

Mediclima 2019

CRITERI DI SOSTENIBILITÀ ENERGETICA E AMBIENTALE

Il Ruolo Dei Progettisti, Degli Imprenditori e Della Amministrazione Pubblica nell'era della Digitalizzazione

Edilizia circolare e Ambiente

Sostenibilità e Criteri ambientali minimi. Il ruolo degli Enti locali, dei progettisti e dei costruttori nell'applicare e promuovere criteri sostenibili.

Progettare e costruire nell'era del BIM

CAM, BIM, EGE. Il ruolo degli Enti locali, dei progettisti e dei costruttori nell'evoluzione digitale e normativa

Soluzioni E Alternative Progettuali: Pro e Contro

Il ruolo di progettisti, costruttori, committenti e produttori nel processo edilizio.

Il processo di digitalizzazione delle costruzioni in Italia e in Europa: esempi applicativi

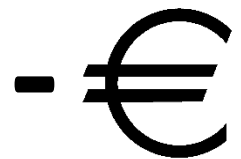
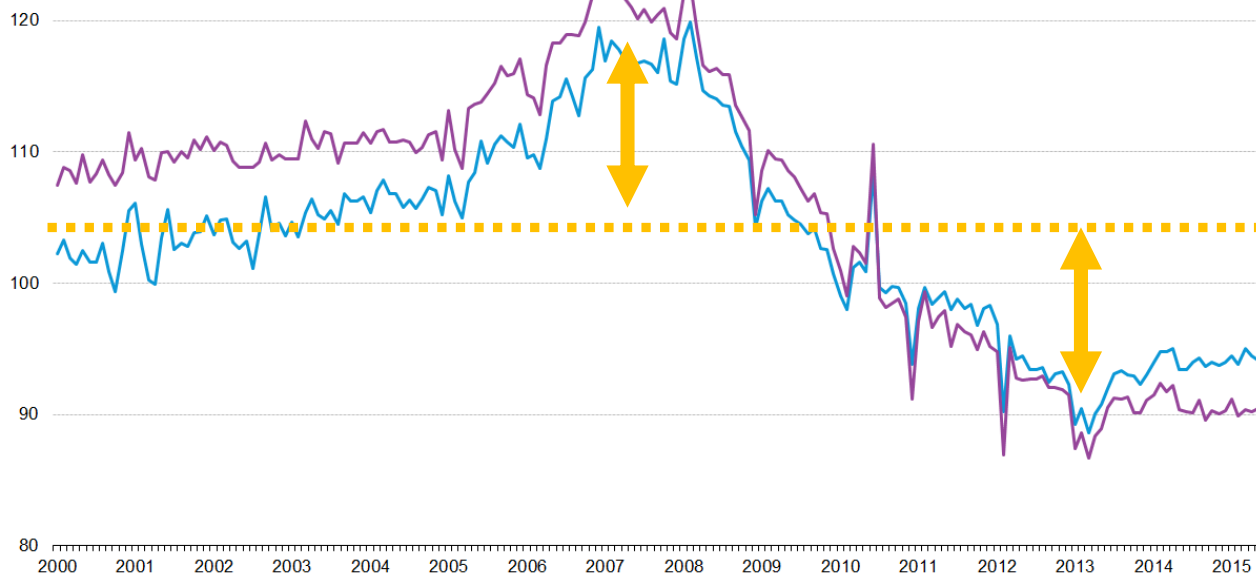
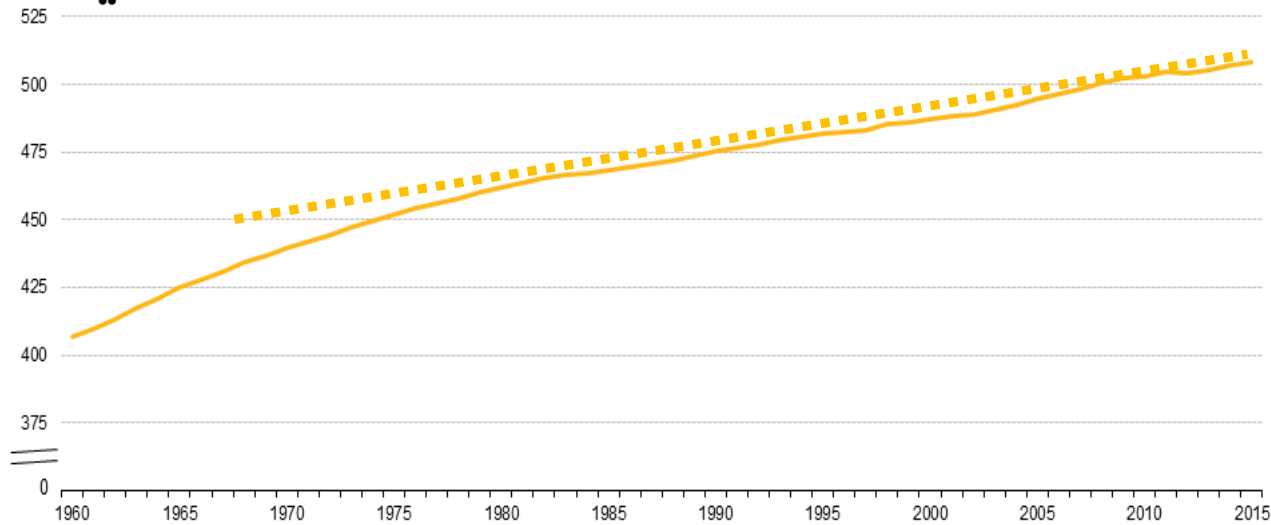
Relatore:

Ph.D. ing. Carlo Zanchetta

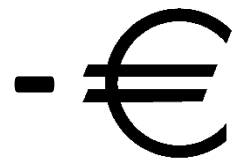
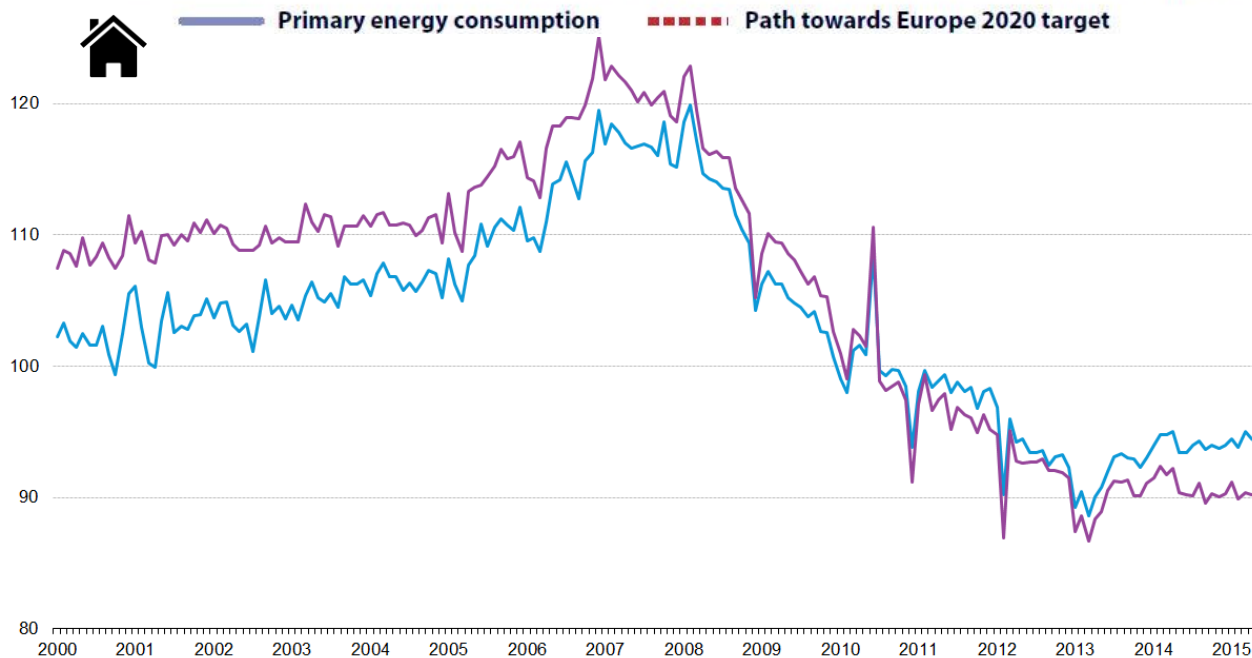
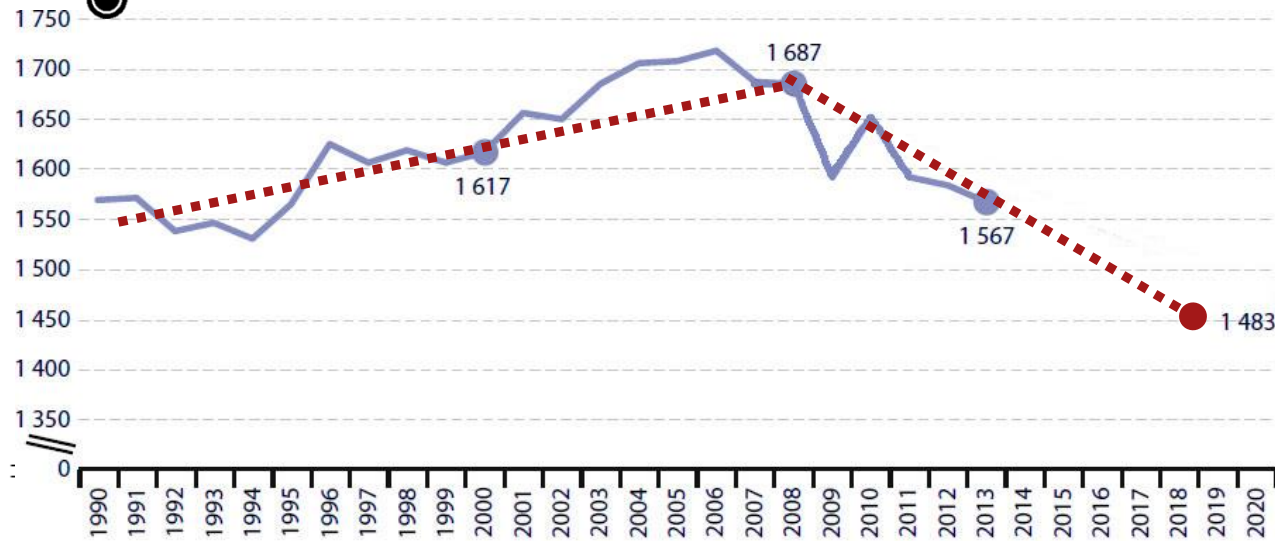


Ordine degli Ingegneri della Provincia di Nuoro
Via Convento n. 35 08100 Nuoro
Tel e Fax 078436903
Sito: www.ingegnerinuoro.it e-mail: ordineingegnerinuorocittat@pec.it
pec: ordineinuoro@ingpec.eu

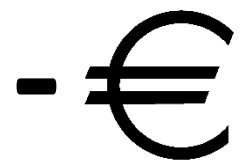
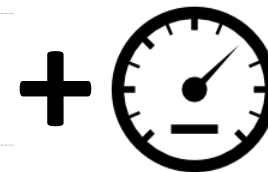
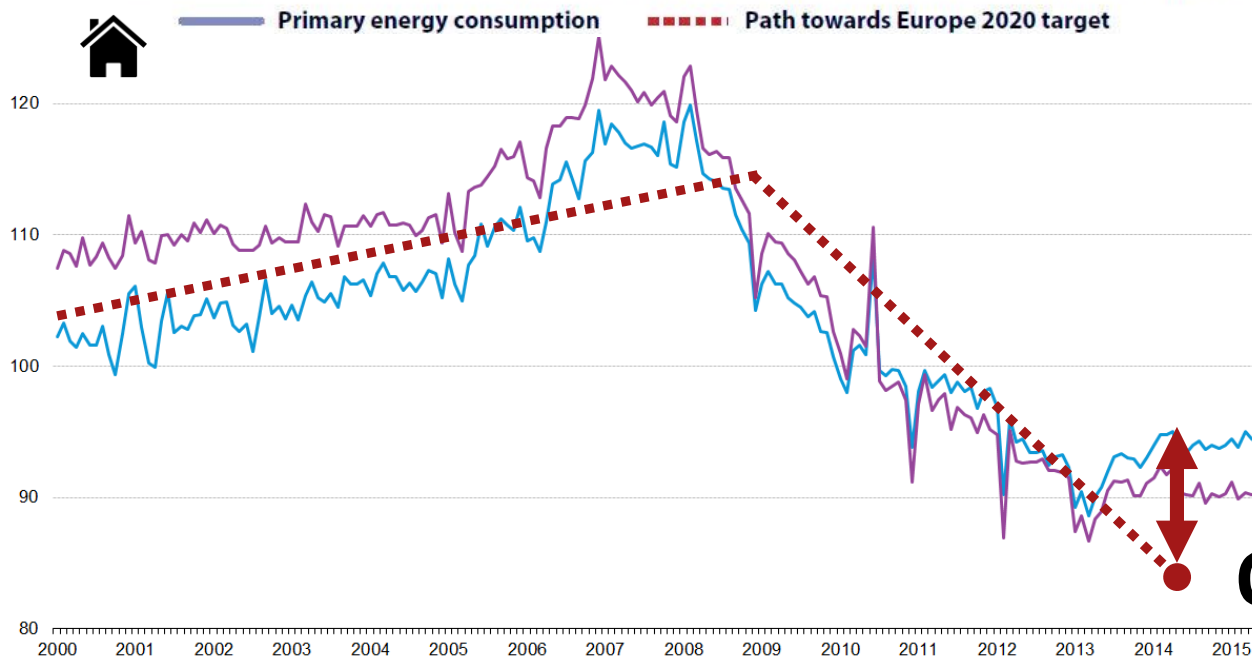
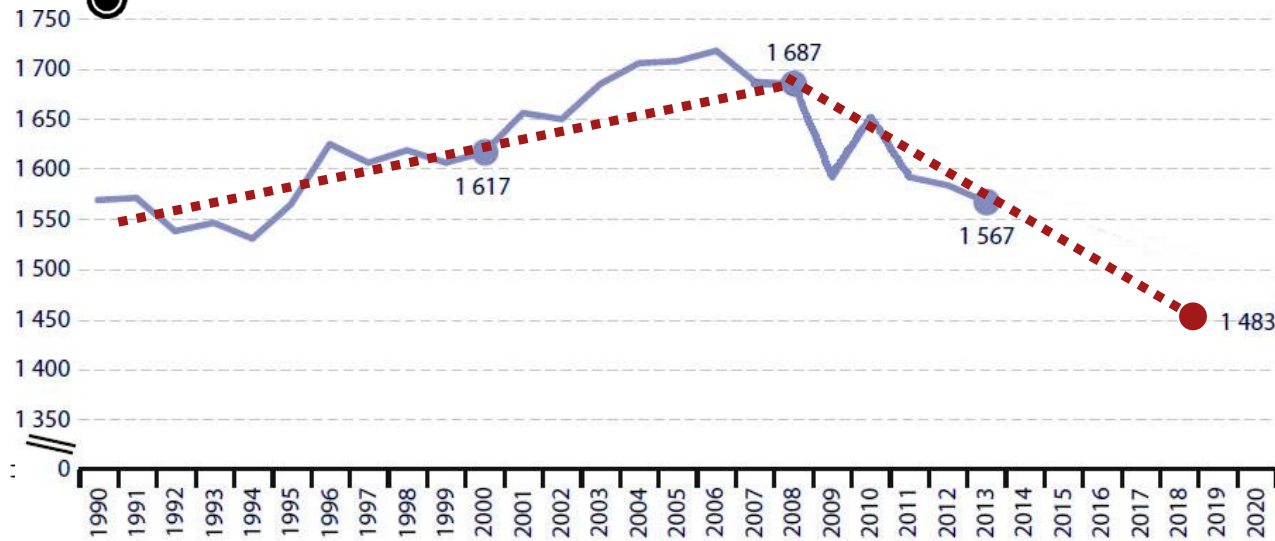




COSTS

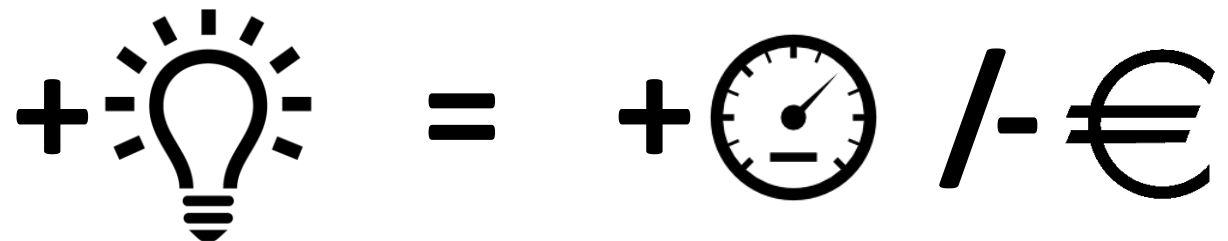


COSTS



QUALITY

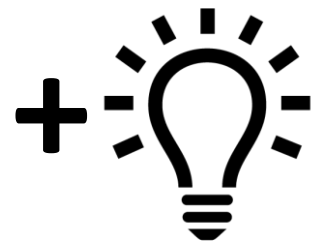
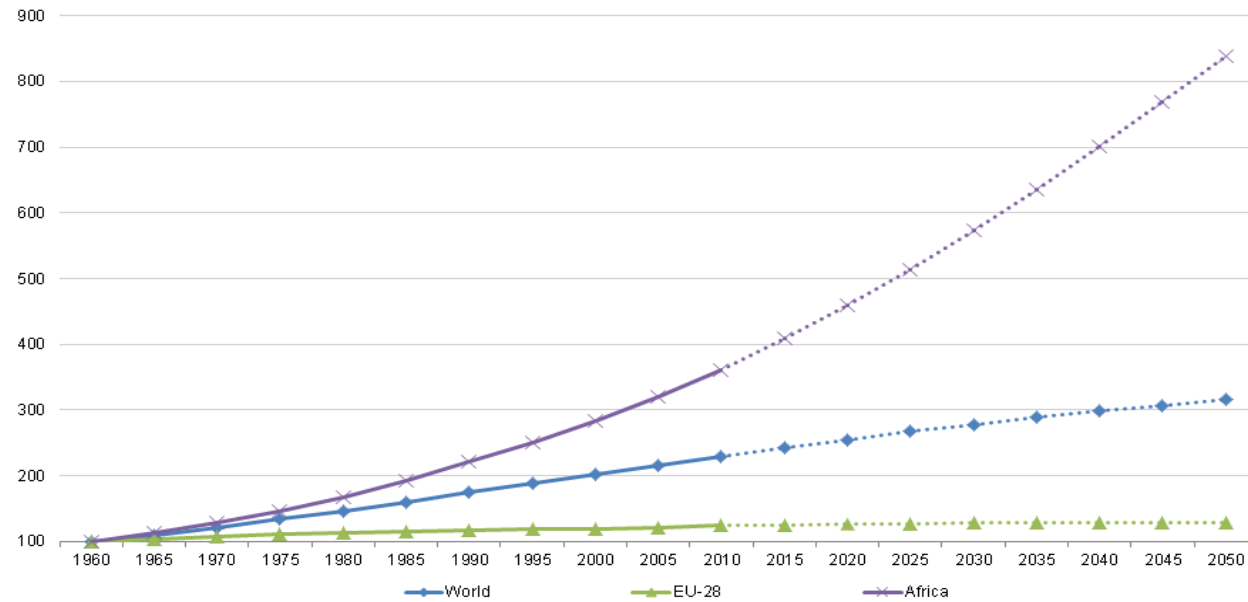
COSTS



VALUE

QUALITY

COSTS



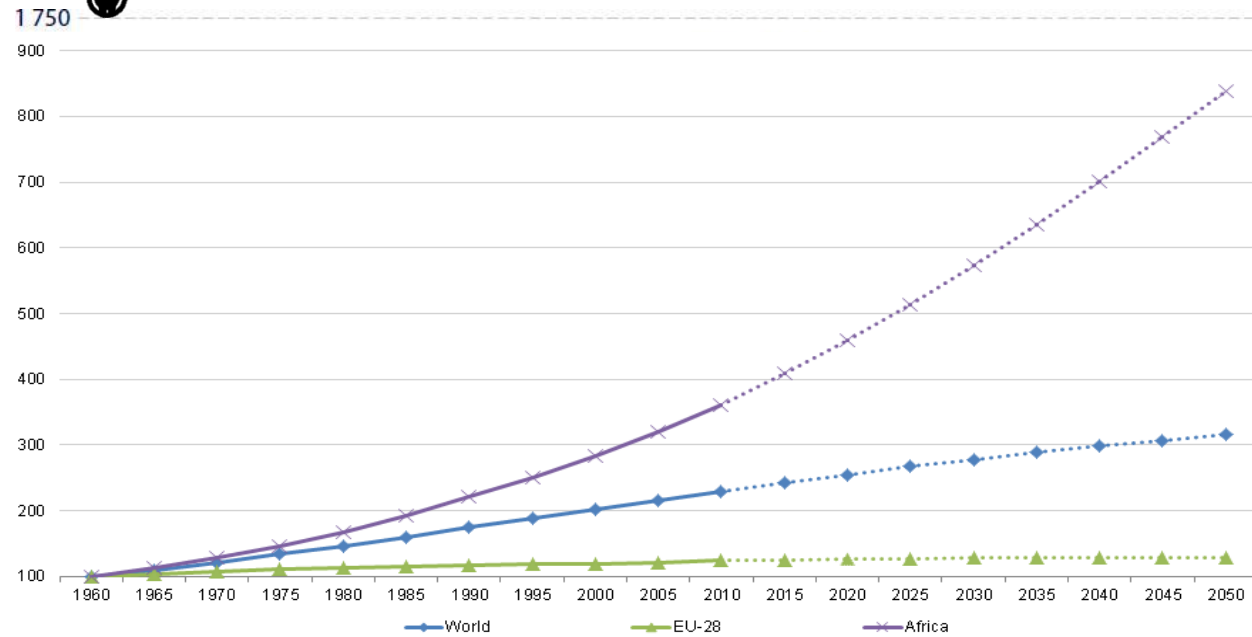
VALUE

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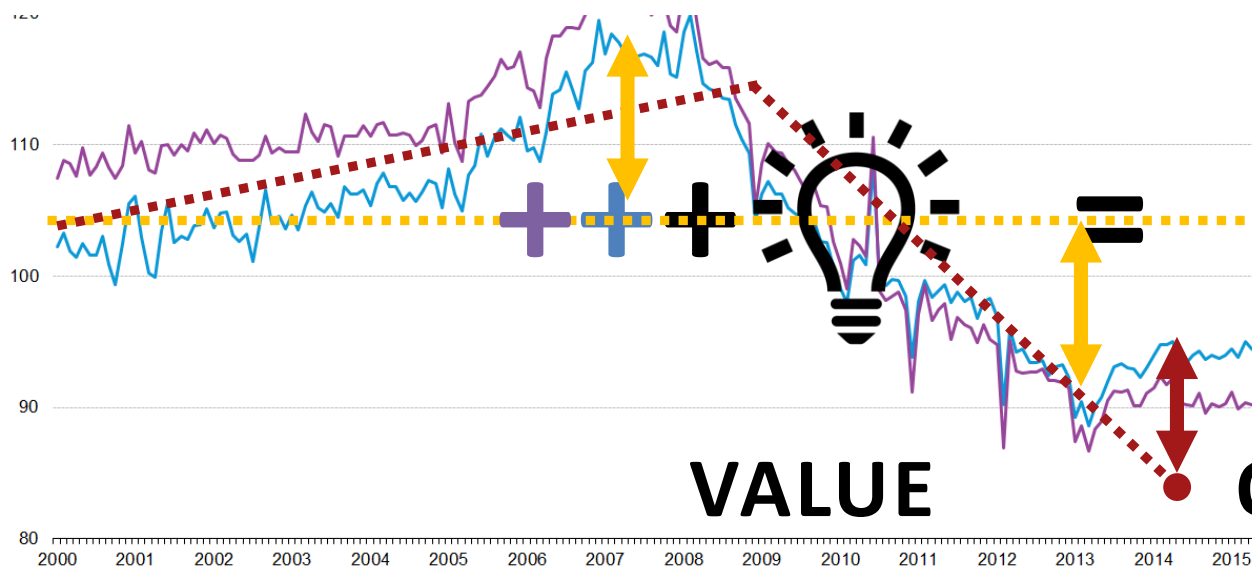


QUALITY

COSTS



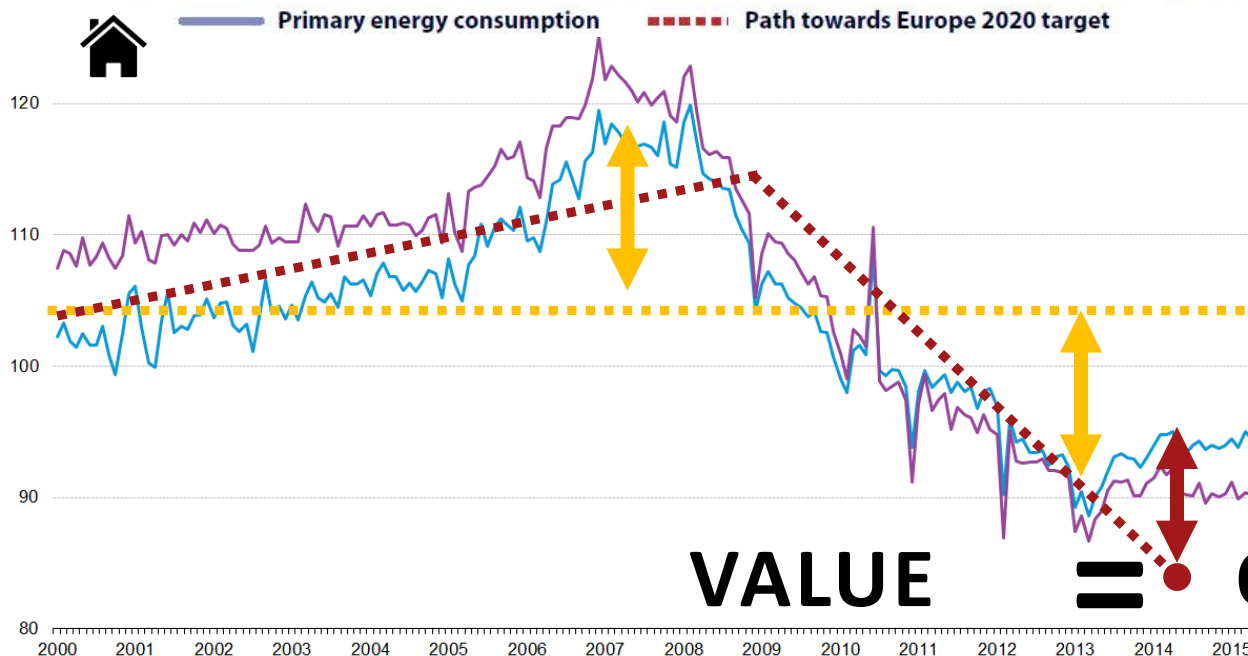
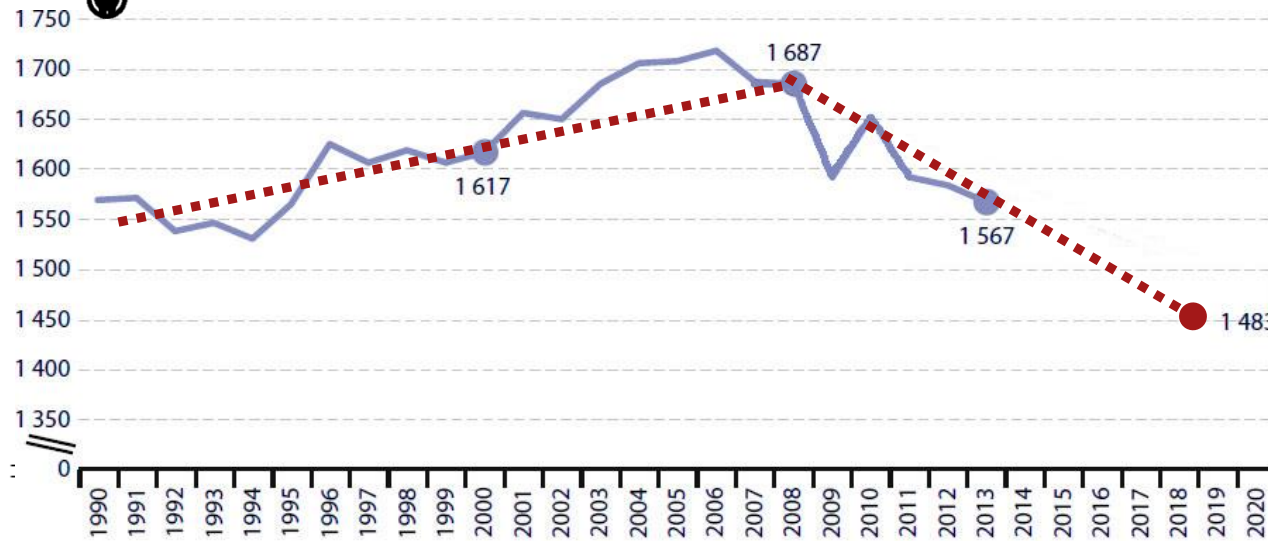
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VALUE

QUALITY

COSTS

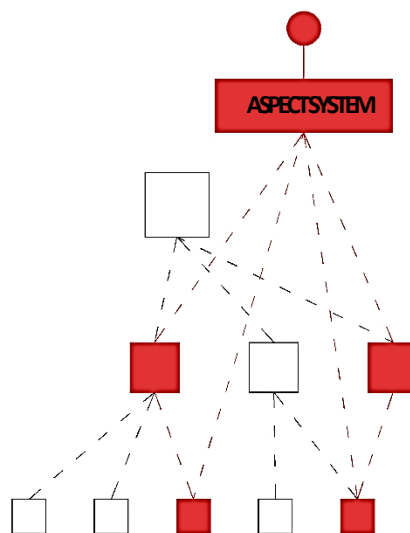
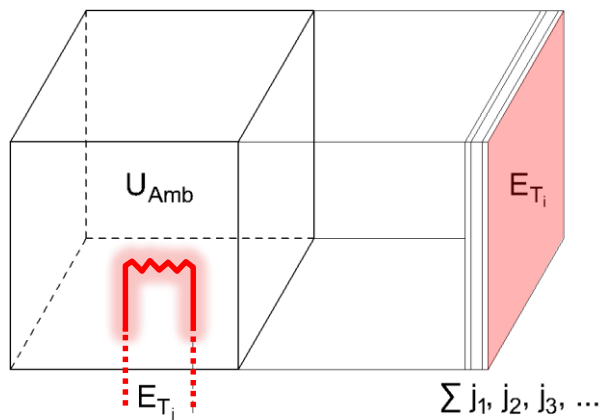


VALUE

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QUALITY / COSTS

SOSTENIBILITA'	Base	Alter 1	Alter 2	Alter 3
AMBIENTALE	1,00	1,00	1,02	0,92
Qualità dell'aria	1,00	0,96	1,01	0,90
Acqua	1,00	1,00	0,99	0,97
Energia	1,00	0,94	1,05	1,01
Comfort termico	1,00	1,12	1,00	1,04
Risorse naturali	1,00	1,00	1,00	0,86
SOCIALE	1,00	1,02	0,97	1,00
Consumo di suolo	1,00	0,92	0,87	1,00
Mobilità/Accessibilità	1,00	1,15	1,06	1,00
Partecipazione	1,00	1,00	1,00	1,00
Comfort	1,00	1,00	1,00	1,00
ECONOMICA	1,00	0,77	0,67	1,00



PERFORMANCE

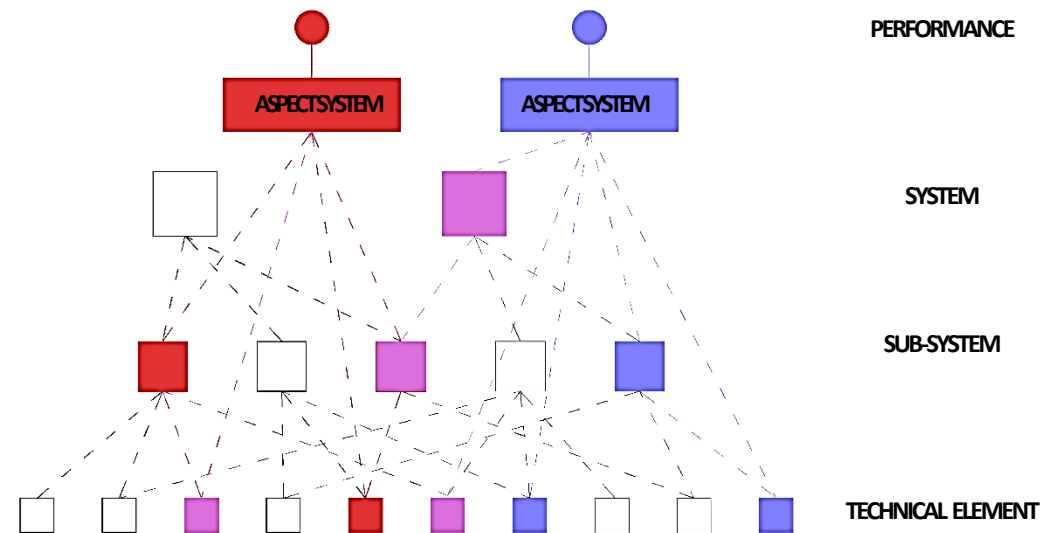
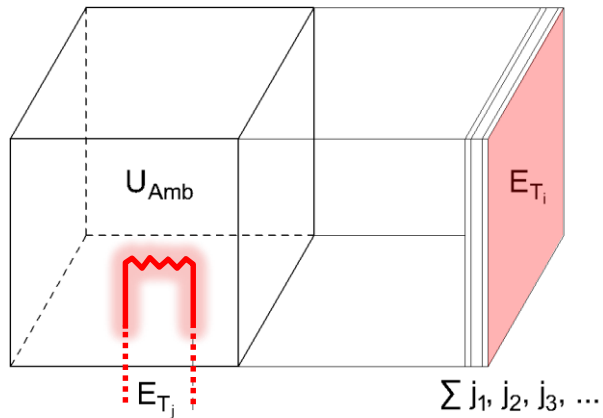
SYSTEM

SUB-SYSTEM

TECHNICAL ELEMENT

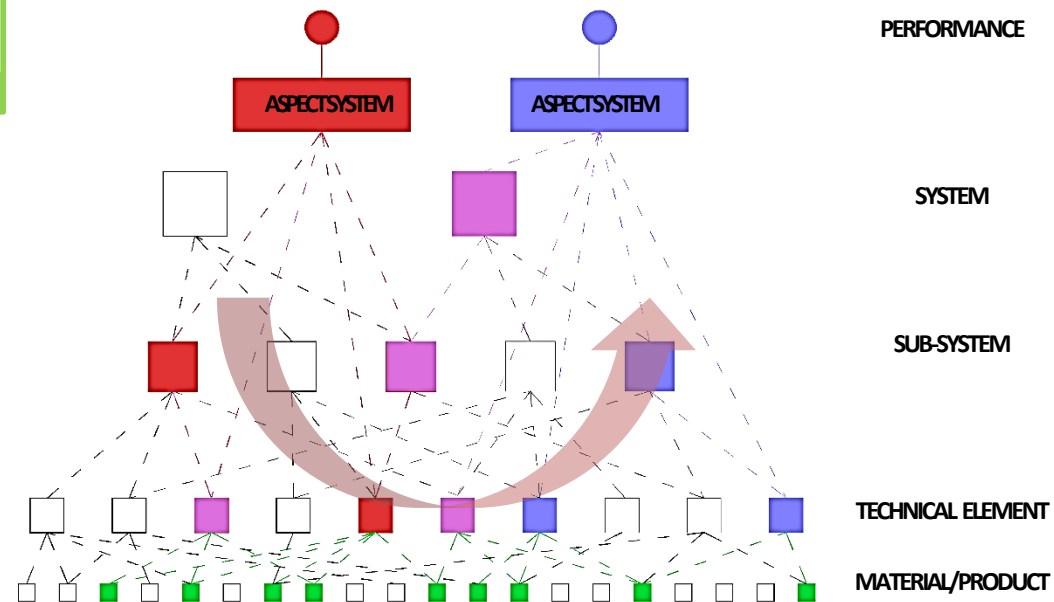
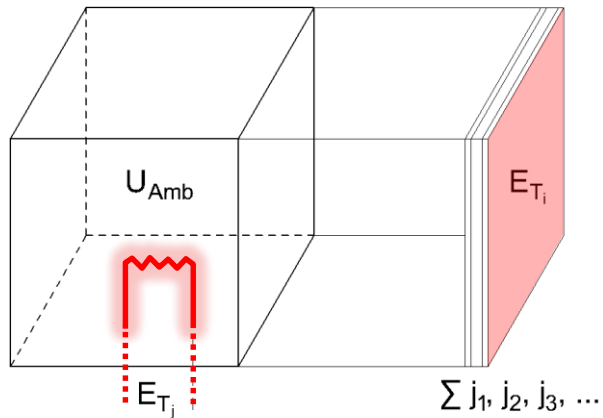
$$\text{VALUE} = \text{QUALITY} / \text{COSTS}$$

SOSTENIBILITA'	Base	Alter 1	Alter 2	Alter 3
AMBIENTALE	1,00	1,00	1,02	0,92
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ECONOMICA	1,00	0,77	0,67	1,00



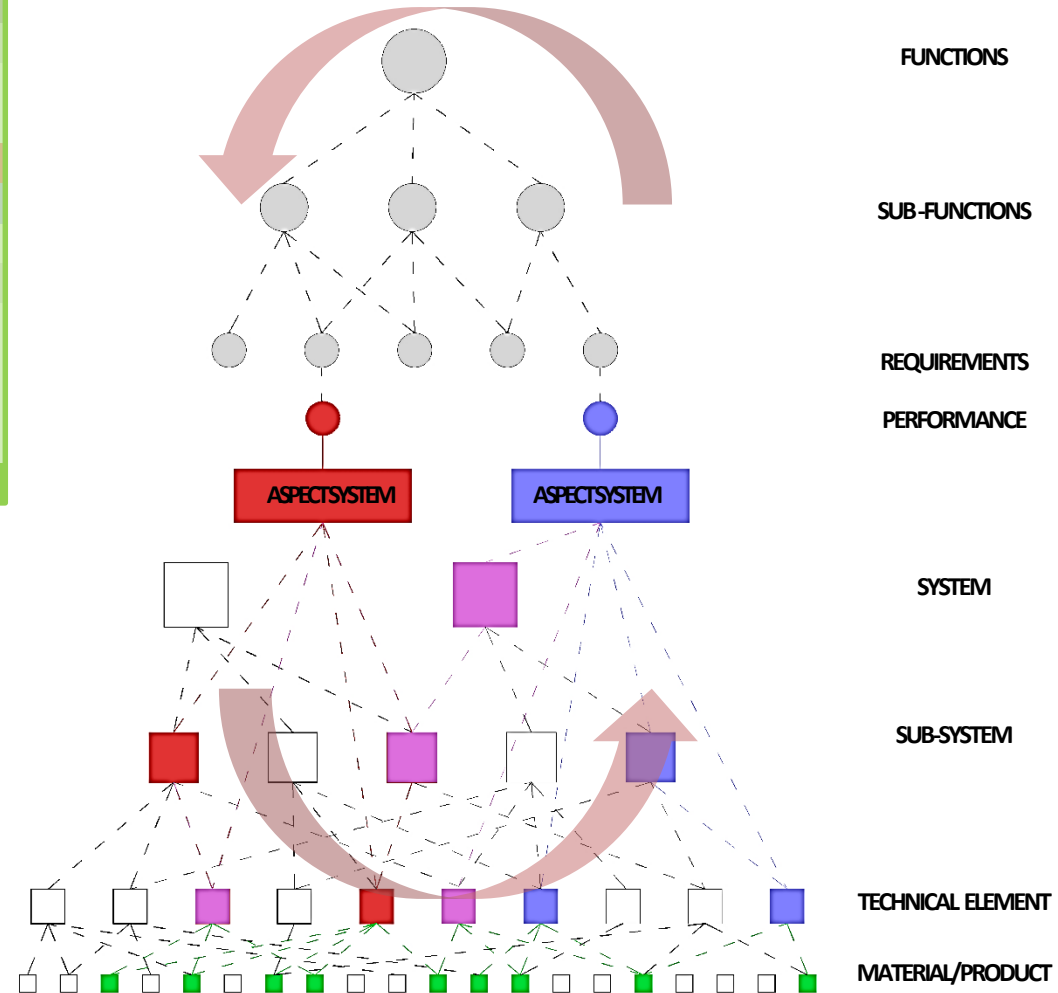
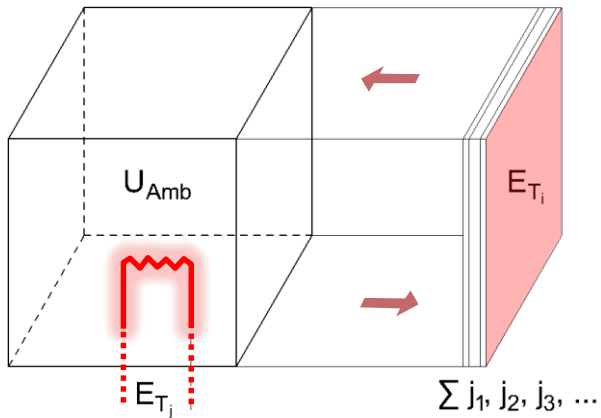
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Partecipazione	1,00	1,00	1,00	1,00
Comfort	1,00	1,00	1,00	1,00
ECONOMICA	1,00	0,77	0,67	1,00

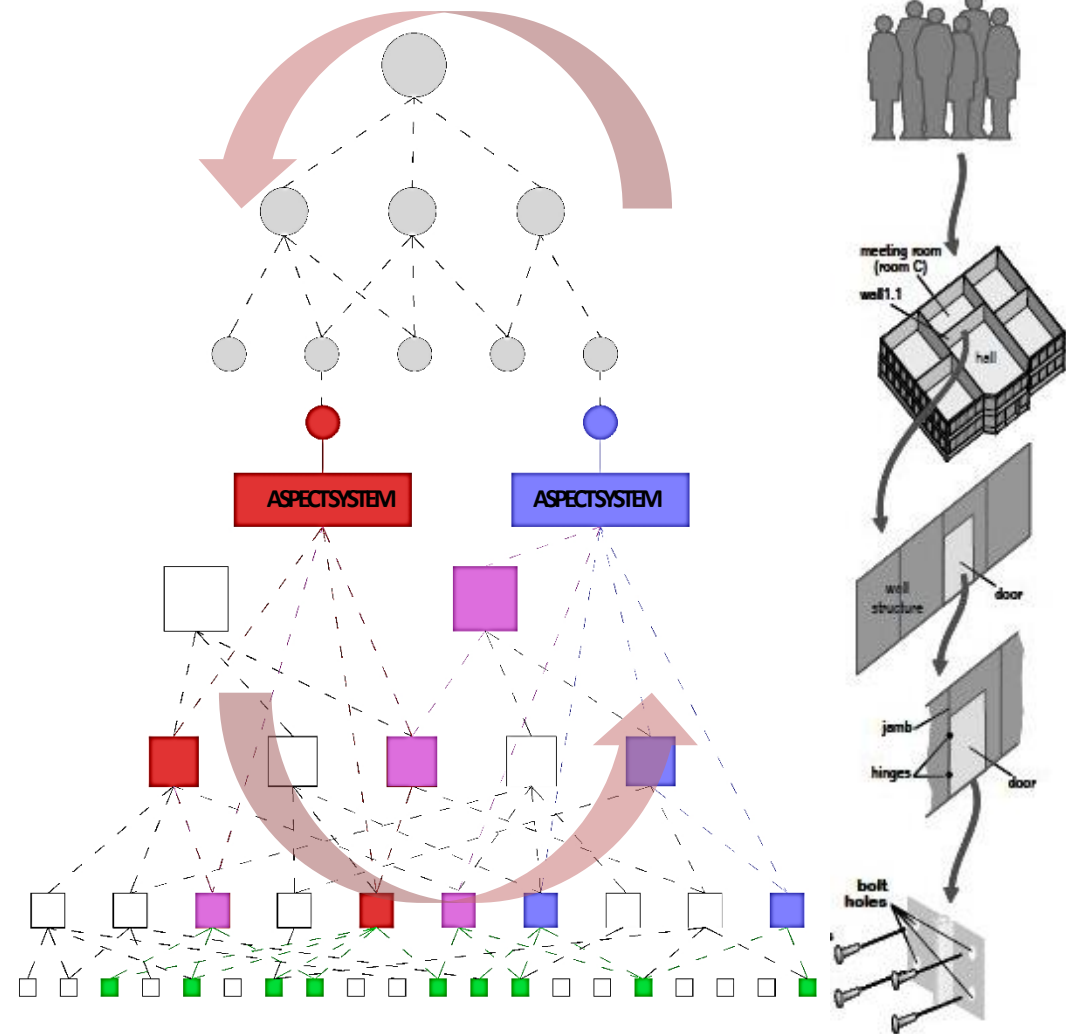
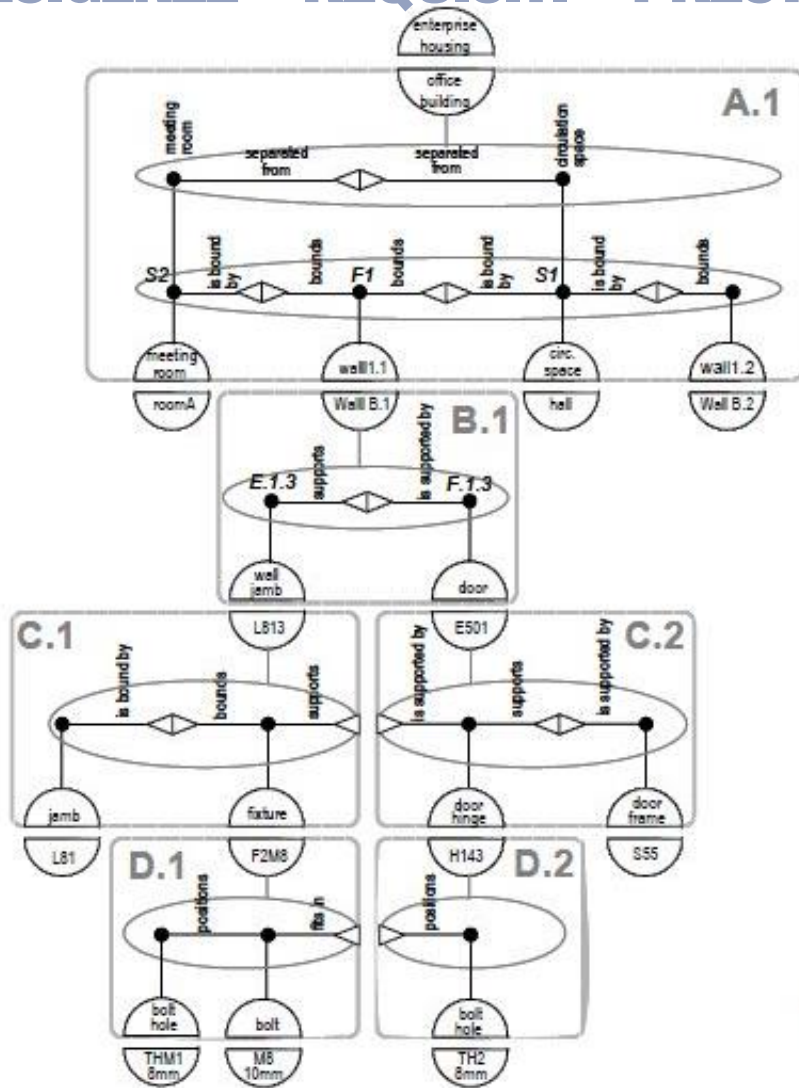


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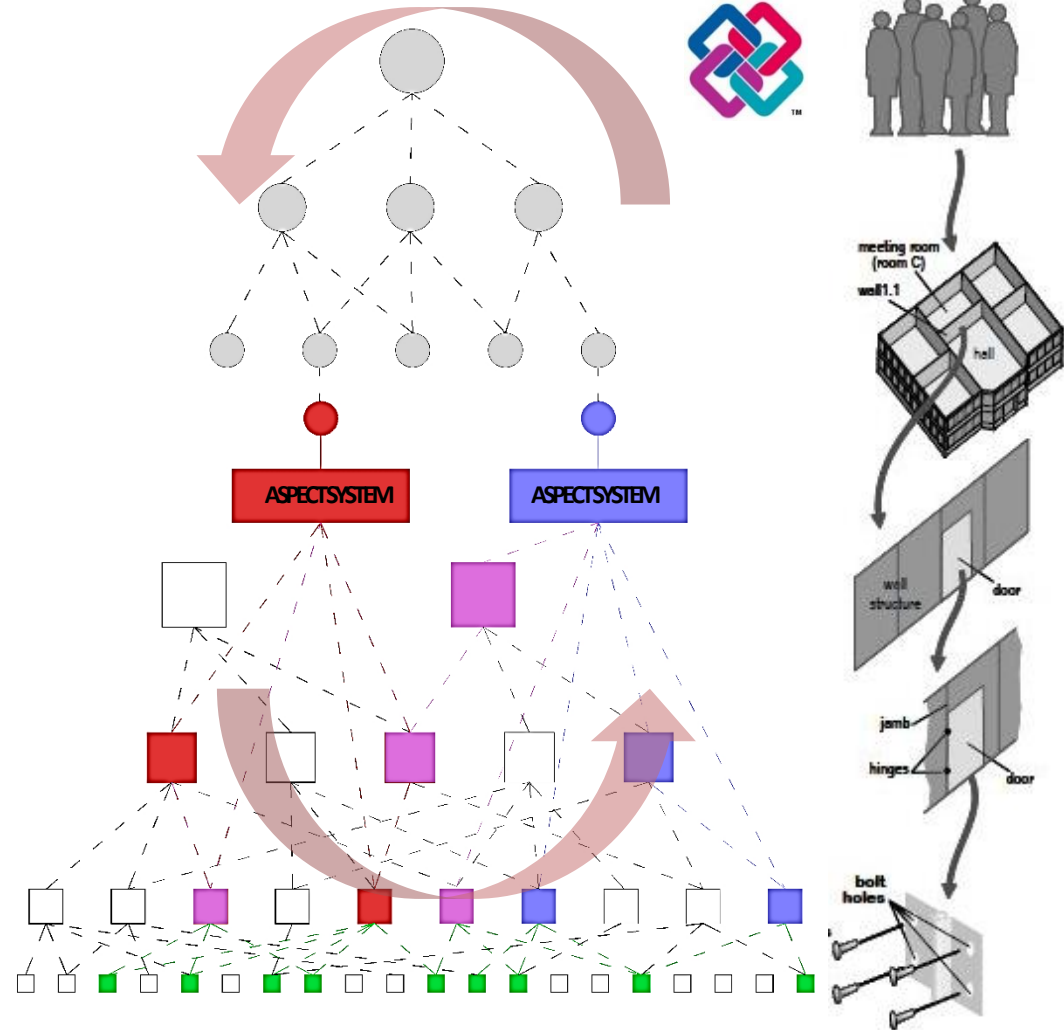
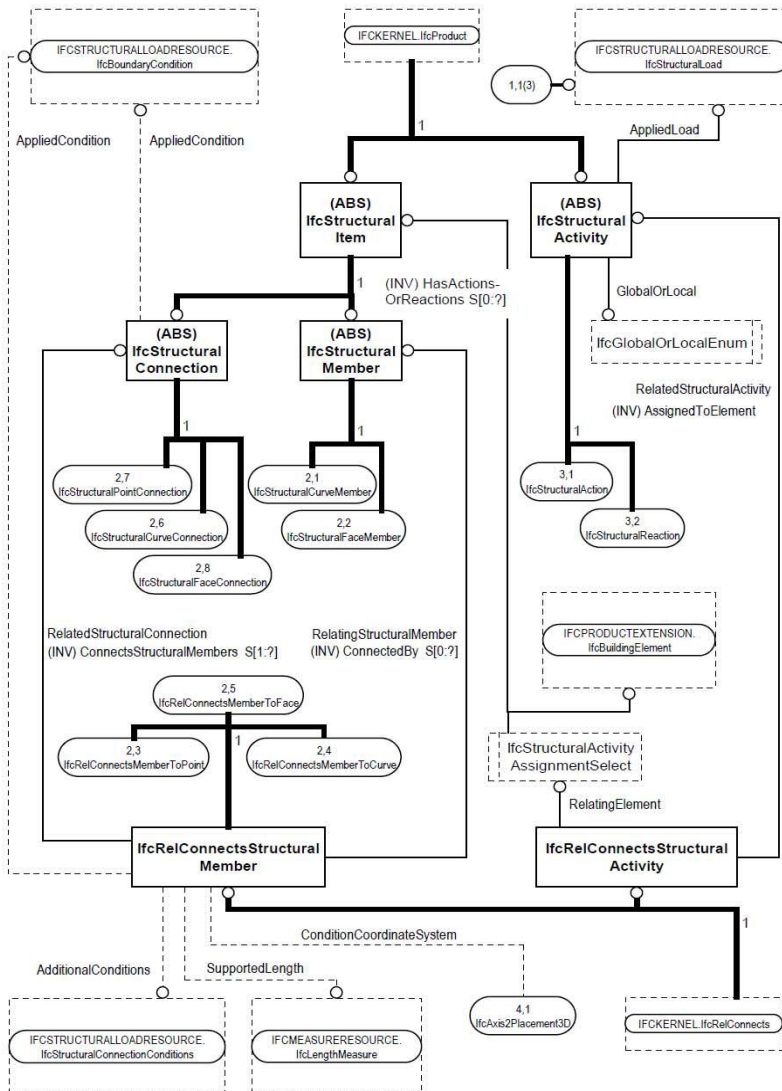
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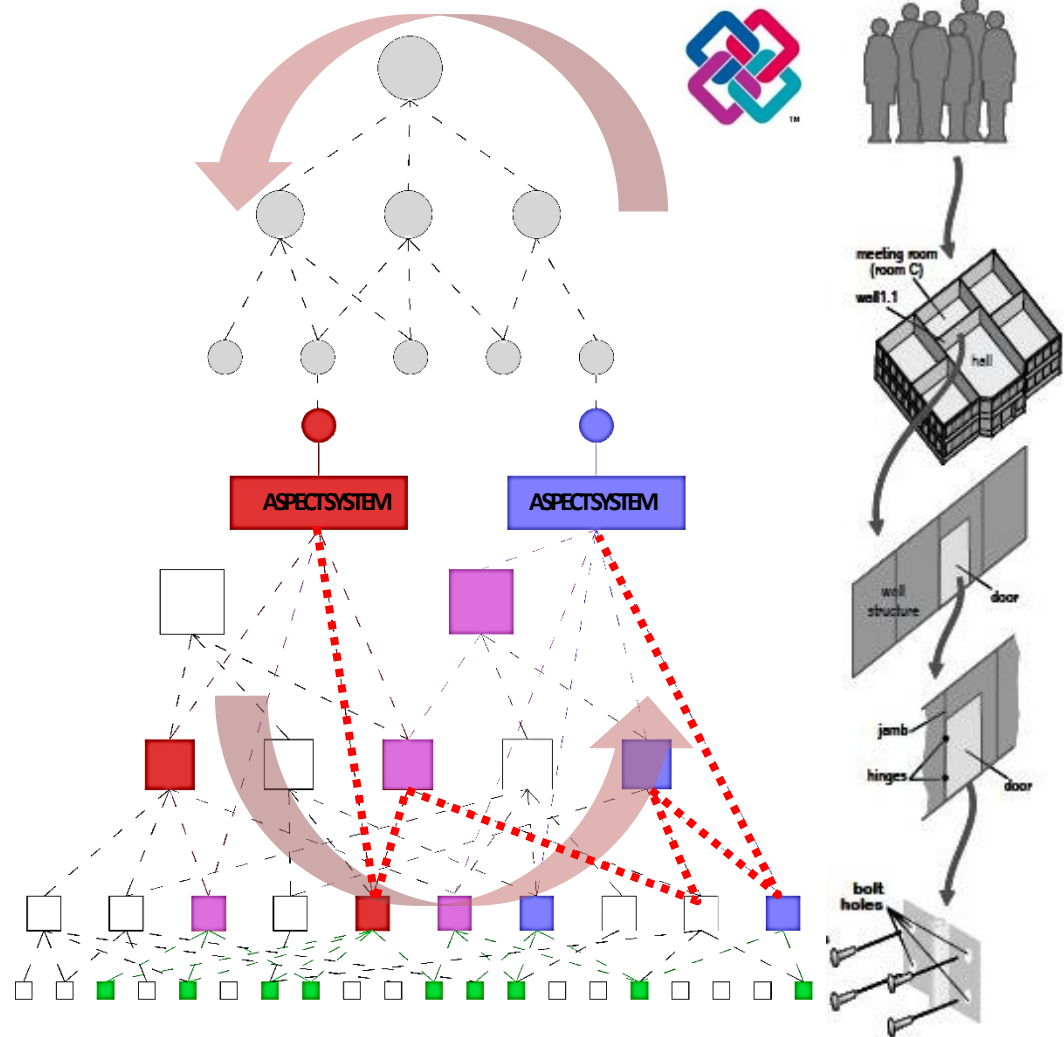
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$$\text{VALUE} = \text{QUALITY} / \text{COSTS}$$



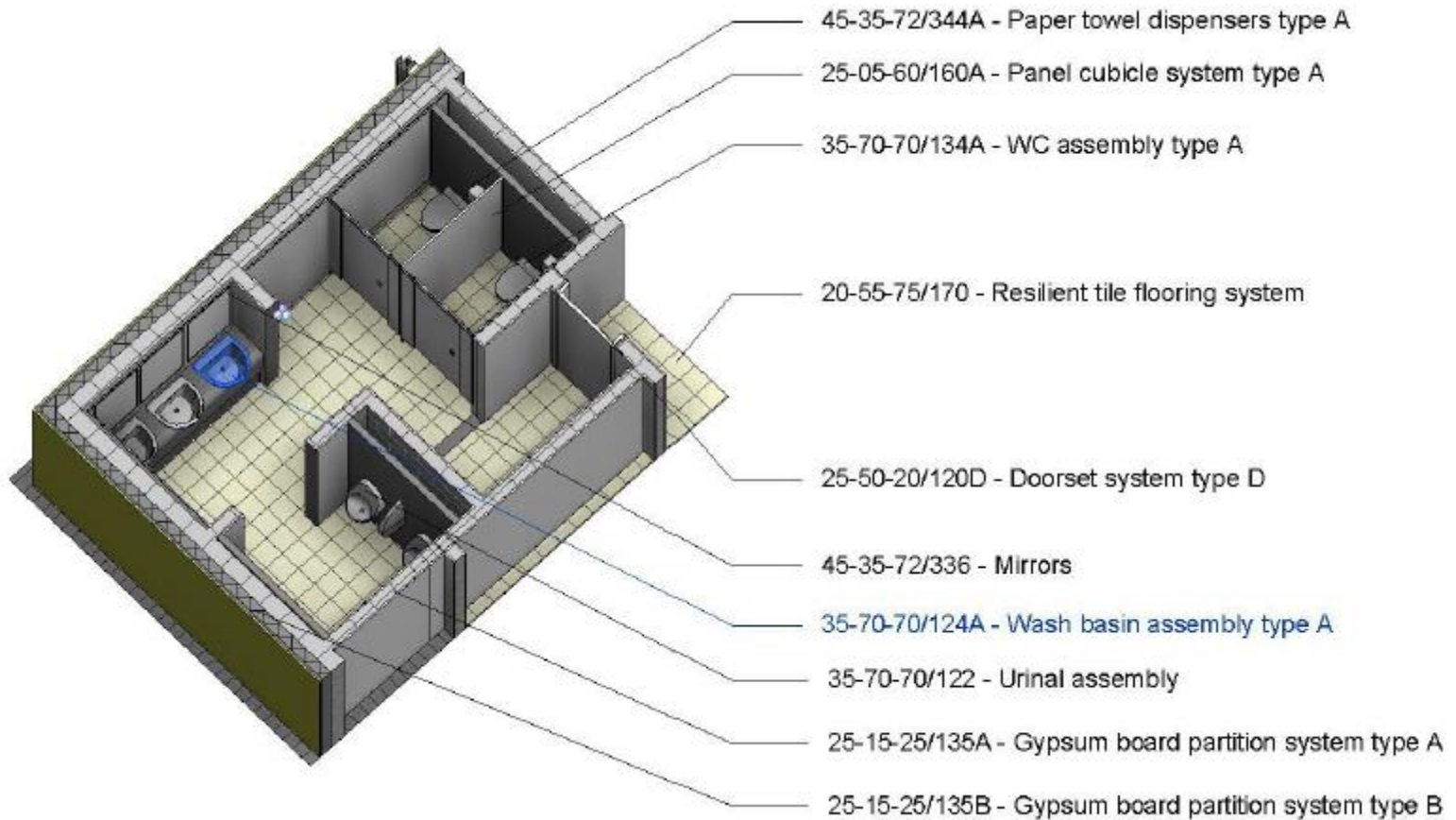
VALUE = QUALITY / COSTS

UK

STANDARD INFO

+

CODIFICA



Formato proprietario

Eigenschaften [X]

Basiswand
STB_250

Wände (1) [v] Typ bearbeiten

Phase erstellt Phase 1 [^]

Phase abgebrochen Keine

IFC-Parameter [^]

AcousticRating 52

Combustible ☒

SurfaceSpreadOfFlame B1

Compartmentation ☒

Daten [^]

hchZone

[Hilfe zu Eigenschaften](#) [Anwenden]

Formato aperto

Element Properties Properties Relations		
PropertySets from entity		
[-] PropertySets from entity		
[-] Pset_WallCommon		
AcousticRating		52
Combustible		TRUE
Compartmentation		TRUE
ExtendToStructure		TRUE
FireRating		F90
IsExternal		FALSE
LoadBearing		FALSE
Reference		STB_250
SurfaceSpreadOfFlame		B1
ThermalTransmittance		4.184

Formato proprietario

Formato aperto

Eigenschaften

Basiswand
STB_250

Wände (1) Typ bearbeiten

Phase erstellt	Phase 1
Phase abgebrochen	Keine
IFC-Parameter	
AcousticRating	52
Combustible	☒
SurfaceSpreadOfFlame	B1
Compartmentation	☒
Daten	
hchZone	

[Hilfe zu Eigenschaften](#) Anwenden

Element Properties	
Properties	Relations
PropertySets from entity	
PropertySets from entity	
Pset_WallCommon	
AcousticRating	52
Combustible	TRUE
Compartmentation	TRUE
ExtendToStructure	TRUE
FireRating	F90
IsExternal	FALSE
LoadBearing	FALSE
Reference	STB_250
SurfaceSpreadOfFlame	B1
ThermalTransmittance	4.184

Formato proprietario

Eigenschaften

Basiswand
STB_250

Wände (1) Typ bearbeiten

Phase erstellt	Phase 1
Phase abgebrochen	Keine
IFC-Parameter	
AcousticRating	52
Combustible	☒
SurfaceSpreadOfFlame	B1
Compartmentation	☒
Daten	
hchZone	hchZone

[Hilfe zu Eigenschaften](#) **Anwenden**

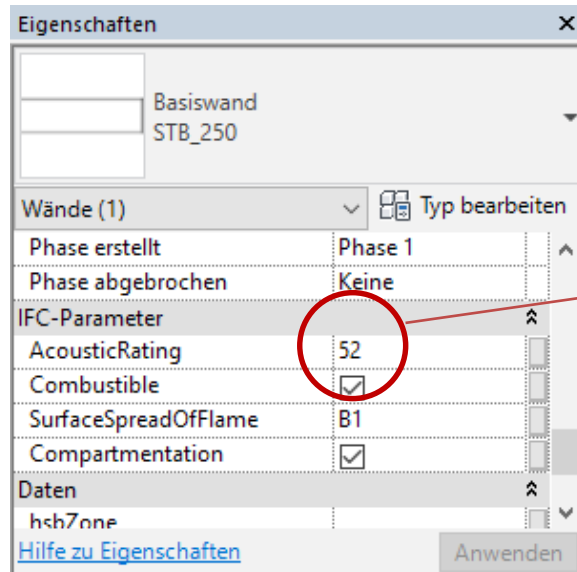
editabile

Formato aperto

PropertySets from entity	
PropertySets from entity	
Pset_WallCommon	
AcousticRating	52
Combustible	TRUE
Compartmentation	TRUE
ExtendToStructure	TRUE
FireRating	F90
IsExternal	FALSE
LoadBearing	FALSE
Reference	STB_250
SurfaceSpreadOfFlame	B1
ThermalTransmittance	4.184

editabile

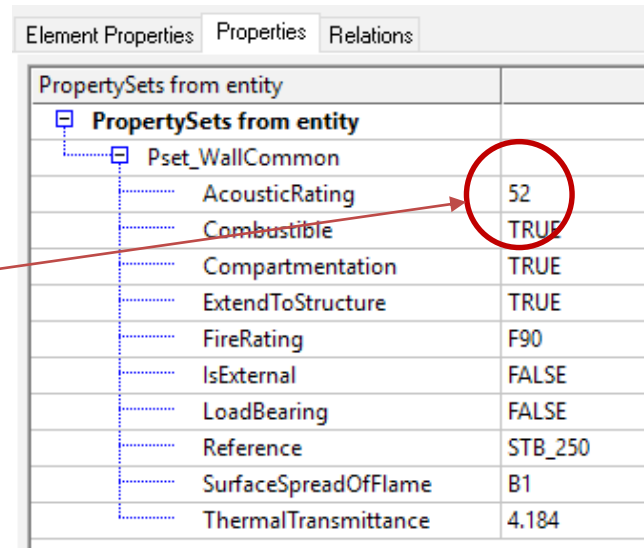
Formato proprietario



Eigenschaften	
Basiswand STB_250	
Wände (1)	Typ bearbeiten
Phase erstellt	Phase 1
Phase abgebrochen	Keine
IFC-Parameter	
AcousticRating	52
Combustible	☒
SurfaceSpreadOfFlame	B1
Compartmentation	☒
Daten	
hchZone	
Hilfe zu Eigenschaften	
Anwenden	

editabile
relazionale

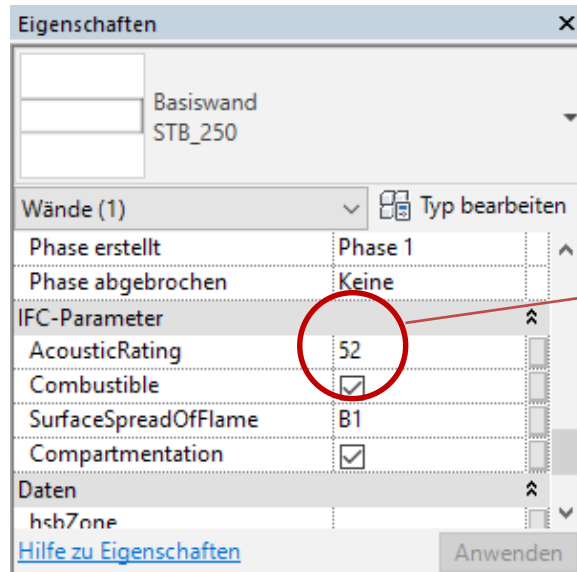
Formato aperto



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PropertySets from entity	
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AcousticRating	52
Combustible	TRUE
Compartmentation	TRUE
ExtendToStructure	TRUE
FireRating	F90
IsExternal	FALSE
LoadBearing	FALSE
Reference	STB_250
SurfaceSpreadOfFlame	B1
ThermalTransmittance	4.184

editabile
non relazionale

Formato proprietario



editabile
relazionale
progettazione

Formato aperto

Element Properties Properties Relations	
PropertySets from entity	
PropertySets from entity	
Pset_WallCommon	
AcousticRating	52
Combustible	TRUE
Compartmentation	TRUE
ExtendToStructure	TRUE
FireRating	F90
IsExternal	FALSE
LoadBearing	FALSE
Reference	STB_250
SurfaceSpreadOfFlame	B1
ThermalTransmittance	4.184

editabile
non relazionale
condivisione

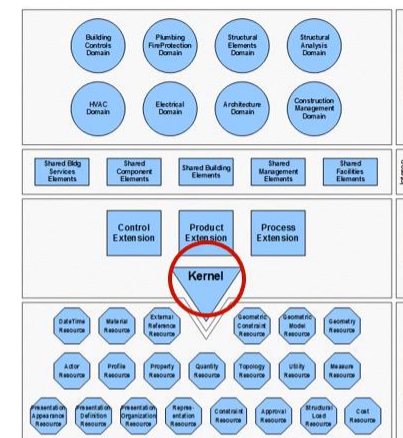
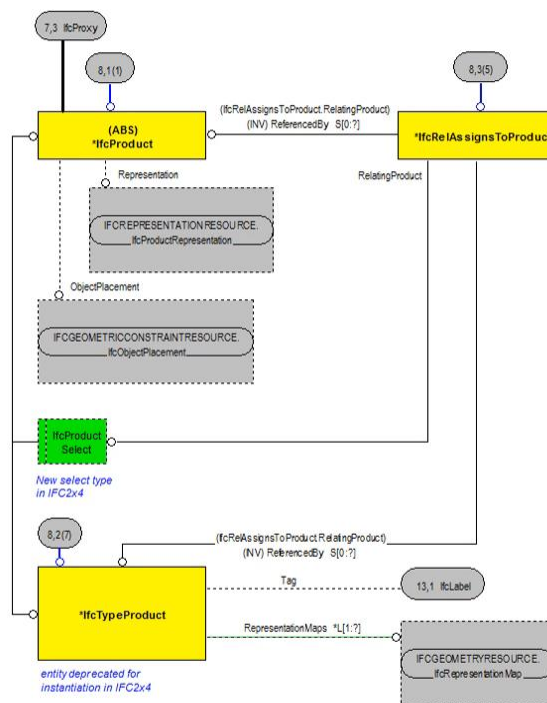
_mappatura export

Categoria Revit	Nome classe IFC	Tipo IFC
Stratigrafia	Non esportato	
Linee nascoste	Non esportato	
Structural Area Reinforcement	IfcReinforcingBar	
Structural Beam Systems	IfcAssembly	BEAMSYSTEM
Structural Column Tags	Non esportato	
Structural Columns	IfcColumn	
Structural Fabric Areas	IfcGroup	
Structural Fabric Reinforcement	IfcReinforcementMesh	
Structural Foundation Tags	Non esportato	
Structural Foundations	IfcSlab	BASESLAB
Structural Framing	IfcBuildingElementProxy	
Structural Framing Tags	Non esportato	
Structural Path Reinforcement	IfcReinforcingBar	
Structural Rebar	IfcReinforcingMesh	
Structural Rebar Couplers	IfcMechanicalFastener	
Structural Stiffener Tags	Non esportato	
Structural Stiffeners	IfcPlate	
Structural Truss Tags	Non esportato	
Structural Trusses	IfcAssembly	TRUSS
Telaio strutturale	Non esportato	
Altro	Non esportato	
Animi	Non esportato	

Carica...

Standard

Salva con nome...



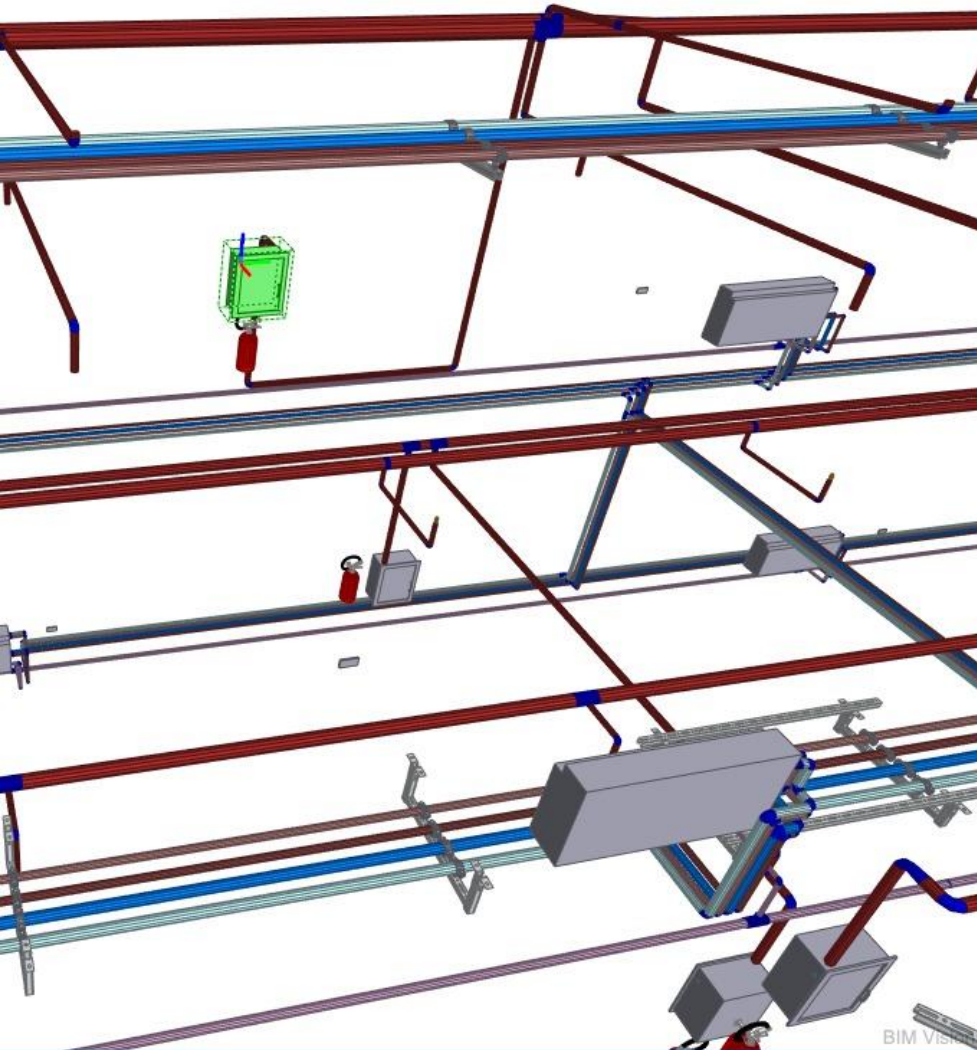
_mappatura export INTELLIGENTE!

```
# User Defined PropertySet Definition File
#
# Format:
#   PropertySet:      <Pset Name>      I[nstance]/T[ype]      <element list separated by '<,'>'>
#       <Property Name 1>      <Data type>      <[opt] Revit parameter name, if different from IFC>
#       <Property Name 2>      <Data type>      <[opt] Revit parameter name, if different from IFC>
#       ...
```

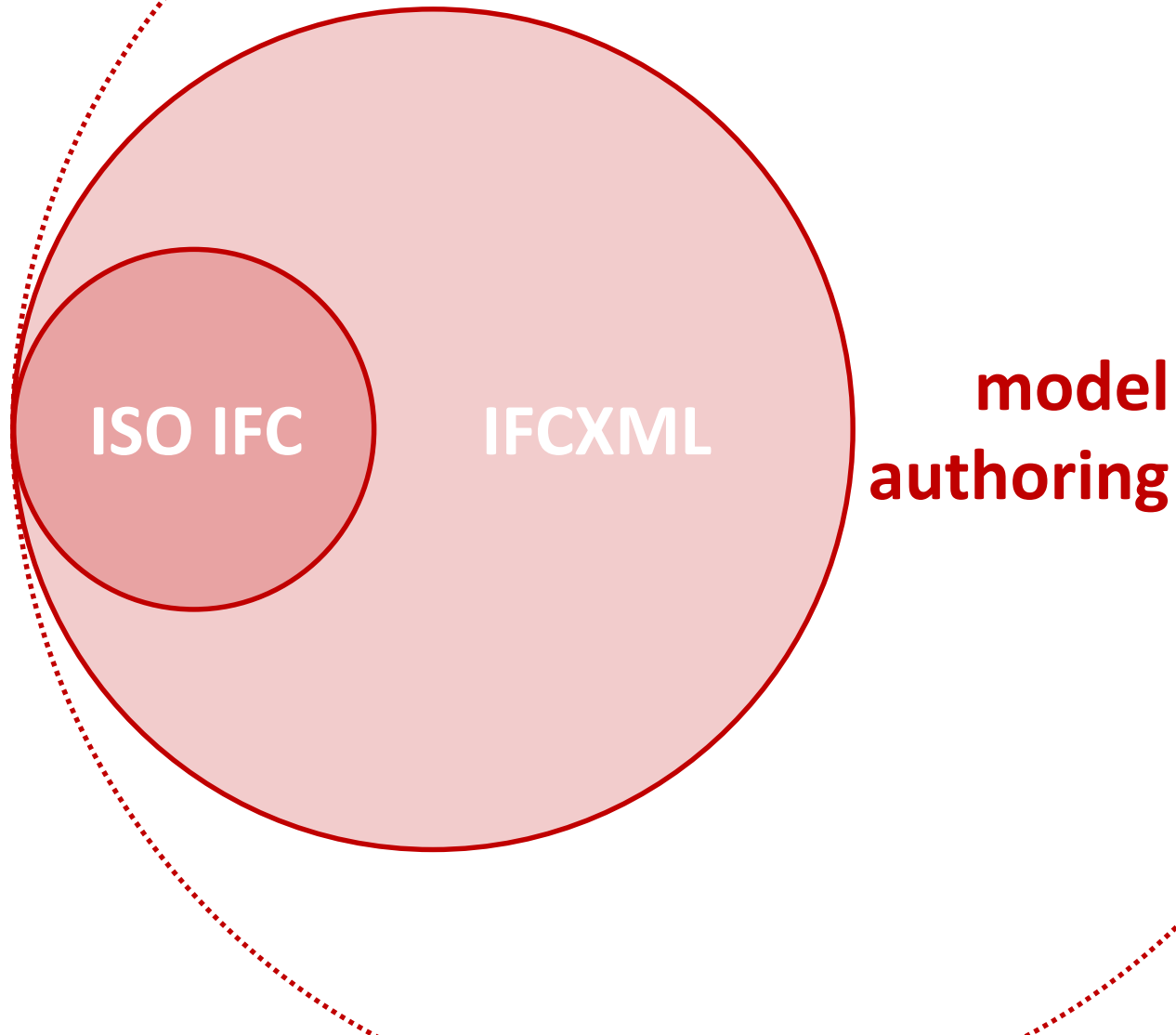
Per contro, un foglio dati completamente configurato potrebbe avere questo aspetto:

#	PropertySet:	Autodesk Parameter	I	IfcWall
	Phase		Text	Phase erstellt
	Raumbegrenzung		Boolean	
	Tragwerk		Boolean	

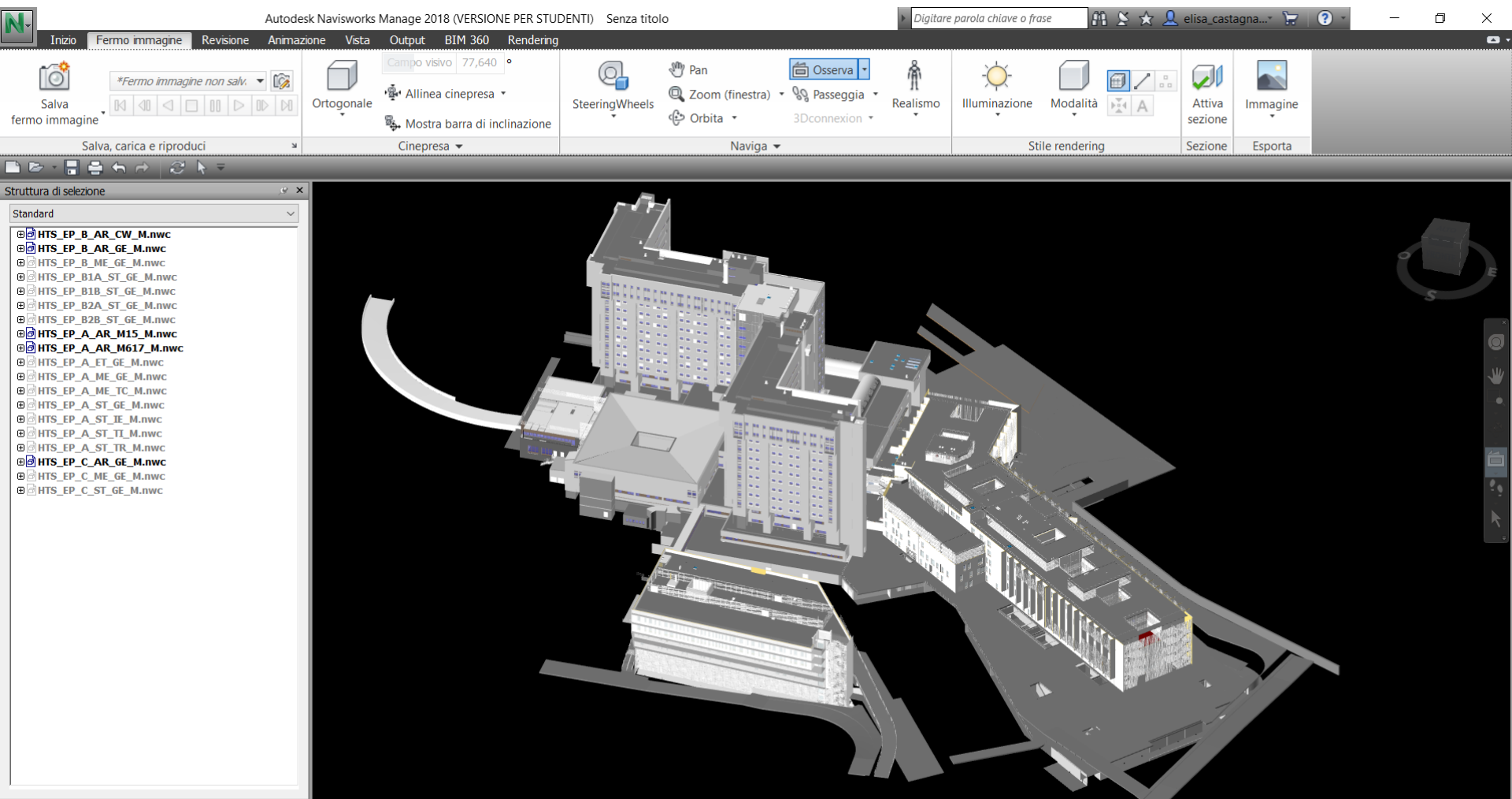
```
#
# User Defined PropertySet Definition File
#
# Format:
#   PropertySet:      <Pset Name>      I[nstance]/T[ype]      <element list separated by ', '>
#   <Property Name 1>  <Data type>      <[opt] Revit parameter name, if different from IFC>
#   <Property Name 2>  <Data type>      <[opt] Revit parameter name, if different from IFC>
#   ...
#
# Data types supported: Area, Boolean, ClassificationReference, ColorTemperature, Count, Currency,
#   ElectricalCurrent, ElectricalEfficacy, ElectricalVoltage, Force, Frequency, Identifier,
#   Illuminance, Integer, Label, Length, Logical, LuminousFlux, LuminousIntensity,
#   NormalisedRatio, MassDensity, PlaneAngle, PositiveLength, PositivePlaneAngle, PositiveRatio,
#   Power, Pressure, Ratio, Real, Text, ThermalTransmittance, ThermodynamicTemperature, Volume,
#   VolumetricFlowRate
#
# Example property set definition for TEST:
#
PropertySet:  ACDat - External References      I      IfcElement
  External reference 1  Text  ACDat_Scheda Tecnica
  External reference 2  Text  ACDat_Dettaglio Costruttivo
  External reference 3  Text  ACDat_Istruzione Montaggio
  External reference 4  Text  ACDat_Schema Armature
  External reference 5  Text  ACDat_Scheda Materiale/Fornitore
  External reference 6  Text  ACDat_Elaborato Transitorio
  External reference 7  Text  ACDat_Piano Controllo Qualita
  External reference 8  Text  ACDat_Contenuto Ibrido
  External reference 9  Text  ACDat_Garanzia
#
PropertySet:  Phases Time Sequencing & Schedule Requirements I      IfcElement
  WBS Code      Text  WBS_Codice
  WBS Level 1    Text  WBS_Progetto
  WBS Level 2    Text  WBS_Intervento
  WBS Level 3    Text  WBS_Categoria
  WBS Level 4    Text  WBS_Area Intervento
  WBS Level 5    Text  WBS_Opera
#
PropertySet:  Status I      IfcElement
  Status_Approvato      Boolean Status_Approvato
  Status_Iniziato      Boolean Status_Iniziato
  Status_Realizzato      Boolean Status_Realizzato
#
PropertySet:  Element I      IfcElement
  Categoria      Text
#
```

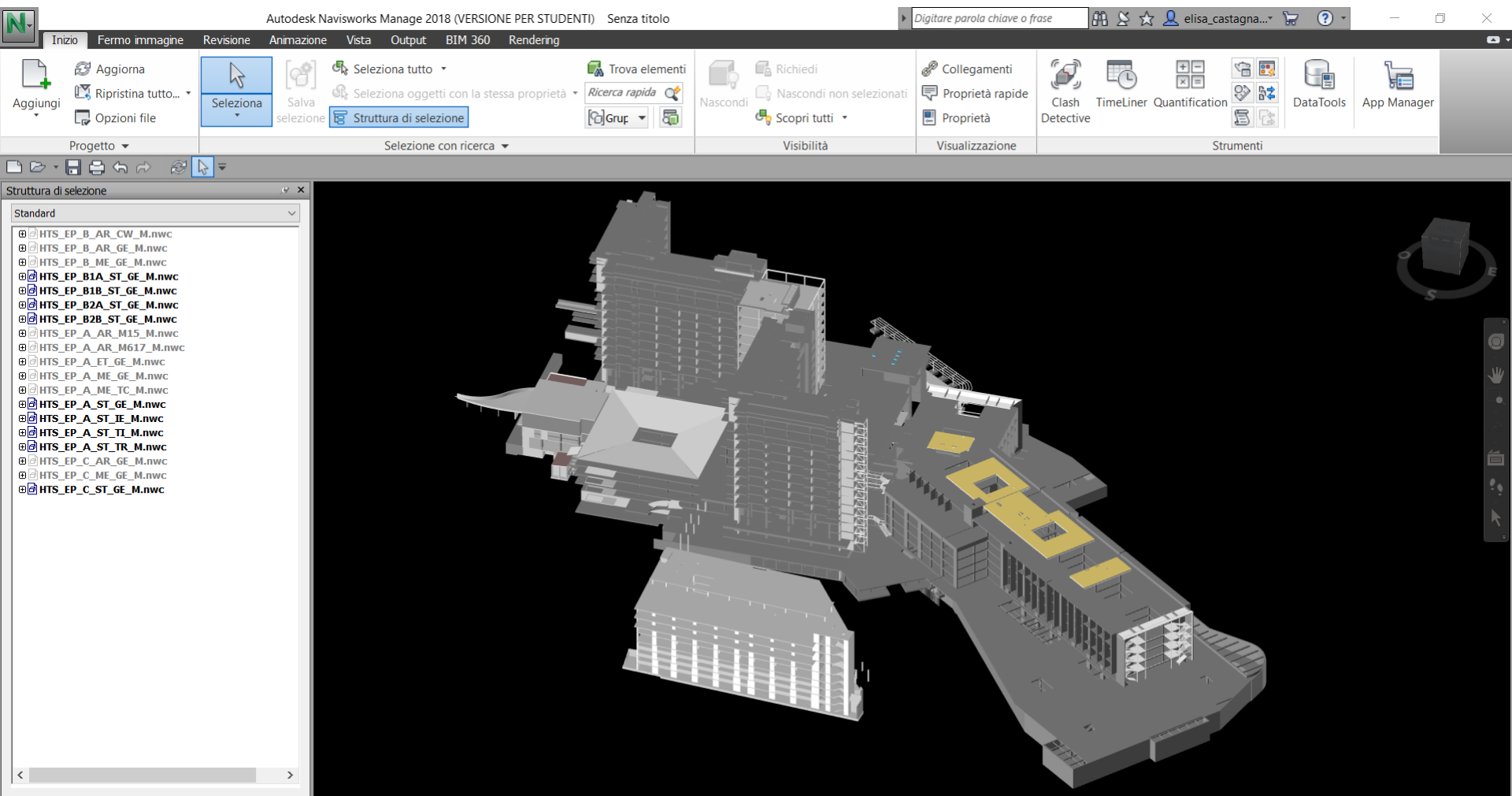


Proprietà	Location	Classification	
Nome	Valore	U.m.	
Element Specific			
PSet_ACDat - External References			
ACDat_Certificati	30-00-40-00-300_APP_N.01.03.01-PA.IM.097.a-N.01.07.01-N.01.02.03\M-034_Certificazione03.pdf;30-00-40-00-300_APP_N.01.03.01-PA.IM.097.a-N.01.07.01-N.01.02.03\M034_cassetta_AI_scheda LEED.DOCX		
ACDat_Dettaglio Costruttivo	n/d		
ACDat_Elaborato Transitorio	PS-PC-MF06.0-03;PS-PC-MF07.0-00		
ACDat_Garanzia	n/d		
ACDat_Istruzione Montaggio	n/d		
ACDat_Manuale D'uso	n/d		
ACDat_Risultati Test	n/d		
ACDat_Scheda Manutentiva	n/d		
ACDat_Scheda Materiale/Fornitore	30-00-40-00-300_APP_N.01.03.01-PA.IM.097.a-N.01.07.01-N.01.02.03\M-034-Schema_N.01.07.01.pdf		
ACDat_Scheda Tecnica	30-00-40-00-300_APP_N.01.03.01-PA.IM.097.a-N.01.07.01-N.01.02.03\M-034-SchTecnica_N.01.07.01.pdf		
ACDat_Schema Armature	n/d		
PSet_Building Program & Project Meta Data			
Categoria	Attrezzatura meccanica		
Modificato da			
PSet_Building Program & Project Meta Data			
Categoria	Attrezzatura meccanica		
Modificato da			
PSet_Construction_Logistics_& Sequencing			
CST_Codice Prodotto	n/d		
CST_Data Installazione	2019-02-20		
CST_Descrizione Prodotto	Idrante a muro con manichetta flessibile		
CST_Installatore	Radar		
Variante di progetto			
PSet_Facilities/Asset Management			
Classificazione sistema	Altra protezione antincendio		
FM_Codice Garanzia	n/d		
FM_Codice Sistema	V-IDRA		
FM_Data Fine Garanzia	n/d		
FM_Data Inizio Garanzia	n/d		
FM_Descrizione Sistema	Naspi e idranti aeroportuali		
FM_Funzione Sistema	Impianti antincendio sedime aeroportuale		
FM_Locale di Riferimento	Pontile AB.02		
FM_Nome Sistema	n/d		
FM_Zona di Riferimento	n/d		



OPERABILITÀ





Autodesk Navisworks Manage 2018 (VERSIONE PER STUDENTI) Senza titolo

Digitare parola chiave o frase

elisa_castagna...

Inizio Fermo immagine Revisione Animazione Vista Output BIM 360 Rendering

Aggiungi Aggiorna Seleziona Salva selezione

Aggiorna Ripristina tutto... Opzioni file

Seleziona tutto Selezione con la stessa proprietà Struttura di selezione

Trova elementi Ricerca rapida Gruppo

Nascondi Richiedi Nascondi non selezionati Scopri tutti

Collegamenti Proprietà rapide Proprietà

Clash Detective TimeLiner Quantification

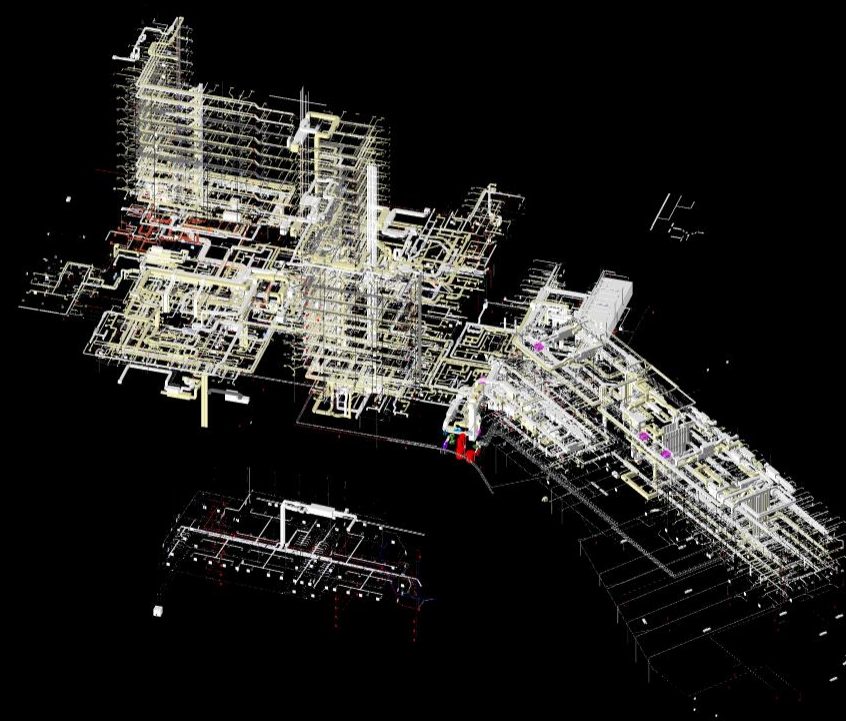
DataTools App Manager

Progetto Selezione con ricerca Visibilità Visualizzazione Strumenti

Struttura di selezione

Standard

- HTS_EP_B_AR_CW_M.nwc
- HTS_EP_B_AR_GE_M.nwc
- HTS_EP_B_ME_GE_M.nwc
- HTS_EP_B1A_ST_GE_M.nwc
- HTS_EP_B1B_ST_GE_M.nwc
- HTS_EP_B2A_ST_GE_M.nwc
- HTS_EP_B2B_ST_GE_M.nwc
- HTS_EP_A_AR_M15_M.nwc
- HTS_EP_A_AR_M617_M.nwc
- HTS_EP_A_ET_GE_M.nwc
- HTS_EP_A_ME_GE_M.nwc
- HTS_EP_A_ME_TC_M.nwc
- HTS_EP_A_ST_GE_M.nwc
- HTS_EP_A_ST_IE_M.nwc
- HTS_EP_A_ST_TI_M.nwc
- HTS_EP_A_ST_TR_M.nwc
- HTS_EP_C_AR_GE_M.nwc
- HTS_EP_C_ME_GE_M.nwc
- HTS_EP_C_ST_GE_M.nwc



Salvato automaticamente: C:\Users\elisa\AppData\Roaming\Autodesk Navisworks Manage 2018\AutoSave\Senza titolo.Autosave2.nwf

1 di 1 4448

HTS_EP_B_AR_GE_M_dissociato.rvt - Vista 3D: (3D - elisa_castagna@libero.it) | Digitare parola chiave o frase

Architettura | Struttura | Sistemi | Inserisci | Annota | Analizza | Volumetrie e planimetria | Collabora | Vista | Gestisci | Moduli aggiuntivi | Modifica

Modifica | Muro | Porta | Finestra | Componente | Tetto | Controsoffitto | Pavimento | Costruisci | Sistema facciata continua | Griglia facciata continua | Montante | Ringhiera | Rampa inclinata | Scala | Distribuzione verticale | Testo modello | Linea di modello | Gruppo di modello | Modello | Locale | Delimitatore locale | Assegna etichetta al locale | Locale e area | Contorno area | Assegna etichetta all'area | Apertura | Riferimento | Piano di lavoro

Browser di progetto - HTS_EP_B_AR_GE_M_dissociato.rvt

- Muri
 - Facciata continua
 - Muro di base
 - Concept -100mm
 - Facc Continua_Muro generico_32 cm
 - M_E_CA_CA20_EI 90
 - M_E_CA_CA25_EI 180
 - M_E_CA_CA30
 - M_E_CA_I_CA25.I
 - M_E_CA_I_ISO15.CA25
 - M_E_CA_I_ISO15.CA25_EI 120
 - M_E_CA_I_ISO15.CA25_EI 180
 - M_E_CA_I_ISO15.CA30
 - M_E_CA_I_ISO15.CA30.RI14
 - M_E_GV_GV
 - M_ES_CC_CCA40
 - M_ES_CC_CCA60
 - M_ES_L_BL25
 - M_G_S_GS20
 - M_G_S_GS40
 - M_G_S_GS40.ISO15
 - M_I_AE_AE20
 - M_I_AR_AR20_EI 120
 - M_I_AR_AR20_EI 180
 - M_I_CR_CR30_NS_EI 120
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 - M_I_GF_GF.G.75.GF.A1.A1

1 : 100

Workset1 | Modello principale

Proprietà

Vista 3D
3D View

Vista 3D: (3D - elisa_castagna@libero.it) | Modifica tipo

Grafica

Scala vista	1 : 100
Scala 1:	100
Livello di dettaglio	Medio
Visibilità stratigrafia	Mostra originale
Sostituzioni visibilità/g...	Modifica...
Opzioni di visualizzazi...	Modifica...
Disciplina	Coordinamento
Mostra linee nascoste	Per disciplina
Stile visualizzazione a...	Nessuno
Visibile nella variante	tutti
Percorso del sole	☐

Testo

Building	
WBS_Reparti	

Estensioni

Ritaglia vista	☐
Regione di taglio visib...	☐
Taglio annotazione	☐
Ritaglio orizzontale at...	☐
Offset del ritaglio oriz...	30480.00
Riquadro di sezione	☐

Cinepresa

Impostazioni di render...	Modifica...
Orientamento bloccato	☐
Prospettiva	☐

Guida alle proprietà | Applica

Explora

RACCOGLIE L'INFORMAZIONE
EDILIZIA NEL BIM



COLLEGA AL BIM
QUANTITÀ E COSTI



COLLEGA AL BIM
TEMPI E COSTI



PORTA IN CANTIERE IL BIM



PROGETTAZIONE

GARA

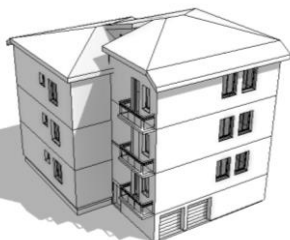
PROGRAMMAZIONE

ESECUZIONE

CONSEGNA

BIM IT!

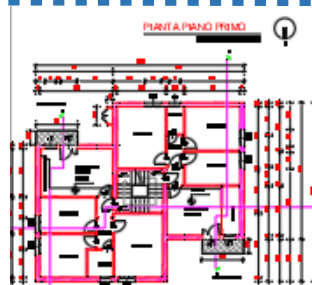
RACCOGLIE L'INFORMAZIONE
EDILIZIA NEL BIM



COLLEGA AL BIM
QUANTITÀ E COSTI

COLLEGA AL BIM
TEMPI E COSTI

PORTA IN CANTIERE IL BIM



PROGETTAZIONE

GARA

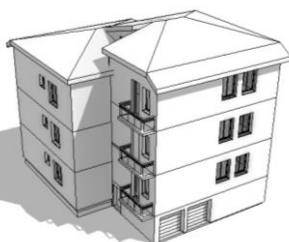
PROGRAMMAZIONE

ESECUZIONE

CONSEGNA

BIM IT!

RACCOGLIE L'INFORMAZIONE
EDILIZIA NEL BIM



5D

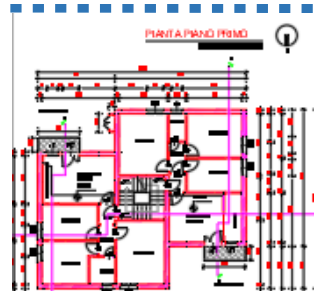
COLLEGA AL BIM
QUANTITÀ E COSTI

Dimensions	
Sporgenza avanzale	15.00
Height	150.00
Altezza soglia	80.00
Width	120.00
Rough Width	
Rough Height	
Analytical Properties	

COLLEGA AL BIM
TEMPI E COSTI



PORTA IN CANTIERE IL BIM

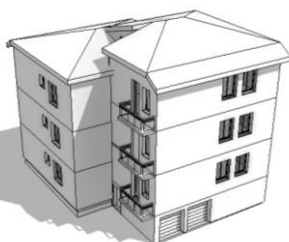


larghezza	altezza		
0,80	1,50	mq	1,20
1,20	1,50	mq	1,80
1,20	1,50	mq	1,80
1,20	1,50	mq	1,80
		mq	
		mq	
0,80	0,80	mq	0,64
		mq	
			7,24



BIM IT!

RACCOGLIE L'INFORMAZIONE
EDILIZIA NEL BIM



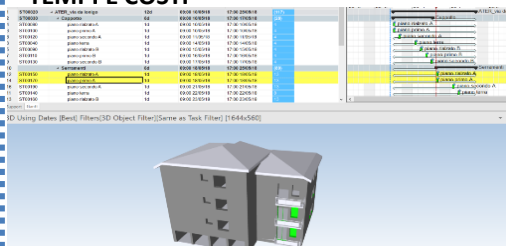
5D

COLLEGA AL BIM
QUANTITÀ E COSTI

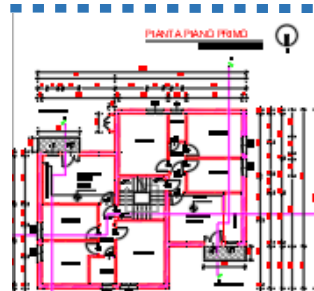
Dimensions	
Sporgenza avanzale	15.00
Height	150.00
Altezza soglia	80.00
Width	120.00
Rough Width	
Rough Height	
Analytical Properties	

4D

COLLEGA AL BIM
TEMPI E COSTI



PORTA IN CANTIERE IL BIM



Sottimane di lavoro		1	2	3	4	5	6	7	8	9	10
arghezza	altezza										
0,80	1,50	m²	1,20								
1,20	1,50	m²	1,80								
1,20	1,50	m²	1,80								
1,20	1,50	m²	1,80								
		m²									
0,80	0,80	m²	0,64								
		m²									
			7,24								



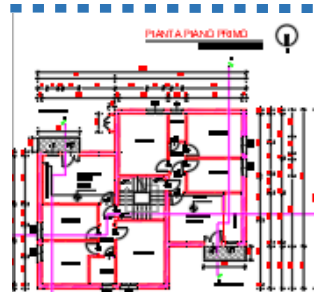
PROGETTAZIONE

GARA

PROGRAMMAZIONE

ESECUZIONE

CONSEGNA



PROGETTAZIONE

5D

Dimensions	
Sporgenza davanzale	15.00
Height	150.00
Altezza soglia	80.00
Width	120.00
Rough Width	
Rough Height	
Analytical Properties	

4D

The screenshot displays a 3D software interface. On the left, a list of objects is shown with columns for Name, Units, and Location. The objects include various materials and textures. In the center, a 3D view shows a house model with a white roof and walls, and a green lawn. The house has a chimney and a small porch. The interface also includes a top menu bar and a bottom status bar.

[illegible]

PROGRAMMAZIONE

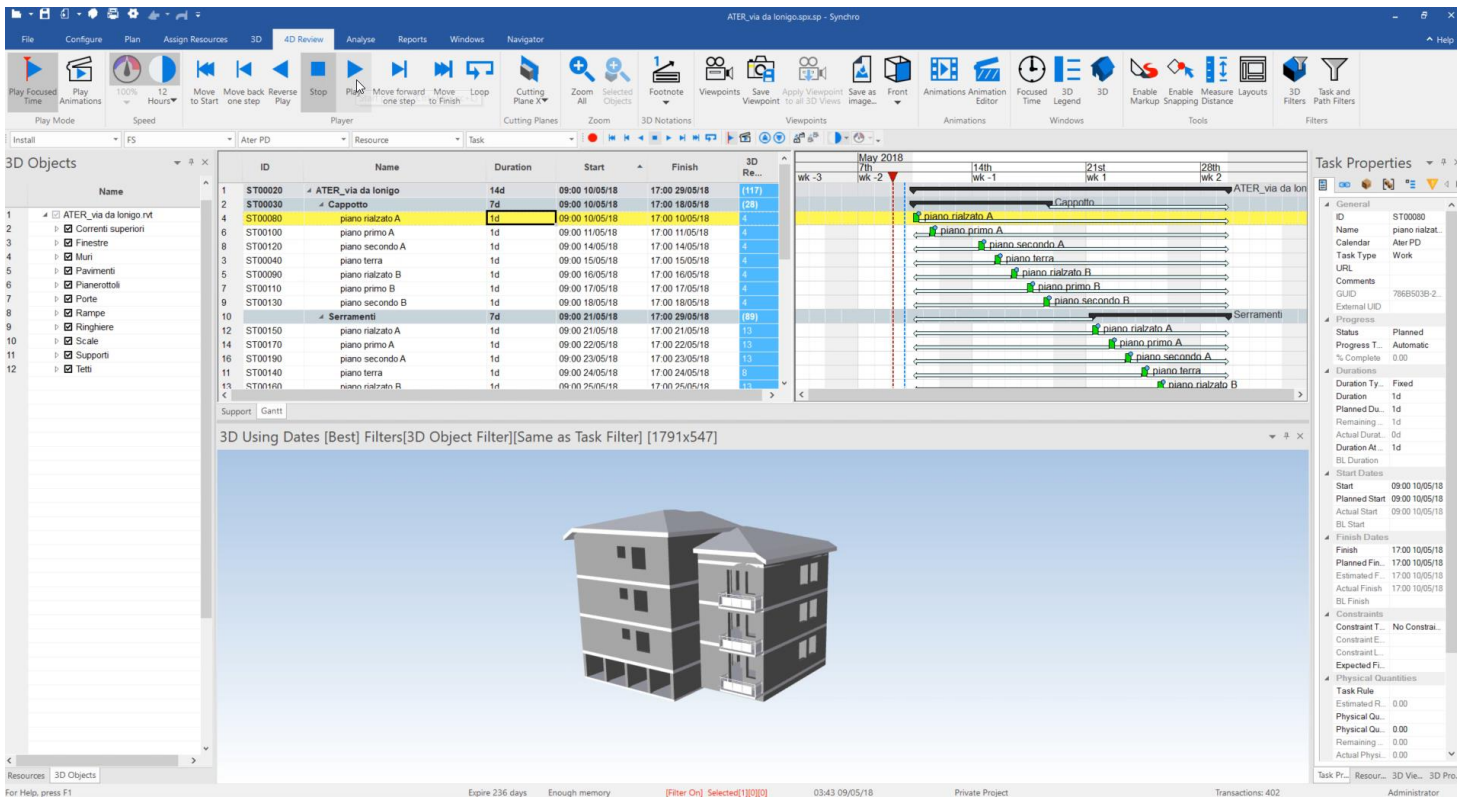
4D (t)



ESECUZIONE

CONSEGNA

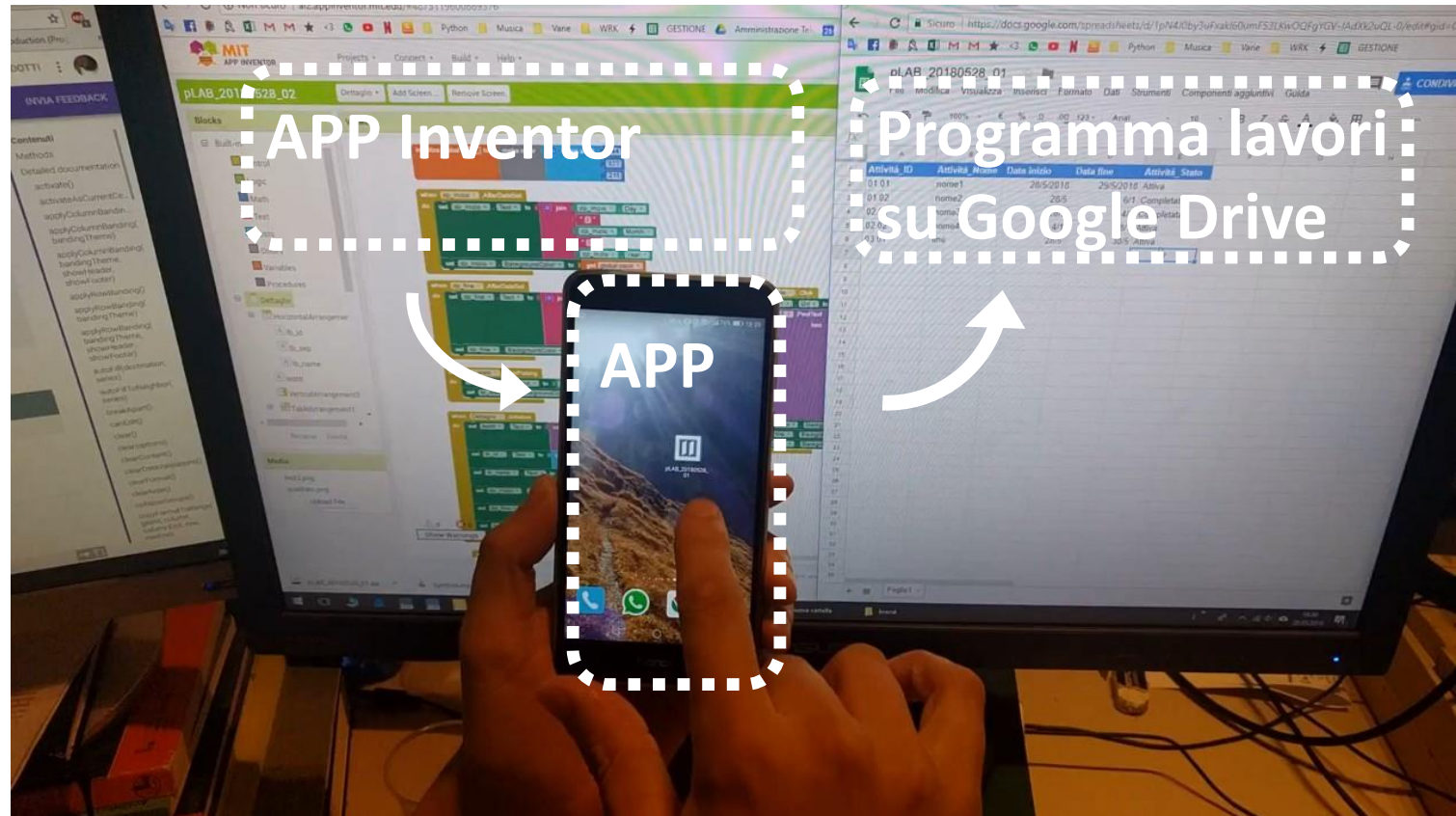


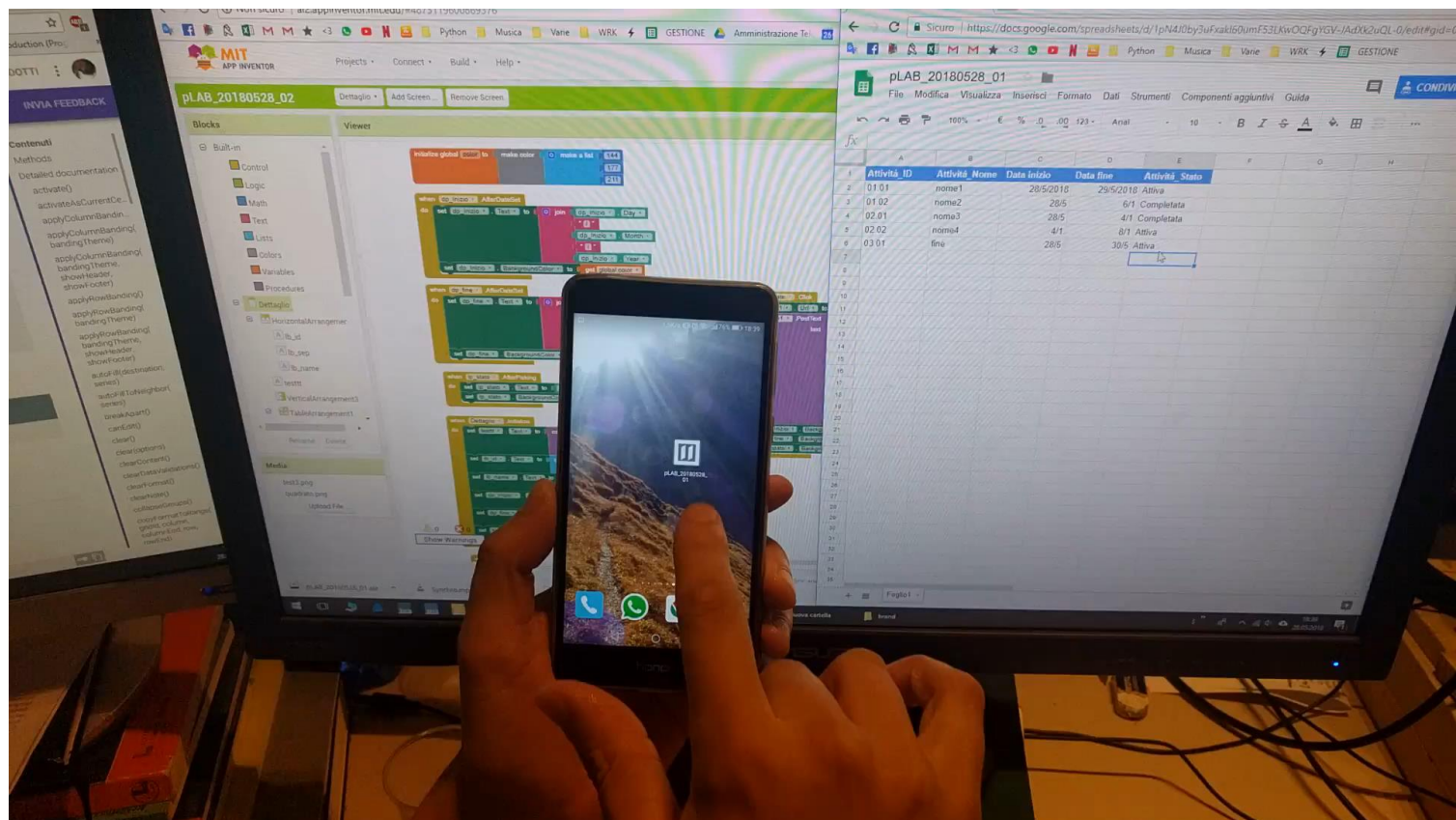


Tasks/Task/ID	Tasks/Task/Name	Tasks/Task/Start	Tasks/Task/Finish	Tasks/Task/Active	Tasks/Task/Active/#agg	Tasks/Task/ActualCost	Tasks/Task/ActualCost/#agg	Tasks/Task/ActualDuration	Tasks/Task/ActualFinish	Tasks/Task/ActualOvertimeCost	Tasks/Task/ActualOvertimeCost/#agg	Tasks/Task/ActualWork	Tasks/Task/ActualWork/#agg	Tasks/Task/ACWP/#agg	Tasks/Task/BCWP/#agg	Tasks/Task/BCWS/#agg	Tasks/Task/calendarUID	Tasks/Task/calendarUID/#agg	Tasks/Task/commitmentType	
1	Training Project Schedule	01.02.2016 09:00	26.04.2017 17:00	1	1	0	PT183H27M12S		0	0	PT0H0M0S	01.02.2016 09:00	PT240H0M0S	0	0	0	0	1	0	
2	Office Building, Core & S	01.02.2016 09:00	26.04.2017 17:00	1	1	0	PT183H27M12S		0	0	PT0H0M0S	01.02.2016 09:00	PT240H0M0S	0	0	0	0	-1	-1	0
3	Pre Construction	01.02.2016 09:00	26.02.2016 17:00	1	1	0	PT160H0M0S	26.02.2016 17:00	0	0	PT0H0M0S	01.02.2016 09:00	PT240H0M0S	0	0	0	0	1	1	0
4	Notice to Proceed	01.02.2016 09:00	01.02.2016 09:00	1	1	0	PT0H0M0S	01.02.2016 09:00	0	0	PT0H0M0S	01.02.2016 09:00	PT0H0M0S	0	0	0	0	1	1	0
5	Building Permit	01.02.2016 09:00	26.02.2016 17:00	1	1	0	PT160H0M0S	26.02.2016 17:00	0	0	PT0H0M0S	01.02.2016 09:00	PT160H0M0S	0	0	0	0	1	1	0
6	Award Subcontractors	01.02.2016 09:00	12.02.2016 17:00	1	1	0	PT80H0M0S	12.02.2016 17:00	0	0	PT0H0M0S	01.02.2016 09:00	PT80H0M0S	0	0	0	0	1	1	0
7	Perimeter Fence	22.02.2016 09:00	24.02.2016 17:00	1	1	0	PT24H0M0S	24.02.2016 17:00	0	0	PT0H0M0S	22.02.2016 09:00	PT0H0M0S	0	0	0	0	1	1	0
8	Temporary Hard Standing	24.02.2016 09:00	24.02.2016 17:00	1	1	0	PT8H0M0S	24.02.2016 17:00	0	0	PT0H0M0S	24.02.2016 09:00	PT0H0M0S	0	0	0	0	1	1	0
9	Field Office	25.02.2016 09:00	26.02.2016 17:00	1	1	0	PT16H0M0S	26.02.2016 17:00	0	0	PT0H0M0S	25.02.2016 09:00	PT0H0M0S	0	0	0	0	1	1	0
10	Material Procurement	15.02.2016 09:00	20.05.2016 17:00	1	1	0	PT94H46M12S		0	0	PT0H0M0S	15.02.2016 09:00	PT0H0M0S	0	0	0	0	1	1	0
11	Structural Steel	15.02.2016 09:00	13.05.2016 17:00	1	1	0	PT88H0M0S		0	0	PT0H0M0S	15.02.2016 09:00	PT0H0M0S	0	0	0	0	1	1	0
12	Glass Curtain Wall	15.02.2016 09:00	06.05.2016 17:00	1	1	0	PT88H0M0S		0	0	PT0H0M0S	15.02.2016 09:00	PT0H0M0S	0	0	0	0	1	1	0
13	Elevator	15.02.2016 09:00	13.05.2016 17:00	1	1	0	PT88H0M0S		0	0	PT0H0M0S	15.02.2016 09:00	PT0H0M0S	0	0	0	0	1	1	0
14	MEP Equipment	15.02.2016 09:00	20.05.2016 17:00	1	1	0	PT88H0M0S		0	0	PT0H0M0S	15.02.2016 09:00	PT0H0M0S	0	0	0	0	1	1	0
15	Construction	29.02.2016 09:00	21.02.2017 17:00	1	1	0	PT5H3M30S		0	0	PT0H0M0S	29.02.2016 09:00	PT0H0M0S	0	0	0	0	1	1	0
16	Site Construction	29.02.2016 09:00	07.02.2017 17:00	1	1	0	PT29H3M30S		0	0	PT0H0M0S	29.02.2016 09:00	PT0H0M0S	0	0	0	0	1	1	0
17	Foundation Excavation	29.02.2016 09:00	04.03.2016 17:00	1	1	0	PT8H0M0S		0	0	PT0H0M0S	29.02.2016 09:00	PT0H0M0S	0	0	0	0	1	1	0
18	Structural Piles	07.03.2016 09:00	01.04.2016 17:00	1	1	0	PT0H0M0S		0	0	PT0H0M0S		PT0H0M0S	0	0	0	0	1	1	0
19	Site Utilities	29.02.2016 09:00	22.04.2016 17:00	1	1	0	PT8H0M0S		0	0	PT0H0M0S	29.02.2016 09:00	PT0H0M0S	0	0	0	0	1	1	0
20	Backfill / Compact Foun	18.04.2016 09:00	22.04.2016 17:00	1	1	0	PT0H0M0S		0	0	PT0H0M0S		PT0H0M0S	0	0	0	0	1	1	0
21	Crushed Gravel, Ground	11.07.2016 09:00	15.07.2016 17:00	1	1	0	PT0H0M0S		0	0	PT0H0M0S		PT0H0M0S	0	0	0	0	1	1	0
22	Road / Parking Lot Prepa	21.12.2016 09:00	17.01.2017 17:00	1	1	0	PT0H0M0S		0	0	PT0H0M0S		PT0H0M0S	0	0	0	0	1	1	0
23	Road / Parking Lot Paven	18.01.2017 09:00	25.01.2017 17:00	1	1	0	PT0H0M0S		0	0	PT0H0M0S		PT0H0M0S	0	0	0	0	1	1	0
24	Site Improvements	21.12.2016 09:00	24.01.2017 17:00	1	1	0	PT0H0M0S		0	0	PT0H0M0S		PT0H0M0S	0	0	0	0	1	1	0
25	Site Plantings	25.01.2017 09:00	07.02.2017 17:00	1	1	0	PT0H0M0S		0	0	PT0H0M0S		PT0H0M0S	0	0	0	0	1	1	0
26	Concrete	04.04.2016 09:00	04.08.2016 17:00	1	1	0	PT0H0M0S		0	0	PT0H0M0S		PT0H0M0S	0	0	0	0	1	1	0

	A	B	C	D	E
1	Attività_ID	Attività_Nome	Data_inizio	Data_fine	Attività_Stato
2	1	Office Building, Core & Shell	01.02.2016 09:00	26.04.2017 17:00	
3	2	Pre Construction	01.02.2016 09:00	26.02.2016 17:00	
4	3	Notice to Proceed	01.02.2016 09:00	01.02.2016 09:00	
5	4	Building Permit	01.02.2016 09:00	26.02.2016 17:00	
6	5	Award Subcontractors	01.02.2016 09:00	12.02.2016 17:00	
7	6	Perimeter Fence	22.02.2016 09:00	24.02.2016 17:00	
8	7	Temporary Hard Standing	24.02.2016 09:00	24.02.2016 17:00	
9	8	Field Office	25.02.2016 09:00	26.02.2016 17:00	
10	9	Material Procurement	15.02.2016 09:00	20.05.2016 17:00	
11	10	Structural Steel	15.02.2016 09:00	13.05.2016 17:00	
12	11	Glass Curtain Wall	15.02.2016 09:00	06.05.2016 17:00	
13	12	Elevator	15.02.2016 09:00	13.05.2016 17:00	
14	13	MEP Equipment	15.02.2016 09:00	20.05.2016 17:00	
15	14	Construction	29.02.2016 09:00	21.02.2017 17:00	
16	15	Site Construction	29.02.2016 09:00	07.02.2017 17:00	
17	16	Foundation Excavation	29.02.2016 09:00	04.03.2016 17:00	
18	17	Structural Piles	07.03.2016 09:00	01.04.2016 17:00	
19	18	Site Utilities	29.02.2016 09:00	22.04.2016 17:00	
20	19	Backfill / Compact Foundation Excavation	18.04.2016 09:00	22.04.2016 17:00	
21	20	Crushed Gravel, Ground Floor	11.07.2016 09:00	15.07.2016 17:00	
22	21	Road / Parking Lot Preparation	21.12.2016 09:00	17.01.2017 17:00	
23	22	Road / Parking Lot Pavement	18.01.2017 09:00	25.01.2017 17:00	
24	23	Site Improvements	21.12.2016 09:00	24.01.2017 17:00	
25	24	Site Plantings	25.01.2017 09:00	07.02.2017 17:00	
26	25	Concrete	04.04.2016 09:00	04.08.2016 17:00	
27	26	Pile Caps	04.04.2016 09:00	15.04.2016 17:00	
28	27	Grade Beams	25.04.2016 09:00	06.05.2016 17:00	
29	28	Slab on Grade	18.07.2016 09:00	20.07.2016 17:00	
30	29	Slab on Deck, 1st Floor	21.07.2016 09:00	02.08.2016 17:00	
31	30	Slab on Deck, 1st Floor, Area 1	21.07.2016 09:00	26.07.2016 17:00	
32	31	Slab on Deck, 1st Floor, Area 1A	21.07.2016 09:00	21.07.2016 17:00	
33	32	Slab on Deck, 1st Floor, Area 1B	22.07.2016 09:00	22.07.2016 17:00	
34	33	Slab on Deck, 1st Floor, Area 1C	25.07.2016 09:00	25.07.2016 17:00	
35	34	Slab on Deck, 1st Floor, Area 1D	26.07.2016 09:00	26.07.2016 17:00	

Programma lavori
su Google Drive







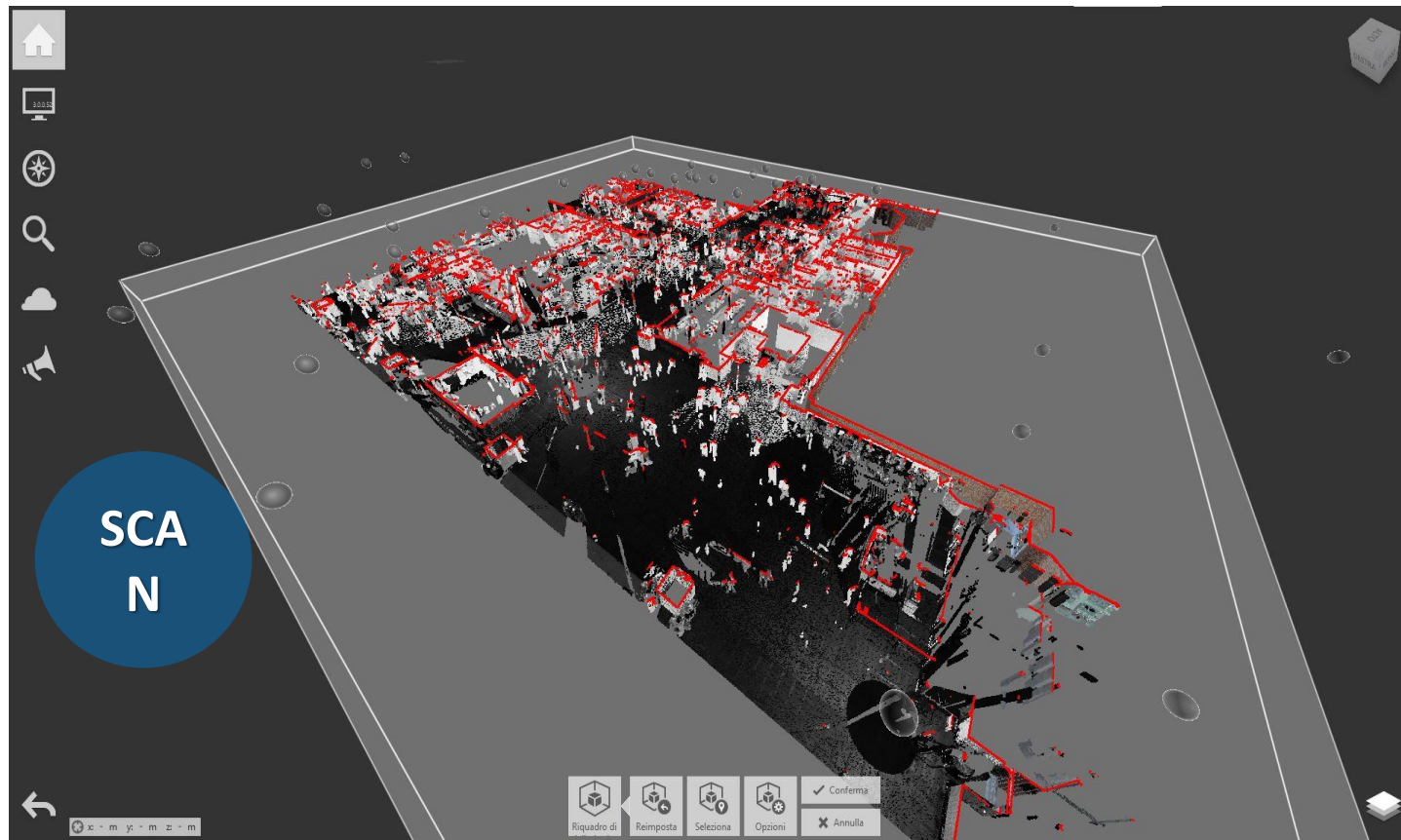
1: RACCOLTA DELLE INFORMAZIONI

2: ORGANIZZAZIONE

3: BIM->CAFM



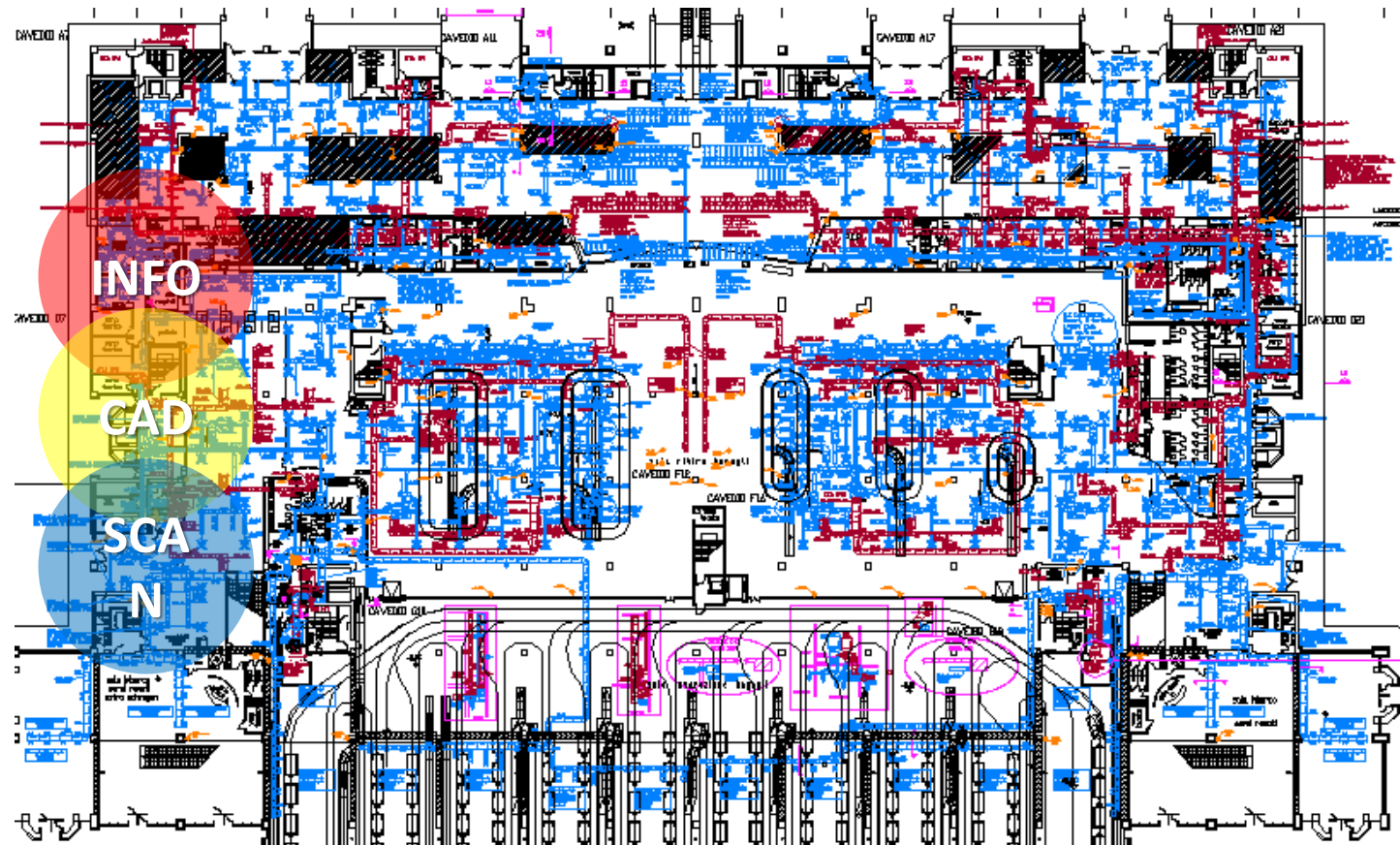
RILIEVI: POINTCLOUD – FOTO3D

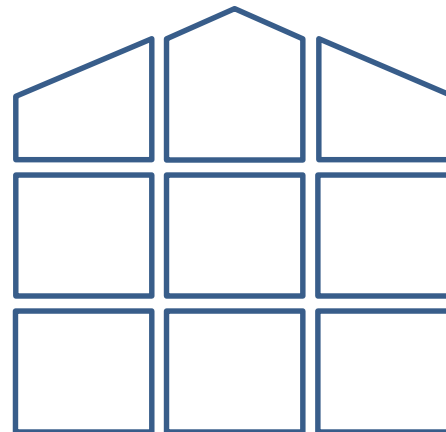
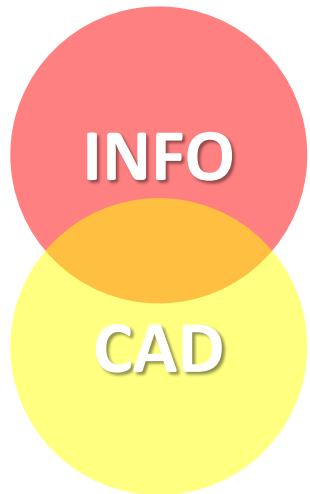


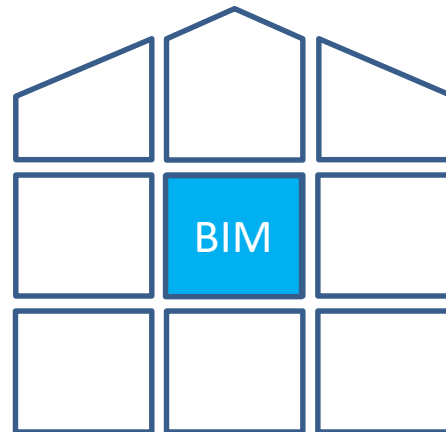
DOCUMENTAZIONE

	Nome	Ultima modifica	Tipo
▼ save			
▼ 2002 AS-BUILT ALLESTIMENTI			
banco info arrivi	2016 AS-BUILT SWING GATE E BOX TRAVELEX	20/09/2016 14.23	Cartella di file
banco info partenze	2016 AS-BUILT MODIFICA FOGNATURA E ACQUE BIANCHE CHECK-IN SUD	22/08/2016 13.28	Cartella di file
banco transiti	2016 AS-BUILT BUSSOLA PIANO TERRA ARRIVI	20/09/2016 14.23	Cartella di file
biglietterie centrali	2015 AS-BUILT SOSTITUZIONE GRUPPI FRIGO AG2 E AG5	22/08/2016 13.28	Cartella di file
check in	2015 AS-BUILT PIATTAFORME O e P	22/08/2016 13.28	Cartella di file
gate	2015 AS-BUILT CHECK-IN SUD	05/09/2016 11.09	Cartella di file
iso	2013 AS-BUILT VETRATA MOTORIZZATA IMBARCHI EXTRA-SCHENGEN	22/08/2016 13.27	Cartella di file
passport counters	2013 AS-BUILT STRUTTURA VARCHI CENTRALI 2013	20/09/2016 14.25	Cartella di file
rent a car	2013 AS-BUILT SPOSTAMENTO BOMBOLE IMPIANTO DI SPEGNIMENTO	22/08/2016 13.27	Cartella di file
sala amica	2013 AS-BUILT IMPIANTI ELETTRICI E SPECIALI SUMMER 2013	22/08/2016 13.27	Cartella di file
tour operators perimetrali	2012-2013 AS-BUILT IMPIANTI CLEAR CHANNEL - REV1	26/09/2016 09.30	Cartella di file
▼ 2002 AS-BUILT ALLESTIMENTI	2011-2014 AS-BUILT PROTEZIONE AL FUOCO SOLAI METALLICI	01/09/2016 17.34	Cartella di file
Box dogana	2011 AS-BUILT SALA VIP ALITALIA	22/08/2016 13.25	Cartella di file
Sala centrale	2011 AS-BUILT INTERVENTI DI ADEGUAMENTO IMPIANTO BHS	22/08/2016 13.25	Cartella di file
Isole circolari	2011 AS-BUILT INTERVENTI ADEGUAMENTO IMPIANTO BHS - VARI	22/08/2016 13.22	Cartella di file
Sala vip SAVE	2009 AS-BUILT ADEGUAMENTO NORMATIVO MAGAZZINI	22/08/2016 13.22	Cartella di file
Separé dogana	2008 AS-BUILT NEGOZI MC ARTHUR GLEN	26/09/2016 09.27	Cartella di file
▼ 2002 AS-BUILT BHS	2008 AS-BUILT MAGAZZINI SUD	06/10/2016 14.42	Cartella di file
> DIS-M	2007-2009 MODIFICA IMPIANTI ELETTRICI	06/10/2016 15.34	Cartella di file
> DOCUMENTAZIONE	2006 AS-BUILT TORRINO N°6	22/08/2016 13.20	Cartella di file
Elenco Item	2002 AS-BUILT STRUTTURALI AEROSTAZIONE PDF	28/09/2016 12.27	Cartella di file
GENERALE IMPIANTO	2002 AS-BUILT SIMA (UFFICI SECONDO PIANO)	22/08/2016 13.14	Cartella di file
	2002 AS-BUILT PONTILI TELESCOPICI	22/08/2016 13.14	Cartella di file
	2002 AS-BUILT IMPIANTI MECCANICI	05/10/2016 17.55	Cartella di file
	2002 AS-BUILT IMPIANTI ELETTRICI E SPECIALI	22/08/2016 15.40	Cartella di file
	2002 AS-BUILT BHS	22/08/2016 12.44	Cartella di file
	2002 AS-BUILT ALLESTIMENTI DITTA DELLA BARCHESSA	22/08/2016 12.36	Cartella di file

DOCUMENTAZIONE GRAFICA

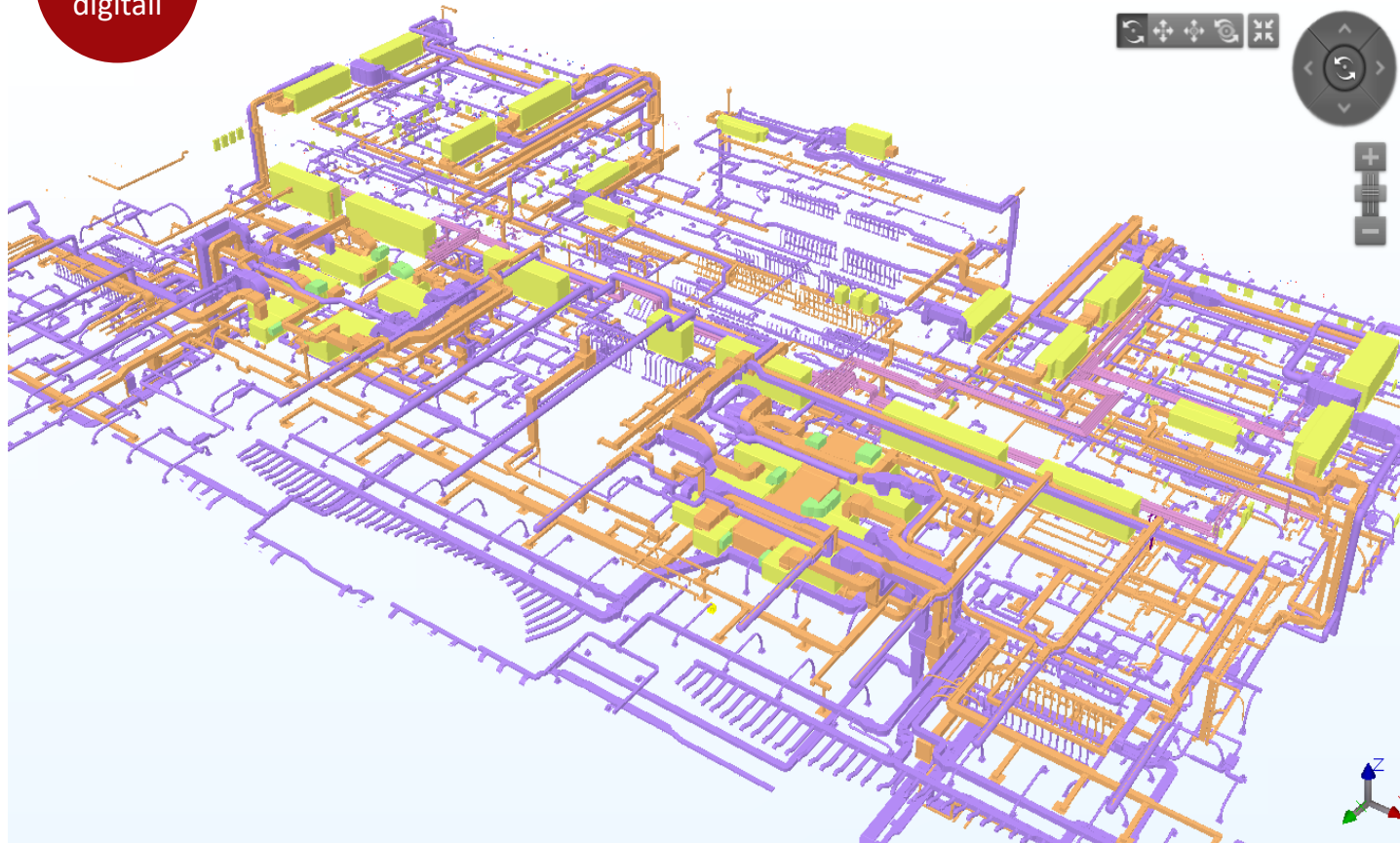






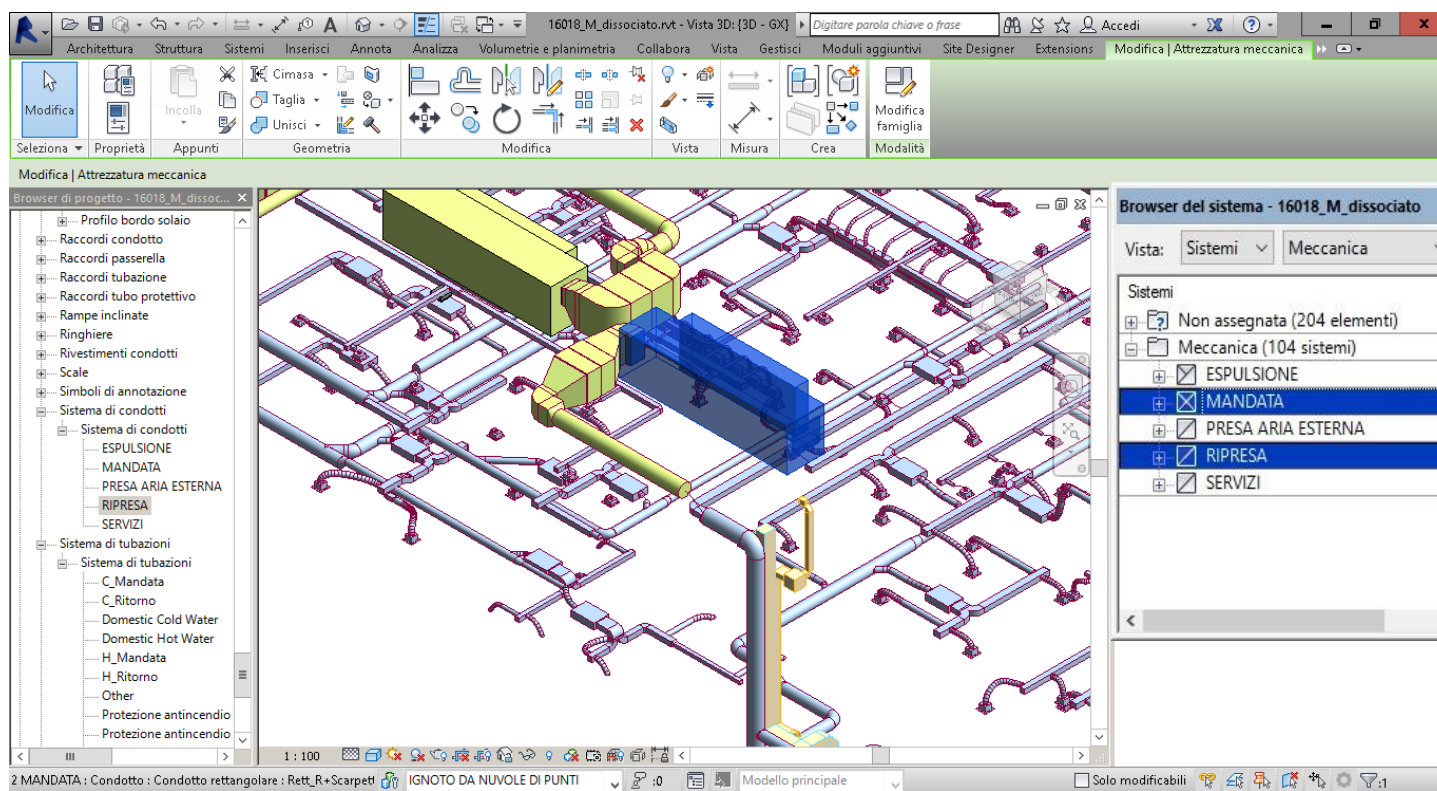
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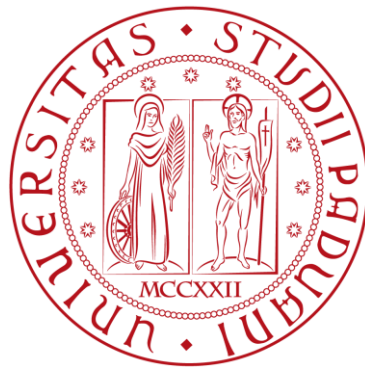


Sistemi

CORRELAZIONE IMPIANTI - CIRCUITI - SPAZI



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CAPITAL COST COST IN USE COST TO BUSINESS

Source: The Royal Academy of Engineering, 1998

COORDINATION -33%

BIM

1

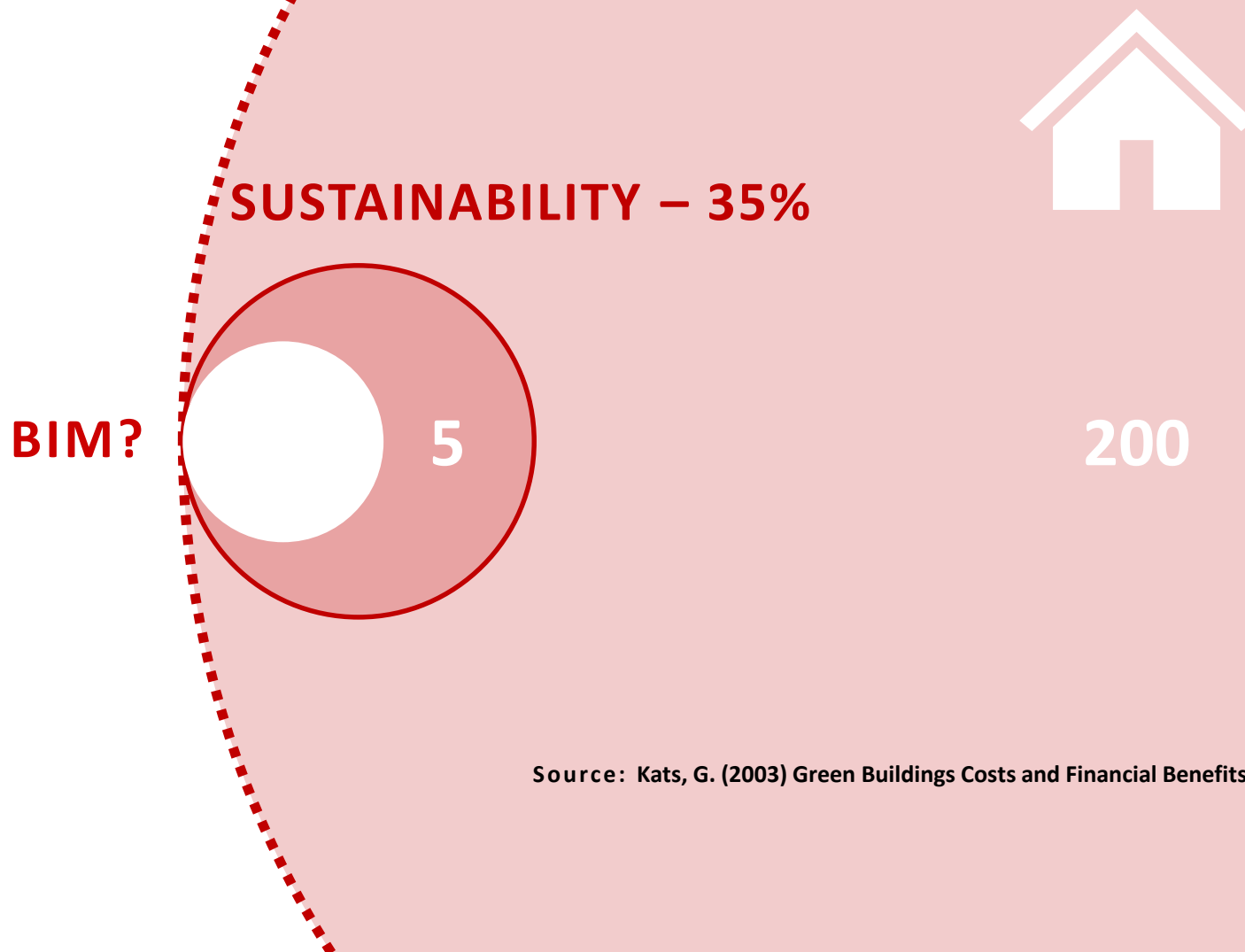
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CAPITAL COST COST IN USE COST TO BUSINESS

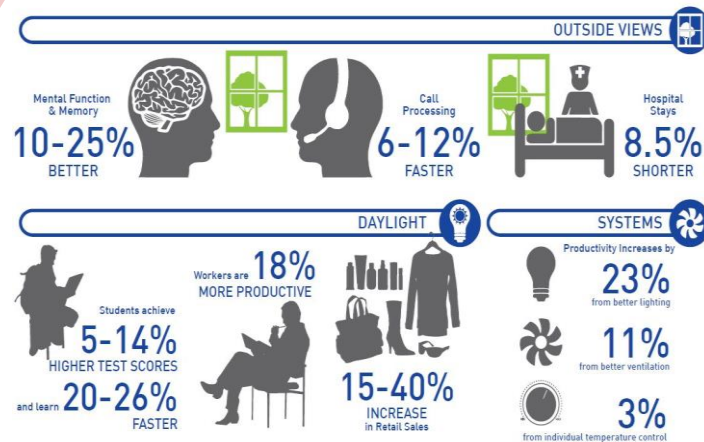
Source: The Royal Academy of Engineering, 1998



Source: Kats, G. (2003) Green Buildings Costs and Financial Benefits

BIM?

PRODUCTIVITY + 18%



???

200

Source: The Business case for green building, GBC 2013

grazie!



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