

Εφαρμογές του BIM στον Αρχιτεκτονικό Σχεδιασμό

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Αρχιτέκτων - Μηχανικός ΕΜΠ

Π.Μ.Σ «Ψηφιακές Μορφές Τέχνης» ΑΣΚΤ

Διδάκτωρ Τμήματος Αρχ. Μηχ. Πανεπιστημίου Θεσσαλίας

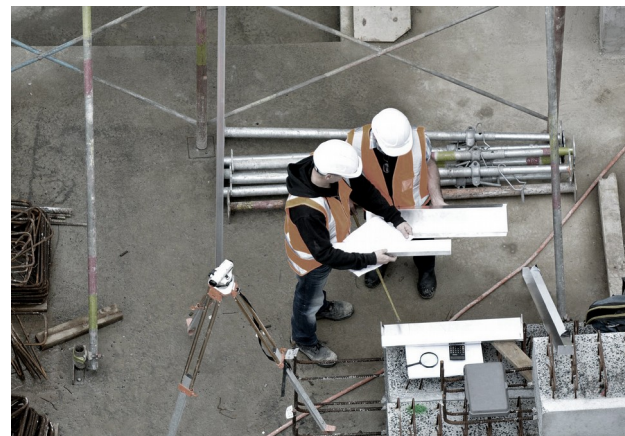
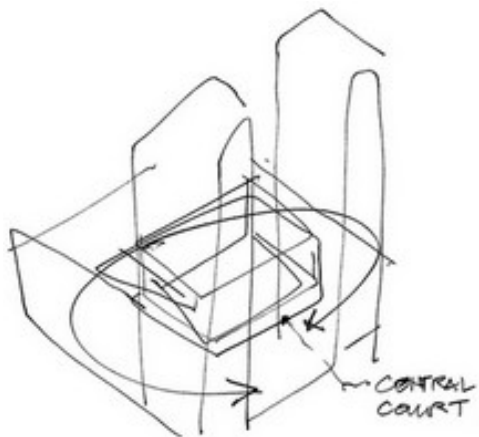
Εκπρόσωπος ΤΕΕ και ΣΑΔΑΣ-ΠΕΑ στο BIM workgroup του Συμβουλίου Αρχιτεκτόνων της Ευρώπης (Architects' Council of Europe)

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1. BIM – Βασικές Έννοιες

Back to BIM

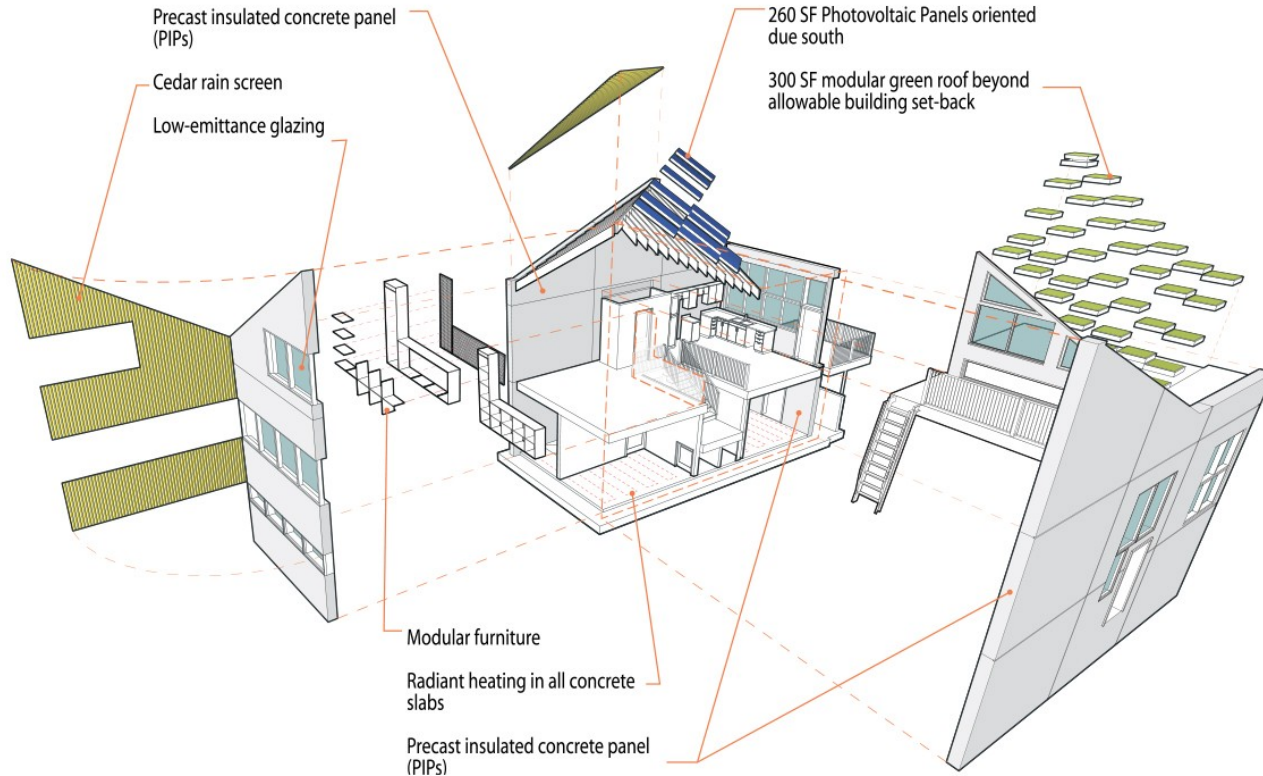


Back to BIM



Cattedrale di Santa Maria del Fiore, Filippo Brunelleschi (τρούλος) 1296--1436

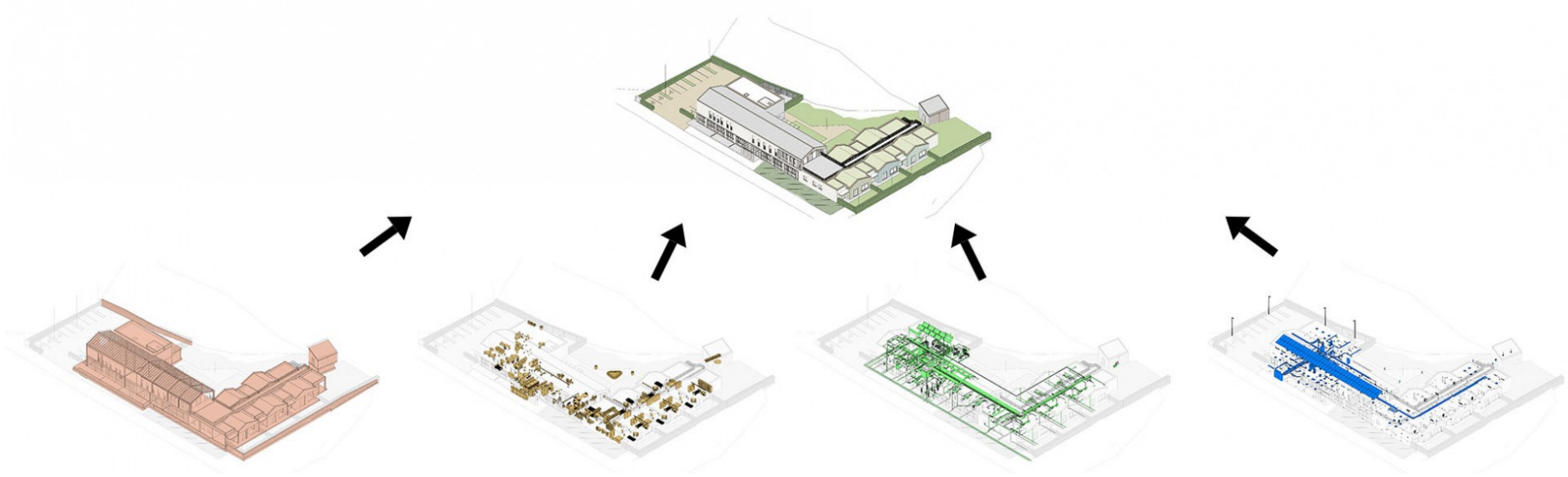
Μελέτη σε ψηφιακό 3d μοντέλο



Διαχείριση της πληροφορίας σε όλες τις φάσεις του κύκλου ζωής ενός κτιρίου



Federated model



BIM execution plan

ISO 19650-1

Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) – **information management using building information modelling**

Part 1: Concepts and principles



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ISO 19650-2

Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) – **information management using building information modelling**

Part 2: Delivery phase of assets



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ISO 19650-3

Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) – **information management using building information modelling**

Part 3: Operational phase of assets



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ISO 19650-4

Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) – **information management using building information modelling**

Part 4: Information exchange



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ISO 19650-5

Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) – **information management using building information modelling**

Part 5: Security-minded approach to information management



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ISO 19650-6

In Development



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ARCHITECTS' COUNCIL OF EUROPE AN INTRODUCTION TO BIM

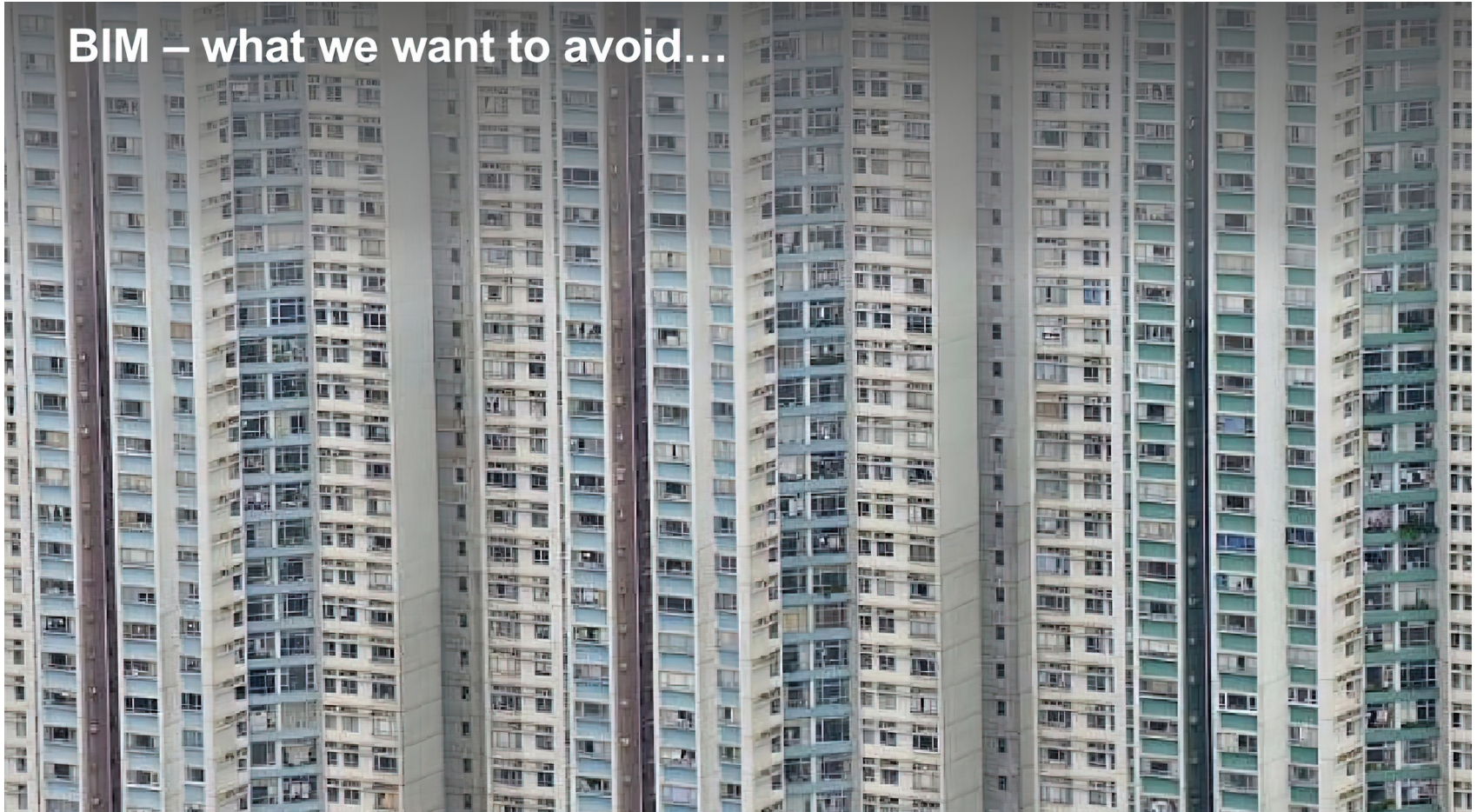
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| [2] CONTRACTS AND SCOPE OF SERVICE | 5 |
| [3] SCOPE OF SERVICE VERSUS LOD (LEVEL OF DEFINITION) | 6 |
| [4] MODELLING PRACTICE | 8 |
| [5] CLASSIFICATION/TIPOLOGY | 10 |
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| [7] LOI (LEVEL OF INFORMATION) | 13 |
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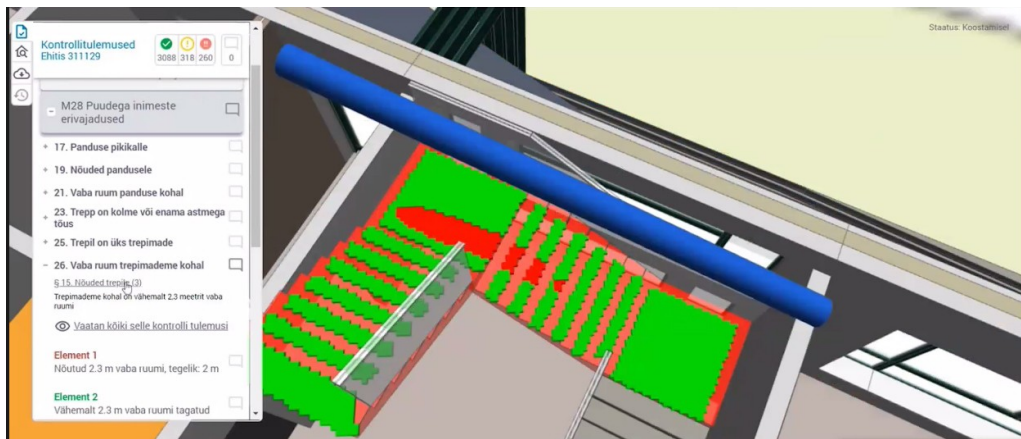
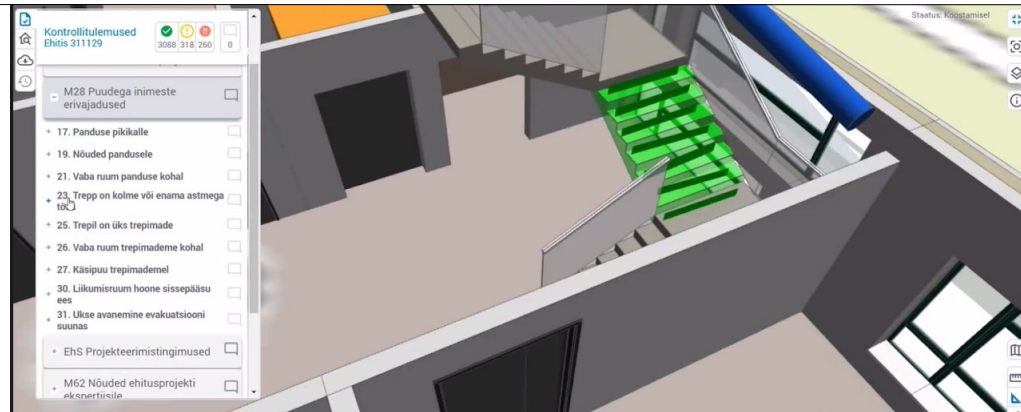
BIM – what we hope to achieve...



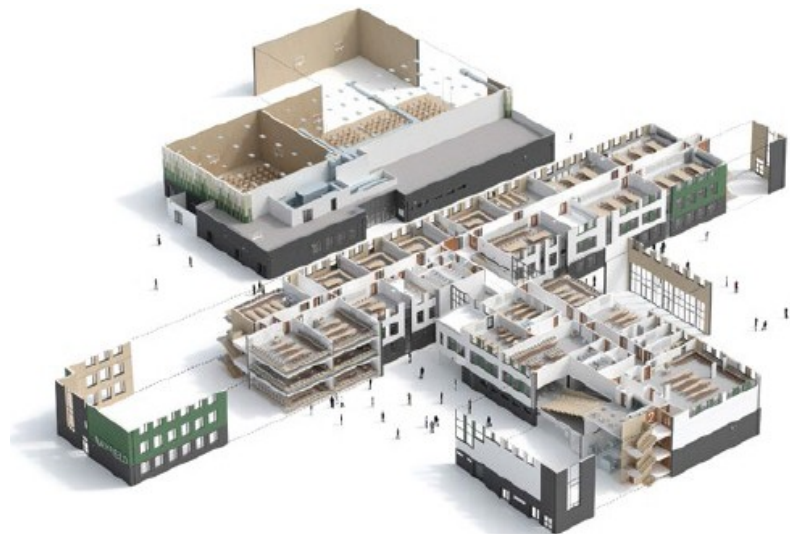
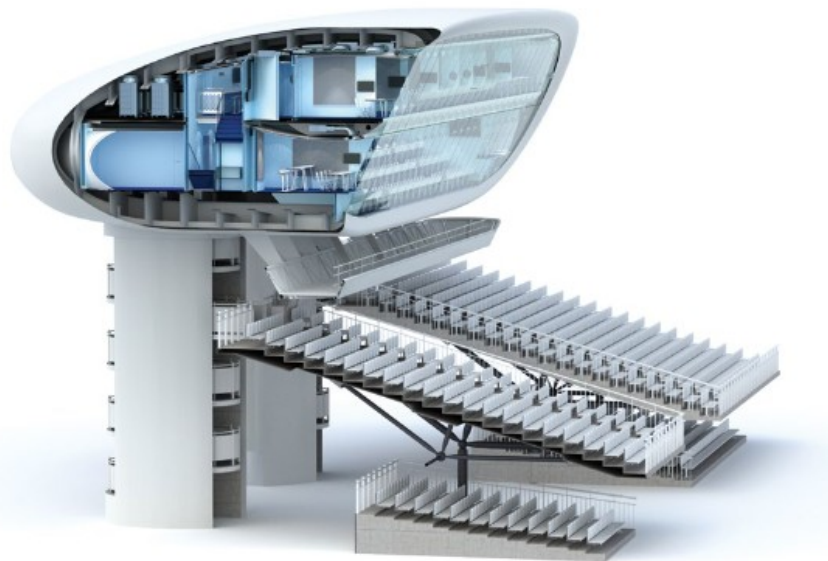
BIM – what we want to avoid...

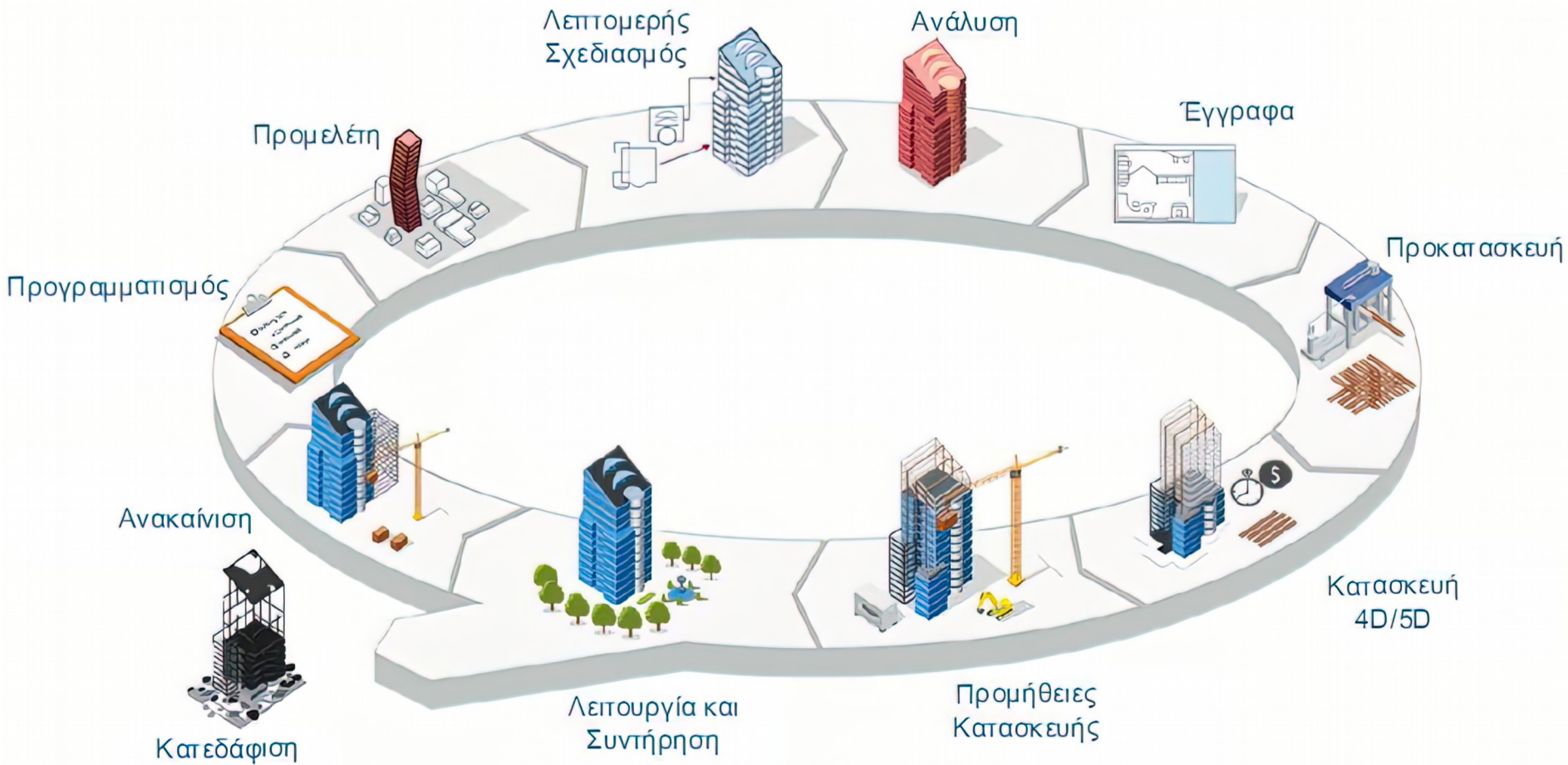


Έλεγχος / Αδειοδότηση με BIM, Εσθονία










2. Πλεονεκτήματα Μελέτης με BIM





Χωρικός συντονισμός (Clash detection)

| STR VS MEP | Tolerance | Clashes | New | Active | Reviewed | Approved | Resolved | Type | Status |
|------------|-----------|---------|-----|--------|----------|----------|----------|------|--------|
| | 0.050m | 50 | 49 | 1 | 0 | 0 | 0 | Hard | OK |

| Image | Clash Name | Status | Distance | Grid Location | Description | Date Found | Assigned To | Clash Point | Item 1 | | | | Item 2 | | | | Comments |
|---|------------|--------|----------|----------------------------|-------------|--------------------|-------------|--|---------------------|------------------|-------------------------|-----------|----------------------|----------------------------|---------------------------|-----------|--|
| | | | | | | | | | Item ID | Layer | Item Name | Item Type | Item ID | Layer | Item Name | Item Type | |
|  | Clash1 | Active | -0.300 | T-W : - 00 - Absolute Zero | Hard | 2017/1/31 22:35.16 | TOM | x:530141.220, y:183282.171, z:61.981 | Element ID: 2865321 | 09 - NINTH FLOOR | Concrete - Cast In Situ | Solid | Element ID: 13212004 | Ninth Floor Services Datum | Cable Tray with Fittings | Line | #0 - macalis - 2017/1/31 22:36.14 Assigned to TOM _____ PLEASE CREATE OPENING IN WALL FOR TRAY |
|  | Clash2 | New | -0.285 | J-W : - 00 - Absolute Zero | Hard | 2017/1/31 22:35.16 | | x:530143.257, y:183296.040, z:64.462 | Element ID: 4228318 | 10 - TENTH FLOOR | Concrete - Cast In Situ | Solid | Element ID: 5358274 | Roof Services Datum | Cable Tray with Fittings | Line | |
|  | Clash3 | New | -0.253 | T-W : - 00 - Absolute Zero | Hard | 2017/1/31 22:35.16 | | x:530141.102, y:183293.476, z:64.490 | Element ID: 4228319 | 10 - TENTH FLOOR | Concrete - Cast In Situ | Solid | Element ID: 5360025 | Roof Services Datum | Cable Tray with Fittings | Line | |
|  | Clash4 | New | -0.247 | J-W : - 00 - Absolute Zero | Hard | 2017/1/31 22:35.16 | | x:530143.195, y:183294.657, z:64.437 | Element ID: 4228318 | 10 - TENTH FLOOR | Concrete - Cast In Situ | Solid | Element ID: 5358346 | Roof Services Datum | Cable Tray with Fittings | Line | |
|  | Clash5 | New | -0.223 | T-W : - 00 - Absolute Zero | Hard | 2017/1/31 22:35.16 | | x:530144.953, y:183282.001, z:63.845 | Element ID: 2954527 | 10 - TENTH FLOOR | Concrete - Cast In Situ | Solid | Element ID: 13139150 | 10 - Roof | Metal - Aluminium Extract | Line | |
|  | Clash6 | New | -0.223 | T-W : - 00 - Absolute Zero | Hard | 2017/1/31 22:35.16 | | x:530141.732, y:183282.147, z:63.845 | Element ID: 2954527 | 10 - TENTH FLOOR | Concrete - Cast In Situ | Solid | Element ID: 13139106 | 10 - Roof | Metal - Aluminium Extract | Line | |
|  | Clash7 | New | -0.223 | T-W : - 00 - Absolute Zero | Hard | 2017/1/31 22:35.16 | | x:530144.660, y:183285.168, z:63.936 | Element ID: 2956793 | 10 - TENTH FLOOR | Concrete - Cast In Situ | Solid | Element ID: 13139184 | 10 - Roof | Metal - Aluminium Extract | Line | |

Έλεγχος Κόστους - Προμετρήσεις

πρω ibis IBIM meerstaten Versie #1 Bouwkundig ibis demo-project Instellingen Model ibis Demo

ibis demo project

- ibis demo locatie
 - Voorbereid woning
 - Functieing -1
 - Borgatie gebied 0
 - Besam
 - BinnengebiedsProcy
 - Coluim
 - Covering
 - Door
 - Floer Tegelmat
 - FuortsmingElement
 - Stap
 - Staz
 - Waal
 - DF 0 1
 - DF 0 2
 - DF 0 3
 - DF 0 4
 - DF 0 5
 - DF 0 6
 - DF 0 7
 - DF 0 8
 - DF 0 9
 - DF 0 10
 - IV 1-000 0 11
 - IV 1-001 0 12
 - IV 1-003 0 13
 - IV 1-004 0 14

Toevoegen Binnenwanden Sorteer meerstaat Subtotaal toevoegen Verwijder regel

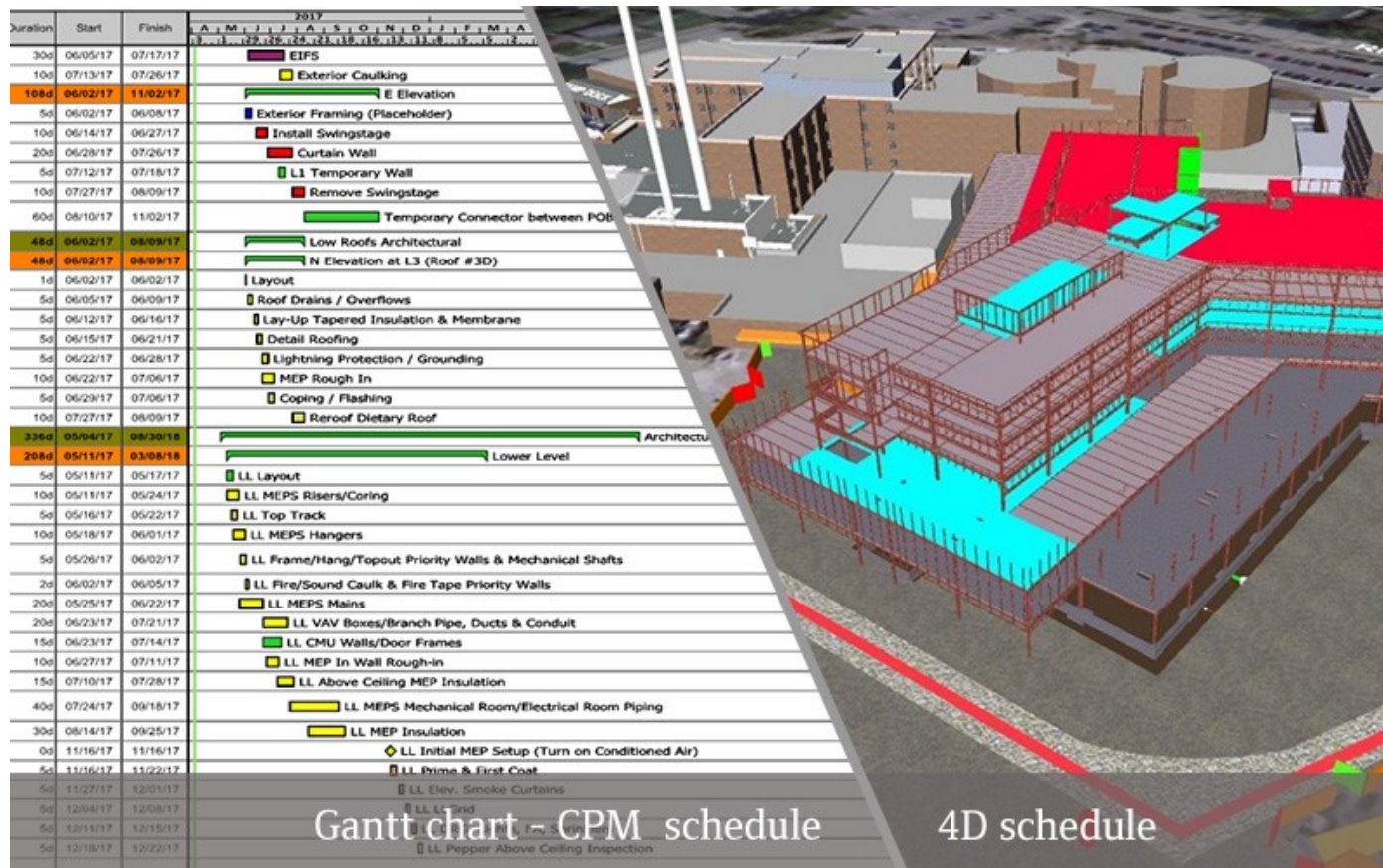
Waal (16)

| Object | Aantal | Type | Code | Oppervlakte [m ²] | Lengte [mm] | Hoogte [mm] | Dikte [mm] | lithoud [m ³] | Opmerking |
|--------------------|-----------|------|------------------------------|-------------------------------|------------------|------------------|------------|---------------------------|-----------|
| IV 2-001 1 9 | 1 | Waal | 241-Orisgebod binnenwanden | 12.120 | 6717,011 | 2400,000 | 122,000 | 1,514 | |
| Dragend | 5 | | | 44.726 | 24284.348 | 12096.000 | | 6.177 | |
| IV 2-004 1 12 | 1 | Waal | 242-Net-dragende binnenmuren | 2.951 | 2002,082 | 2400,000 | 122,000 | 0,360 | |
| IV 2-007 1 15 | 1 | Waal | 242-Net-dragende binnenmuren | 6.879 | 2866,287 | 2400,000 | 122,000 | 0,839 | |
| IV 1-004 0 14 | 1 | Waal | 242-Net-dragende binnenmuren | 4.659 | 1941,082 | 2400,000 | 122,000 | 0,568 | |
| IV 1-005 0 15 | 1 | Waal | 242-Net-dragende binnenmuren | 3.504 | 1460,100 | 2400,000 | 122,000 | 0,428 | |
| IV 2-005 1 14 | 1 | Waal | 242-Net-dragende binnenmuren | 6.819 | 2841,082 | 2400,000 | 122,000 | 0,832 | |
| IV 2-008 1 16 | 1 | Waal | 242-Net-dragende binnenmuren | 4.435 | 2161,619 | 2400,000 | 122,000 | 0,509 | |
| IV 1-005 0 16 | 1 | Waal | 242-Net-dragende binnenmuren | 3.864 | 2599,100 | 2200,000 | 122,000 | 0,430 | |
| IV 1-003 0 13 | 1 | Waal | 242-Net-dragende binnenmuren | 4.964 | 2841,082 | 2400,000 | 122,000 | 0,564 | |
| IV 2-009 1 17 | 1 | Waal | 242-Net-dragende binnenmuren | 1.344 | 560,000 | 2400,000 | 122,000 | 0,164 | |
| IV 1-007 0 17 | 1 | Waal | 242-Net-dragende binnenmuren | 1.344 | 560,000 | 2400,000 | 122,000 | 0,164 | |
| IV 2-010 1 18 | 1 | Waal | 242-Net-dragende binnenmuren | 3.504 | 1460,100 | 2400,000 | 122,000 | 0,428 | |
| IV 2-005 1 13 | 1 | Waal | 242-Net-dragende binnenmuren | 6.819 | 2841,082 | 2400,000 | 122,000 | 0,832 | |
| IV 1-008 0 18 | 1 | Waal | 242-Net-dragende binnenmuren | 6.819 | 2841,082 | 2400,000 | 122,000 | 0,832 | |
| Net dragend | 13 | | | 57.804 | 27494.693 | 31006.000 | | 6.999 | |
| Totaal | 18 | | | 102.631 | 61789.041 | 43096.000 | | 13.176 | |

Waal (16)

| Identificatie | Object Type | Tag | Materialen |
|--------------------|-------------|-----|----------------|
| Hoeeenheden | | | |
| GrossFloorArea | | | m ² |
| NetVolume | | | m ³ |
| GrossSideArea | | | m ² |
| Length | | | mm |
| Height | | | mm |
| NetFloorArea | | | m ² |
| Width | | | mm |
| NetSideArea | | | m ² |
| GrossVolume | | | m ³ |
| Height | | | mm |

Χρονικός Προγραμματισμός - 4D schedule



Gantt chart - CPM schedule

4D schedule

Facility Management



| A | B | C | D |
|--|--------------------------|------------|--|
| Name | CreatedBy | CreatedOn | Category |
| Pre-planted vegetation blanket | info@ABCArchitecture.com | 2017-04-05 | Pr_45_57_91_65 : Pre-planted vegetation blanket |
| Rootball securing assembly | info@ABCArchitecture.com | 2017-04-05 | Pr_45_63_64_72 : Rootball securing frames |
| Stakes | info@ABCArchitecture.com | 2017-04-05 | Pr_45_63_64_84 : Stakes |
| Tree grilles | info@ABCArchitecture.com | 2017-04-05 | Pr_45_63_64_87 : Tree grilles |
| Tree guards | info@ABCArchitecture.com | 2017-04-05 | Pr_45_63_64_88 : Tree guards |
| Corrosion inhibitor chemicals for | info@ABCArchitecture.com | 2017-04-05 | Pr_60_55_96_15 : Corrosion inhibitor chemicals |
| Scale inhibitor chemicals for open | info@ABCArchitecture.com | 2017-04-05 | Pr_60_55_96_77 : Scale inhibitor chemicals |
| Dosing pots | info@ABCArchitecture.com | 2017-04-05 | Pr_60_55_97_07 : Biocide dosing pots ; Pr |
| Gas fired condensing boilers | info@ABCArchitecture.com | 2017-04-05 | Pr_60_60_08_34 : Gas fired condensing boilers |
| Storage water heaters, gas fired | info@ABCArchitecture.com | 2017-04-05 | Pr_60_60_96_34 : Gas-fired storage water heaters |
| Immersion heaters | info@ABCArchitecture.com | 2017-04-05 | Pr_60_60_96_42 : Immersion heaters |
| Low temperature hot water heaters | info@ABCArchitecture.com | 2017-04-05 | Pr_60_65_37_47 : Low temperature hot water heaters |
| PVC-U solid wall below ground | info@ABCArchitecture.com | 2017-04-05 | Pr_65_52_07_88 : Unplasticized polyvinyl chloride |
| Covers and gratings for floor gullies | info@ABCArchitecture.com | 2017-04-05 | Pr_65_52_24_30 : Floor gully covers and gratings |
| Floor gullies | info@ABCArchitecture.com | 2017-04-05 | Pr_65_52_24_31 : Floor gullies |
| Freestanding grease traps and catchers | info@ABCArchitecture.com | 2017-04-05 | Pr_65_52_25_32 : Free-standing grease traps and catchers |
| Pressure gauges | info@ABCArchitecture.com | 2017-04-05 | Pr_65_52_34_66 : Pressure gauges |
| Temperature gauges | info@ABCArchitecture.com | 2017-04-05 | Pr_65_52_34_88 : Temperature gauges |

COBie

Modify | Mechanical Equipment

Properties

M_VAV Unit - Single Duct
150 mm

Mechanical Equipment (1)

Panel

Circuit Number

Mechanical

Supply Air Pressure Drop 54.70 Pa

System Classification Supply Air

System Name Supply air

Power

Mechanical - Flow

Air Flow 16.19 L/s

Critical Path

Identity Data

Image

Comments

Mark VAV-113

Phasing

Phase Created Existing

Phase Demolished None

Other

AssetIdentifier

BarCode

InstallationDate

SerialNumber

TagNumber

WarrantyStartDate

dروفus_occurrence_id2 1065

[Properties help](#) Apply

Project Browser - COBie Test Project_Mech

Views (all)

Floor Plans

- 1st Floor - Mech
- Basement - Mech
- Roof

Ceiling Plans

- 1 - Ceiling Mech

System Component D.30.00030/004
150 mm: VAV-113

COBie Export - Component

| | |
|-------------------|---|
| Name | 01.007-D.30.00030-M_VAV Unit - Single Duct: 150 |
| CreatedBy | |
| CreatedOn | 6/18/2018 10:49:51 AM |
| TypeName | D.30.00030 M_VAV Unit - Single Duct: 150 mm |
| Space | 01.007 |
| Description | Parallel Fan Powered VAV Box |
| ExtSystem | dRofus Systems - - Unique |
| ExtObject | dRofus Id 1065 |
| ExtIdentifier | dRofus Occurrence D.30.00030 M_VAV Unit - Sing |
| SerialNumber | |
| InstallationDate | 20181008 |
| WarrantyStartDate | 20181008 |
| TagNumber | |
| BarCode | |
| AssetIdentifier | |

COBie Export - System

| | |
|---------------|--|
| Name | D.30.00041/001-01 - Supply air |
| CreatedBy | |
| CreatedOn | 6/18/2018 10:49:51 AM |
| Category | 23-33 41 17 13: Variable Air Volume Terminal Uni |
| ComponentName | 01.007-D.30.00030-M_VAV Unit - Single Duct: 150 |
| Description | D.30.00041/001-01 - Supply air |

Undo Save

VIEWER COBie Project

Room 01.007 - ...

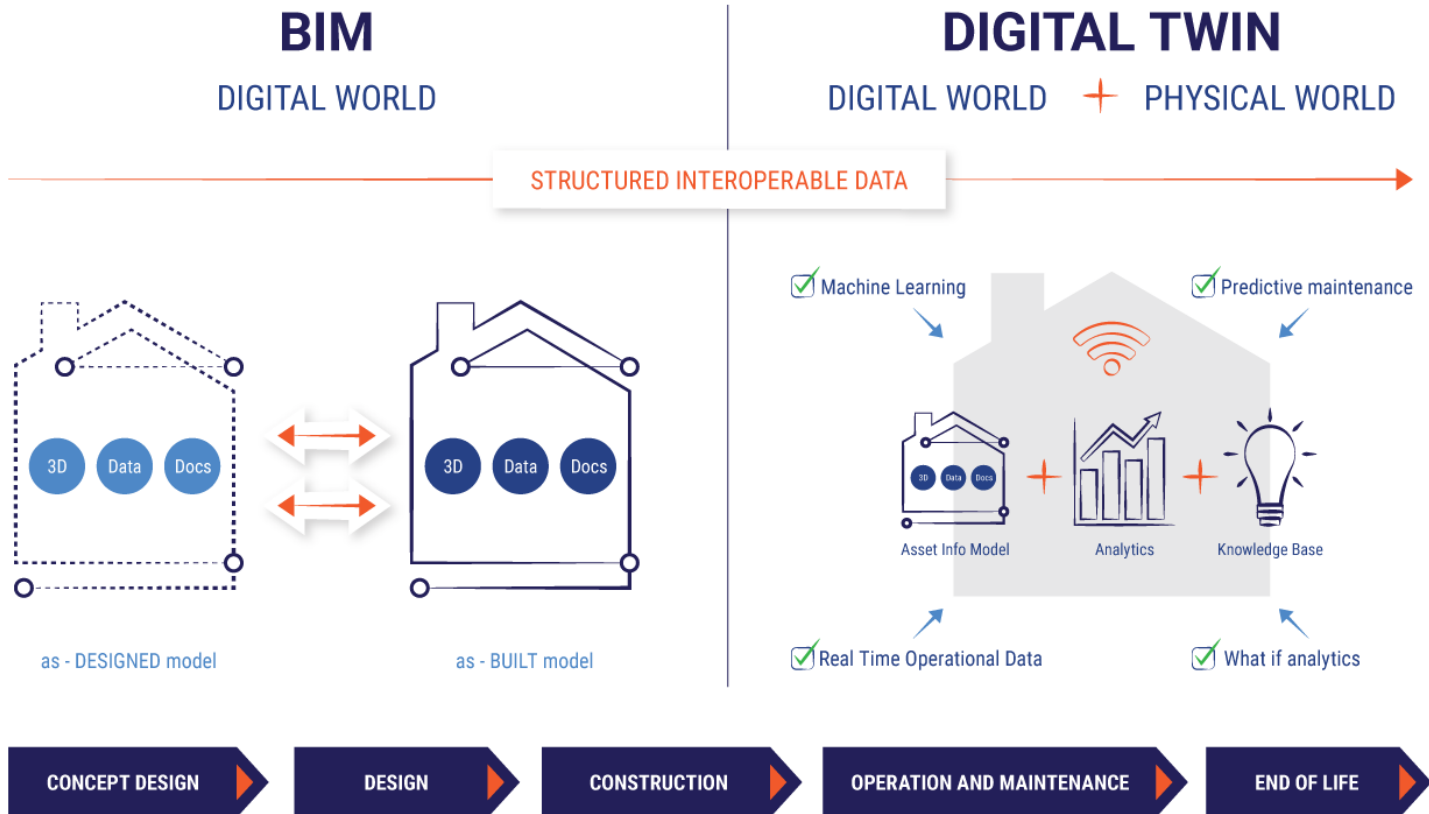
Details Exists both in dRofus and IFC

Zoom 2D Viewer IFC Data

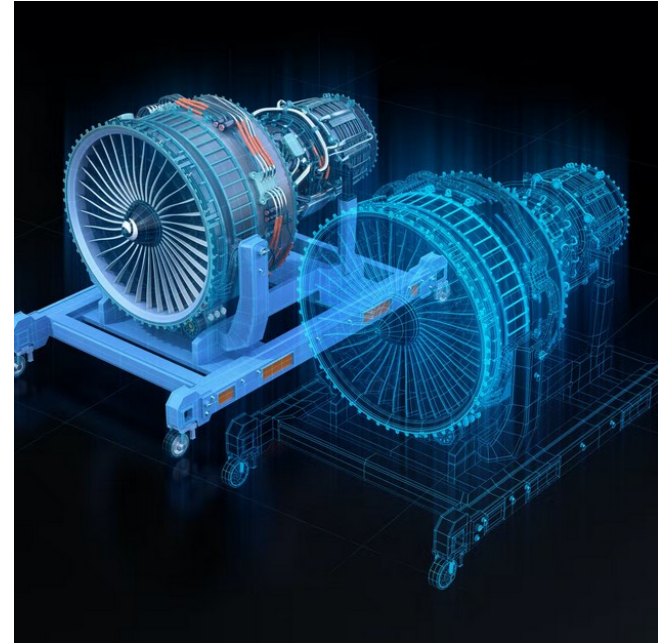
Deactivate X-RAY Increase/Decrease height

3D Model View

Ψηφιακό Αντίγραφο (Digital Twin)



Ψηφιακό Αντίγραφο (Digital Twin)



- Ψηφιακή αναπαράσταση ενός φυσικού αντικειμένου
- Διαφορετική σημασία ανάλογα με την βιομηχανία [industry] που χρησιμοποιείται
- Ψηφιακό στοιχείο [digital asset]: Κτίριο, Εξοπλισμός, Όχημα, Υποδομές, Πληροφορία

Pre-fabrication & modular construction 1

Advanced building materials 2

3D printing & additive manufacturing 3

Autonomous construction 4

Augmented reality & virtualization 5

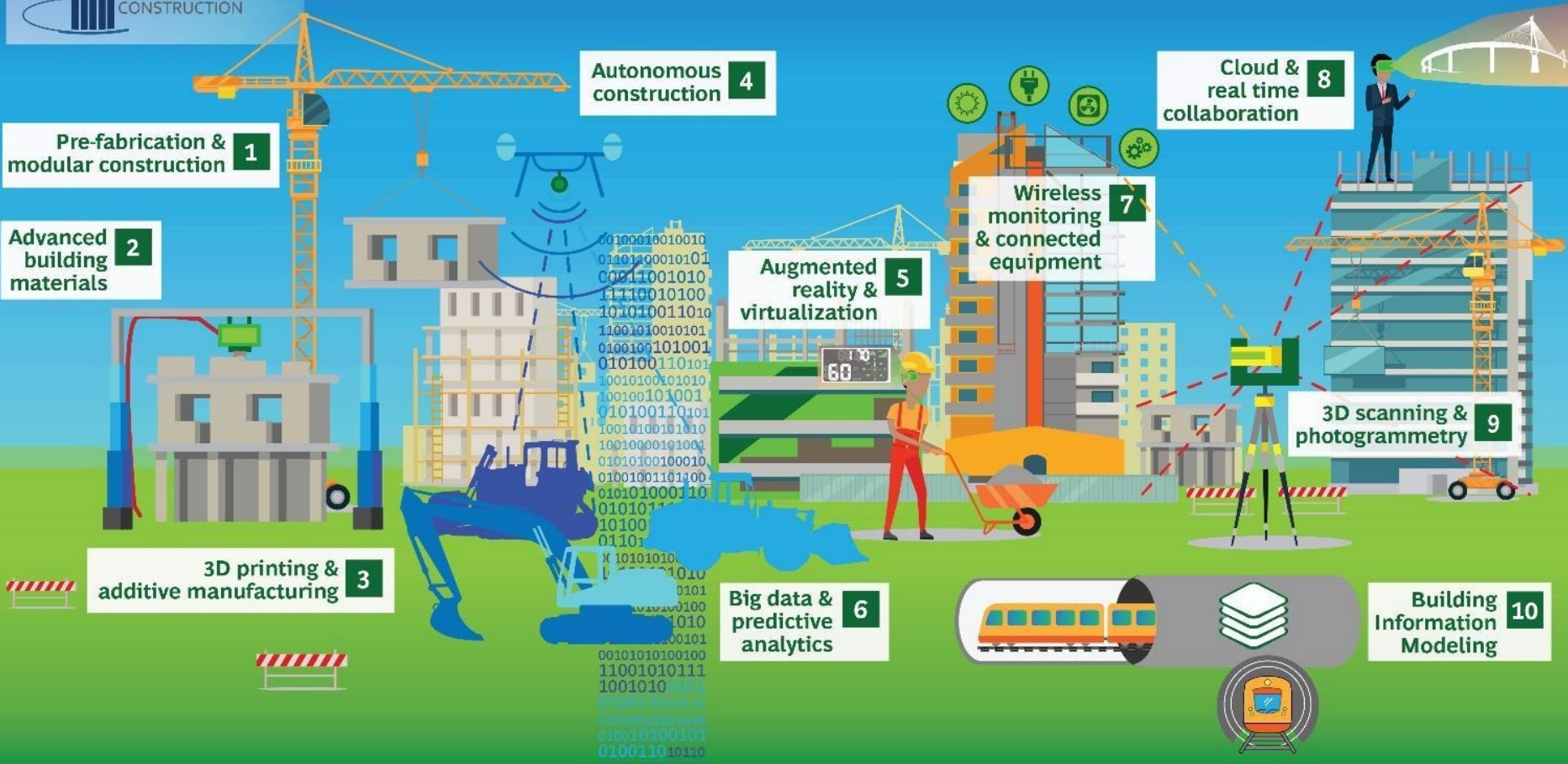
Big data & predictive analytics 6

Wireless monitoring & connected equipment 7

Cloud & real time collaboration 8

3D scanning & photogrammetry 9

Building Information Modeling 10



← Airport

Things near Pivot ×



FRONT

Light.001



EnergyM.001



CCTV.001



Gate D5



FCU.001



FCU.001
Fan Coil Unit

Status: OFF

Return Air Temp: 20 C

Fan Speed: 50

Temp Setpoint: 25 C

Op Status:

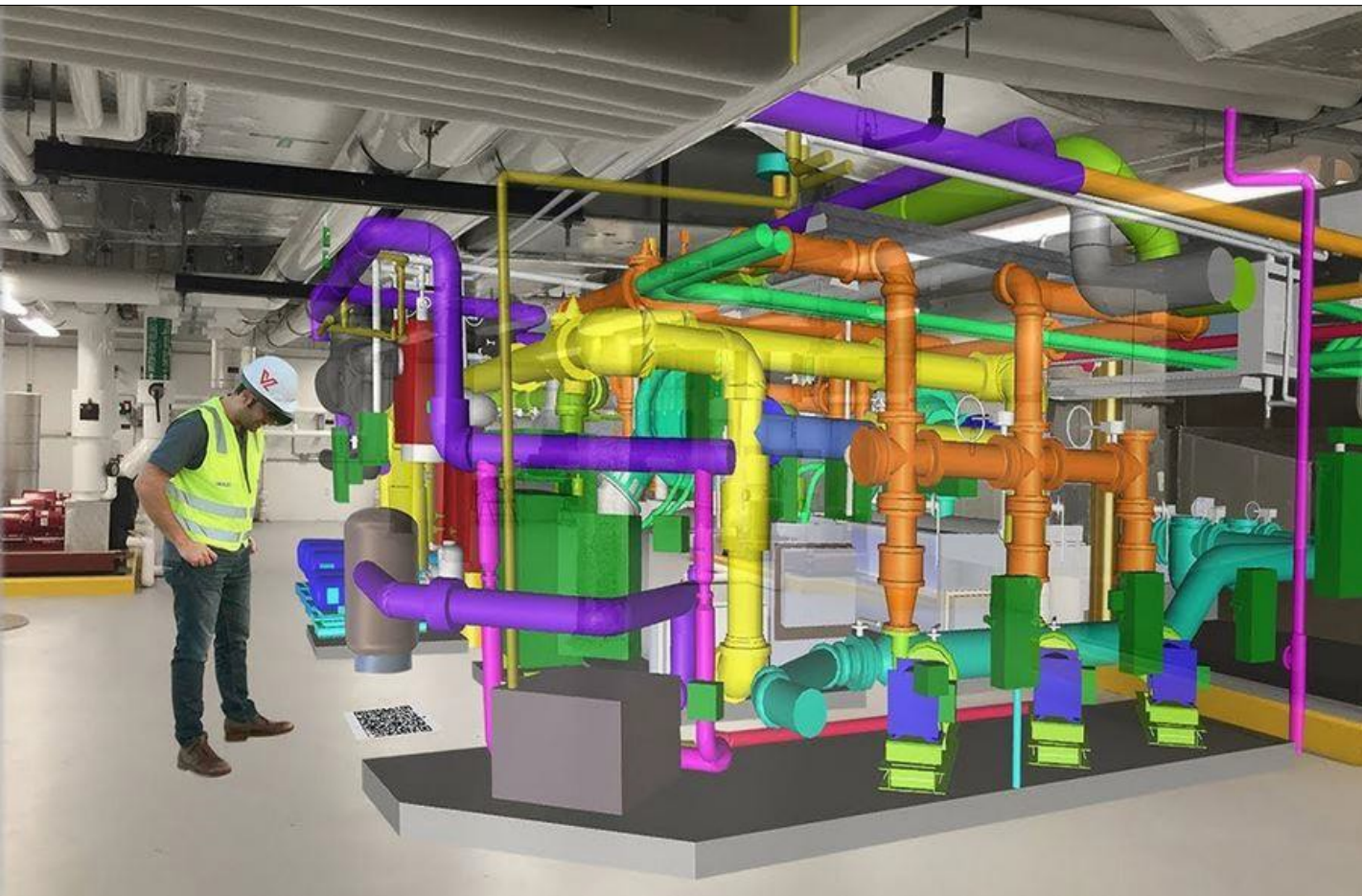
CCTV.001
Live Stream

EnergyM.001
Energy Usage

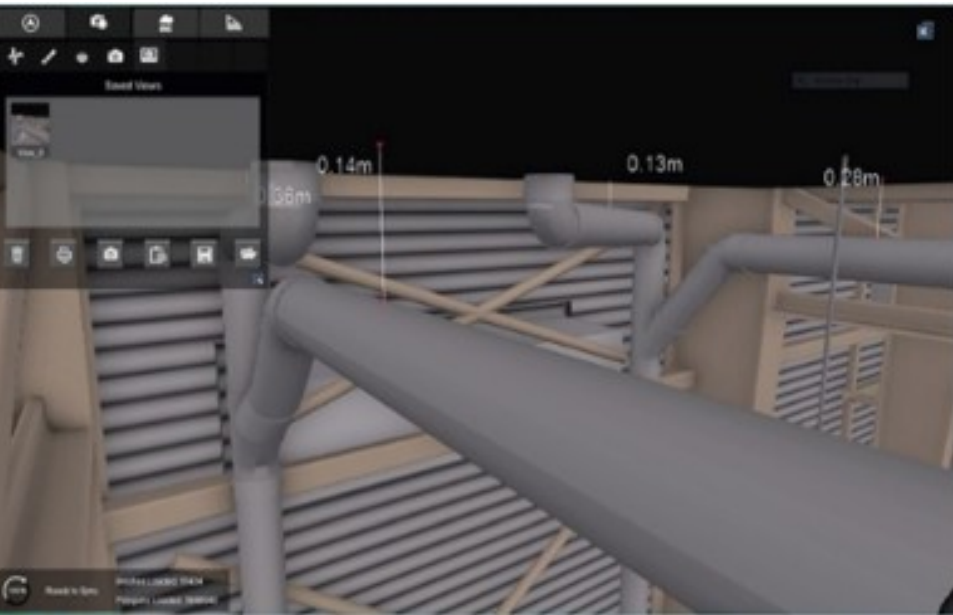
Current Usage: 198 W



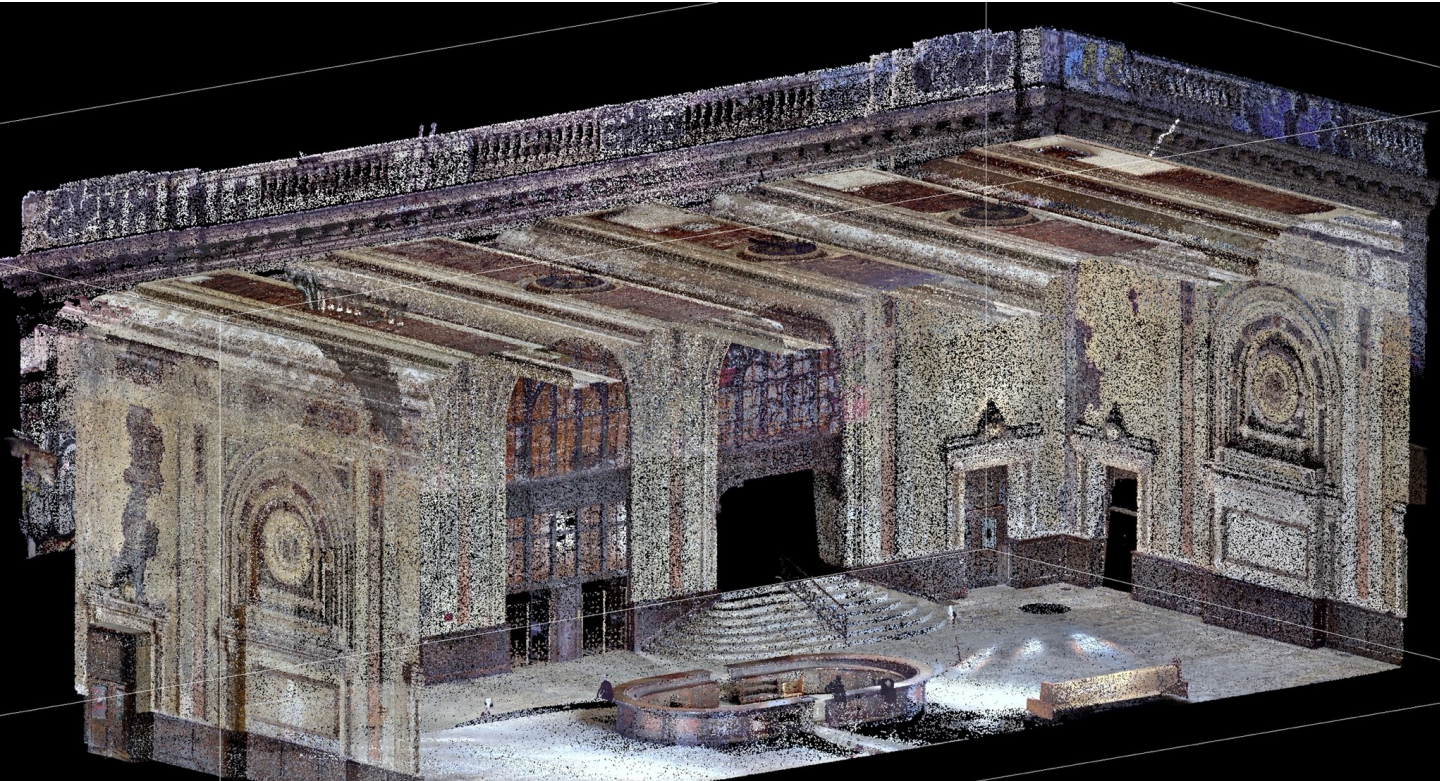
Μέθοδοι Αναπαράστασης AR/VR



Μέθοδοι Αναπαράστασης AR/VR



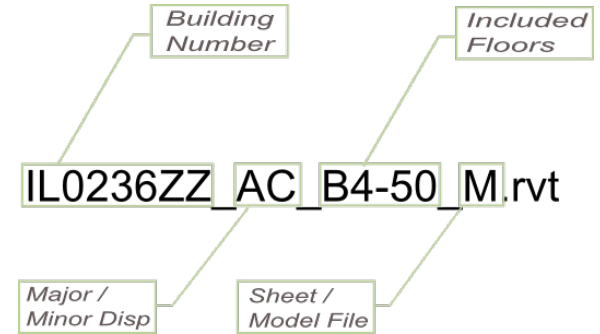
Scan to BIM



3. Στάδια Μελέτης με BIM

Οργάνωση του έργου / BIM execution plan

- Design Responsibility matrix (οργάνωση της ομάδας / key activities)
- Ονομασία και κωδικοποίηση αρχείων
- Οργάνωση κτιριακού έργου σε ενότητες
- Παραδοτέα κάθε φάσης
- Απαιτούμενο Επίπεδο πληροφορίας (LOD)
- Μεθοδολογία ελέγχου του μοντέλου (Project Audit)
- CDE (Common Data Environment)



LOD / Level of Development



LOD100

(Όγκοπλασία)



LOD200

(Προμελέτη)



LOD300

(Οριστική Μελέτη)



LOD400

(Μελέτη Εφαρμογής)



LOD500

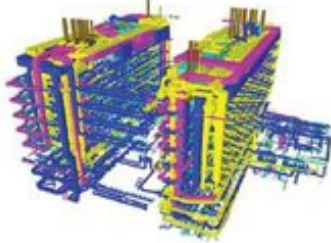
(Ως κατασκευάσθη- As Built)



Architectural Model



Structural Model



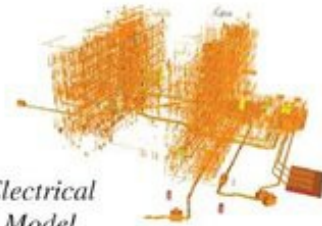
Mechanical Model



Federated Model



Fire Protection Model

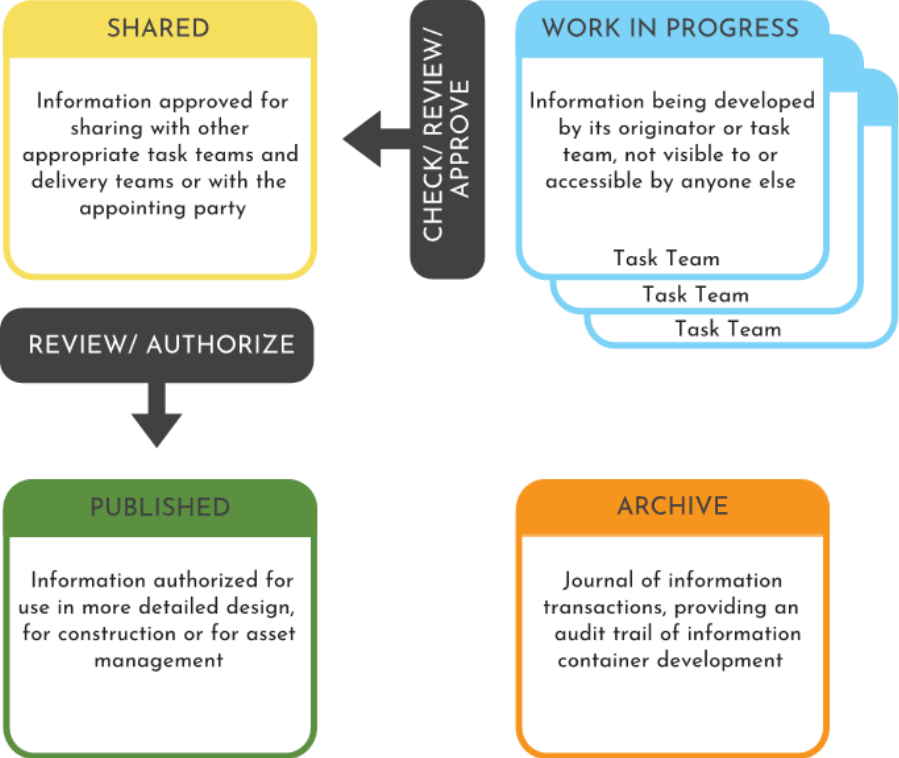


Electrical Model



Plumbing Model

Common Data Environment



| Code | Description/ Requirement | Purpose |
|--|---|---|
| 2 Concept design What is typical for concept stage? | <p>Visual information to provide general principles of the design. Showing arrangement of system with their relationship to internal and external context, and key project criteria to suit client brief.</p> <p>General descriptions would be expected to communicate principles of materiality, scope, colour and context. Expect strategic coordination with other professions to show general principles of the design.</p> | To provide a visual indication of proposals at a concept stage and support general spatial coordination, identifying key requirements such as access and maintenance zones for primary systems. |
| 3 Spatial coordination What is typical as the design develops? | <p>Visual information to provide developed principles of the design to a greater level of detail. Developed coordination between all professions. Visual development showing coordination for general size and primary relationships between different elements of the construction.</p> <p>Can form a brief for a specialist subcontractor or fabricator to progress with their technical design, fabrication and installation. This would be expected to include critical dimensional coordination, performance requirements and qualities of finish.</p> | To provide a visual representation of proposals at a Design Development stage and to allow greater spatial coordination, confirming brief for Technical Design stage. |
| 4 Technical design What is typical as for technical design? | <p>Visual information to provide fixed principles of the design supporting procurement. Developed coordination between all professions. Visual representations showing coordination for general size and relationships between different elements of the construction.</p> <p>Dimensionally accurate graphical representation of system, indicating primary performance characteristics.</p> <p>Graphical information represented may alter, dependent on visual information to be produced, e.g. scope of work drawings, setting out, floor loading, etc.</p> <p>Typical installation details separately produced, linked to model element and adjacent constructions.</p> | To provide a visual representation of proposals at a Technical Design stage supporting full spatial coordination. |
| 5 Construction What has been constructed? | <p>Visual information to provide full information to support construction/ installation. Developed coordination between all professions.</p> <p>Visual representations showing final coordination for size and relationships between different elements of the construction.</p> <p>Dimensionally accurate graphical representation of system, indicating primary performance characteristics and sufficient information to support installation.</p> <p>Typical installation details separately produced, linked to model element and adjacent constructions.</p> | <p>To provide sufficient information for construction/ installation of the required products.</p> <p>To be updated during the construction process to reflect final decisions.</p> |

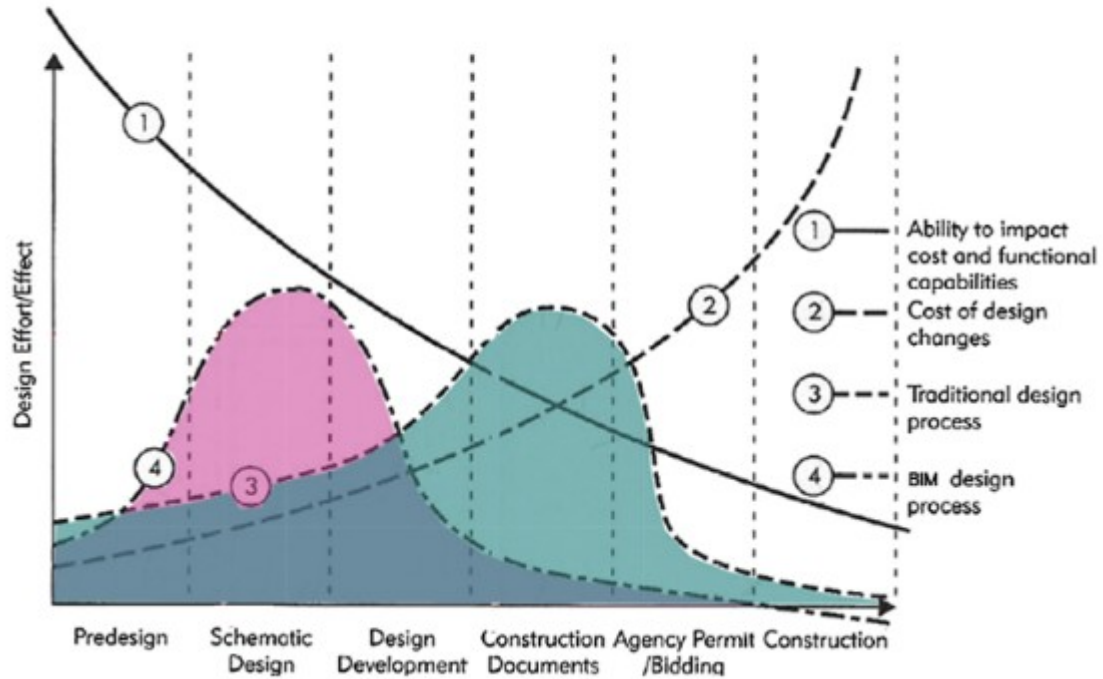
Ss_25_60_35 - Glazing systems

The images below are typical to illustrate visual representations for the system Ss_25_60_35_06 - Bead-fixed insulating glazing systems at selected LOD bandings

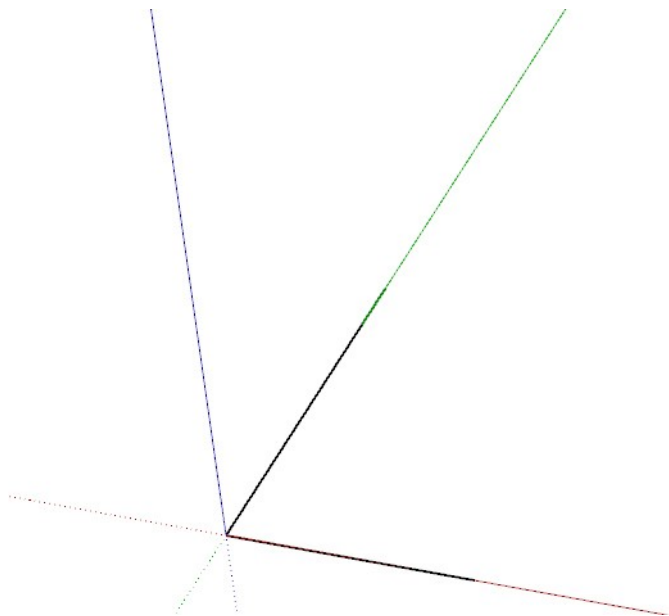
| LOD | Model | Plan | Elevation | Section |
|-----|--|--|---|--|
| 2 |  |  |  |  |
| 3 |  |  |  |  |

4. Μοντελοποίηση

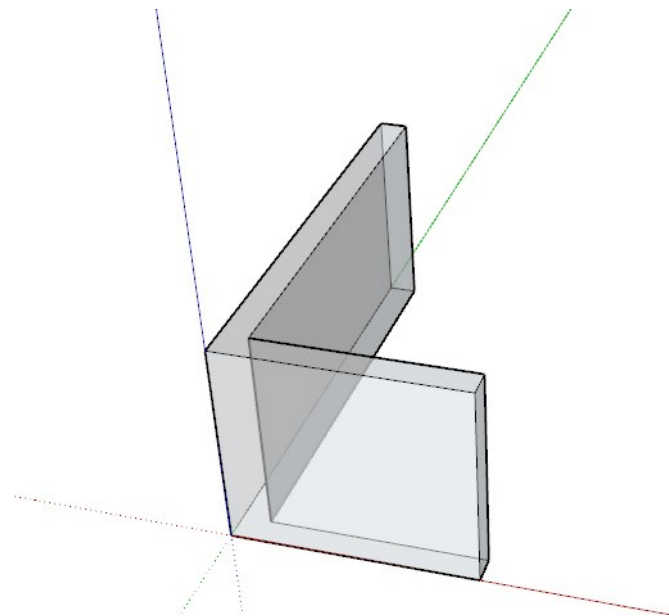
W. Lu et al. / Building and Environment 82 (2014) 317–327



Μετάβαση από CAD σε BIM

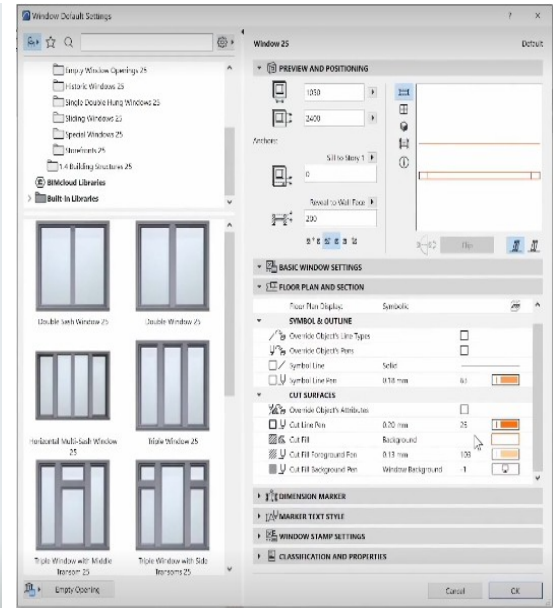
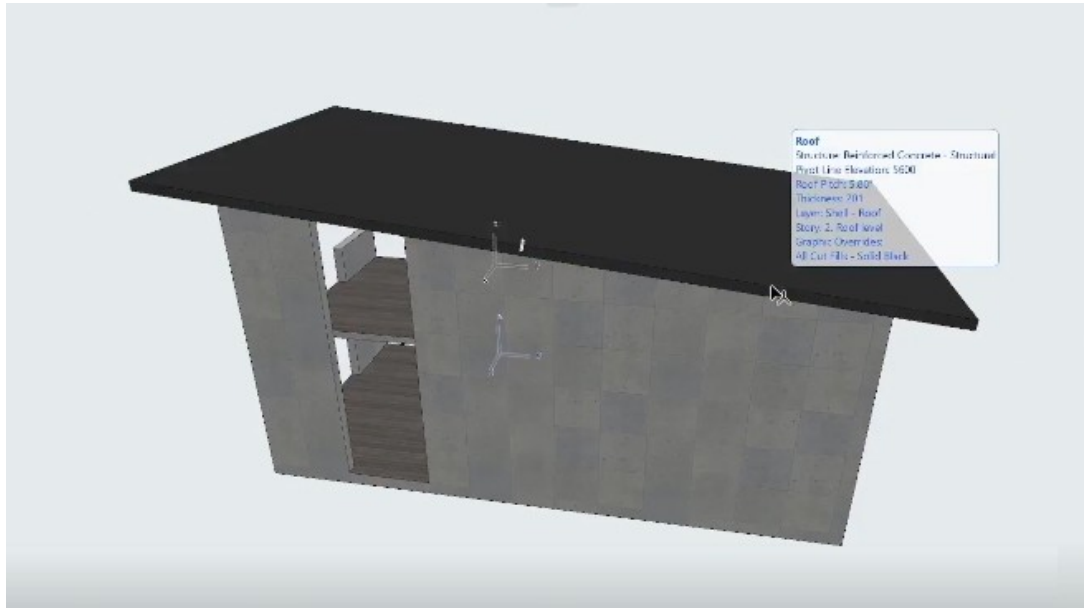


Γραμμές (2d)



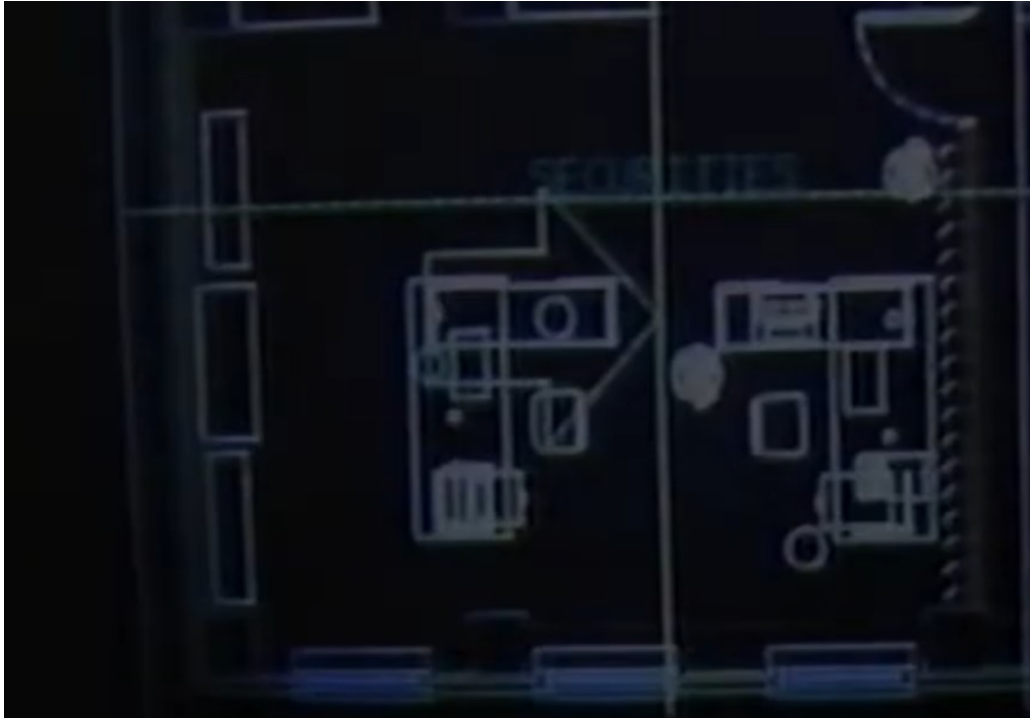
Επιφάνειες / όγκοι (3d)

Μετάβαση από CAD σε BIM



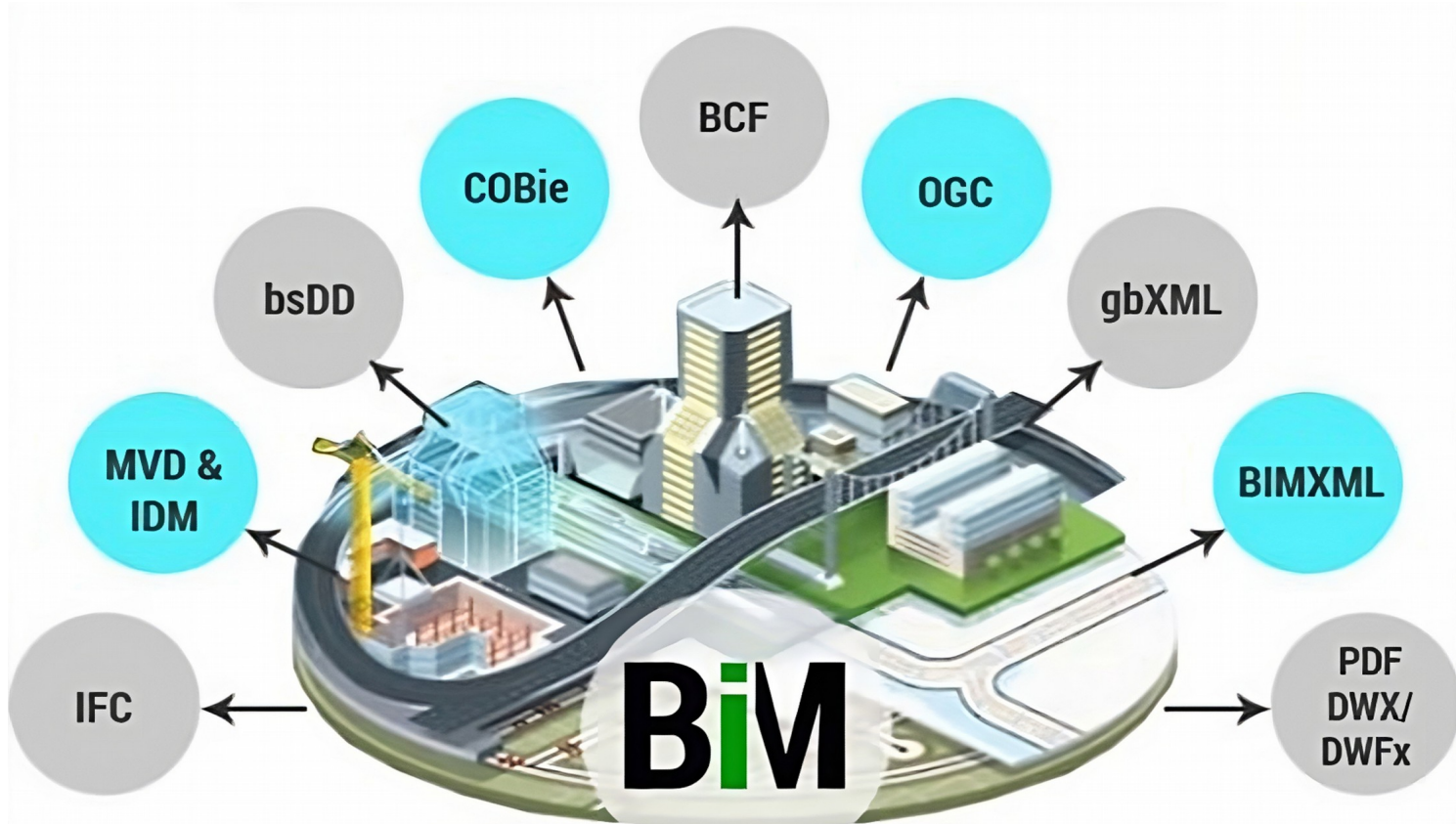
Αντικείμενα (3d)

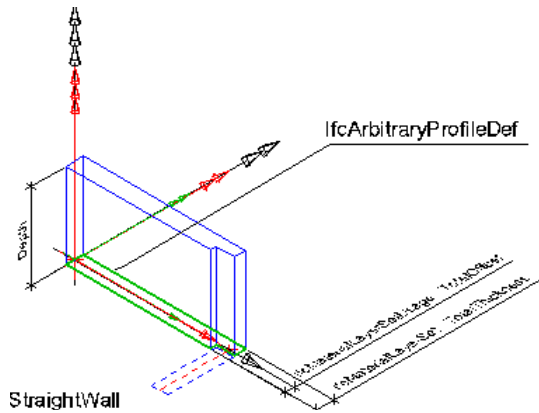
Μετάβαση από CAD σε BIM



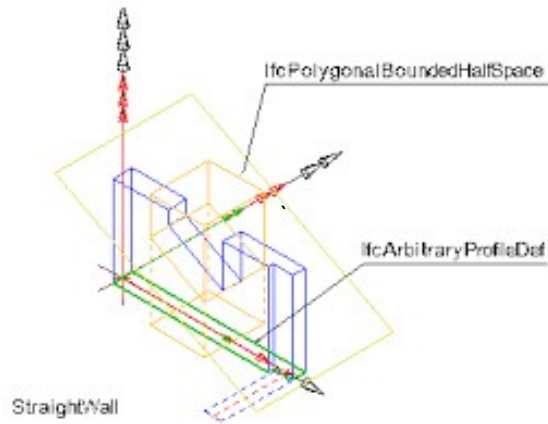
- Building Description System (BDS)
- Really Universal Computer Aided Production System (RUCAPS)
- Sonata
- Reflex
- Revit



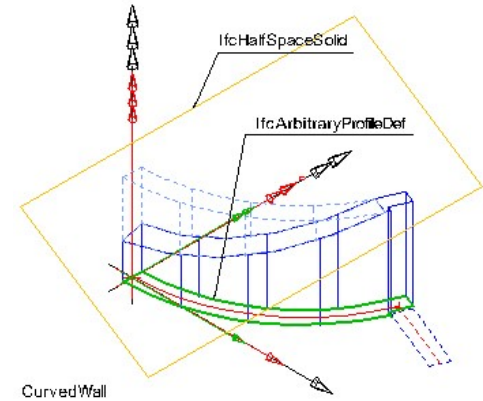




StraightWall

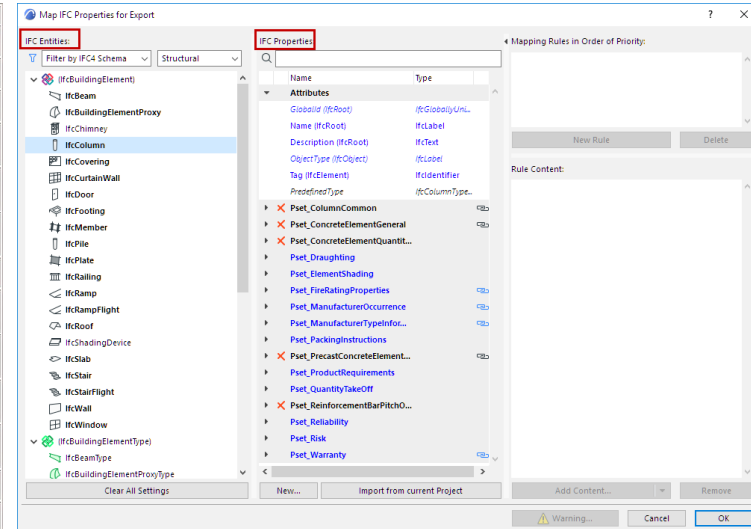


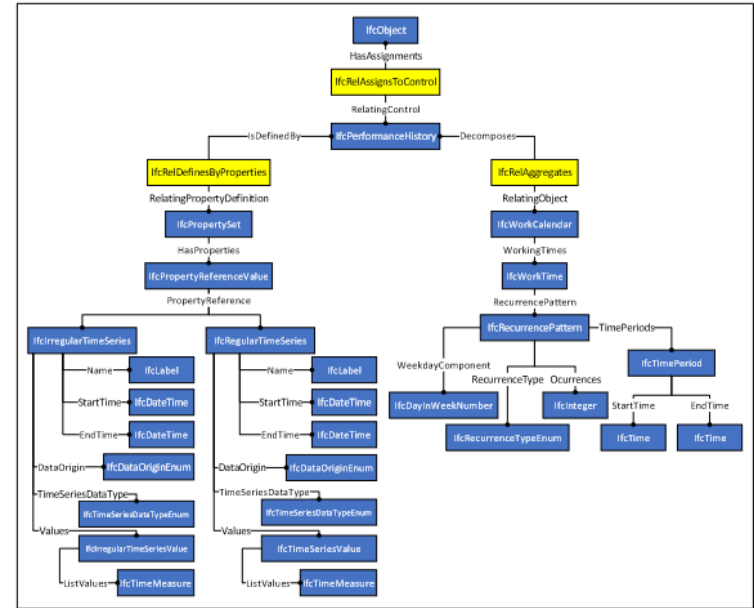
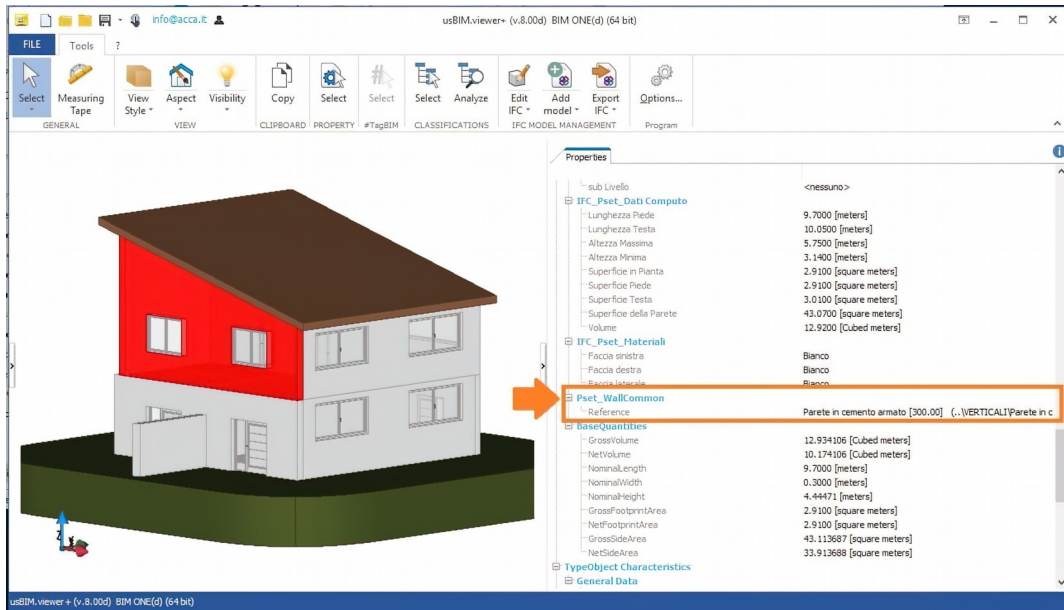
StraightWall



CurvedWall

| Name | Description | Value Type |
|--------------------|--|-------------------|
| NominalLength | Total nominal (or average) length of the wall along the wall path. The exact definition and calculation rules depend on the method of measurement used. | IfcQuantityLength |
| NominalWidth | Total nominal (or average) width (or thickness) of the wall perpendicular to the wall path. The exact definition and calculation rules depend on the method of measurement used. | IfcQuantityLength |
| NominalHeight | Total nominal (or average) height of the wall along the wall path. The exact definition and calculation rules depend on the method of measurement used. | IfcQuantityLength |
| GrossFootprintArea | Area of the wall as viewed by a ground floor view, not taking any wall modifications (like recesses) into account. It is also referred to as the foot print of the wall. The exact definition and calculation rules depend on the method of measurement used. | IfcQuantityArea |
| NetFootprintArea | Area of the wall as viewed by a ground floor view, taking all wall modifications (like recesses) into account. It is also referred to as the foot print of the wall. The exact definition and calculation rules depend on the method of measurement used. | IfcQuantityArea |
| GrossSideArea | Area of the wall as viewed by an elevation view of the middle plane of the wall. It does not take into account any wall modifications (such as openings). The exact definition and calculation rules depend on the method of measurement used. | IfcQuantityArea |
| NetSideArea | Area of the wall as viewed by an elevation view of the middle plane. It does take into account all wall modifications (such as openings). The exact definition and calculation rules depend on the method of measurement used. | IfcQuantityArea |
| GrossSideAreaLeft | Area of the wall as viewed by an elevation view of the left side (when viewed along the wall path orientation). It does not take into account any wall modifications (such as openings). The exact definition and calculation rules depend on the method of measurement used. | IfcQuantityArea |
| NetSideAreaLeft | Area of the wall as viewed by an elevation view of the left side (when viewed along the wall path orientation). It does take into account all wall modifications (such as openings). The exact definition and calculation rules depend on the method of measurement used. | IfcQuantityArea |
| GrossSideAreaRight | Area of the wall as viewed by an elevation view of the right side (when viewed along the wall path orientation). It does not take into account any wall modifications (such as openings). The exact definition and calculation rules depend on the method of measurement used. | IfcQuantityArea |
| NetSideAreaRight | Area of the wall as viewed by an elevation view of the right side (when viewed along the wall path orientation). It does take into account all wall modifications (such as openings). The exact definition and calculation rules depend on the method of measurement used. | IfcQuantityArea |
| GrossVolume | Volume of the wall, without taking into account the openings and the connection geometry. The exact definition and calculation rules depend on the method of measurement used. | IfcQuantityVolume |
| NetVolume | Volume of the wall, after subtracting the openings and after considering the connection geometry. The exact definition and calculation rules depend on the method of measurement used. | IfcQuantityVolume |







LOD100

(Ογκοπλασία)



LOD200

(Προμελέτη)



LOD300

(Οριστική Μελέτη)



LOD400

(Μελέτη Εφαρμογής)



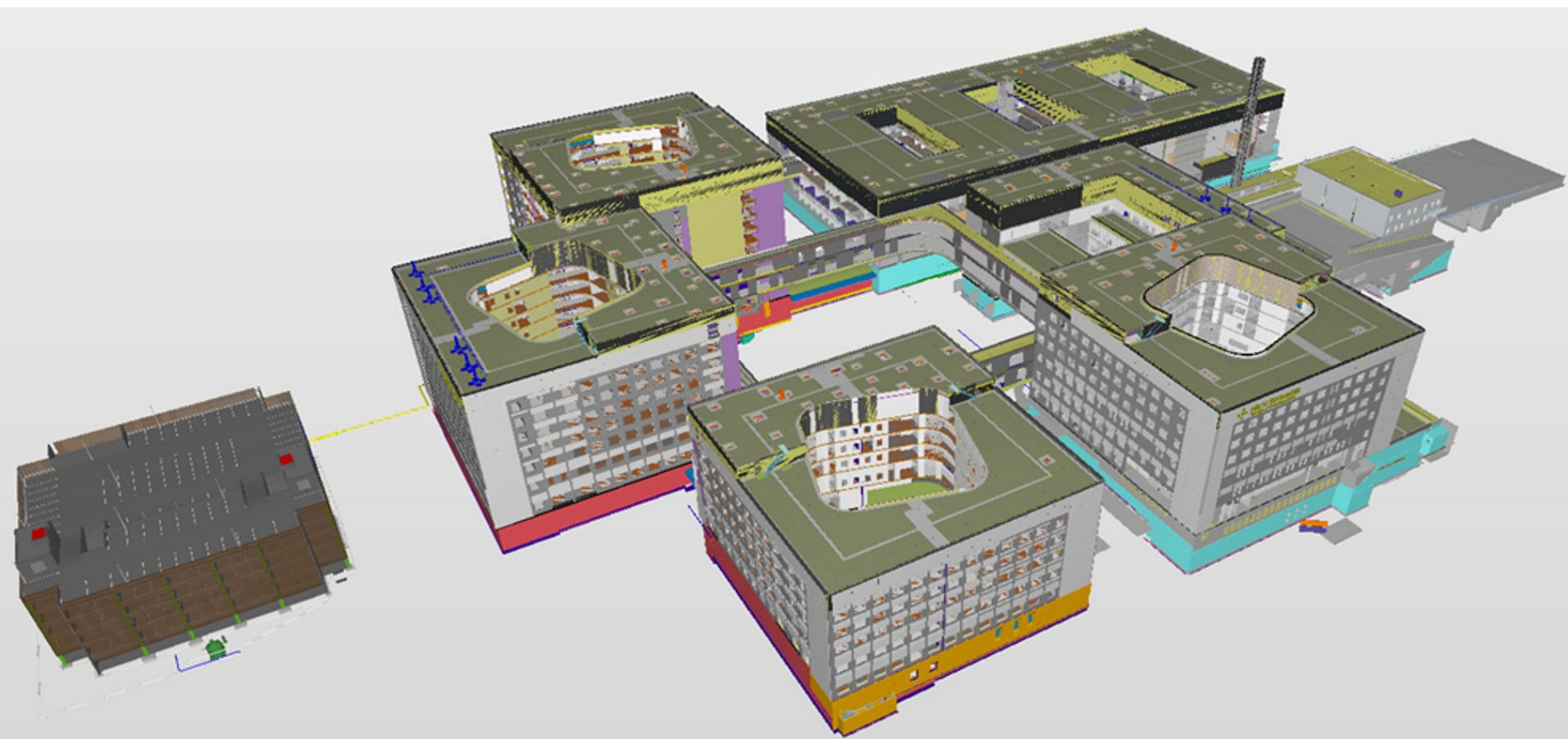
LOD500

(Ως κατασκευάσθη- As Built)

5. Case studies

New Stavanger University Hospital, Νορβηγία





H-Modul

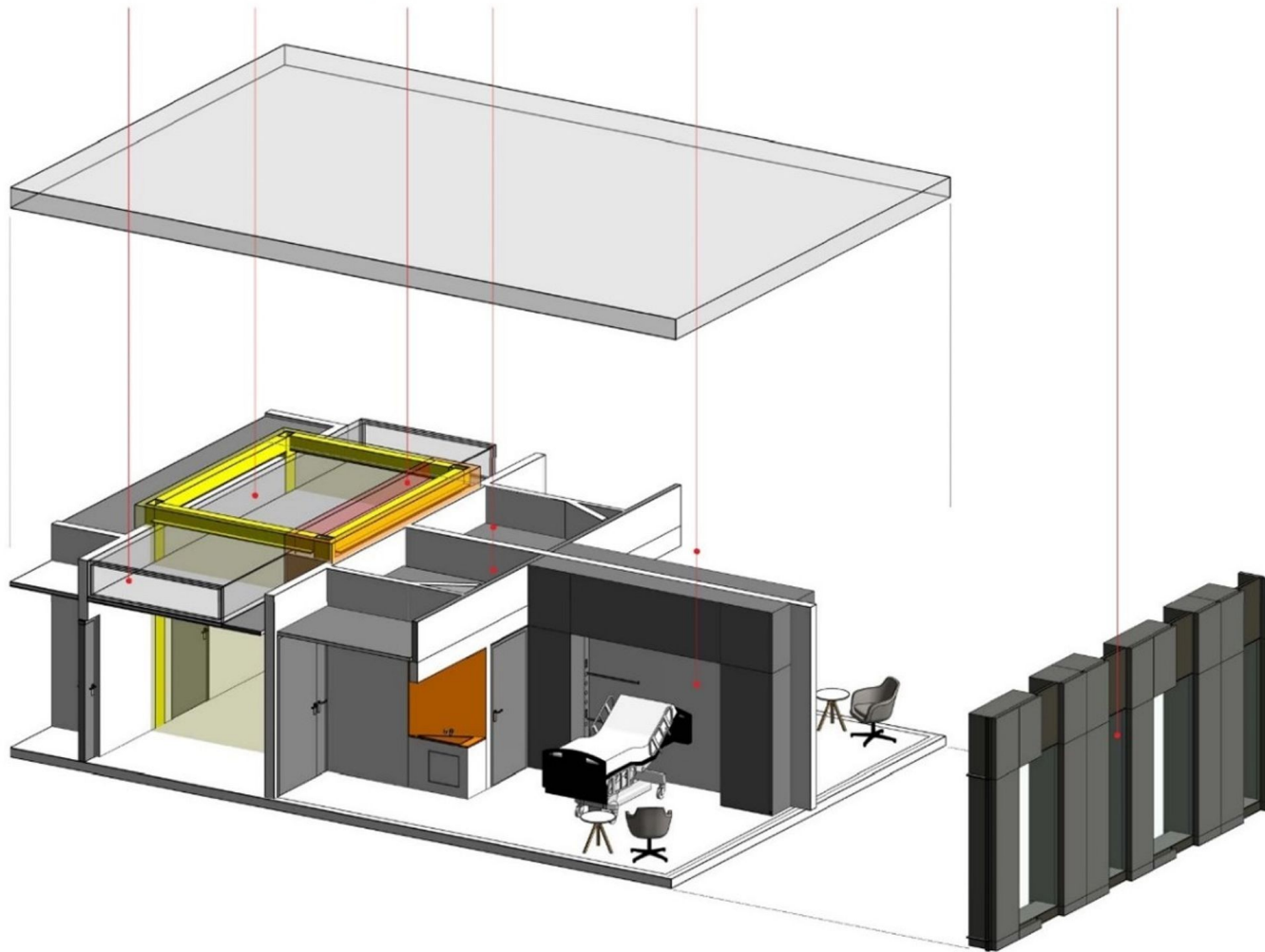
Sjaktrom

V-Modul
i Sjaktrom

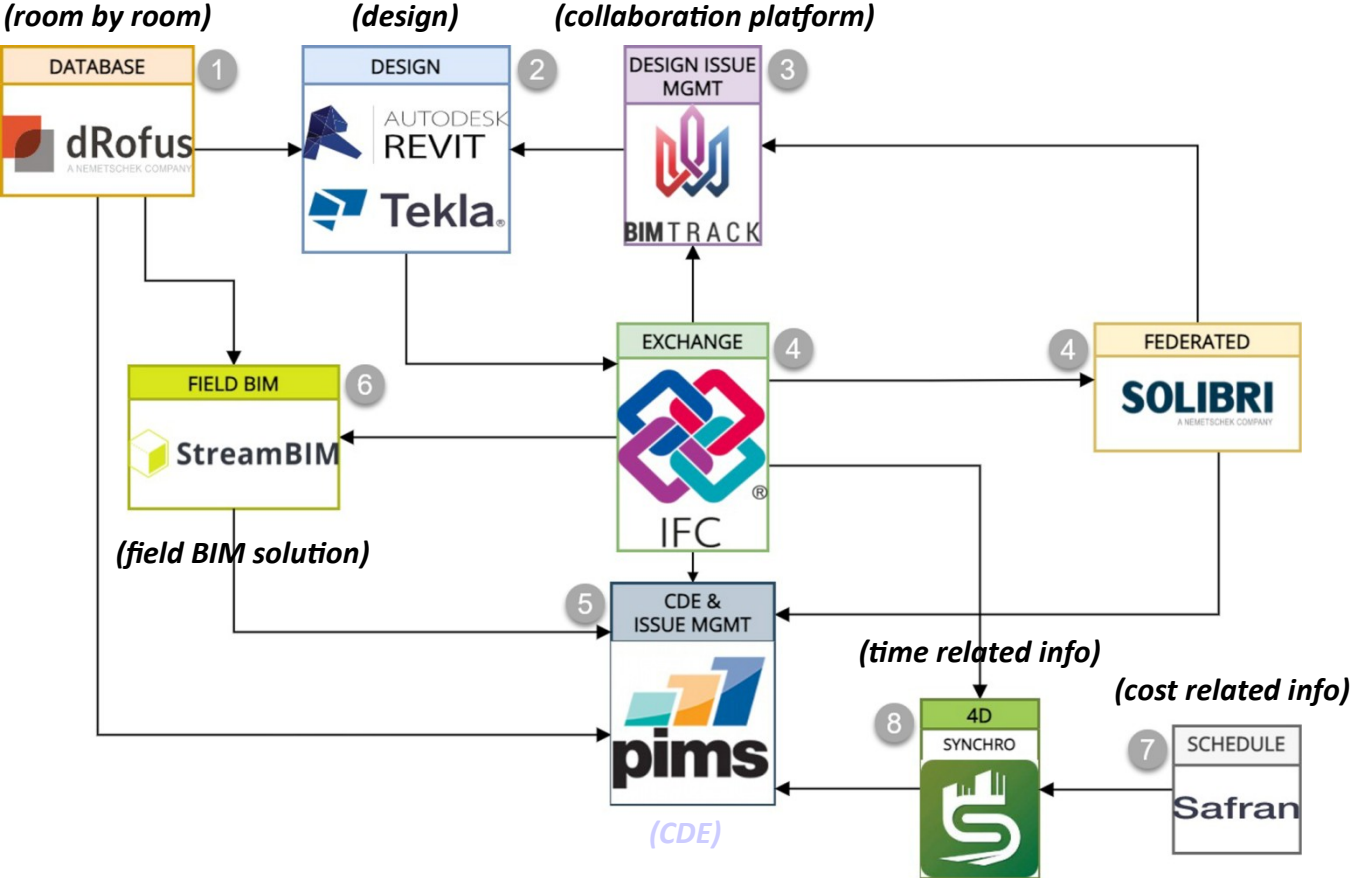
Vätrom

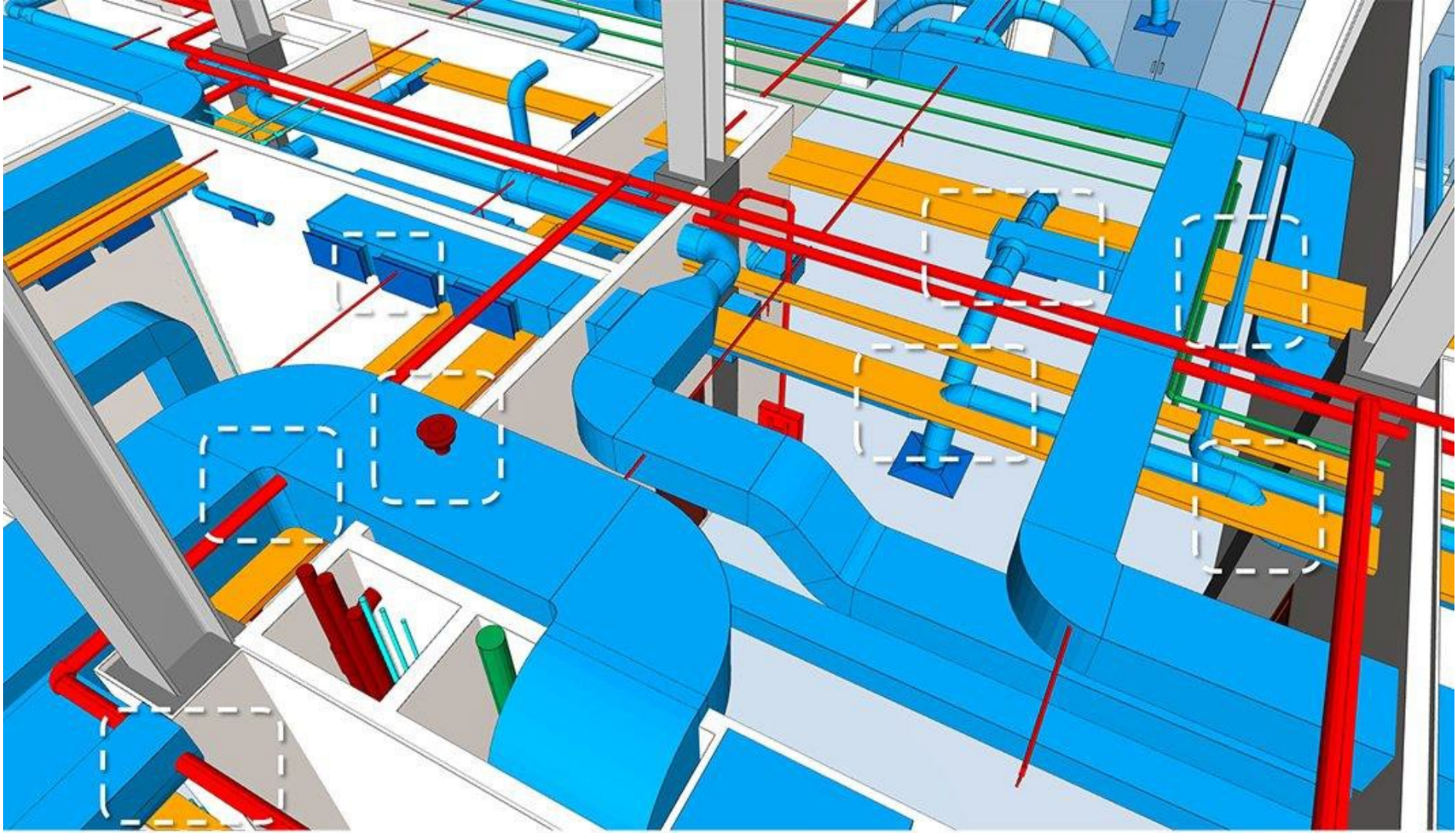
Sengerom

Fasade Modul



Software workflow





BYGGEKIOSKEN.NO



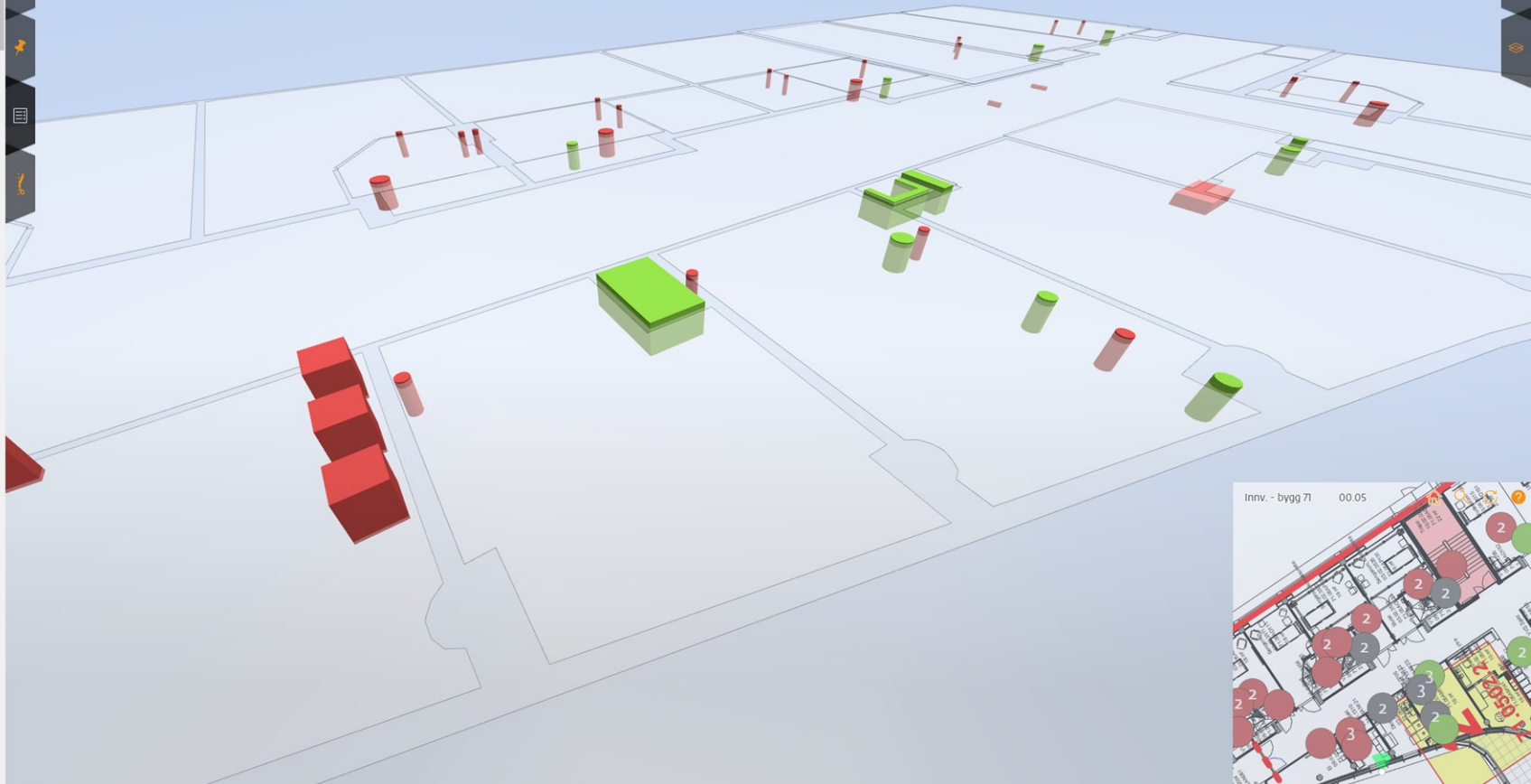
Naboen



- Dashboard
- Lokasjoner
- Field 4
- Box Light
- Oppsett
- Hjelp



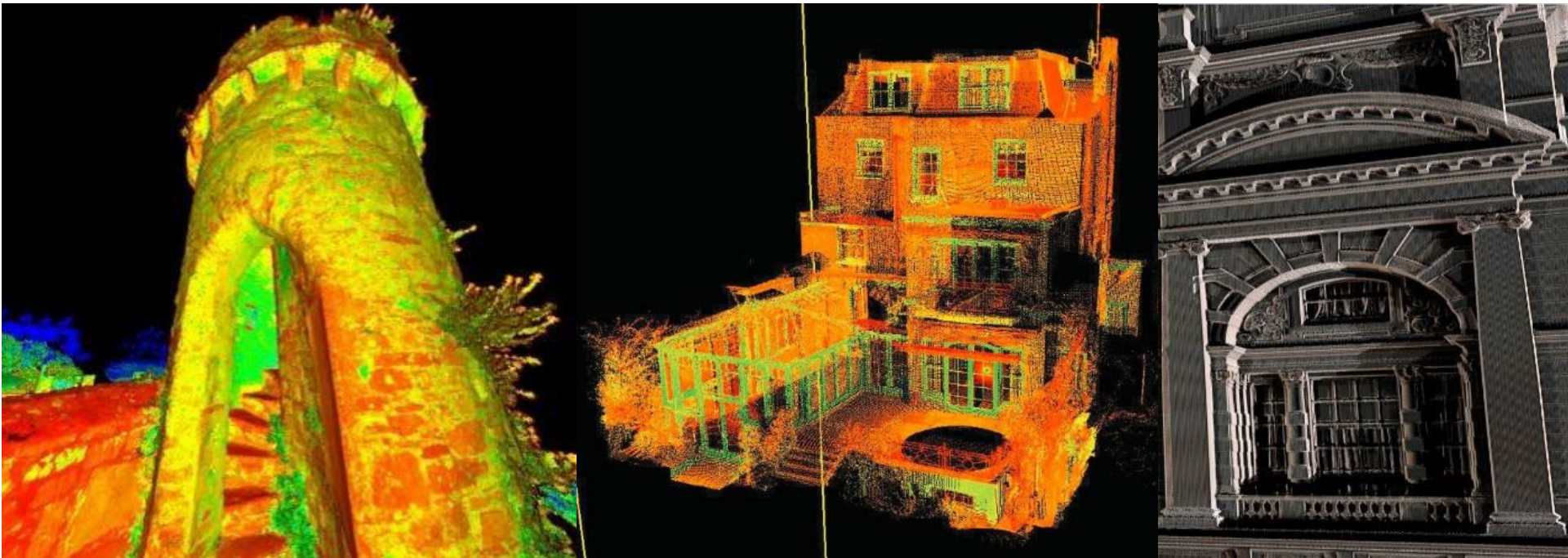
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- Rectangular Horizontal
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🔍 - 🟢 2022-01-05
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- Rectangular Horizontal
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🔍 - 🟢 2022-01-05
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- Rectangular Horizontal
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🔍 - 🟢 2022-01-05
- Rectangular Vertical
00.04.71.0402
🔍 - 🟢 2022-01-05
- Rectangular Vertical
00.04.71.0401
🔍 - 🟢 2022-01-05
- Rectangular Vertical
00.04.71.0401
🔍 - 🟢 2022-01-05
- Rectangular Vertical
00.04.71.0401
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- Rectangular Vertical
00.05.71.05A1001 EL, 71.0502
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🔍 - 🟢
- Rectangular Vertical



🔍 Done In progress Not started



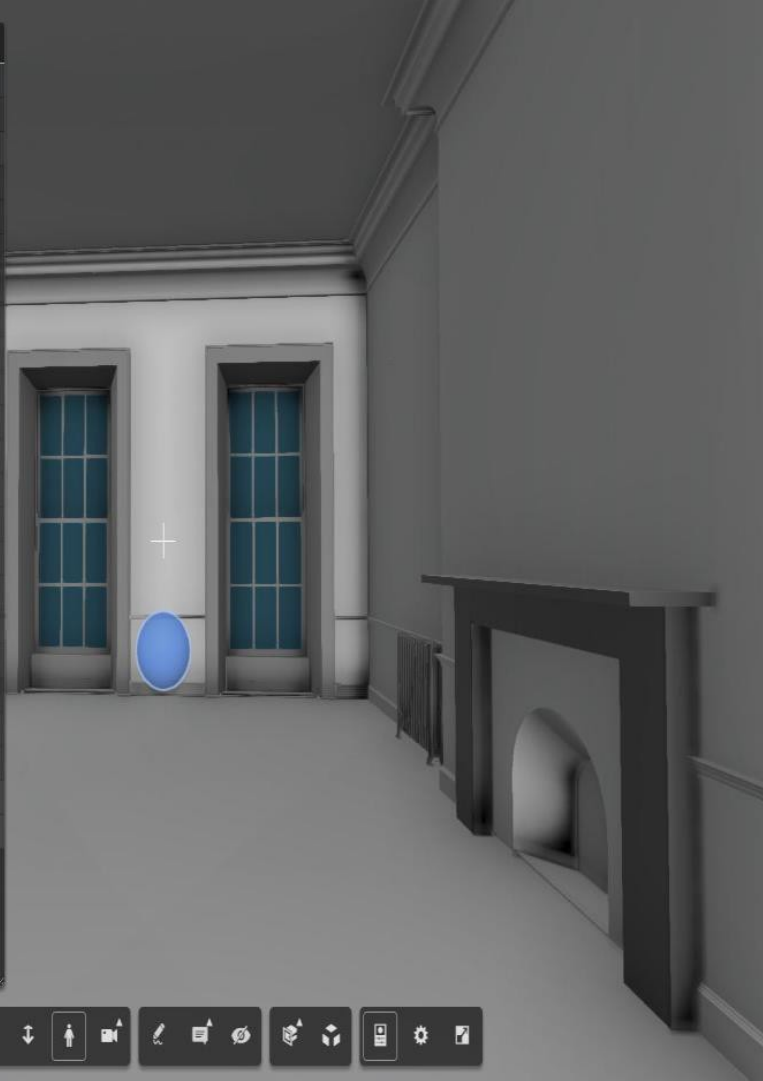
Heritage Building Surveying & Information Modeling





MSL_PHOTOGRAMMETRY_SPHERE [1179261] X

- Constrains
- Dimensions
- ▾ Identity Data
 - Type Name MSL_Phogrammetry_Sphere
 - MSL_Phogrammetry_Point http://bim.murphysurveys.ie/panoramas/16_color_out.html
 - Image
 - Comments
 - Mark
 - Type Image
 - Keynote
 - Model
 - Manufacturer
 - Type Comments
 - URL
 - Description
 - Assembly Code
 - Cost
 - Assembly Description
 - Type Mark
 - OmniClass Number
 - OmniClass Title
- Phasing
- Materials and Finishes







13513-MSL-XX-M3-B-ParnellSquare_Combined-3DView-(3D).fbx

Download



EU BIM - Building Renovation Competition

Διαγωνισμός στα πλαίσια του ερευνητικού προγράμματος BIM Speed



Join the competition!

- Present a building renovation design project
- Improve the renovation process
- Use BIM-SPEED platform and apply BIM tools and methodologies

Registration Deadline:
21 October 2021

For more info:

➔ bim-speed.eu/competition

**Register
now!**



BIM-SPEED PLATFORM COLLABORATION PLATFORM OVERVIEW



Document management system



User management



Folder level access right management



Document versioning



Documents comments



Secured file sharing



Simple validation workflow



Online documents viewing



File syncing application



Collaboration services



Discussion threads & chats



Visio-conferencing



Task management



Calendar / meetings management application



Central authentication system



KROQI SERVICES



File naming convention service



Integrated Open BIM application



BIM-SPEED renovation services integration



Κριτήρια Αξιολόγησης

- Εξοικονόμηση χρόνου και κόστους με τη χρήση της πλατφόρμας BIM-SPEED
- Εφαρμογή Αειφορικών στρατηγικών στην ανακαίνιση
- Αντιμετώπιση θεμάτων που σχετίζονται με την υγεία και άνεση των κατοίκων / χρηστών
- Χρήση εργαλείων BIM σε συνδυασμό με τα διαθέσιμα εργαλεία BIM της πλατφόρμας
- Βαθμός συνεργασίας μέσω της πλατφόρμας

HOME NEWS RESULTS PARTNERS DEMONSTRATION CASES COMMUNITY TRAINING MATERIALS COMPETITION



TRAINING MATERIALS

| | |
|--|----------------------------|
| BIM-Speed file name convention tool | Learn More |
| Multicriteria decision making tool | Learn More |
| BIM Maturity tool | Learn More |
| Inhabitants Crowd-Sourcing App | Learn More |
| BIM-Speed methodology toolkit | Learn More |
| Methods for surveying and diagnostic of HVAC systems in existing buildings | Learn More |
| 3DASH Tool | Learn More |
| BACN2BIM Tool | Learn More |

Renovation project A

- Import files
- Import a directory
- Renovation project A
 - 1 - Mapping
 - as built information
 - deep renovation options
 - financial assessments
 - market analysis
 - on site inspection
 - reference cases
 - technical options and feasibility studies
 - 2 - Modelling
 - as built information
 - BEM alternatives
 - BIM models
 - deep renovation plans
 - laser scans
 - product specifications
 - supply schedules

Context menu options: Details, Comments, Share, Download, Access management, Rename, Move or copy in..., Delete, Access to services.

File list table:

| Name | Modified | Size |
|---------------------|---------------------|------|
| 26/02/2021 12:25 PM | 26/02/2021 12:25 PM | 0 KB |
| 26/02/2021 12:25 PM | 26/02/2021 12:25 PM | 0 KB |
| 26/02/2021 12:25 PM | 26/02/2021 12:25 PM | 0 KB |
| 26/02/2021 12:25 PM | 26/02/2021 12:25 PM | 0 KB |

Business services list

[Filter](#)

Built-in services



Files naming convention tool

This service can be activated on folders in order to create and check naming conventions ...

[Go to the service](#)

IFC LOD Lifter application

[Go to the service](#)

BIM-SPEED service example

A "toy" service, used to illustrate the basics of implementing BIM-SPEED services.



Mereen

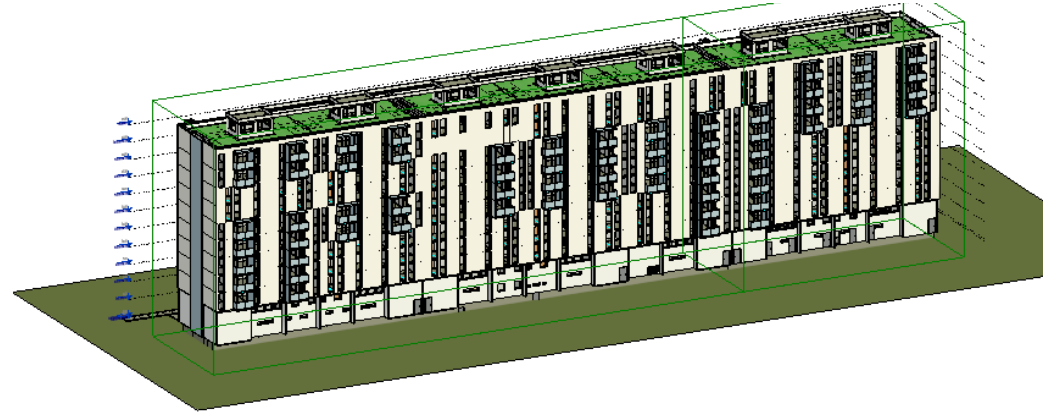
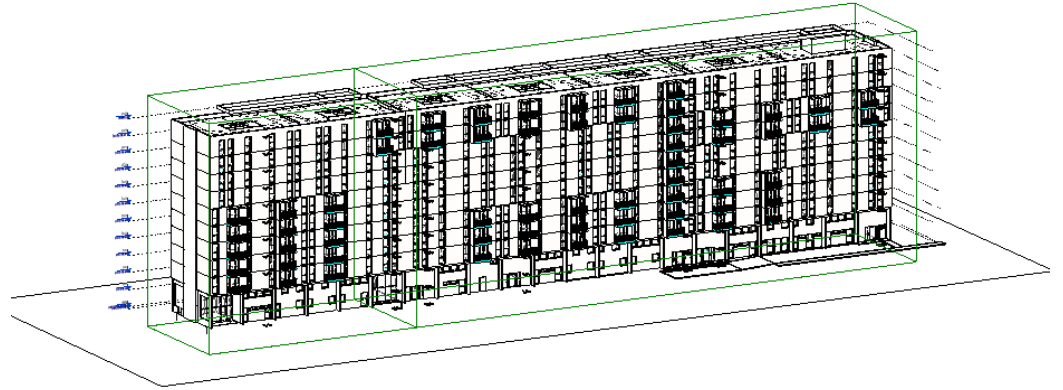
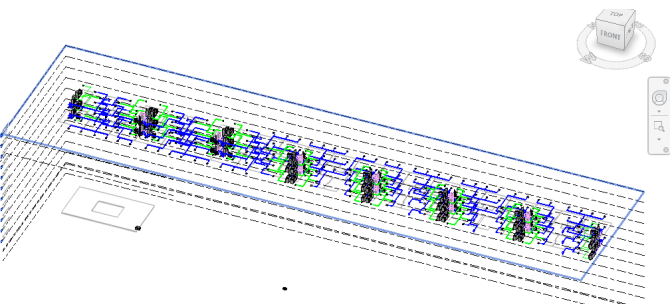
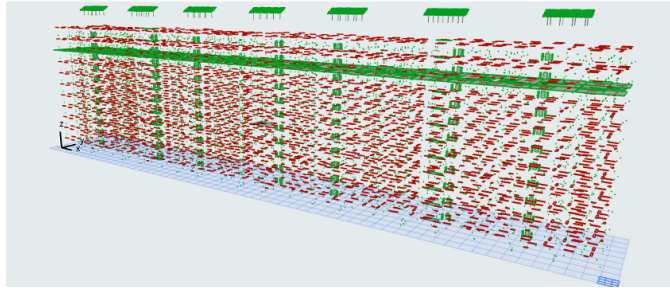
Mereen propose un accès exhaustif à un large historique de données météo. L'originalité de ce ...

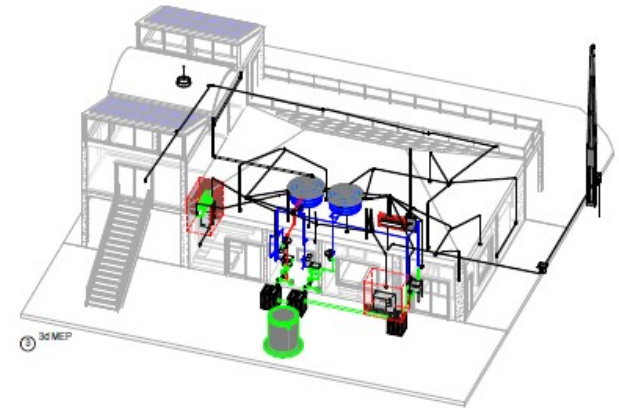
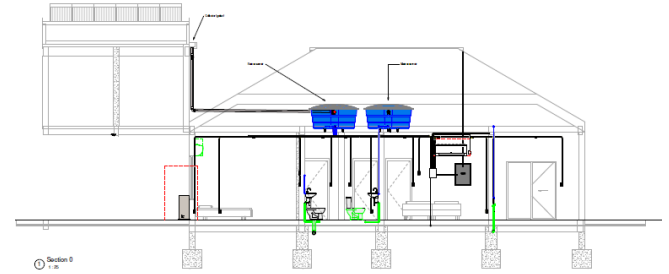
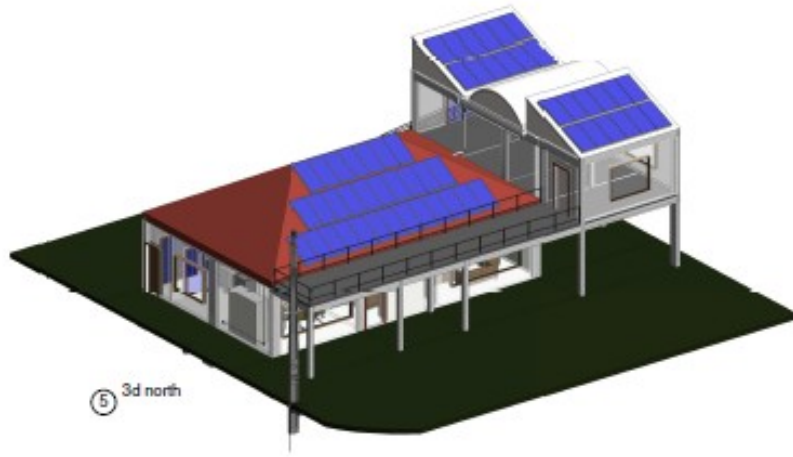
[Go to the service](#)[More info](#)

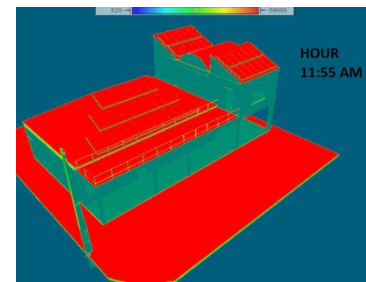
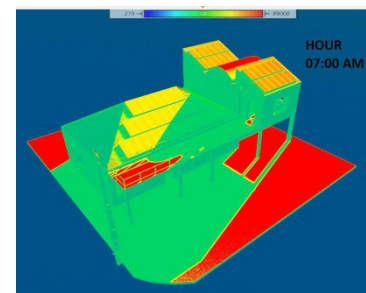
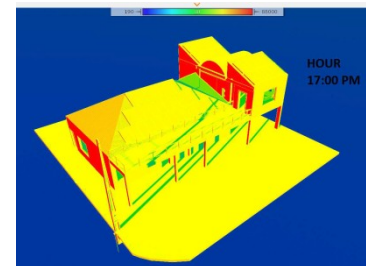
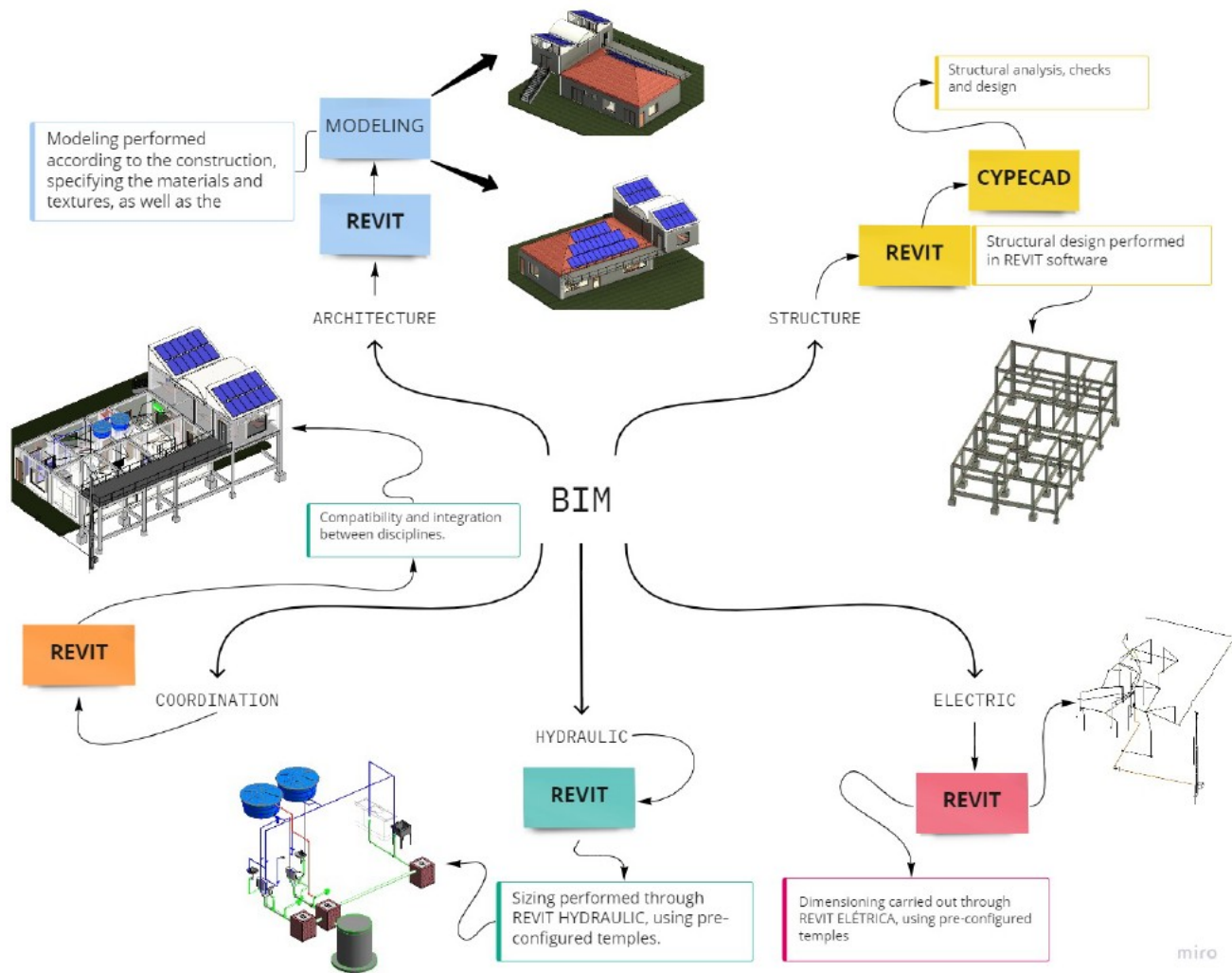
GIS Data Provider

Access to geospatial data.

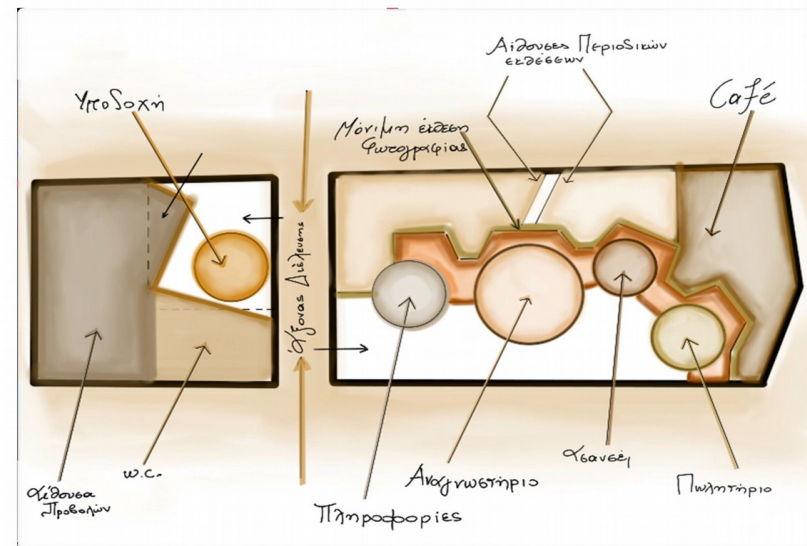
[Go to the service](#)

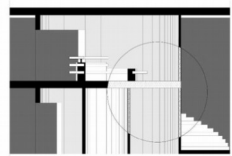
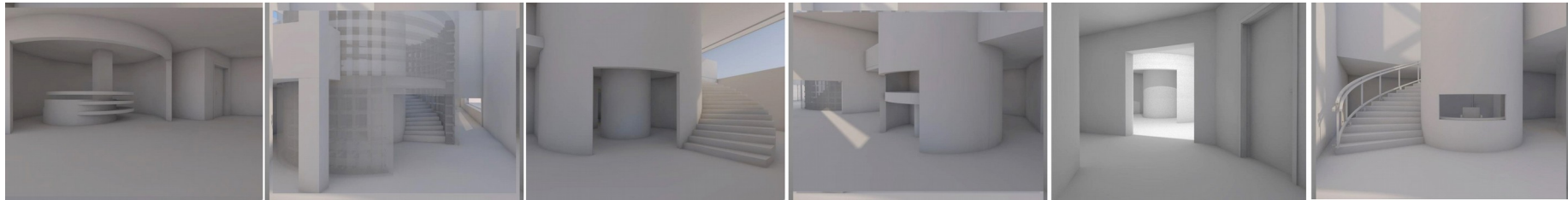




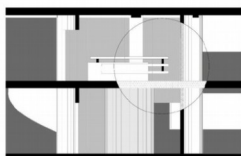


miro





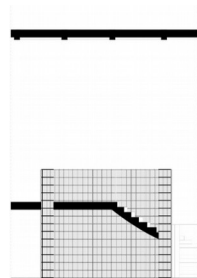
ΤΟΜΗ Α



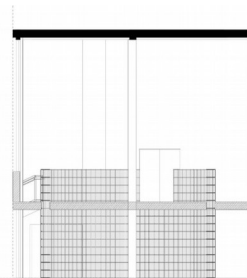
ΤΟΜΗ Β



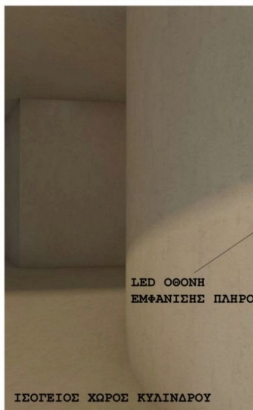
ΧΩΡΟΣ ΑΝΟΙΧΤΟΥ ΠΛΗΤΗΡΙΟΥ



ΤΟΜΗ Α

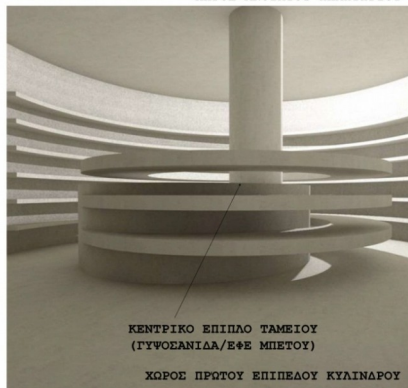


ΤΟΜΗ Β



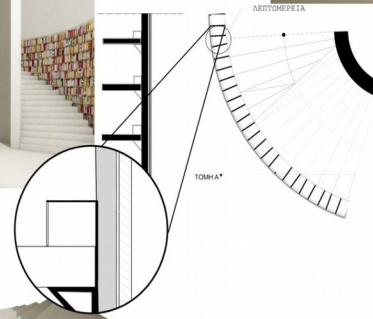
LED ΟΘΟΝΗ
ΕΜΦΑΝΙΣΗΣ ΠΛΗΡΟΦΟΡΙΩΝ ΤΩΝ ΠΕΡΙΟΔΙΚΩΝ ΕΚΔΟΣΕΩΝ

ΓΕΩΓΕΙΟΣ ΧΩΡΟΣ ΚΥΛΙΝΑΡΟΥ



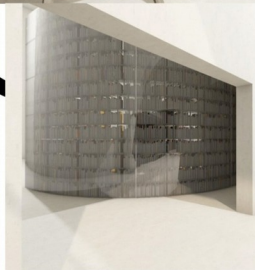
ΚΕΝΤΡΙΚΟ ΕΠΙΠΛΟ ΤΑΜΕΙΟΥ
(ΓΥΦΟΣΑΝΙΔΑ/ΕΦΕ ΜΠΕΤΟΥ)

ΧΩΡΟΣ ΠΡΩΤΟΥ ΕΠΙΣΤΡΑΤΟΥ ΚΥΛΙΝΑΡΟΥ



ΔΕΤΟΜΕΓΡΙΑ

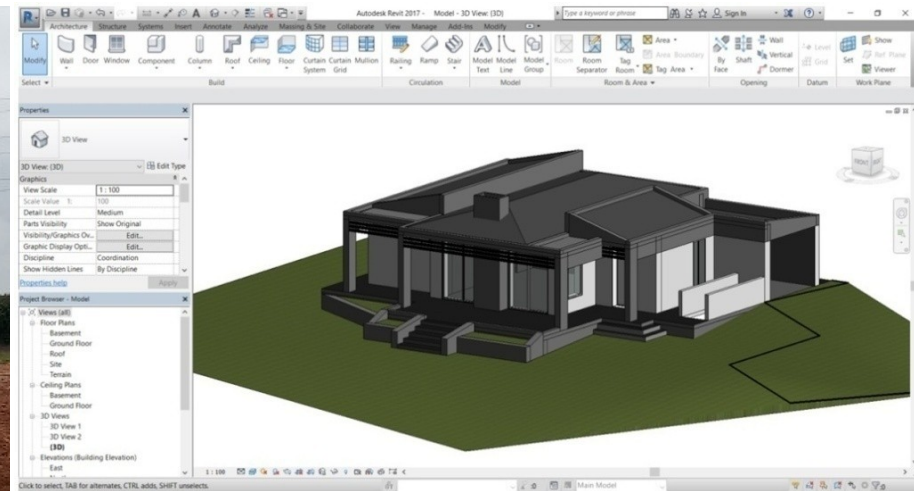
ΤΟΜΗ Α*



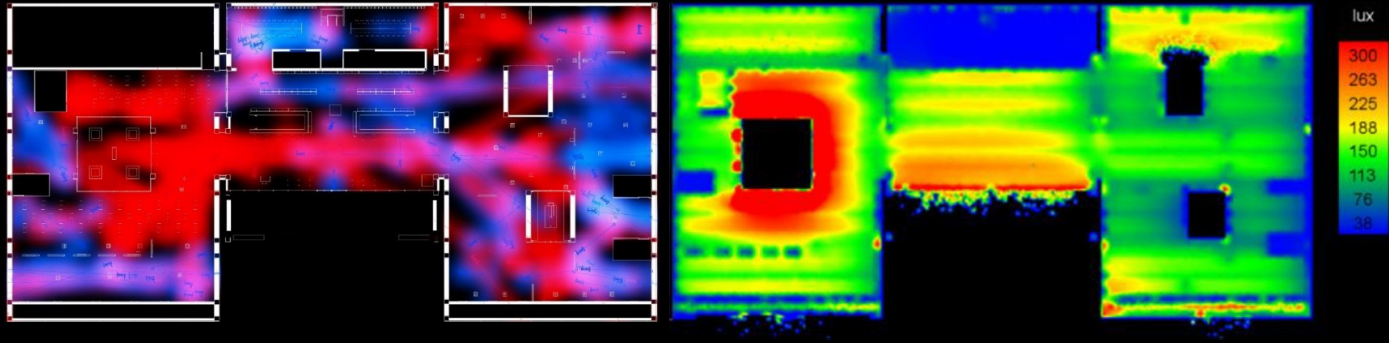
Ελληνικό Ανοικτό Πανεπιστήμιο - Π.Μ.Σ. Σχεδιασμός Φωτισμού

Πτυχιακή εργασία : Βιωματική και διαδραστική μέθοδος μελέτης φωτισμού με τη χρήση BIM και VR

2021-22

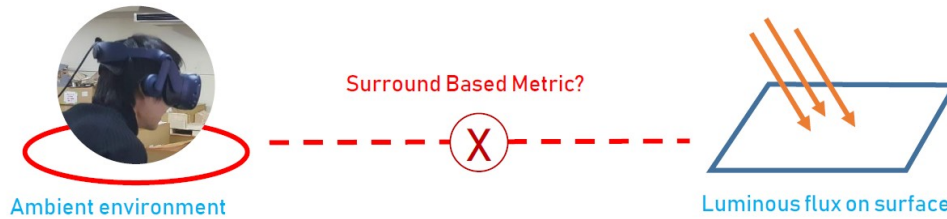


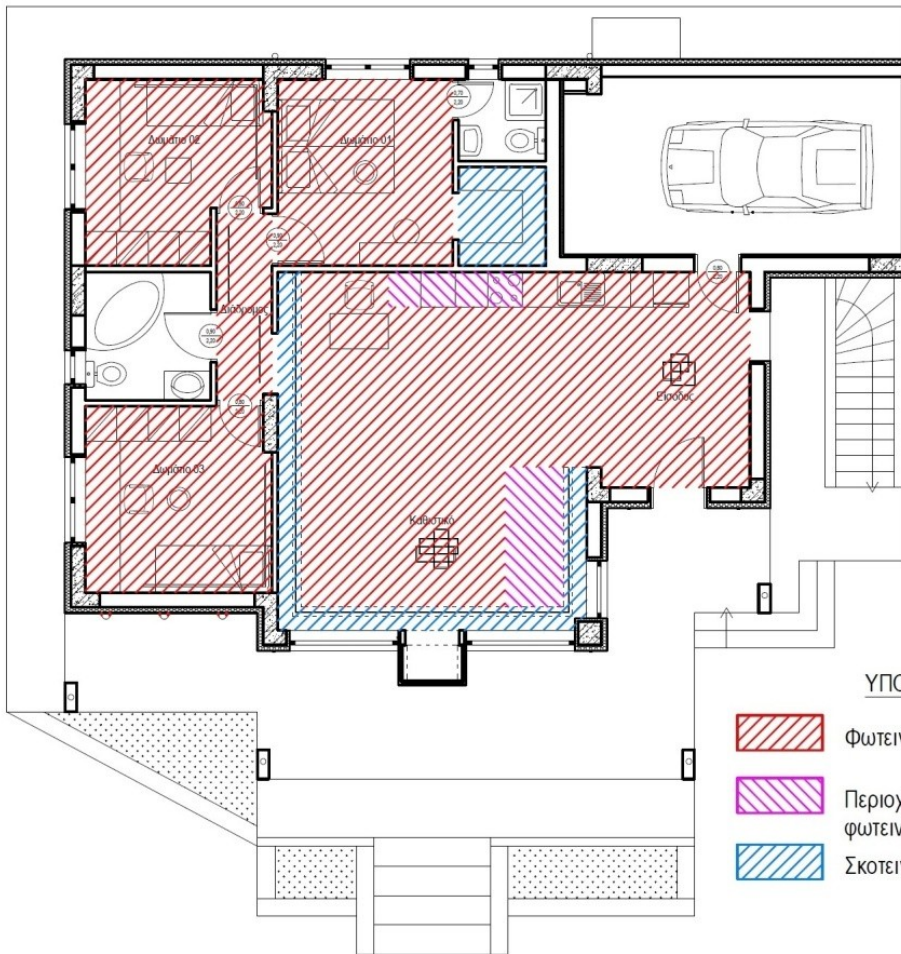
Comparing perception maps to quantitative simulations



Crowd based illuminance

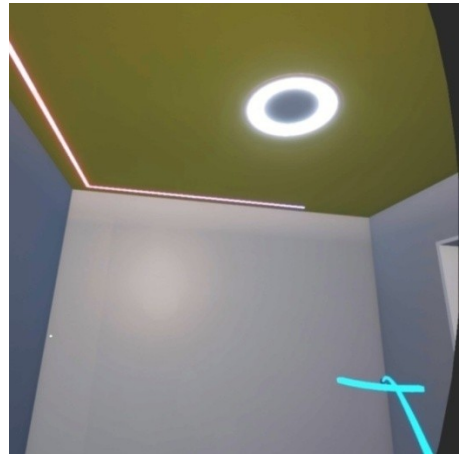
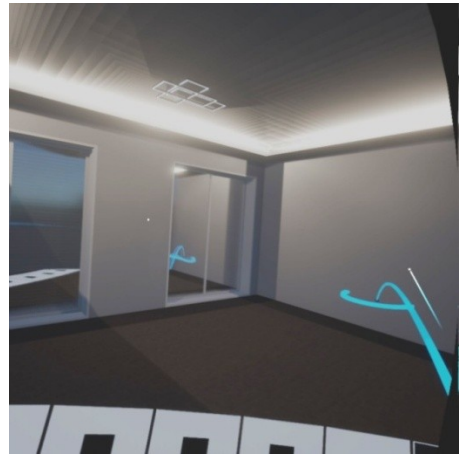
Illuminance map (VELUX Daylight Visualizer)



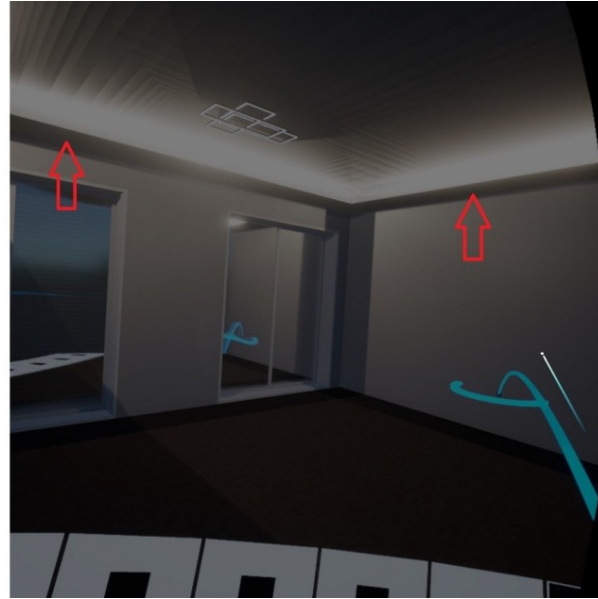
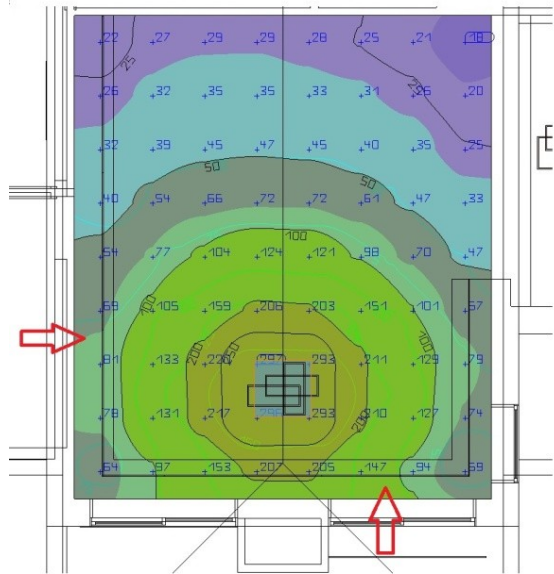


ΥΠΟΜΝΗΜΑ

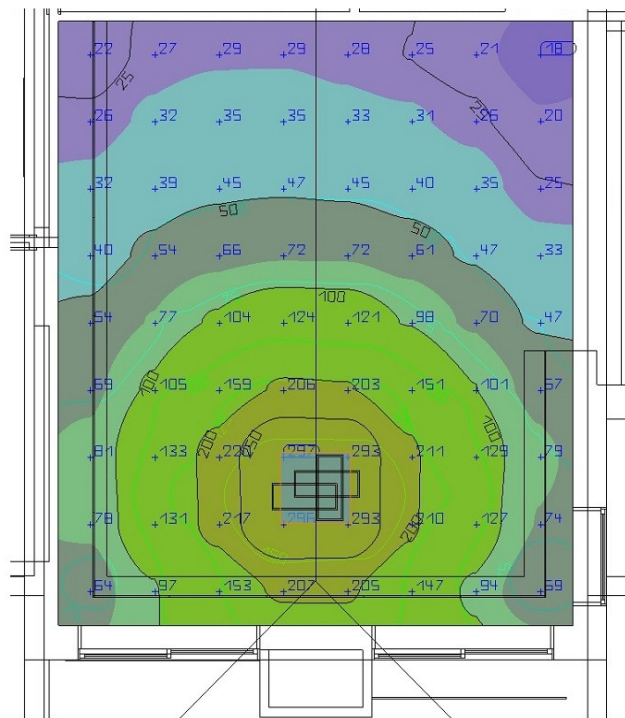
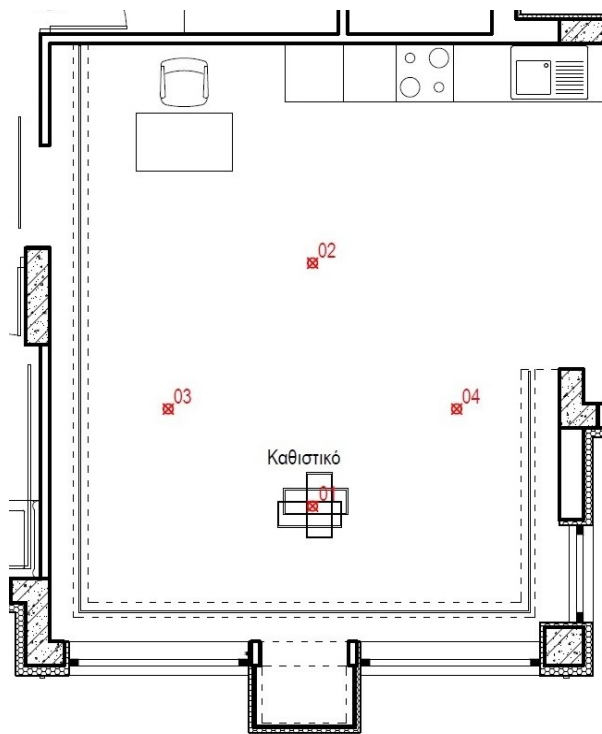
-  Φωτεινές περιοχές
-  Περιοχές ενδιάμεσης φωτεινότητας
-  Σκοτεινές περιοχές



Διάγραμμα βαθμού φωτεινότητας / Περιήγηση σε περιβάλλον Δυνητικής Πραγματικότητας



Αντιπαραβολή διαγράμματος φωτομετρικών υπολογισμών και υλοποιημένου χώρου με το μοντέλο VR



| Σημείο μέτρησης | Υπολογιζόμενη ένταση φωτισμού από το DIALux ενο | Μετρούμενη ένταση φωτισμού |
|-----------------|---|----------------------------|
| | Lux | Lux |
| 01 | 297 | 360 |
| 02 | 50 | 55 |
| 03 | 133 | 122 |
| 04 | 129 | 145 |

Αντιπαραβολή διαγράμματος φωτομετρικών υπολογισμών και επί τόπου μετρήσεων

Πηγές (links)

[ACE BIM Guide](#)

[Singapore BIM Guide](#)

[BIM Forum](#)

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[Building Smart](#)

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