    wall_height : REAL;
END_ENTITY;

```





Enough theory...now...

- › Some Myth Busting ...
 - › Let's have some provocations

- › Use Cases
 - › See how this all matches with practical BIM applications

- › Discussion Topics
 - › Try to get some more opinions/experiences w.r.t. three specific topics
 - › Changing Healthcare
 - › Operational BIM
 - › Learning / Knowledge Building



Q&A



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