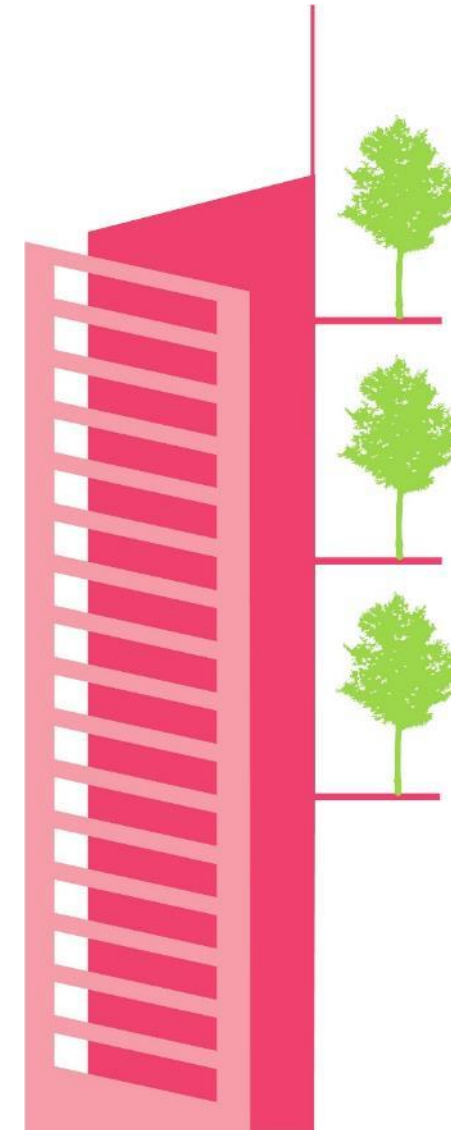


Trinity Tower - BIM to site to BIM



The speakers



FRANCE



JB. Valette
BIM Engineering Director

Engineering Departement
VINCI Construction France



D. Dureisseix
BIM Projects dept manager

BIM Engineering Departement
VINCI Construction France



F. Gonnard
Trinity Tower - MEP
construction supervisor

Bateg
VINCI Construction France



J. Köhler
Head of BIM Competence
Center

PERI



J. Ulrich
CEO

Itekube

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Jean-Baptiste Valette
BIM Engineering director
VINCI Construction France

Phone : +33 (0)6 22641003

Email : jean-baptiste.valette@vinci-construction.fr

■ Jean-Baptiste Valette

- Graduate Civil Engineer
- 2005 – 2008 : Studies at Ecole des Ingénieurs de la Ville à Paris
- 2008 – 2010 : R&D Engineer BIM & Industrialization at VINCI Construction France
- 2010 – 2012 : BIM team business development
- 2012 – 2017 : Head of BIM Engineering Department at VINCI Construction France
- Since 2017 : BIM Engineering director at VINCI Construction France



Daphne Dureisseix
Head of BIM management department
BIM Engineering - VINCI Construction France

- **Daphne Dureisseix**
 - Graduate Civil Engineer
 - 2008 – 2011 : Studies at Polytech'Clermont-Ferrand
 - 2011 – 2012 : Junior Methods Engineer at Dumez – VINCI Construction France
 - 2012 – 2015 : BIM Engineer to BIM Manager at BIM Engineering Department - VINCI Construction France
 - Since 2016 : Head of BIM Management Department at BIM Engineering – VINCI Construction France



Francois Gonnard
Trinity Tower MEP Construction manager
Bateg – VINCI Construction France

■ Francois

- Graduate Management and Civil Engineer
- 1999 – 2003 : Studies at Reims Management School
- 2003 – 2005 : Studies at Ecole Spéciale des Travaux Publics
- 2006 – 2007 : Sales at VINCI Networks (Optical fibers)
- 2008 – 2010 : MEP engineer on CNIT project at VINCI Energies
- 2011 – 2015 : MEP construction supervisor on major renovation projects at BATEG – VINCI Construction France
- Since 2015 : MEP construction supervisor on Trinity Tower project at BATEG – VINCI Construction France



Jochen Koehler
Head of BIM Competence Center
PERI Group

Phone : +49 (0)175 - 2933618

Email : jochen.koehler@peri.de

■ Jochen Koehler

- Graduate Civil Engineer
- 1992 – 1997: Studies at University Stuttgart
- 1997 – 2002: Application Engineer at PERI
- 2002 – 2009: Engineering Standards at PERI
- 2009 – 2015: Head of Technical Office Formwork PERI Group
- 2015 – 2017: Head of Engineering Tools and Innovation PERI Group
- Since 2018: Head of BIM Competence Center PERI Group



Julien Ulrich
Founder and CEO
Itekube

Phone : +33 (0)6 33778820

Email : julien@itekube.com

■ Julien Ulrich

- Graduate Telecom Degree and HBS MBA
- 1988 – 1991 : Computer Science - Institut National des Télécommunications
- 1992 – 1993 : French Embassy Vienna
- 1995 – 1998 : Business development Director at Orange New York
- 1998 – 2000 : MBA Harvard Business School
- 2003 – 2004 : CEO at UPOC – New York
- Since 2011 : Founder and CEO at Itekube – Paris/Caen

VINCI, GLOBAL PLAYER IN CONCESSIONS AND CONSTRUCTION



THE MANIFESTO COMMITMENTS ADDRESS BOTH EXTERNAL AND INTERNAL ISSUES

together!

As an integrated concessions-construction company, VINCI designs, finances, builds and operates infrastructure and facilities that help improve daily life and mobility. Because our projects are in the public interest, we at VINCI consider that we have a duty to reach out to our public and private sector partners and to engage in dialogue with them and are publishing a new Manifesto with commitments meeting that objective.



Together
Design and
build

1 Our infrastructure and facilities serve the public and the common good. We therefore strive to involve all stakeholders - including partners, customers, suppliers, elected officials, local residents and civil society - in our projects as early as possible. We commit to promoting outreach and consultation in conducting our projects to ensure that our partners are closely involved.



Together
Comply with
ethical
principles

2 Ethical behaviour is key to our contracts and our customer relations. Our companies apply our Code of Ethics and Conduct around the world. We commit to ensuring total transparency in our own practices and in those of our subcontractors.



Together
Promote
green growth

3 We are taking part in the forward-looking debate about the sustainable city and sustainable mobility. Our eco design innovations enable us to improve the energy and environmental performance of our infrastructure. We commit to reducing our greenhouse gas emissions by 30% between now and 2025, by supporting our customers in their quest for better energy efficiency and to encouraging their adoption of an environmentally responsible approach.



Together
Engage
in civic
projects

4 Our business activity is rooted in local service. We therefore support the engagement of our employees and companies in sponsoring civic projects and combating social exclusion. We commit to supporting the civic engagement of our employees, especially through the Group's foundations around the world.



Together
Strive for
zero
accidents

5 We reject the idea that workplace accidents are unavoidable. Our management has a responsibility to do its utmost to ensure the physical integrity and the health of everyone on our work sites and in the facilities we operate. We commit to the zero accidents objective.



Together
Foster
equality and
diversity

6 Our culture is based on bringing together people of different backgrounds and experiences. We fight all forms of discrimination in hiring, in workplace relations and in the career paths of our employees. We train our managers in this requirement and impose it on our suppliers and subcontractors. We commit to diversifying our supervisory staff to include more women and people of diverse origins.



Together
Promote
sustainable
careers

7 We take a long-term approach to relations with our employees. We practice responsible flexibility to foster balanced career and personal development for our employees. We commit to proposing training and job mobility opportunities for all our employees in order to provide sustainable employability.



Together
Share the
benefits of
our
performance

8 Our employees together represent VINCI's biggest shareholder block. We strive to share the benefits of our growth with our employees around the world through employee shareholding and appropriate profit-sharing schemes. We commit to ensuring that every VINCI employee is given an opportunity, whenever possible, to share in our economic success.



"I commit to calling on all VINCI managers to apply these commitments and make them a focus of management-employee dialogue at every level. The Group will bring in an outside independent organisation to verify compliance with this Manifesto and measure its impact. To ensure full transparency, it will publish the results regularly."

Xavier Huillard, Chairman and Chief Executive Officer





2017 KEY FIGURES

> 40M€

REVENUE

~194 500

EMPLOYEES

2,75M€

NET ATTRIBUTABLE
PROFIT

280 000

WORKSITES

WHO WE ARE



Our business activities focus on the long term



We are a multi-local and multi-cultural group



Our goal is all-round performance



CONCESSIONS

€6,945m

14,443 EMPLOYEES



VINCI AUTOROUTES

€5,277m

6,309

EMPLOYEES



VINCI AIRPORTS

€1,409m

6,705

EMPLOYEES



OTHER CONCESSIONS

€258m

1,429

EMPLOYEES

CONTRACTING

€32,830m

179,026 EMPLOYEES



VINCI Immobilier

€774 m

(incl. holdings)

874

EMPLOYEES



VINCI ENERGIES

€10,759m

69,382

EMPLOYEES



EUROVIA

€8,112m

39,526

EMPLOYEES



VINCI CONSTRUCTION

€13,960m

70,118

EMPLOYEES

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VINCI CONSTRUCTION KEY FIGURES

~14 M€
REVENUE

~70 000
EMPLOYEES

PRESENT IN
100
COUNTRIES

800
COMPANIES

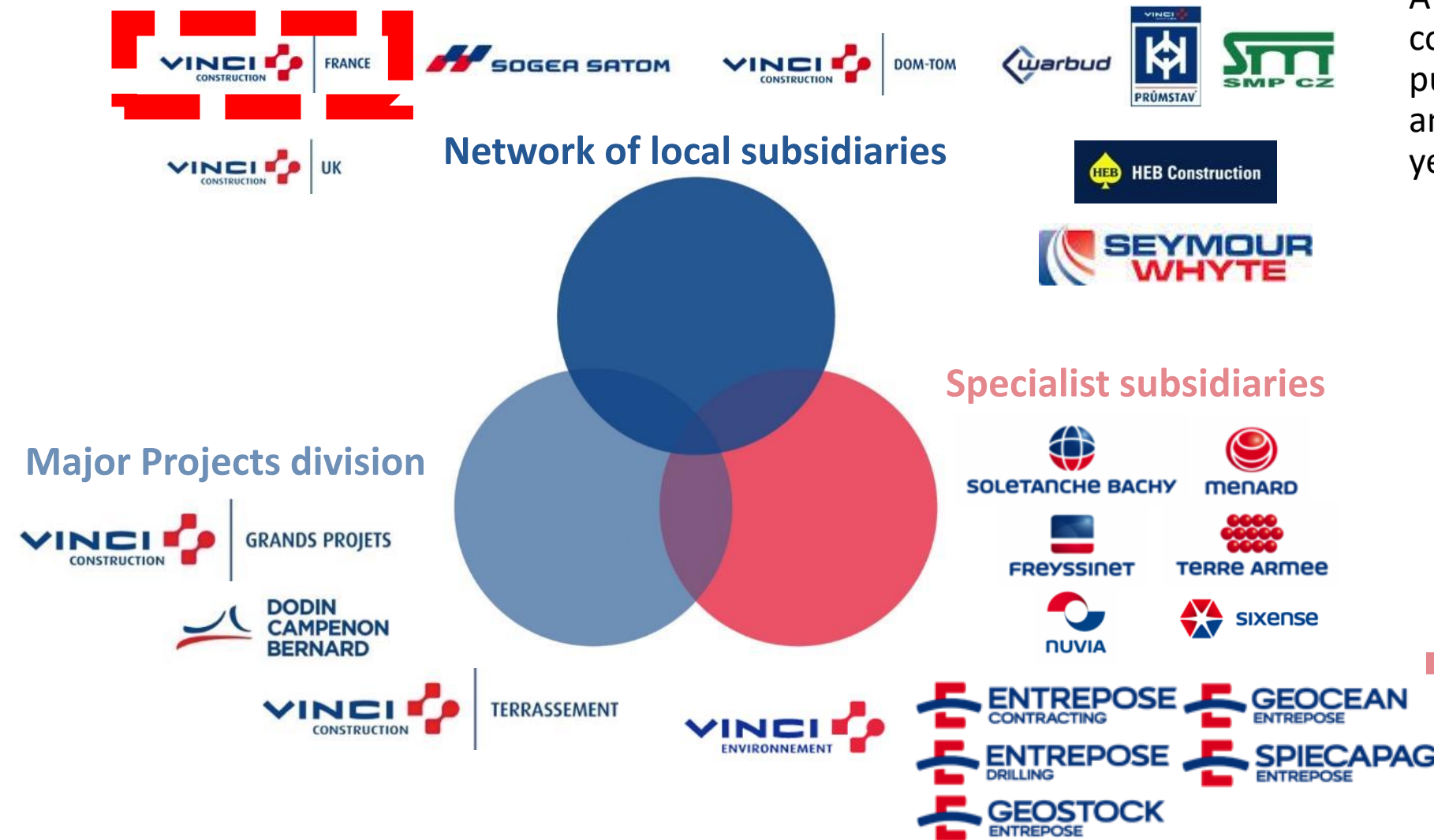
VINCI Construction subsidiaries



FRANCE

- VINCI Construction's time-honoured trademarks.

- Covering the full range of skills required to carry out complex civil engineering structure, earthworks and building projects.
- High-level expertise, strong engineering and project management capabilities, risk management, simple, responsive organisational structure, comprehensive, modular solutions.

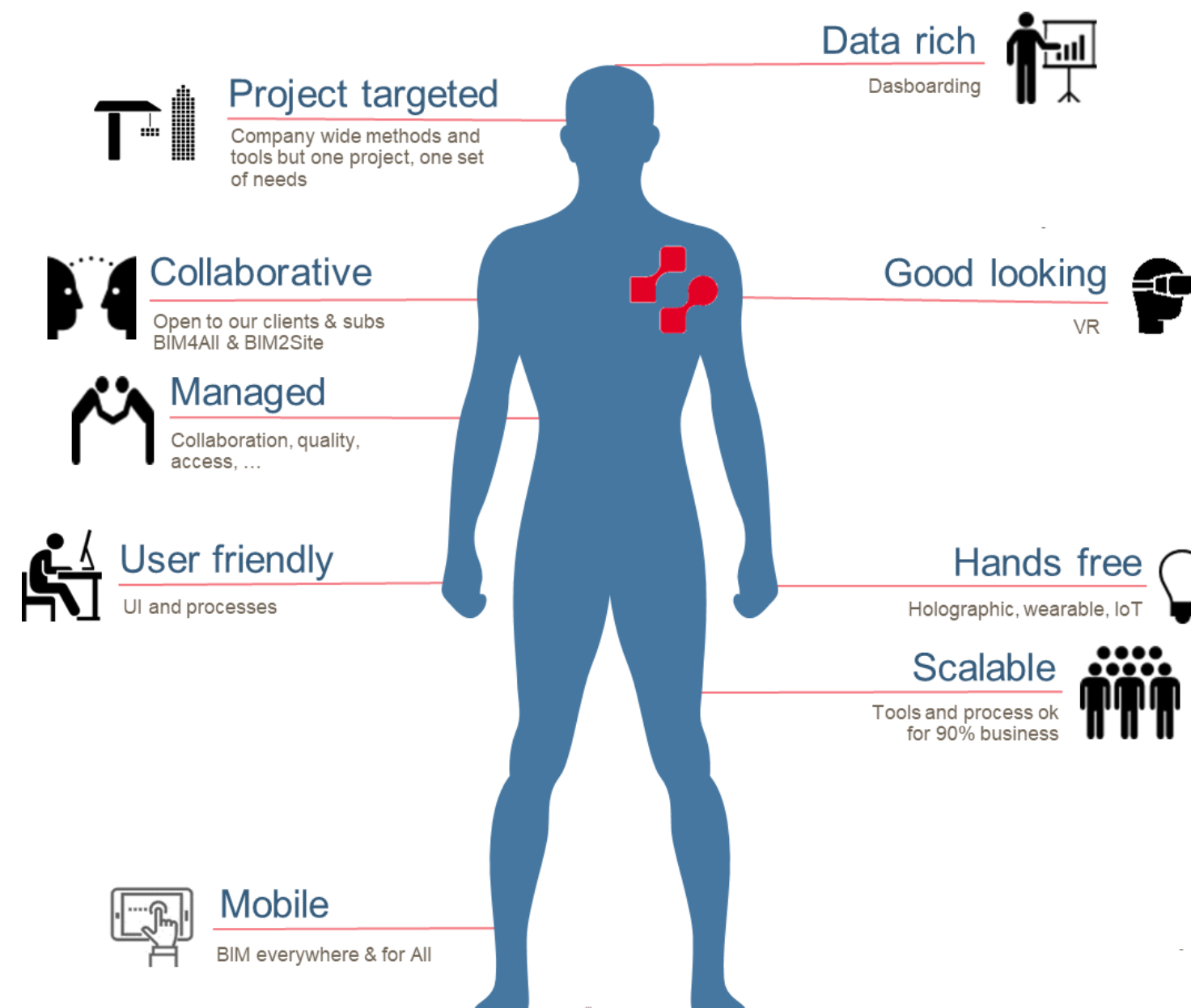


- A network of small and medium sized companies put together gradually in France and other countries over a period of 150 years.

- Solutions with high technological content, engineers with strong expertise in geotechnical, structural, digital, nuclear, oil, gas and renewable energy engineering.

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VDC must be :



VINCI Construction France : A unified company with local roots



FRANCE



Hugues Fourmentraux
Président



Gino Gotti
Directeur général adjoint
Bâtiment de France



Jean-Luc Briat
Directeur général adjoint
Travaux publics/Travaux civils

DIRECTION OPÉRATIONNELLE SUD-OUEST



Alain Le Drouff
Directeur opérationnel Ouest
et directeur adjoint Ouest



Fabrice Mire
Directeur adjoint
Nouvelle-Gaule

DIRECTION OPÉRATIONNELLE SUD-OUEST



Francis Drouff
Directeur opérationnel Sud-Ouest
et directeur adjoint Nouvelle-Aquitaine
et Occitanie



Frédéric Farnet
Directeur adjoint en charge
de la direction régionale
Bâtiment Occitanie-Gaule

DIRECTION OPÉRATIONNELLE SUD-OUEST



Vincent Vial
Directeur adjoint Provence



Laurent Rouche
Directeur adjoint
Clermont

DIRECTION OPÉRATIONNELLE NORD-EST



Bertrand Grigis
Directeur opérationnel Nord-Ost
et directeur adjoint Nord-Ost



Julien Payan
Directeur adjoint Grand-Est

DIRECTION OPÉRATIONNELLE CENTRE-EST



François Tassin de Baillier
Directeur opérationnel Centre-Est
et directeur adjoint Rhône-Alpes



Emmanuel Mollier
Directeur adjoint
Pays de la Loire



Jean-Christophe Terrier
Directeur adjoint
Bâtiment Centre-Gaule

DIRECTION OPÉRATIONNELLE NORD-EST



Jean-Yves Colson
Directeur opérationnel
Bâtiment de France
et directeur adjoint
de France



Henry Beauville
Directeur adjoint
CTM Bâtiment



Frédéric Joux
Directeur adjoint
et directeur adjoint
adjoint Adm.

DIRECTION OPÉRATIONNELLE NORD-EST



Fernando Sison
Directeur opérationnel
Concierges/Travaux civils
Bâtiment de France
et directeur adjoint
de France



Vincent Cornille
Directeur adjoint
Bâtiment



Thierry Barlier
Directeur adjoint en charge
de la direction régionale
Industrie et Service de France

FILIERES DE SPECIALITES



Frédéric Joux
Directeur adjoint
et directeur adjoint
adjoint Adm.

Concierges, Bâtiment, Travaux civils, Travaux publics, Travaux maritimes et Portuaire

Restauration de monuments historiques, Travaux de France, Travaux civils

DIRECTION OPÉRATIONNELLE NORD-EST



Yves Bédier-Gauthier
Directeur opérationnel
Concierges/Travaux civils
Bâtiment de France
et directeur adjoint
de France



Marcel Lecomte
Directeur adjoint
Bâtiment

ACTIVITES TRAVAUX PUBLICS/GÉNIE CIVIL



Frédéric Bernadet
Directeur adjoint
Travaux publics
de France



Guillaume Le Ballec
Directeur adjoint
en charge de
la direction de projet
et de la France

17
Divisions

393
Locations

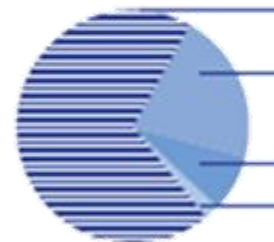
19 938
EMPLOYEES

n°1
FRENCH GENERAL
CONTRACTOR

7 497
CONSTRUCTION
SITES

5 372 M€
DE CHIFFRE D'AFFAIRES

RÉPARTITION DU CHIFFRE D'AFFAIRES (EN %)



69
BUILDING
21
CIVIL
8
WATER & WASTE MANAGEMENT
2
SPECIALTIES

RÉPARTITION DE LA PRISE DE COMMANDES PAR CLIENT (EN %)

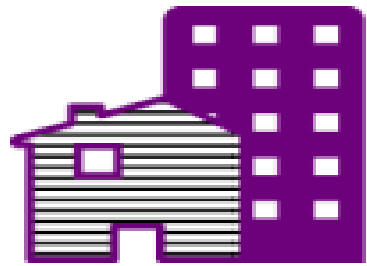
SECTEUR PRIVÉ
SECTEUR PUBLIC



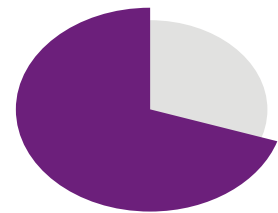
5 785 M€
2016
BACKLOG

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Trinity Tower - BIM to site to BIM

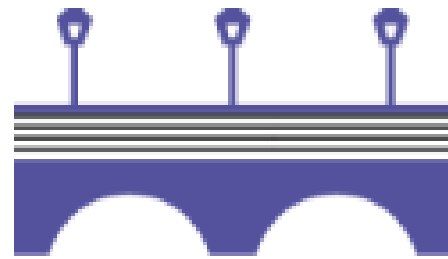


BUILDING

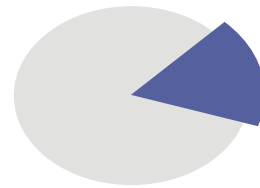


68 %
TURNOVER

3 217
SITES



CIVIL CONSTRUCTION



21 %
TURNOVER

1 534
SITES

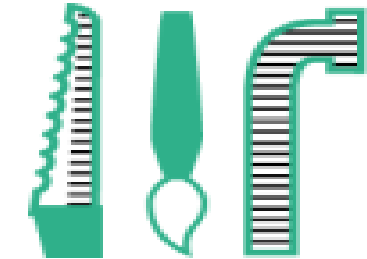


HYDRAULIC & WASTE



7 %
TURNOVER

1 946
SITES



SPECIALITIES



3 %
TURNOVER

793
SITES



Prevention



Organization



Environment

ENTREPRENEURSHIP ENGAGEMENT **TOGETHER**



Digital



Management model

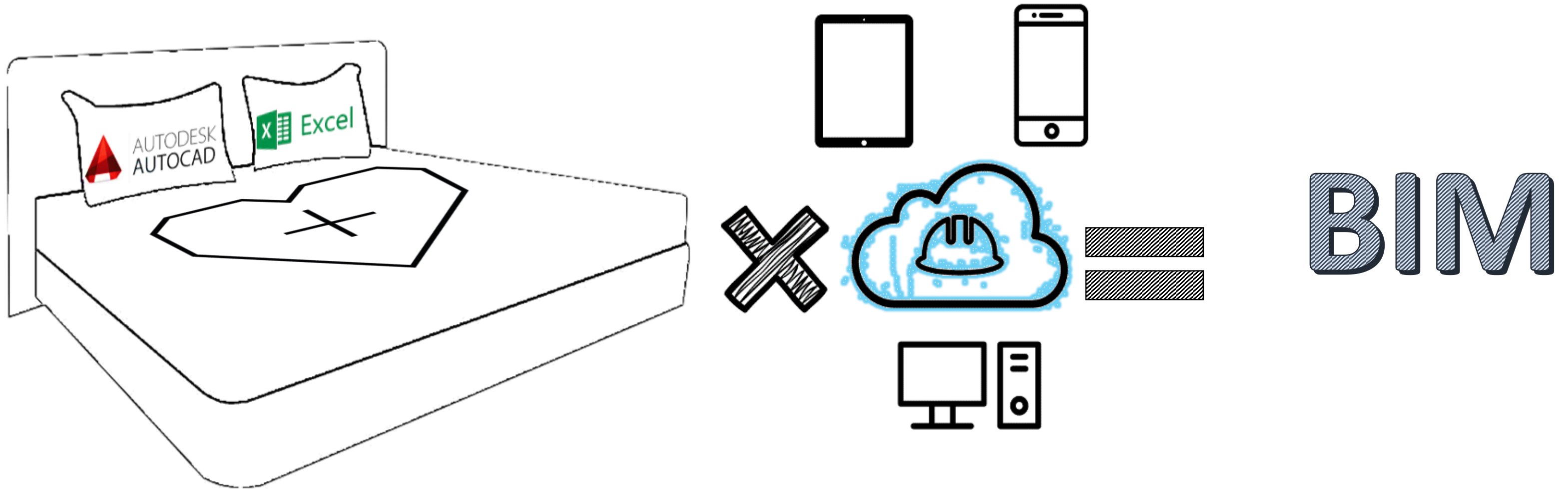


Business

BIM = ?

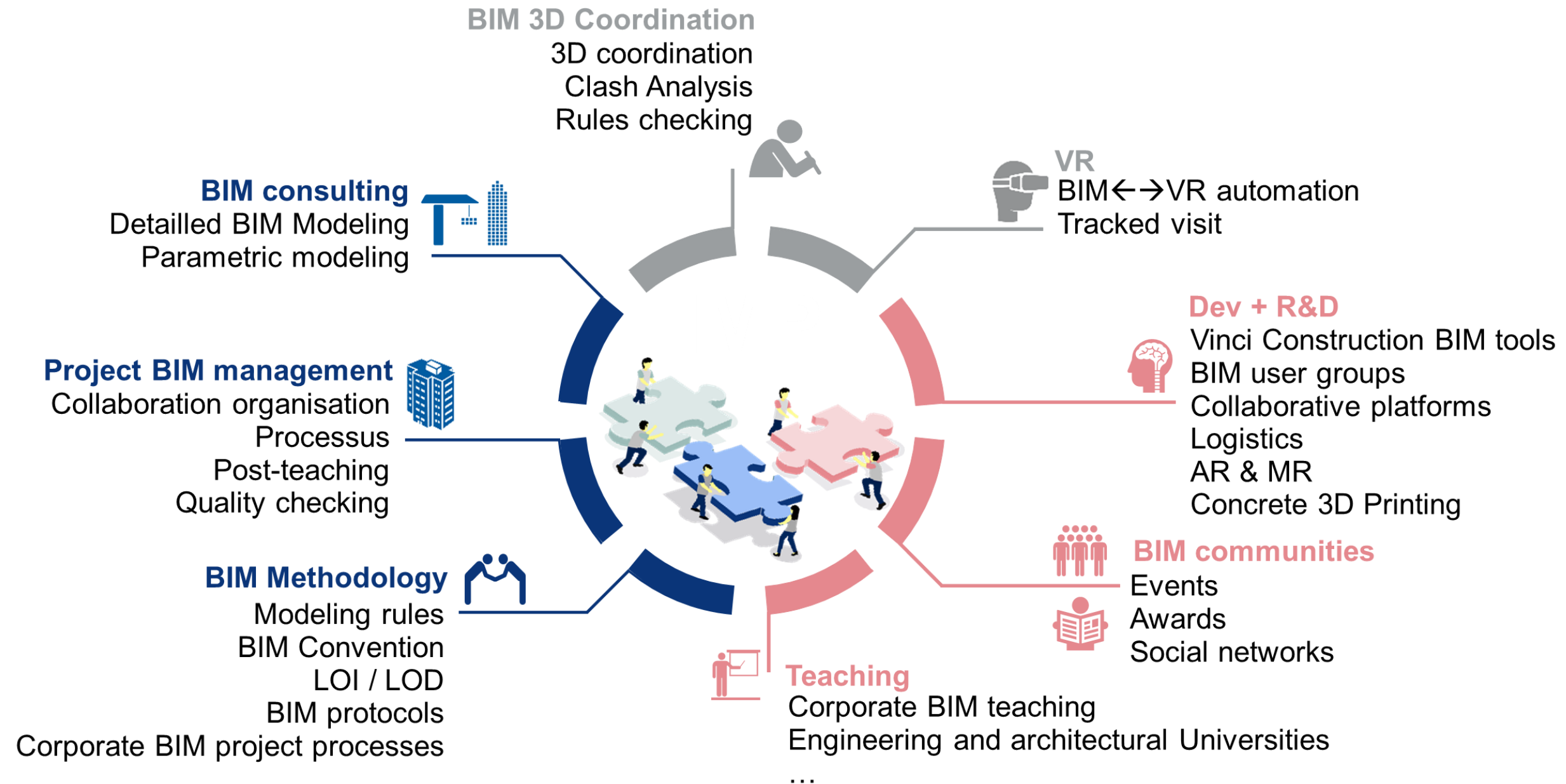


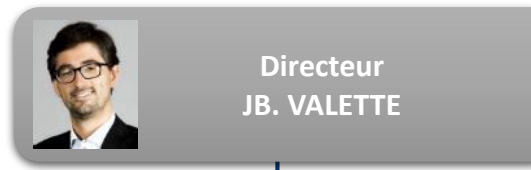
FRANCE



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Trinity Tower - BIM to site to BIM





Directeur
JB. VALETTE



Assistant
L. GALLIEN



FRANCE

BIM Projects Management

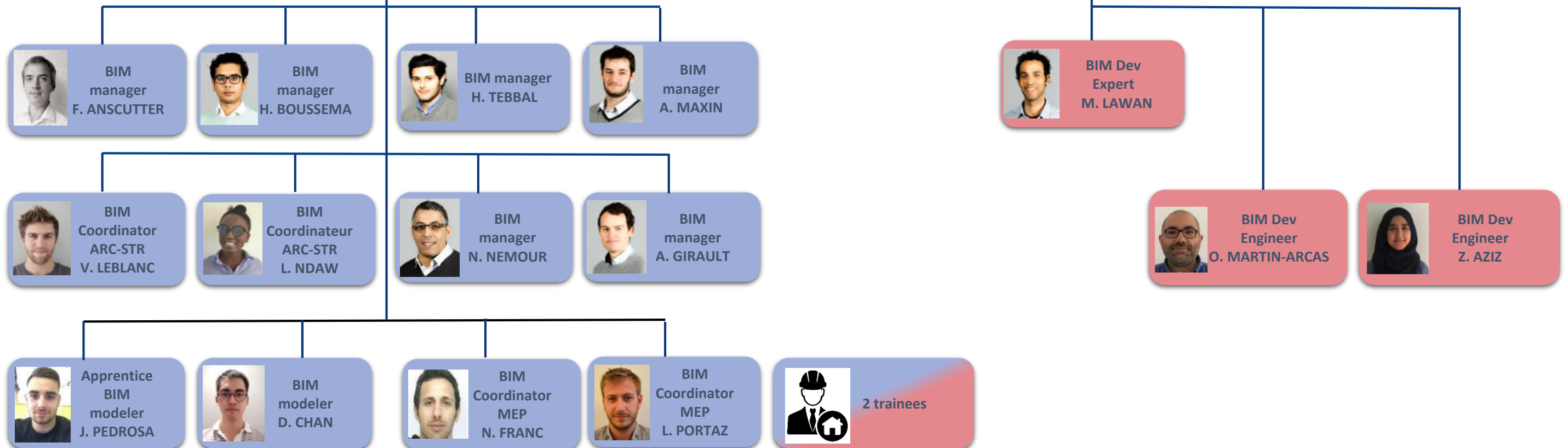
BIM Tools development



Project management
Dept manager
D. DUREISSEIX



Development
Dept manager
A. HAMOUCHE



The projects we managed or manage



FRANCE



D²
tower



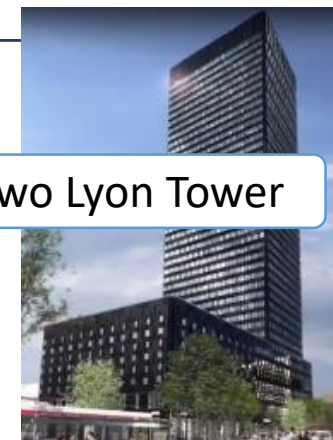
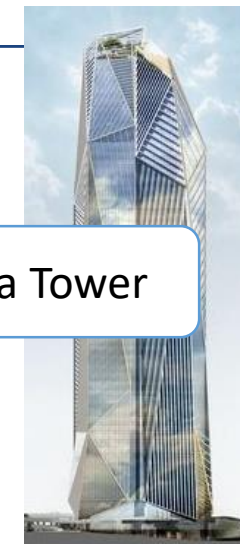
Trinity
tower



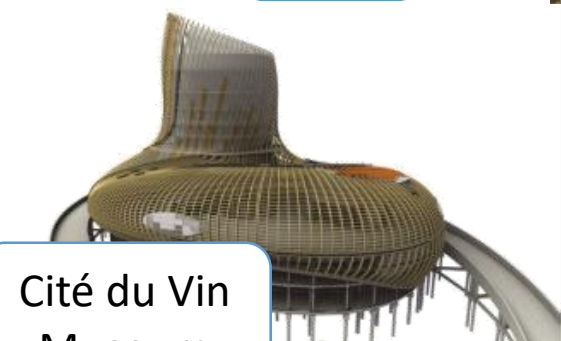
DUO Towers
(Offices+hotel)



Hekla Tower



Two Lyon Tower



Cité du Vin
Museum



Saint Gobain
HQ tower



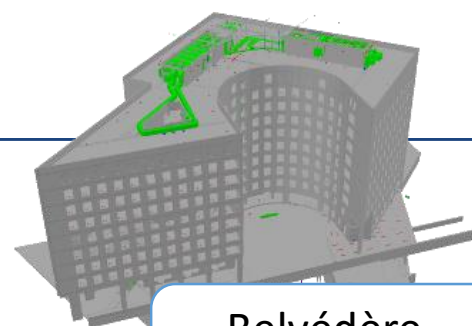
Archipel
VINCI HQ



Jardins de l'Arche
Mixed tower
(offices+hotels)



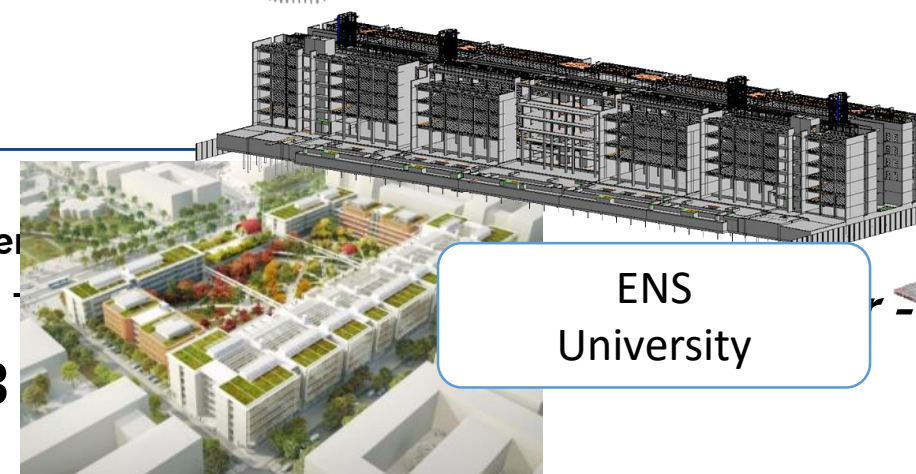
Ilot Fontenoy Segur
Prime minister Offices



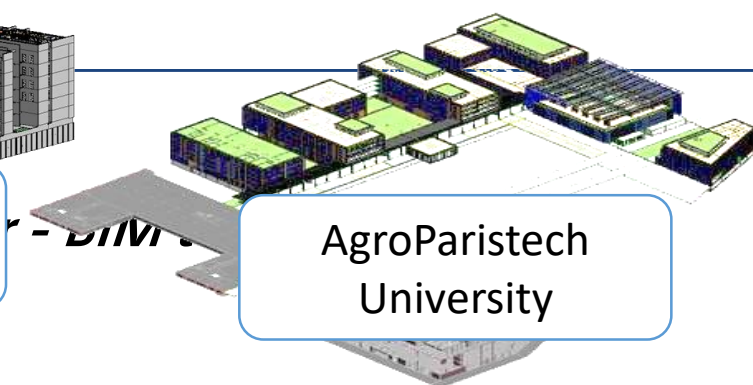
Belvédère
refurbishment

5Di Confer
May 14th

23



ENS
University

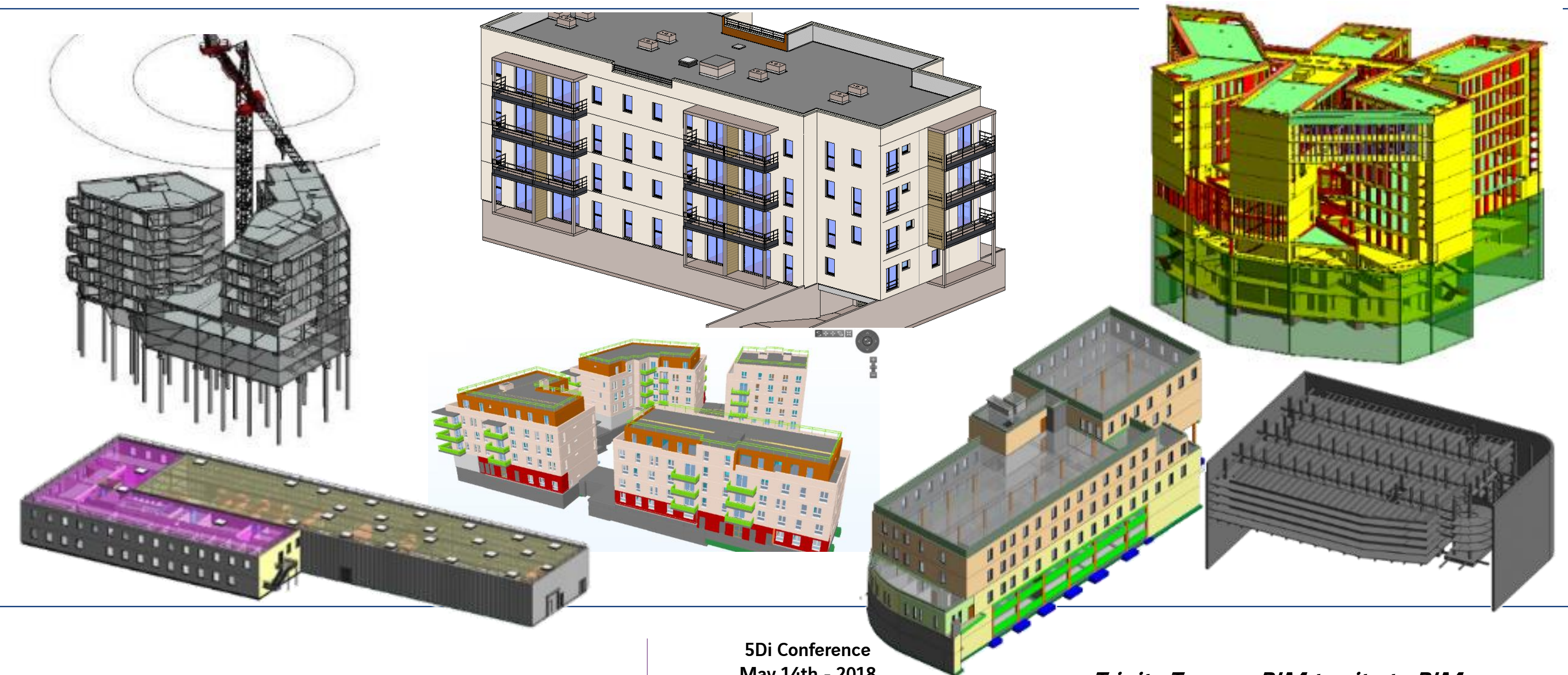


AgroParistech
University

But company business (80% TO)



FRANCE



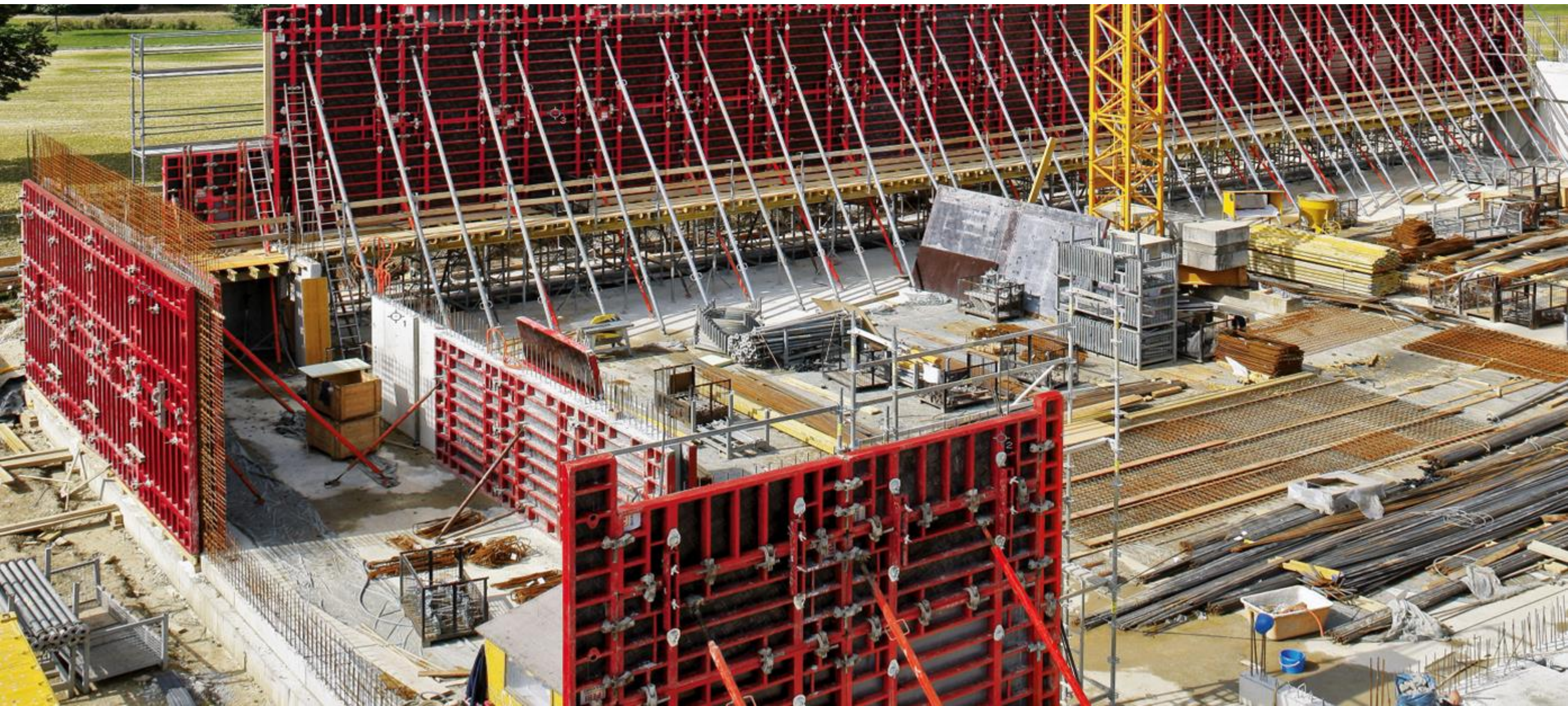
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Trinity Tower - BIM to site to BIM

PERI – Our Company | Formwork



FRANCE



PERI – Our Company | Scaffolding



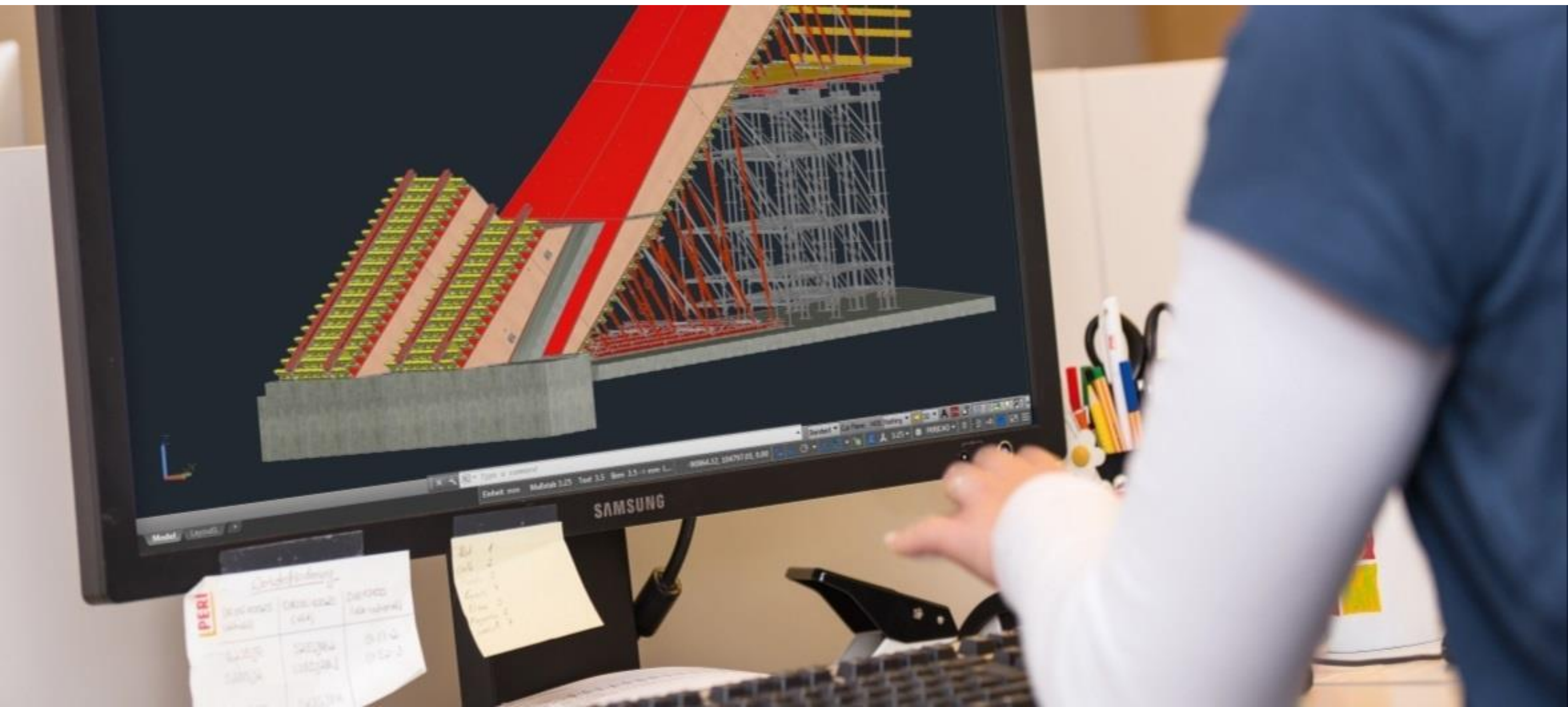
FRANCE



PERI – Our Company | Engineering



FRANCE



PERI – Today | Headquarter Weißenhorn



FRANCE



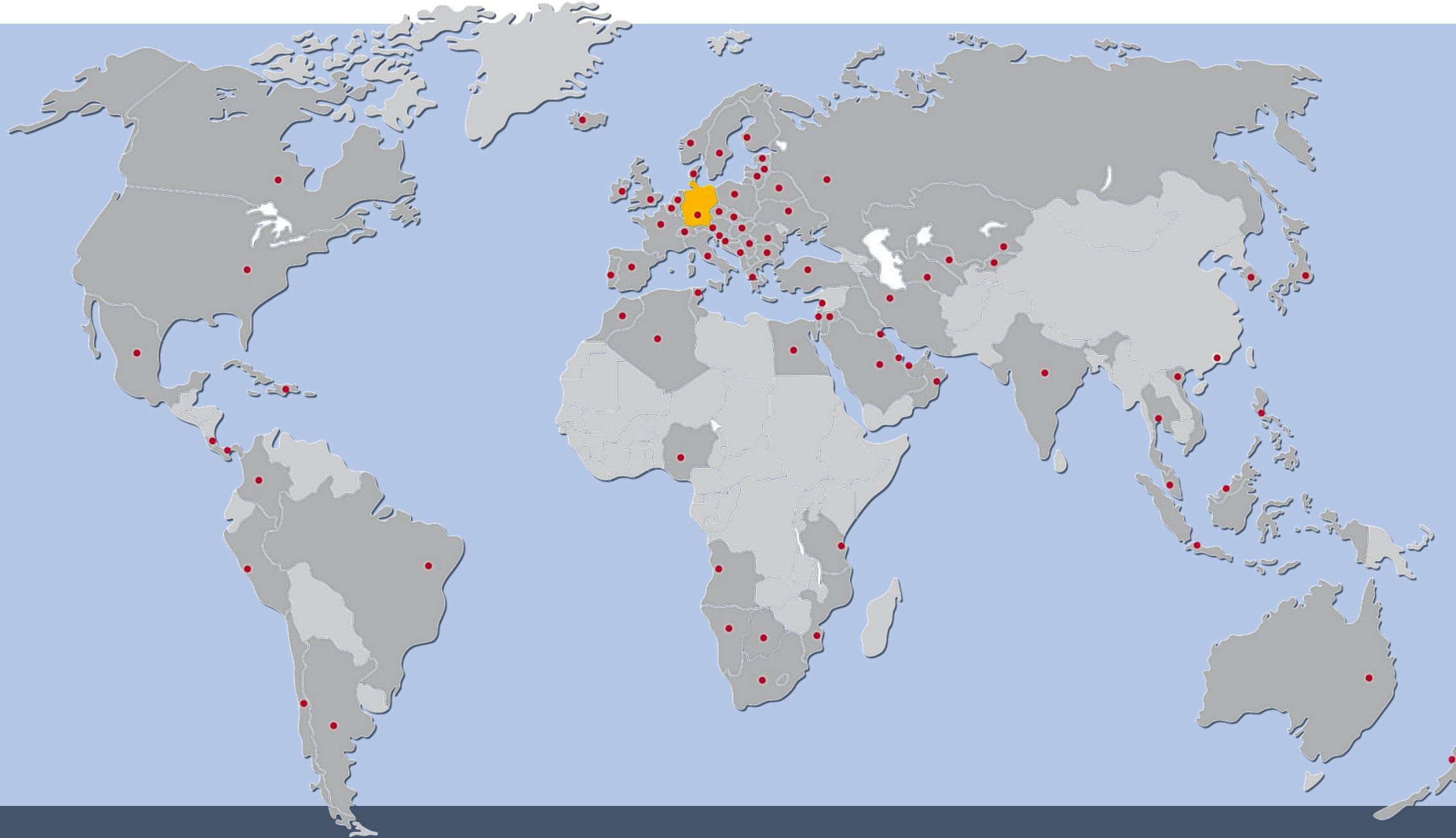
Here, system equipment is developed, produced and held in readiness

Campus, total area 382,000 m²

PERI – Today | Globally



FRANCE



With more than 60 subsidiaries, PERI supports construction sites in more than 90 countries

PERI – Today | Turnover, Employees



FRANCE

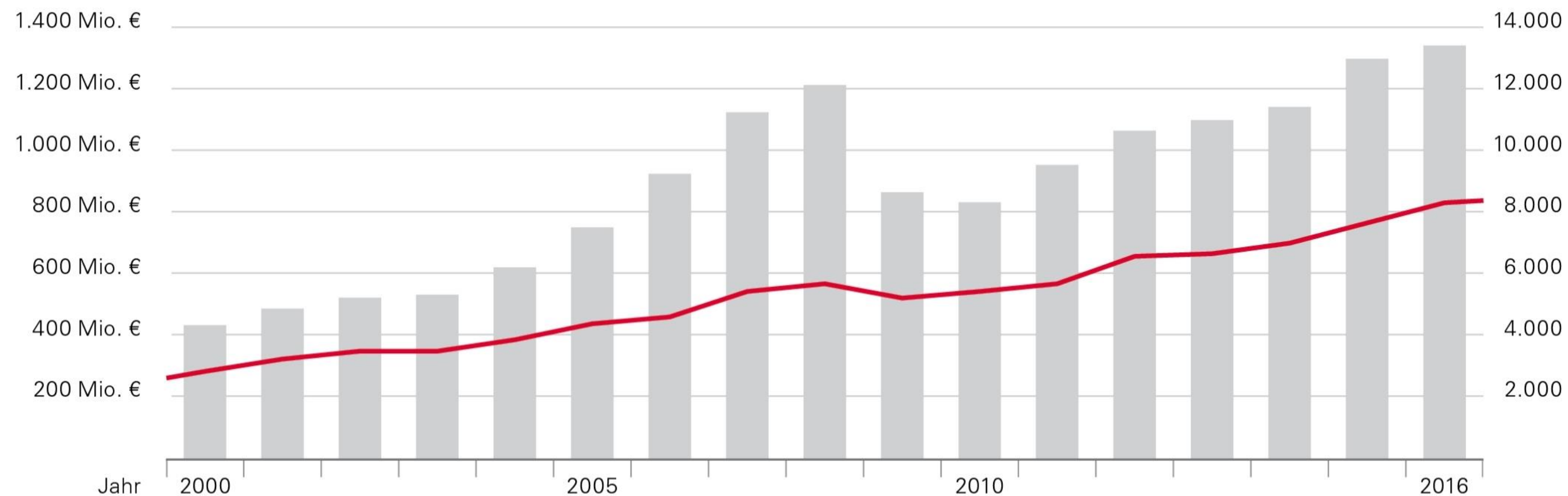


Turnover in millions

1,46 in 2017

Number of employees

8,800 in 2017



PERI – Services | Support



FRANCE



Technical processing



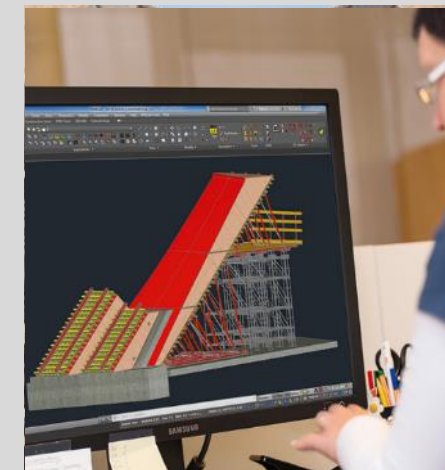
Rental parks and distribution



Cleaning and repairs



Formwork assembly



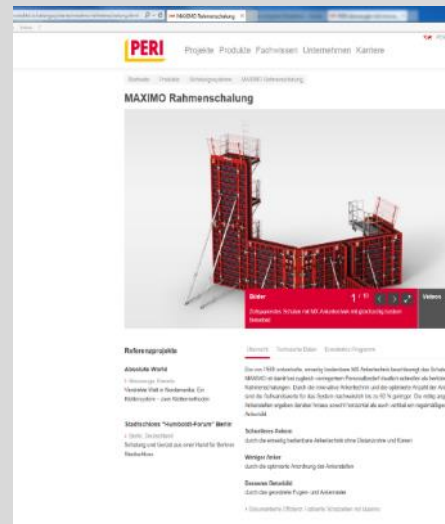
Software solutions and apps



Practice-oriented training



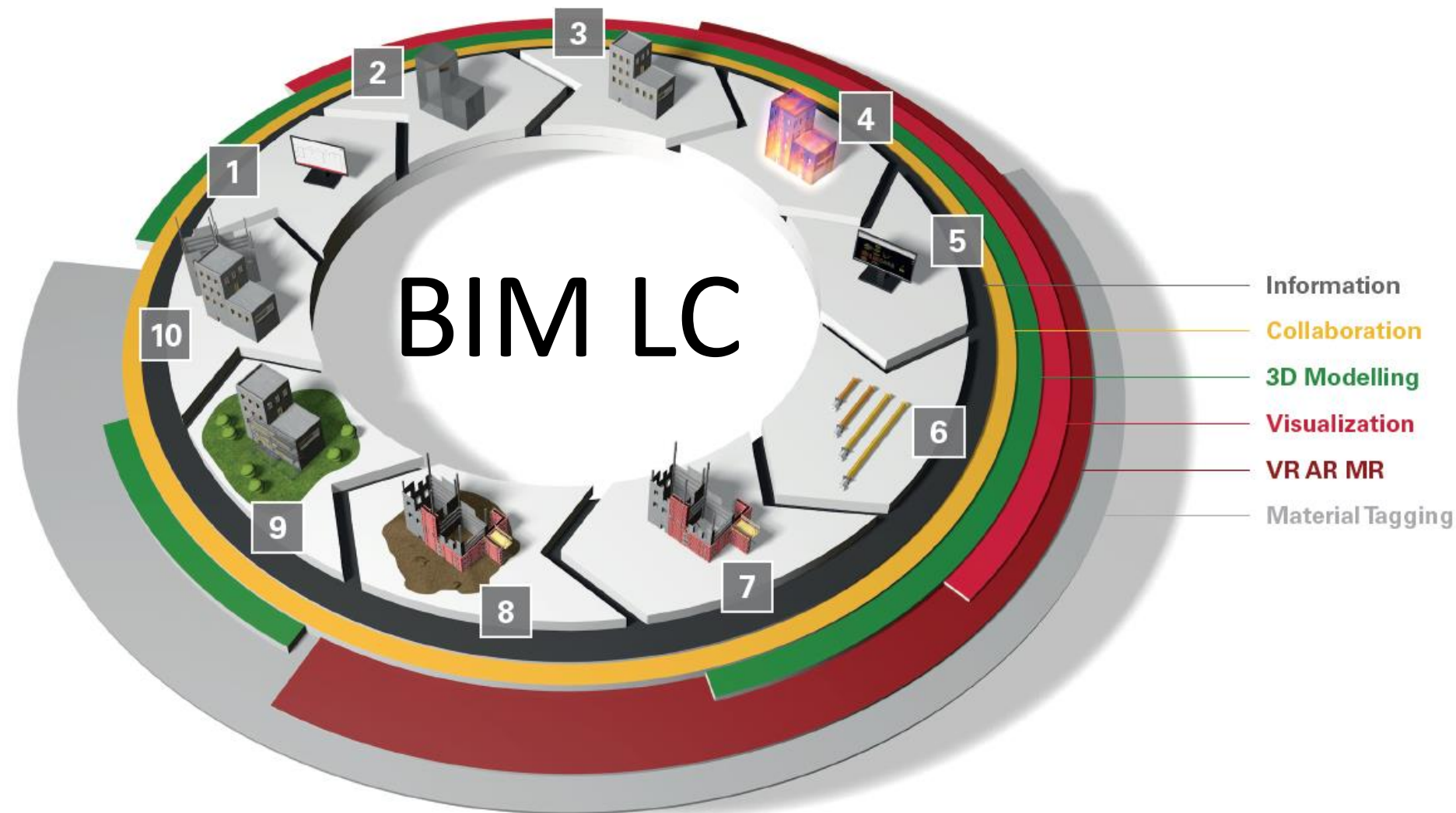
Product documentation



Website and country websites

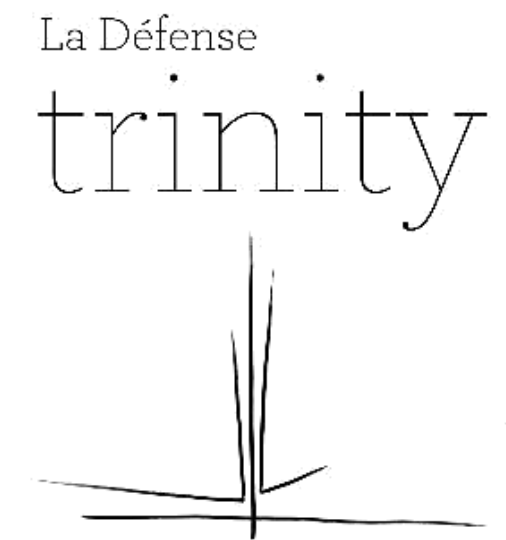
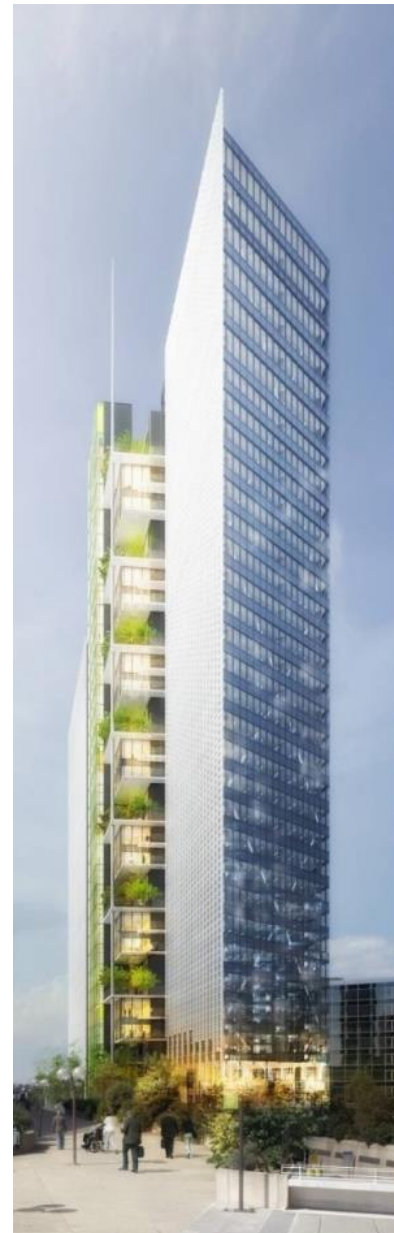
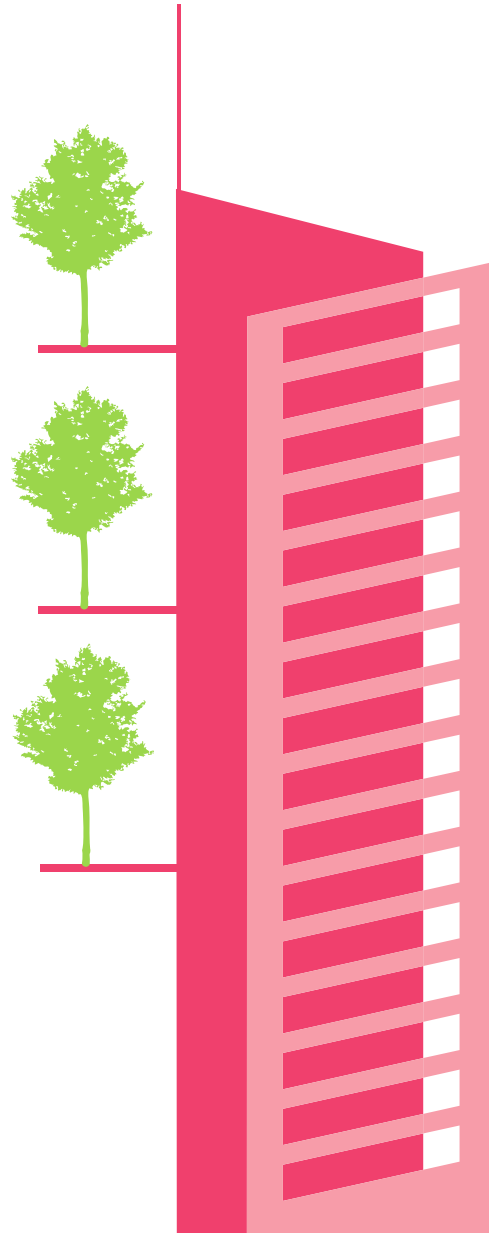


BIM Services



BIM Lebenszyklus

- | | | | | | |
|---|------------------------------------|---|--------------------------------|----|---------------------------------------|
| 1 | Gebäudeentwicklung / Raumplanung | 5 | Planerstellung / Dokumentation | 9 | Betriebsphase mit Facility Management |
| 2 | Entwurfsplanung | 6 | Vorfabrikation / Elementierung | 10 | Revitalisierung / Umnutzung, Rückbau |
| 3 | Ausführungsplanung | 7 | Werk- und Montageplanung | | |
| 4 | Thermische und technische Analysen | 8 | Erstellung / Baustellenplanung | | |



Towers in La Défense

VINCI Headquarters

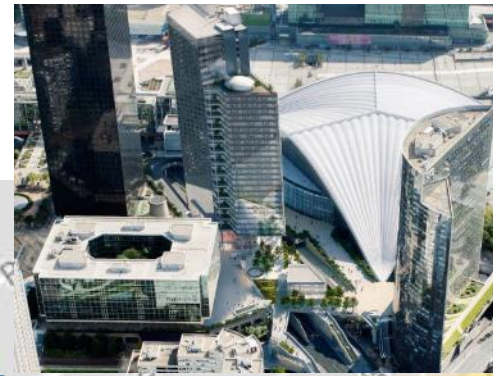
Delivery December 2020



Jardin de l'Arche
Delivery 2021



Trinity
Delivery March 2019



HEKLA
Delivery 2021



Saint-Gobain
Delivery May 2019



to site to BIM
Delivery October 2020



FRANCE

- Construction phase
- Design phase

Contractual differences



FRANCE

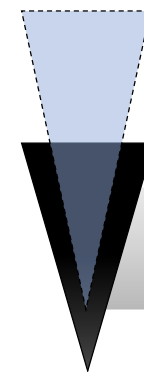
In UK/US



In France



**Trinity
Tower**



Traditional construction

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Trinity Tower - BIM to site to BIM

Project description



FRANCE

Bidding: 2015-11-25

173 300 K€ fixed no update price

- 5 650 K€ cafeteria option

Subsidiary :

BATEG and Chantiers Modernes Construction



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Trinity Tower - BIM to site to BIM

Construction site in the successive months



FRANCE



August 2016

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Trinity Tower - BIM to site to BIM

Construction site in the successive months



FRANCE



December 2016

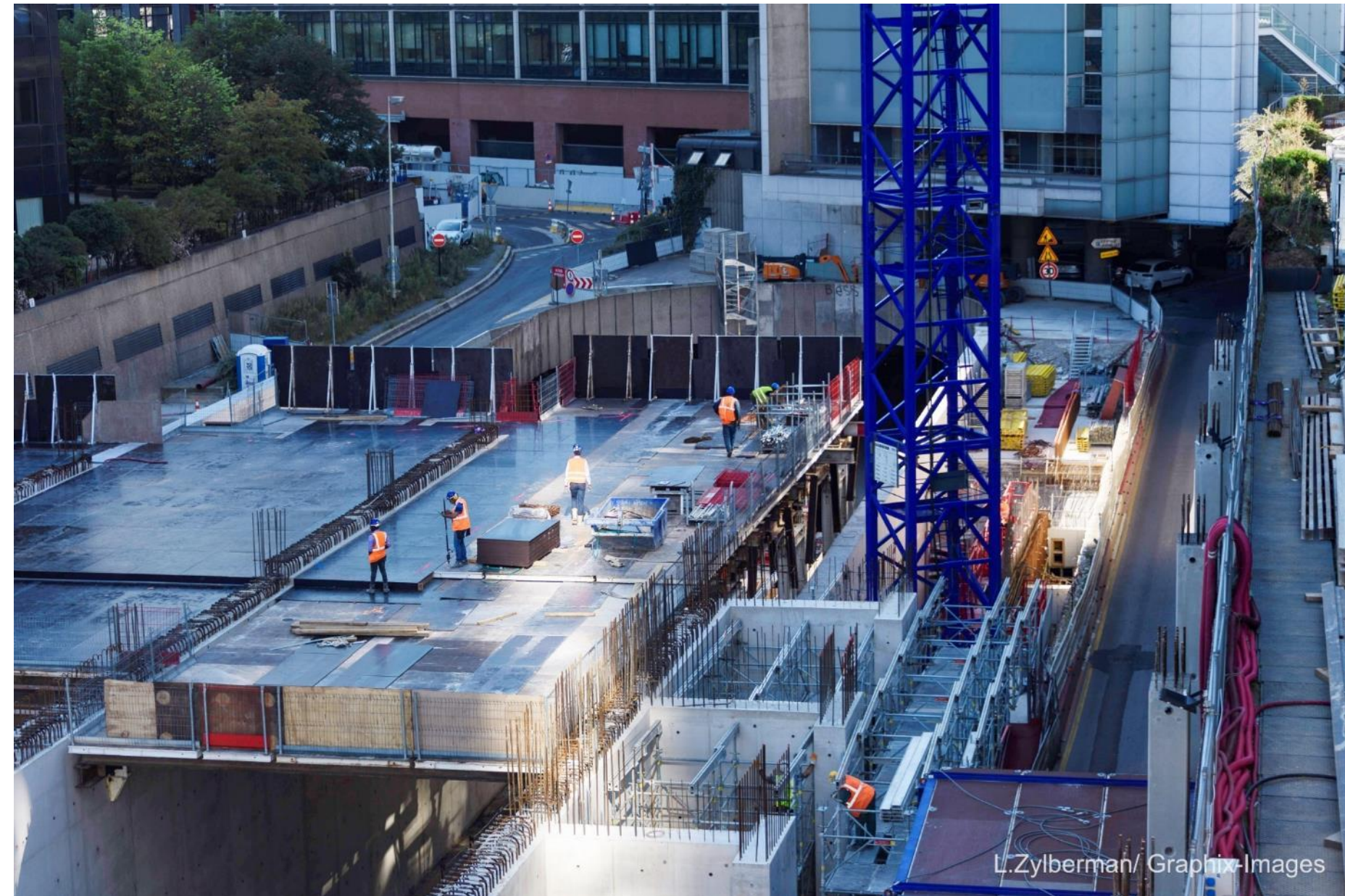
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Trinity Tower - BIM to site to BIM

Construction site in the successive months



FRANCE



July 2017

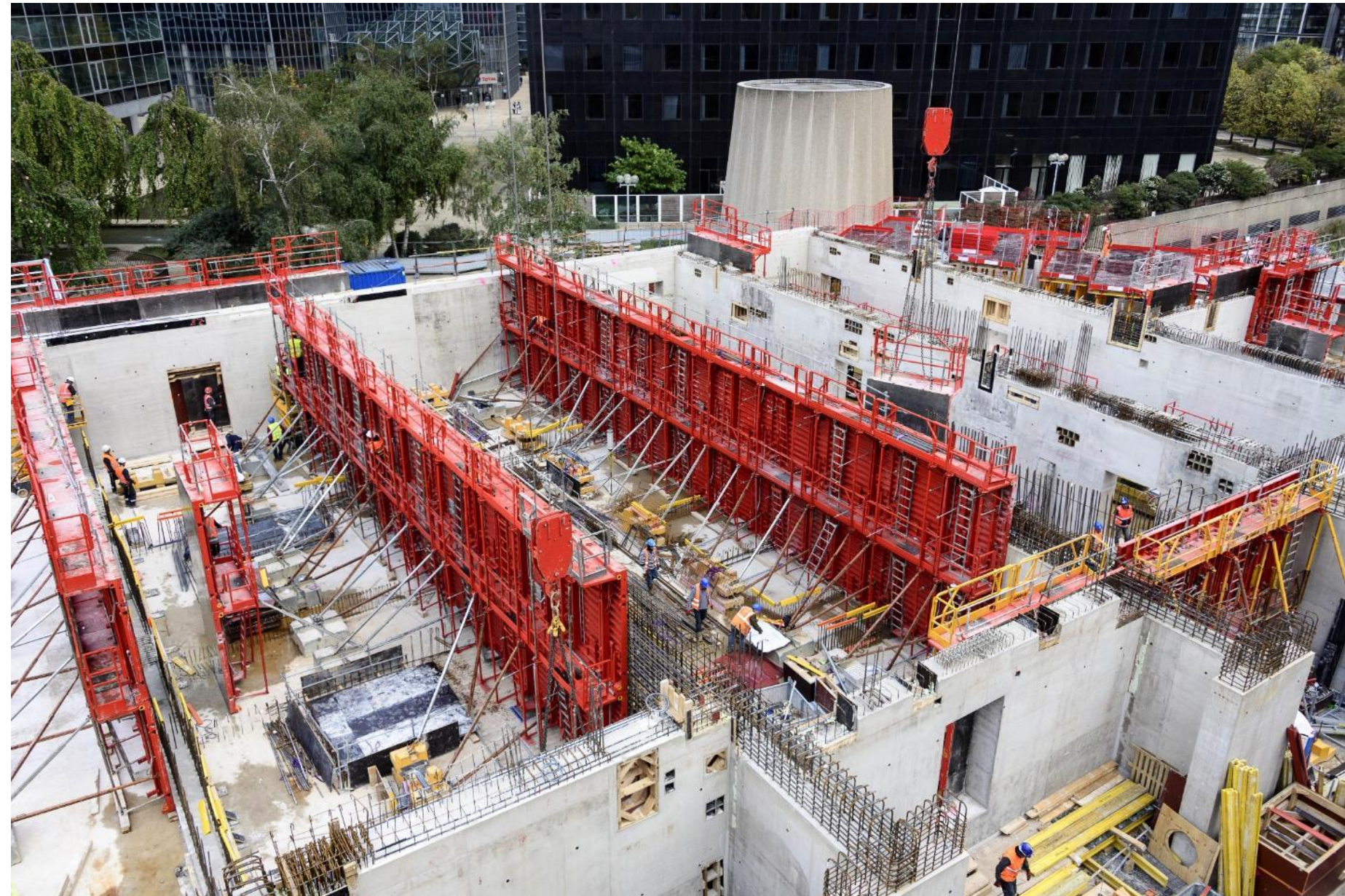
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Trinity Tower - BIM to site to BIM

Construction site in the successive months



FRANCE



31st October 2017

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Trinity Tower - BIM to site to BIM

Construction site in the successive months



FRANCE



April 2018



5Di Conference
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Trinity Tower - BIM to site to BIM

Trinity Tower (Unibail)



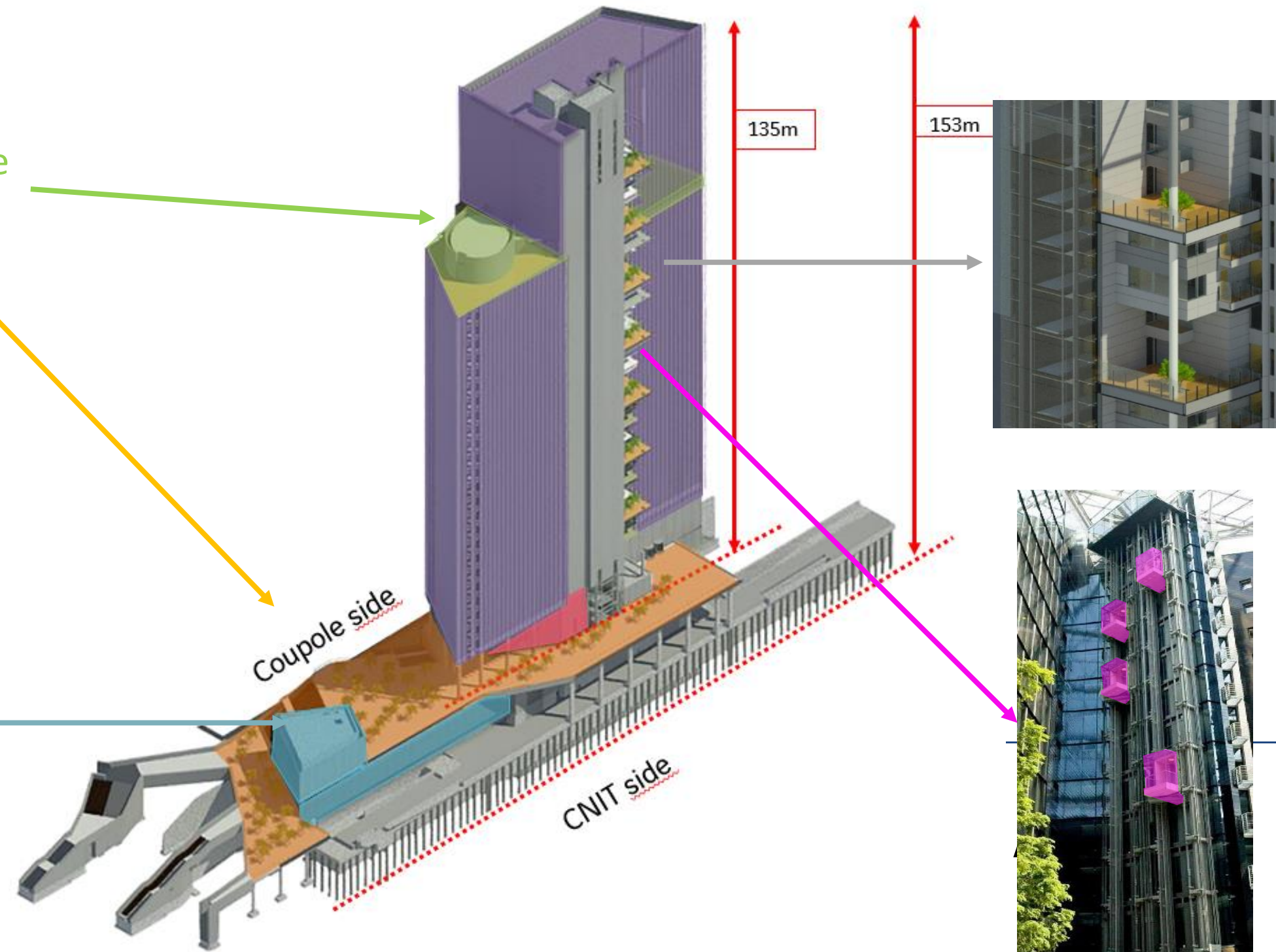
FRANCE

- 135 m from forecourt
- 31 levels – 50 000m² of offices
- Level 25 :
 - Multifunctional room with outdoor terrace
 - Auditorium / Business Center
- Urban link above highway acces (3 500 m²)



- 560 m² of shops

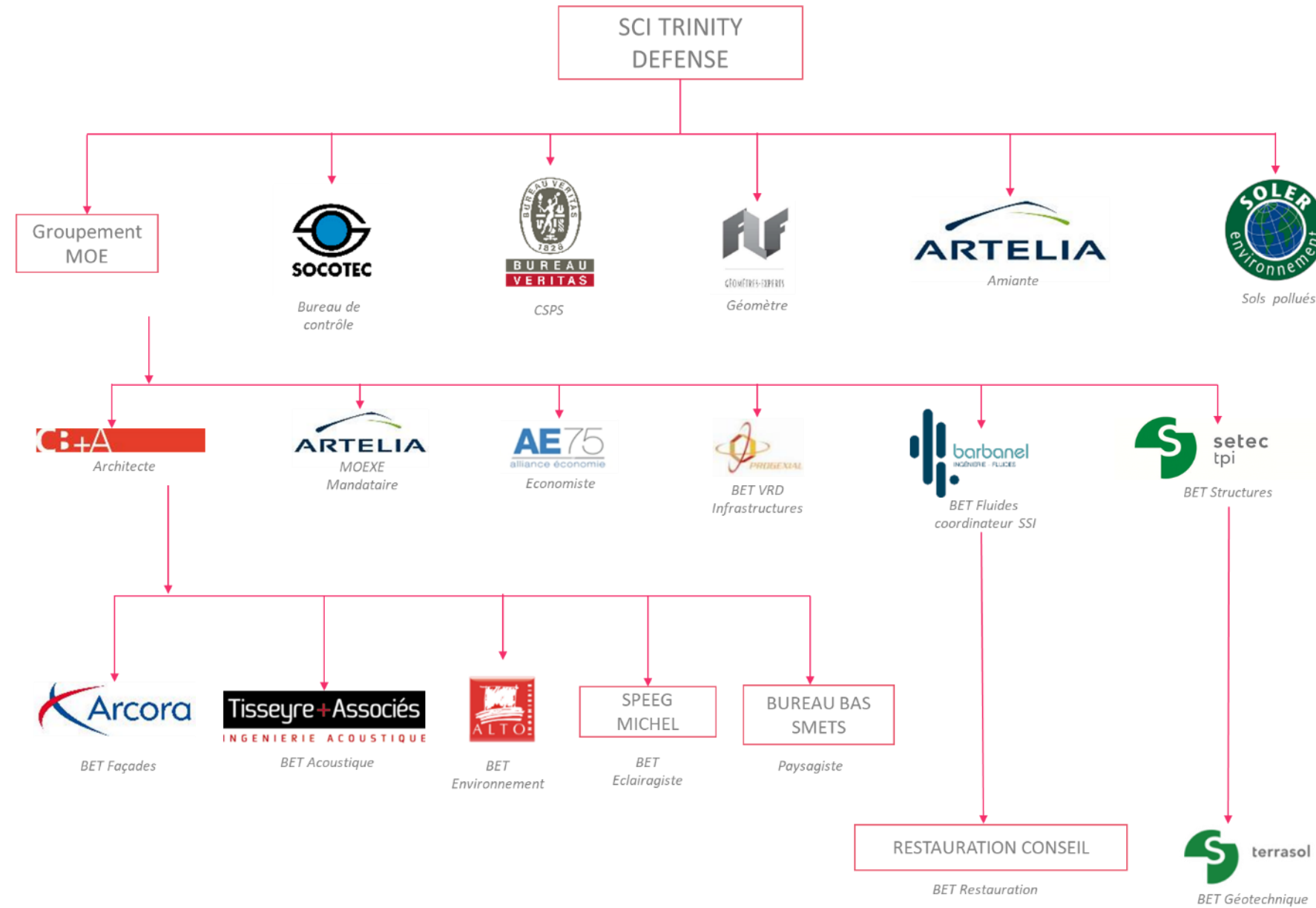
- 560 m² commercial + restauration



Project organization



FRANCE



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Trinity Tower - BIM to site to BIM

What a Construction Project needs?



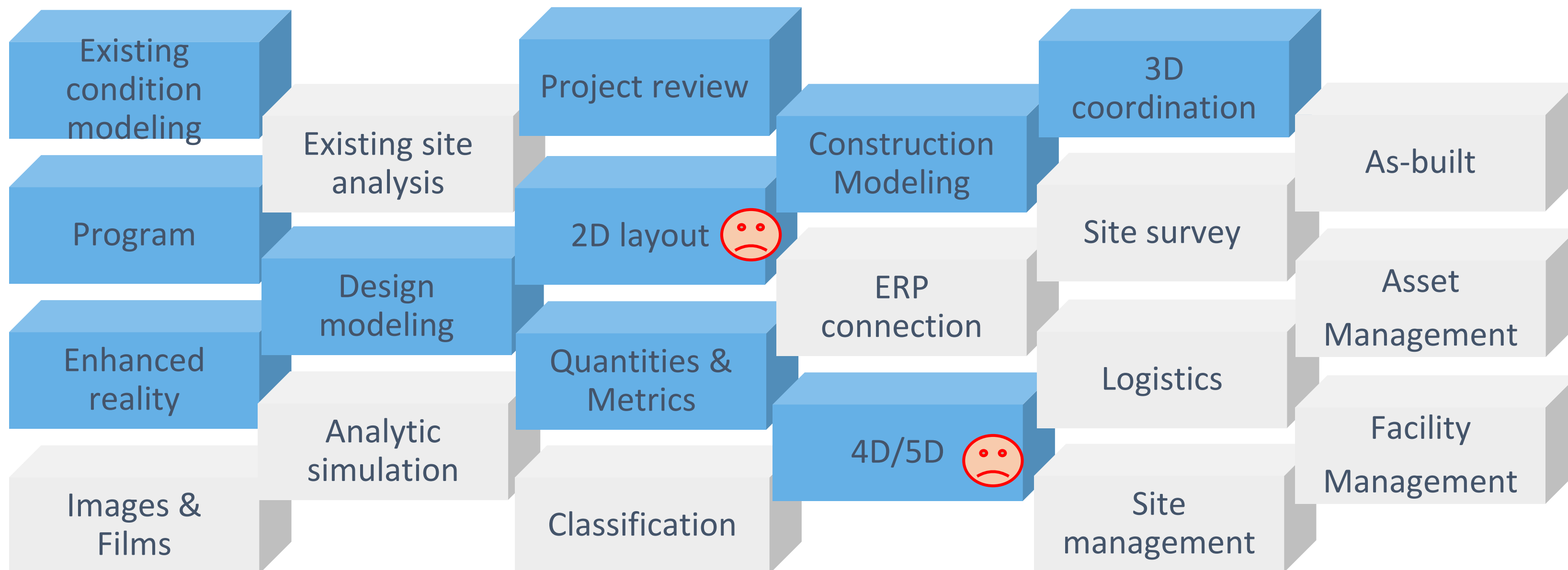
FRANCE

- Documents : 2D/3D sheets + QTO's
- Fixing: who administrates/modifies/sees/validates what.
→ LOI management + engineering management
- Then you can have fun with:
 - Forge and digital cabinet, Hololens site quality checking, onsite 4D

Trinity tower BIM Uses



FRANCE

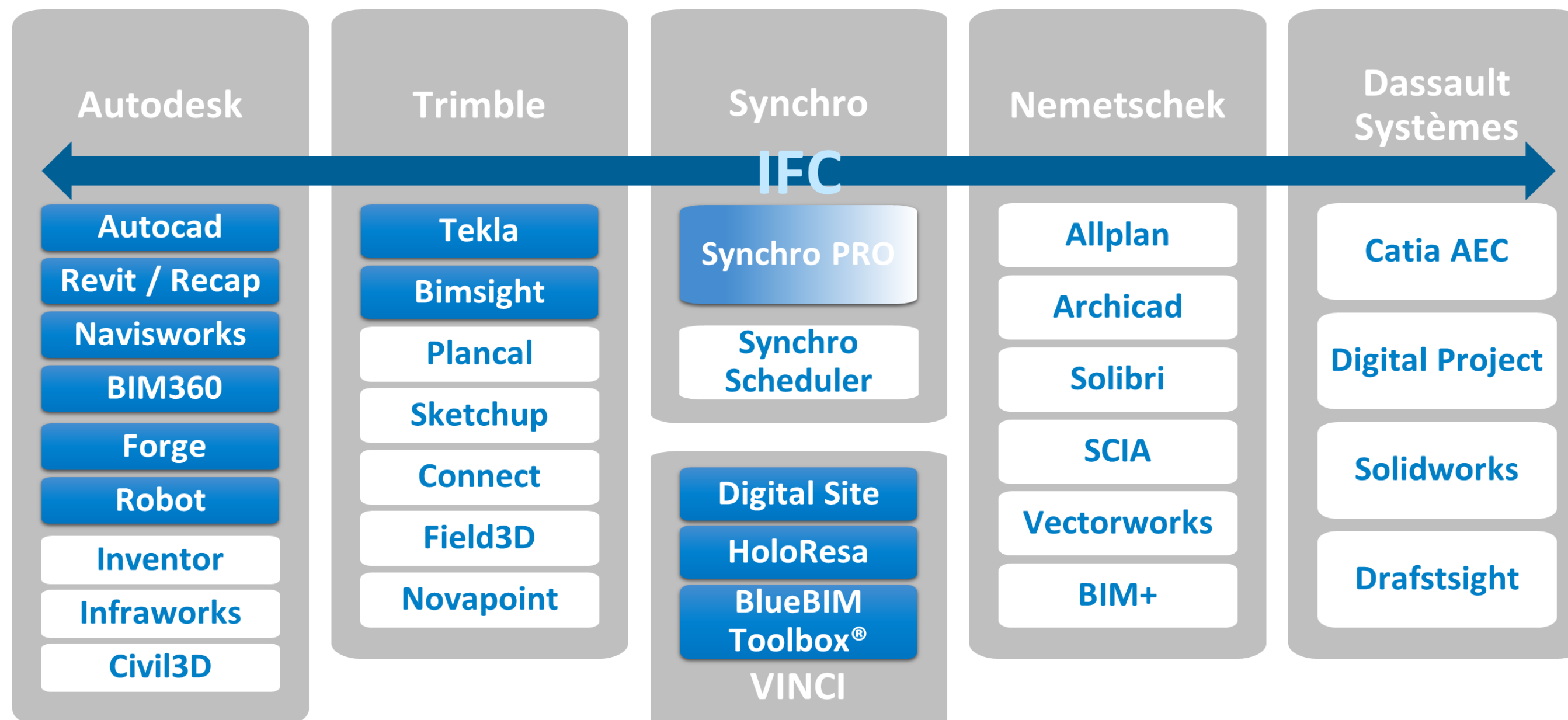


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May 14th - 2018

The used software panorama



FRANCE



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May 14th - 2018

Trinity Tower - BIM to site to BIM

1. Scan + Modeling of existing conditions – VINCI
2. Formwork modeling / IFC Export – PERI
3. Design Collaboration – PERI
4. PERI Library+ for Revit – PERI
5. MEP Coordination – VINCI
6. BIM on Site through MR – VINCI
7. BIM on Site through Site Digital Totem – Itekube

VINCI Construction BlueBIM Toolbox : a common language for all projects



FRANCE

Qties & ARC

Detaillled Qties

Location plans

Methods

Methods

Crane rates

Scheduling

Equipment use

Structure

Simulation

MEP interfaces

CIP 2D

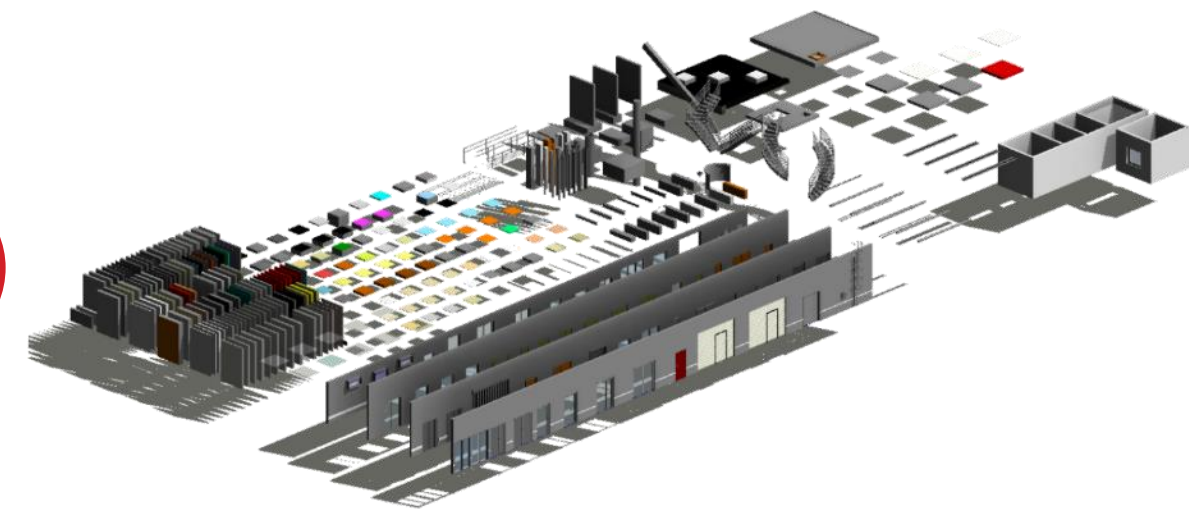
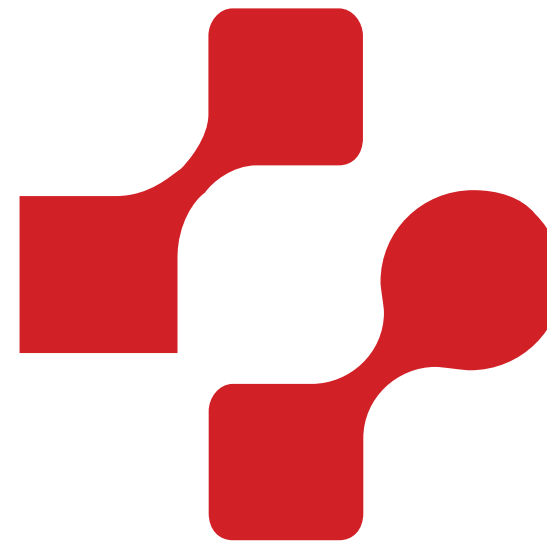
(Reinforcement)

MEP

Terminals

Networks

Coordination

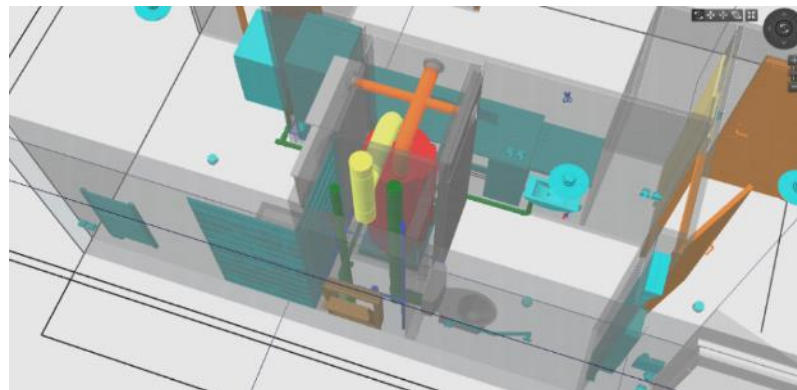
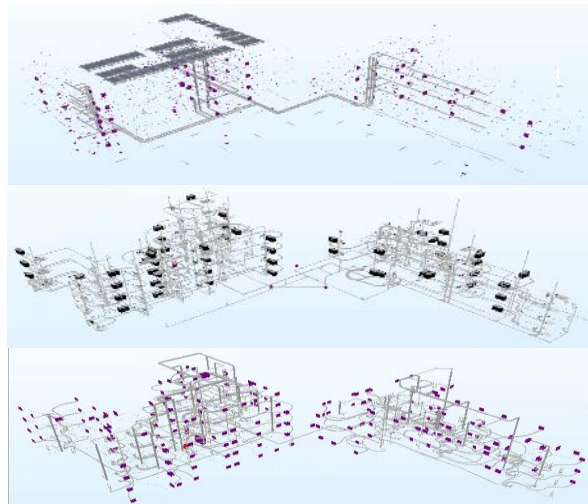
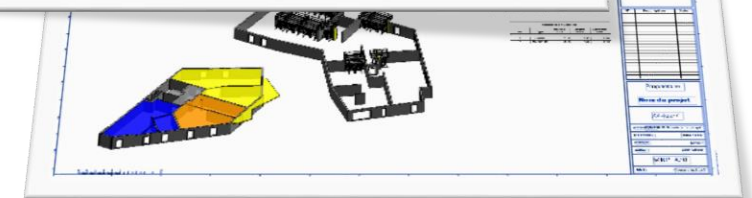
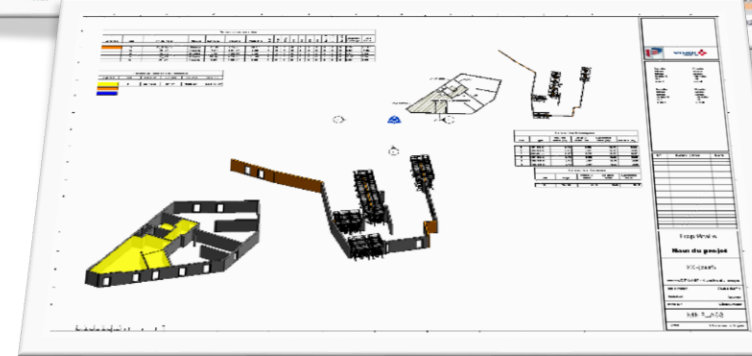
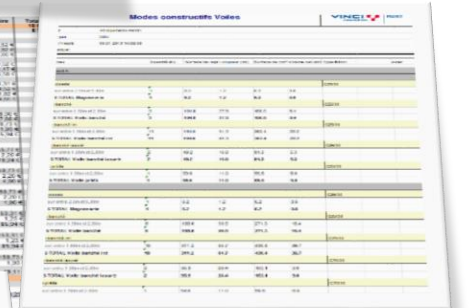
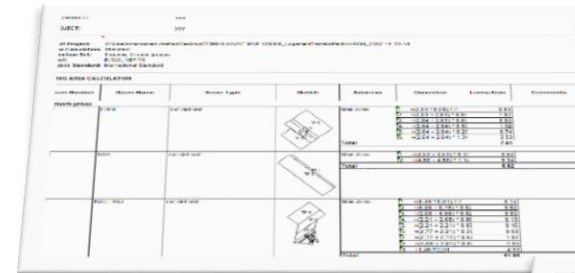
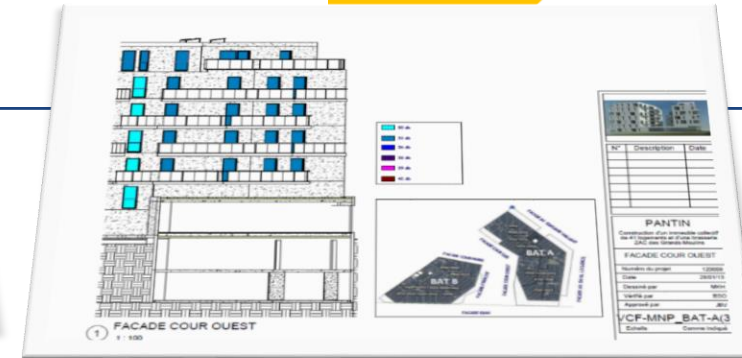
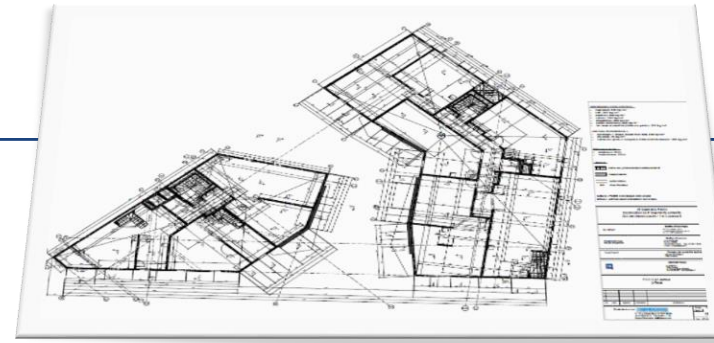


1. **Generic objects**
2. **Parametrics and properties**
3. **Layouts**
4. **VINCI Construction modeling rules**
5. VINCI Construction BIM tools to fasten modeling and use of models

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The kit contains:

- ✓ Generic objects
- ✓ Their settings
- ✓ Templates
- ✓ Modeling rules of VINCI CONSTRUCTION
- ✓ Plugins to accelerate the modeling and operation models



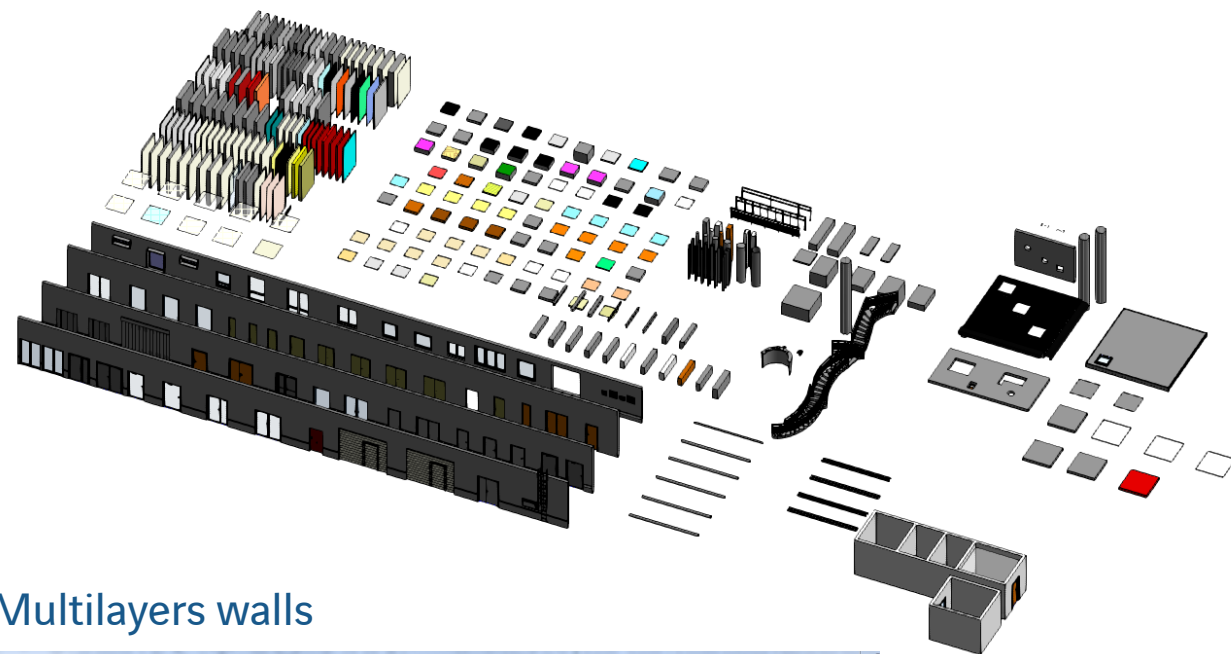
BIM Kit

Architectural template



FRANCE

- Families: walls, slabs, columns, finishes, doors, ...



Multilayers walls

Modifier l'assemblage

Famille: Mur de base
Type: VCF_CES_CLOISON_ALVEOLAIRE_PLACOPAN_DOUBLE_180-50
Epaisseur totale: 0.1800
Résistance (R): 3.0281 (m²·K)/W
Masse thermique: 9.46 kJ/K

Exemple de hauteur: 6.0000

COTES EXTERIEUR				
Couches	Fonction	Matériau	Epaisseur	Retournements
1	Limite de la couche principale	Couches au-dessus	0.0000	
2	Finition 1 [4]	VCF_PLAQUE_PLATRE	0.0130	
3	Doublage [2]	VCF_PLACOPLAN	0.0500	
4	Isolant/Vide [3]	VCF_LAINE_MINERALE	0.0540	
5	Doublage [2]	VCF_PLACOPLAN	0.0500	
6	Porteur/Ossature [1]	VCF_PLAQUE_PLATRE	0.0130	
7	Lin			

Shared parameters

- Buildings
- Zone
- Level

Localization parameters

- Acoustic performance
- Fire classification
- Type of lock
- Type of door leaf
- ...

Door accessories

Information
schedules about
windows, doors
and rooms

Propriétés

VCF_PORTE_METAL_VITREE_2V
VCF_PORTE_METAL_VITREE_2V_HM_90
+50x220cm

Portes (1) Modifier le type

Contraintes

Niveau 1 - RDC

Hauteur de l'appui 0.0000

Construction

Type de cadre

Texte

VCF_Localisation

VCF_Etage RDC

VCF_Zone ??

VCF_Mode_Realisation

VCF_Localisation_Zone Localisation ?? Zone ??

VCF_Heure

VCF_Heure_Ratio

VCF_Grue

Matériaux et finitions

Matériau des huisseries

Finition

VCF_Menuiserie

VCF_PV_Vitrage

VCF_Matériau_Occulta...

VCF_Affaiblissement...

VCF_PV_Serrure

VCF_Finition_Portes

VCF_PV_Cylindre

VCF_Film_Colore

VCF_Poussant_Gauche

VCF_Poussant_Droit

VCF_Barre_Seuil

VCF_Finition_Vantail

VCF_Fermetures

VCF_Garnitures

VCF_Oculus

VCF_Asservissement

VCF_Control_Acces

VCF_Accessoires

VCF_Occultation_Ext

VCF_Occultation_Int

VCF_Ferme_Porte

Cotes

VCF_Retrait_du_Nu_Int... 0.0700

VCF_Epaisseur_Hote 0.2000

Nomenclatures/Quantités

_INFOS_FENETRES
_INFOS_FINITIONS_PIECES
_INFOS_PORTES
_RATIOS_D_ACIERES_DALLES
_RATIOS_D_ACIERES_FONDACTIONS
_RATIOS_D_ACIERES_MURS
_RATIOS_D_ACIERES_OSSATURE
_RATIOS_D_ACIERES_PIEUX
_RATIOS_D_ACIERES_POTEAUX
_RATIOS_D_HEURE_DIVERS
_RATIOS_D_HEURE_MURS
_RATIOS_D_HEURE_SOLS
_VERIFICATION_BETON_PROPRIETE_DEBORD
_VERIFICATION_DESCRIPTION_DIVERS
_VERIFICATION_DESCRIPTION_MURS
_VERIFICATION_DESCRIPTION_SOLS
_VERIFICATION_MATERIAUX_POUTRES
VCF_LOT_04_01_FUT
VCF_LOT_04_01_GROS_BETON_FILANT (FONDATION)
VCF_LOT_04_01_GROS_BETON_FILANT (OSSATURE)
VCF_LOT_04_01_GROS_BETON_ISOLE
VCF_LOT_04_01_ISOLATION_SOUBASSEMENT
VCF_LOT_04_01_LONGRINES
VCF_LOT_04_01_PAROI_MOULEE
VCF_LOT_04_01_PIEU
VCF_LOT_04_01_RADIER&DALLE_PORTE&FOSSE_AS
VCF_LOT_04_01_RELEV_FOSSE_ASCENSEUR
VCF_LOT_04_01_SEMELLE_FILANTE
VCF_LOT_04_01_SEMELLE_ISOLEE
VCF_LOT_04_01_TETE_PIEU
VCF_LOT_04_01_TIRANT_PARASISMIQUE
VCF_LOT_04_02_ACROTERE_BETON
VCF_LOT_04_02_MUR&ACROTERE_PREFA
VCF_LOT_04_02_MUR_AGGLO&BET_CELLUL&BRIQU
VCF_LOT_04_02_MUR_OSSATURE_BOIS
VCF_LOT_04_02_MUR_RIDEAU
VCF_LOT_04_02_PREMUR
VCF_LOT_04_02_VOILE_BETON
VCF_LOT_04_03_POTEAU
VCF_LOT_04_04_POUTRE
VCF_LOT_04_05_BALC_CASQ&PALIER
VCF_LOT_04_05_CAILLEBOTIS
VCF_LOT_04_05_CHAPE
VCF_LOT_04_05_DALLE_BETON


- Steel density
ratio schedules:
slabs, walls,
funding, beams,
columns
- Hour ratio
schedules: walls,
slabs,
multcategories

QTO according
French
classification

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Trinity Tower - BIM to site to BIM

- Document prepared by the BIM Manager
 - It describes the roles, responsibilities, tasks and processes applicable to the project
 - BIM production must comply with the BIM Execution Plan
 - It is useful to all project stakeholders from design to AsBuilt, to ensure uniformity in the use of BIM
 - Crucial documents which sets out:
 - roles, responsibilities,
 - Properties data,
 - construction tolerances,
 - file naming convention,
 - software,
 - origin and orientation
- 
- BIM tools and their uses are constantly changing, therefore this BIM Execution Plan is not frozen and is updated throughout the project*

Level of Information



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Revit category	Information	Parameter name	Description	Instance or type							
CREATION DES MODELES BIM CEA											
Elément	Catégorie Revit	Niveau d'informations								PHASE	
		Nom de l'information	Nom du paramètre Revit	Description	Exemple	Type de paramètre	Groupes	Regrouper sous	Type/occurrence	EXE	DOE
Partition	Wall	Résistance au feu	VCF_Resistance_Feu	Caractéristique de résistance au feu	M0, M1, ...	Texte	VCF_Generalites	Matériaux et finitions	Occurrence	X	X
		Réaction au feu	VCF_Reaction_Feu	Nombre d'heure coupe feu	CF1h, CF2h	Texte	VCF_Generalites	Matériaux et finitions	Occurrence	X	X
		Affaiblissement acoustique	VCF_Affaiblissement_Acoustique	Isolation acoustique (RA en dB)	35 dB	Texte	VCF_Generalites	Matériaux et finitions	Occurrence	X	X
		Résistance thermique isolant	VCF_Resistance_Thermique_Isolant	Isolation thermique, U en W/m².K	0,9 W/m².K	Texte	VCF_Generalites	Matériaux et finitions	Occurrence		X
		Nature de la cloison	VCF_Nature_Cloison	Type de plaque	BA13, BA15, ...	Texte	VCF_Cloison	Matériaux et finitions	Occurrence	X	X
		Nombre de plaques	VCF_Nombre_Plaques	Nombre de plaques constituant la cloison	1, 2, ...	Nombre entier	VCF_Cloison	Matériaux et finitions	Type	X	X
		Nombre de plaques haute résistance	VCF_Nombre_Plaque_Haute_Resistance	Nombre de plaques haute résistance	1, 2, ...	Nombre entier	VCF_Cloison	Matériaux et finitions	Occurrence	X	X
		Isolation	VCF_Isolation	Type de laine	laine de verre, ...	Texte	VCF_Cloison	Matériaux et finitions	Occurrence	X	X
		Epaisseur laine minérale	VCF_Epaisseur_Laine_Minerales	Epaisseur de l'isolant	10cm	Nombre	VCF_Cloison	Matériaux et finitions	Type	X	X
		Nombre de parements hydrofuge	VCF_Nombre_Parements_Hydrofuge	Nombre de plaques hydrofuge	1, 2, ...	Nombre entier	VCF_Cloison	Matériaux et finitions	Type	X	X
		Chapitre CCTP	VCF_Chap_CCTP	Chapitre du CCTP correspondant	\$4.2.2.2	Texte	VCF_Generalites	Matériaux et finitions	Type	X	X
		Hauteur maximum d'emploi	VCF_Hauteur_Maximum_Emploi	Hauteur maximun d'emploi	3,1m, ...	Hauteur	VCF_Cloison	Matériaux et finitions	Occurrence	X	X
		Matériau	Matériau	Matériau	Placoplatre, laine de verre, ...	Matériau	-	-	Type	X	X
Glass wall	Wall	Résistance au feu	VCF_Resistance_Feu	Caractéristique de résistance au feu	M0, M1, ...	Texte	VCF_Generalites	Matériaux et finitions	Occurrence	X	X
		Réaction au feu	VCF_Reaction_Feu	Nombre d'heure coupe feu	CF1h, CF2h	Texte	VCF_Generalites	Matériaux et finitions	Occurrence	X	X
		Affaiblissement acoustique	VCF_Affaiblissement_Acoustique	Isolation acoustique (RA en dB)	35 dB	Texte	VCF_Generalites	Matériaux et finitions	Occurrence	X	X
		Nature du bâti	VCF_Nature_Bati	Matériau du bâti	Placoplatre, bois, ...	Texte	VCF_Generalites	Matériaux et finitions	Occurrence	X	X
		Nature du vitrage	VCF_Nature_Vitrage	Type de vitrage	Simple vitrage, verre feuilleté, verre trempé	Texte	VCF_Generalites	Matériaux et finitions	Occurrence	X	X
		Matériau	Matériau	Matériau	Placoplatre, laine de verre, ...	Matériau	-	-	Type	X	X

- ✓ One sheet per discipline: Finishings, Structure, HVAC, ...
- ✓ VINCI Construction France database for As built

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BIM Management



Structure
Architectural interior



MEP

BIM Coordinators



Facade



Interior finishings

1. Existing condition modeling



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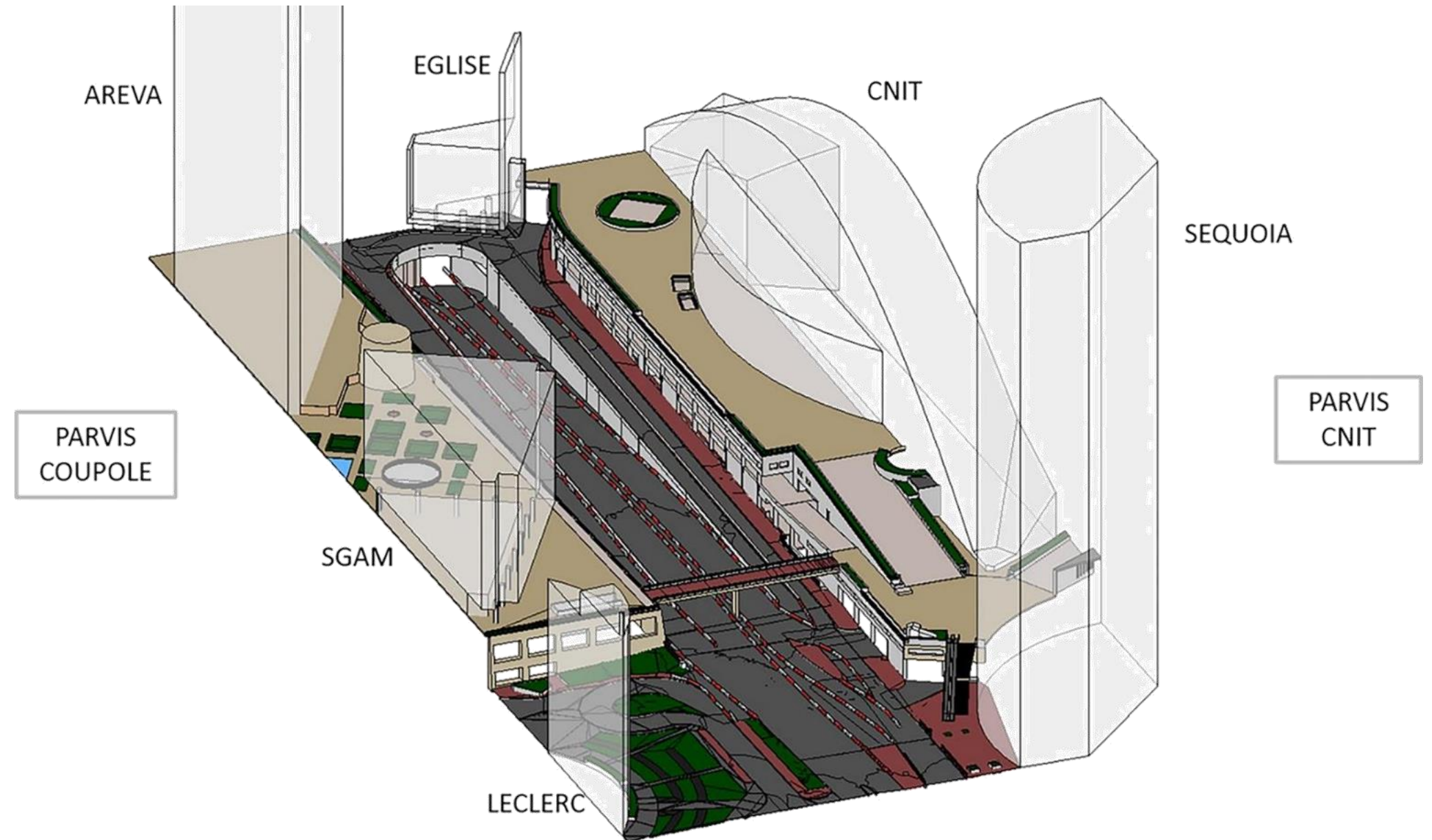
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Trinity Tower - BIM to site to BIM

1. Existing condition modeling

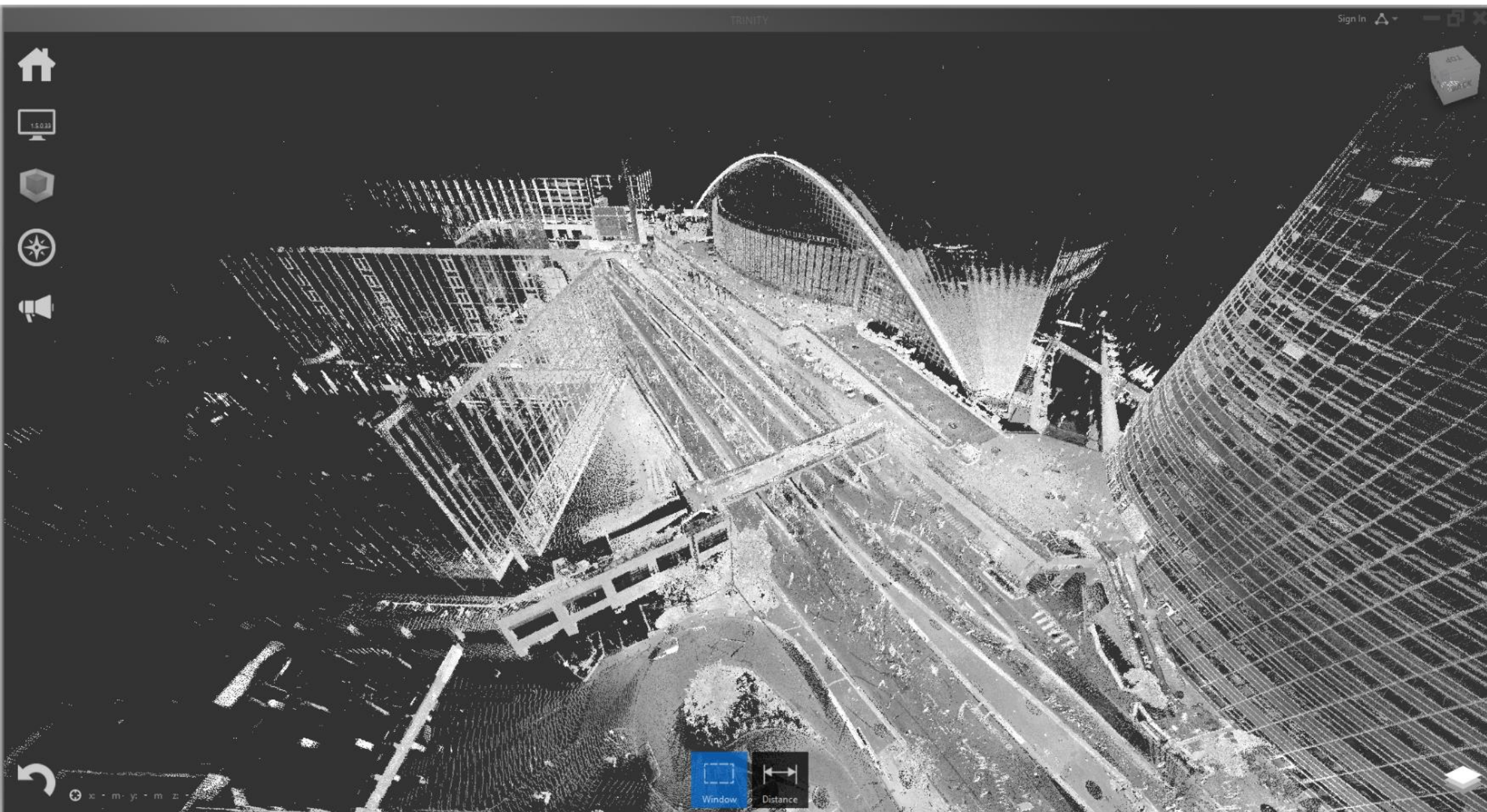
Laser scan survey:
modeling environment
point cloud based



1. Existing condition modeling



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170 scan stations

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Trinity Tower - BIM to site to BIM

2. Formwork modeling / IFC Export – PERI



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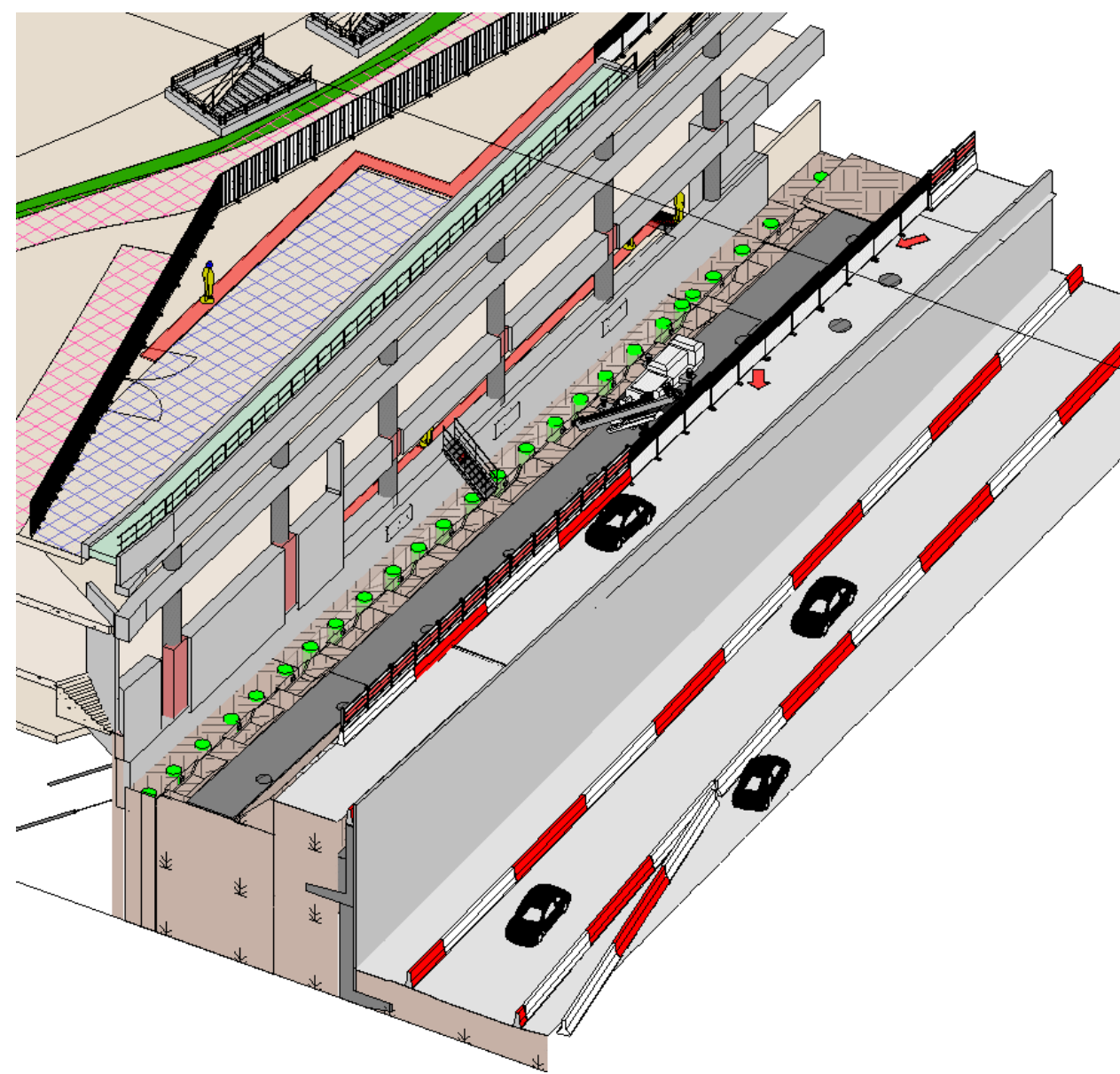
57

Trinity Tower - BIM to site to BIM

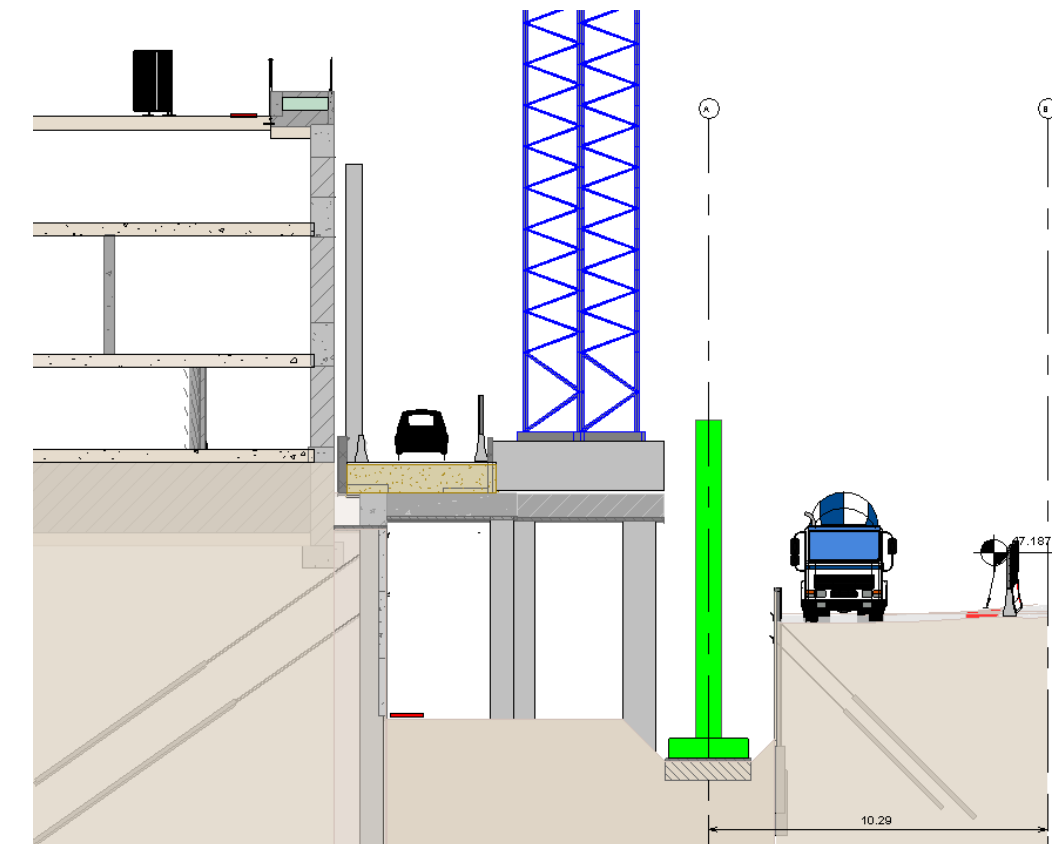
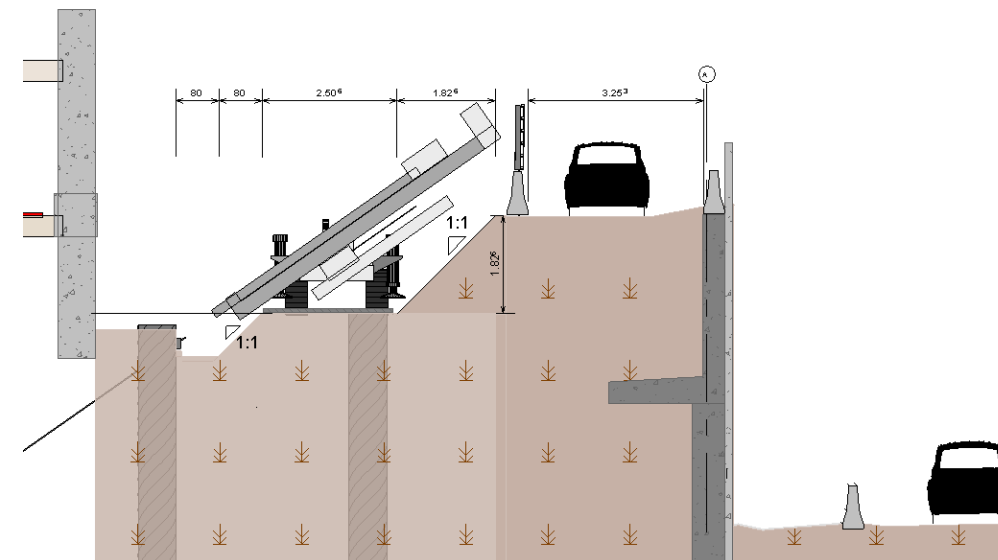
2. Sequencing preparing Formwork modeling



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- ✓ 90 bored pile
- ✓ 25 temporary pile
- ✓ IGU Ground anchor (diameter 130mm, 10 meter long on 2 or 3 levels)



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Trinity Tower - BIM to site to BIM

2. Formwork modeling / IFC Export – PERI



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■ Lesson learned – Need for IFC Export:

- → solved after the project by developing improved IFC Export – PERI CAD to IFC

3. Design Collaboration – PERI



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3. Design Collaboration – PERI

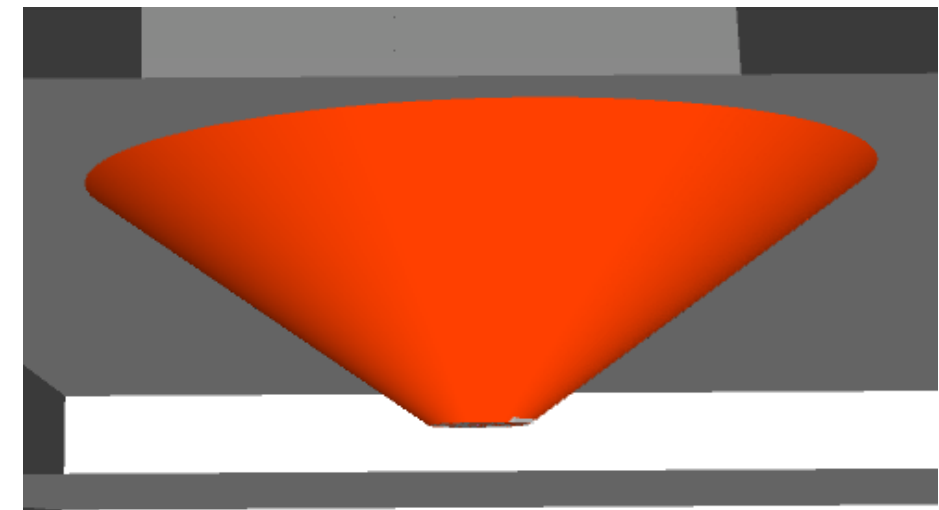
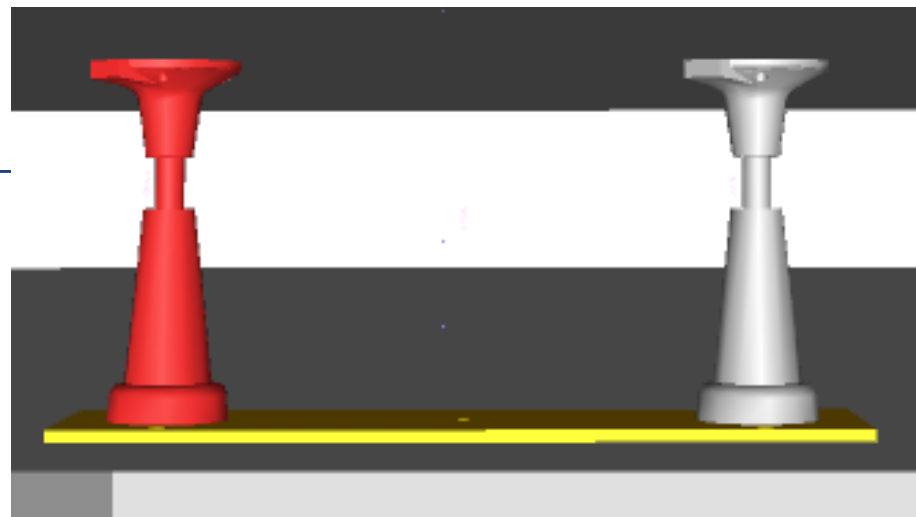
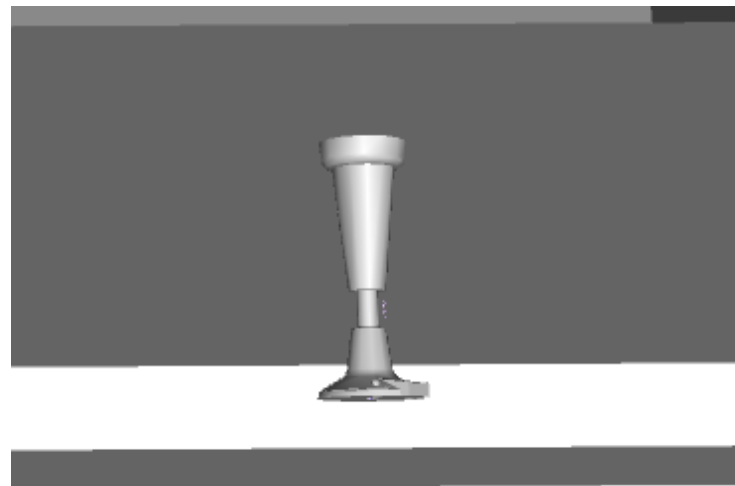
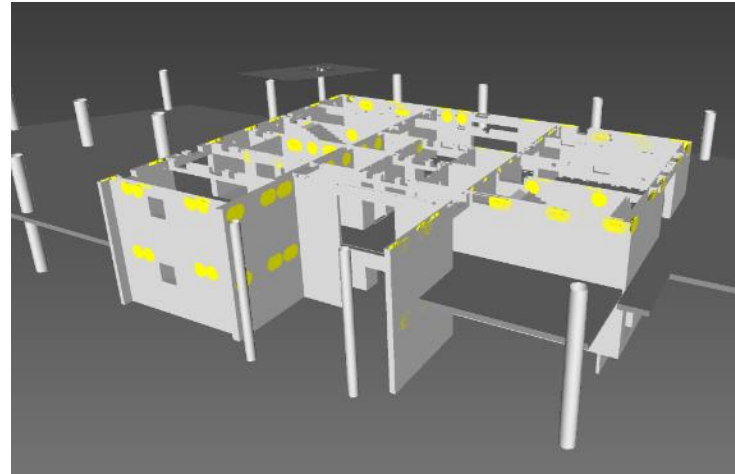


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- **Example Climbing Cone position**

- **Goals:**

- Early Access to the position of the needed climbing cones of the hydraulic climbing units
- Visual View of the affected concrete area of the cone for structural analysis purposes
- Adding properties to the cones like shear- and tension force



Properties

Object

Parent

Benutzerdaten

Tension Force 55 kN

Shear Force 70 kN

BIM

4. PERI Library+ for Revit – PERI



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4. PERI Library+ for Revit – PERI



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- **Lesson learned – Need to provide families in REVIT:**
 - → solved by developing a PERI Library+ for REVIT
 - Actual:
 - MAXIMO Wallformwork
 - SKYDECK Slabformwork
 - All needed accessories like props, anchors, ...
 - Semi automated functionalities

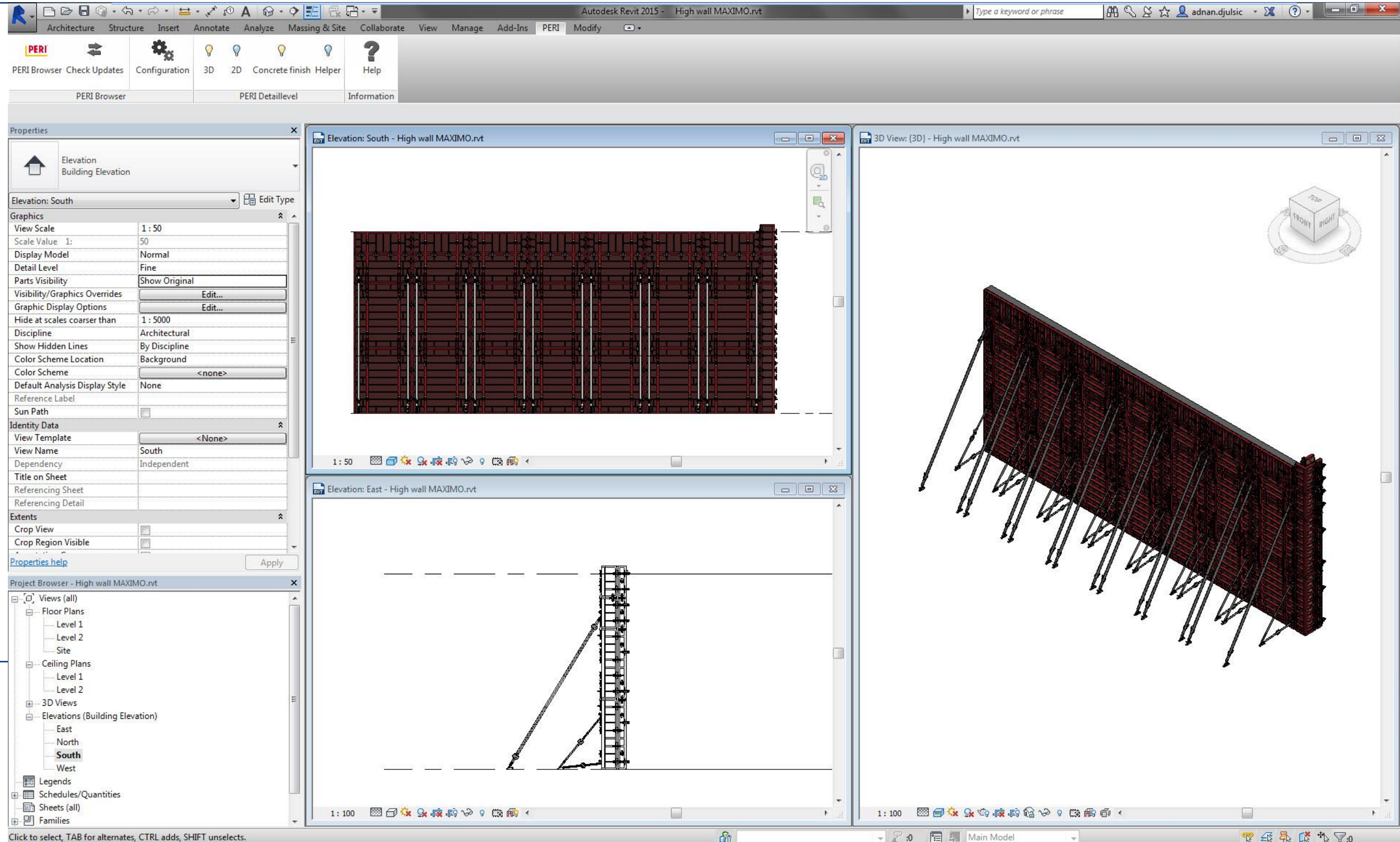


4. PERI Library+ for Revit – PERI



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REVIT

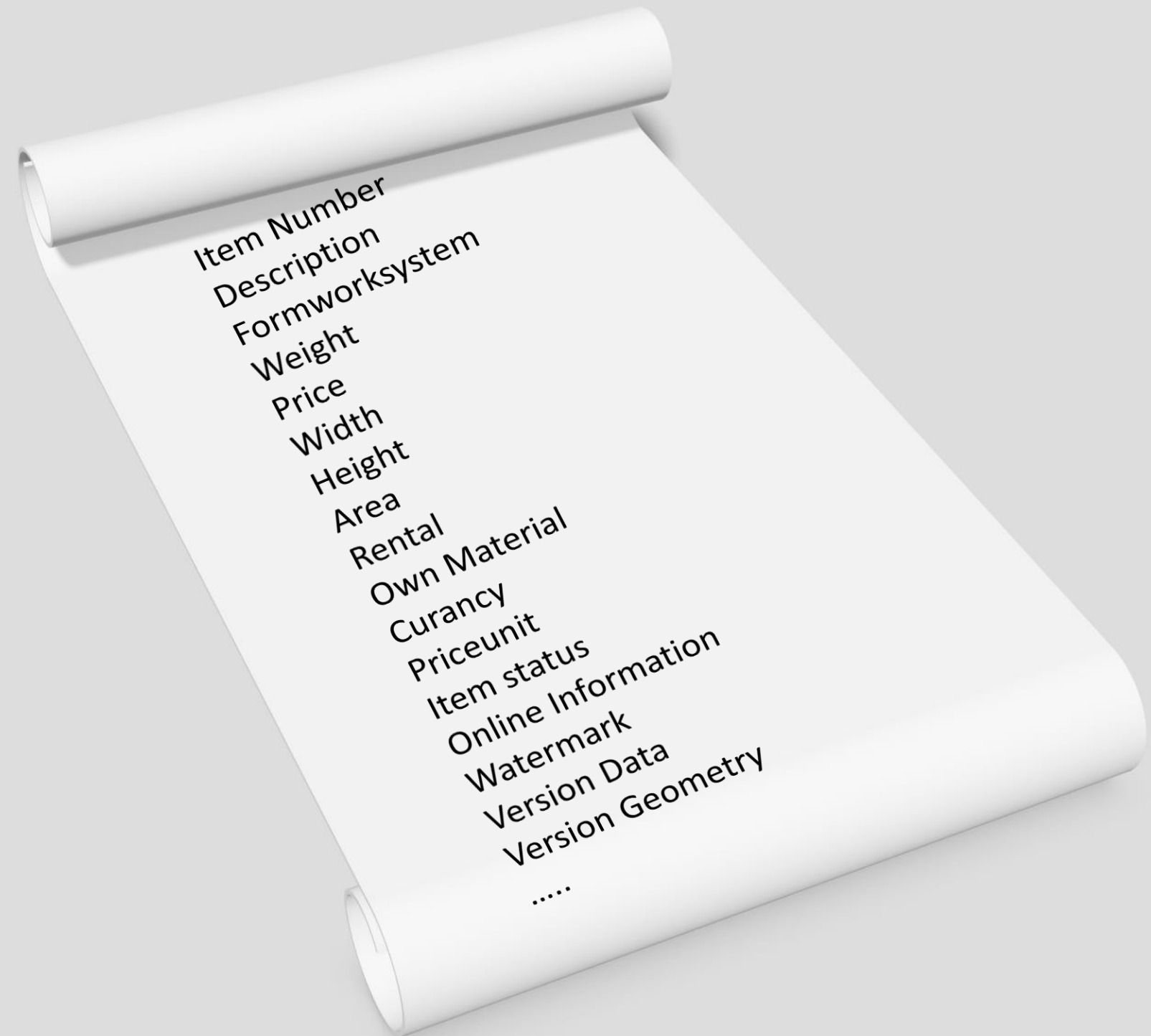


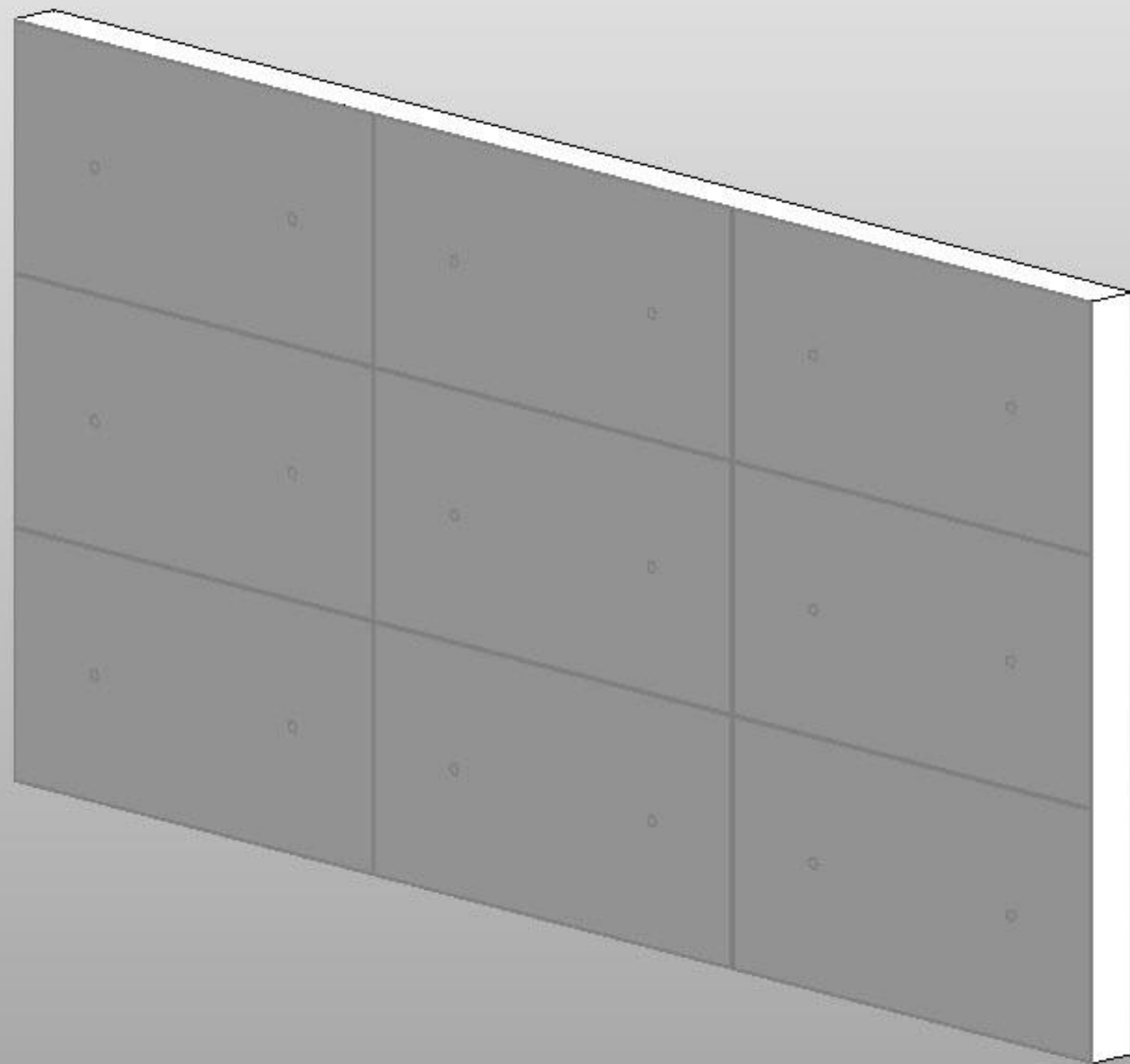
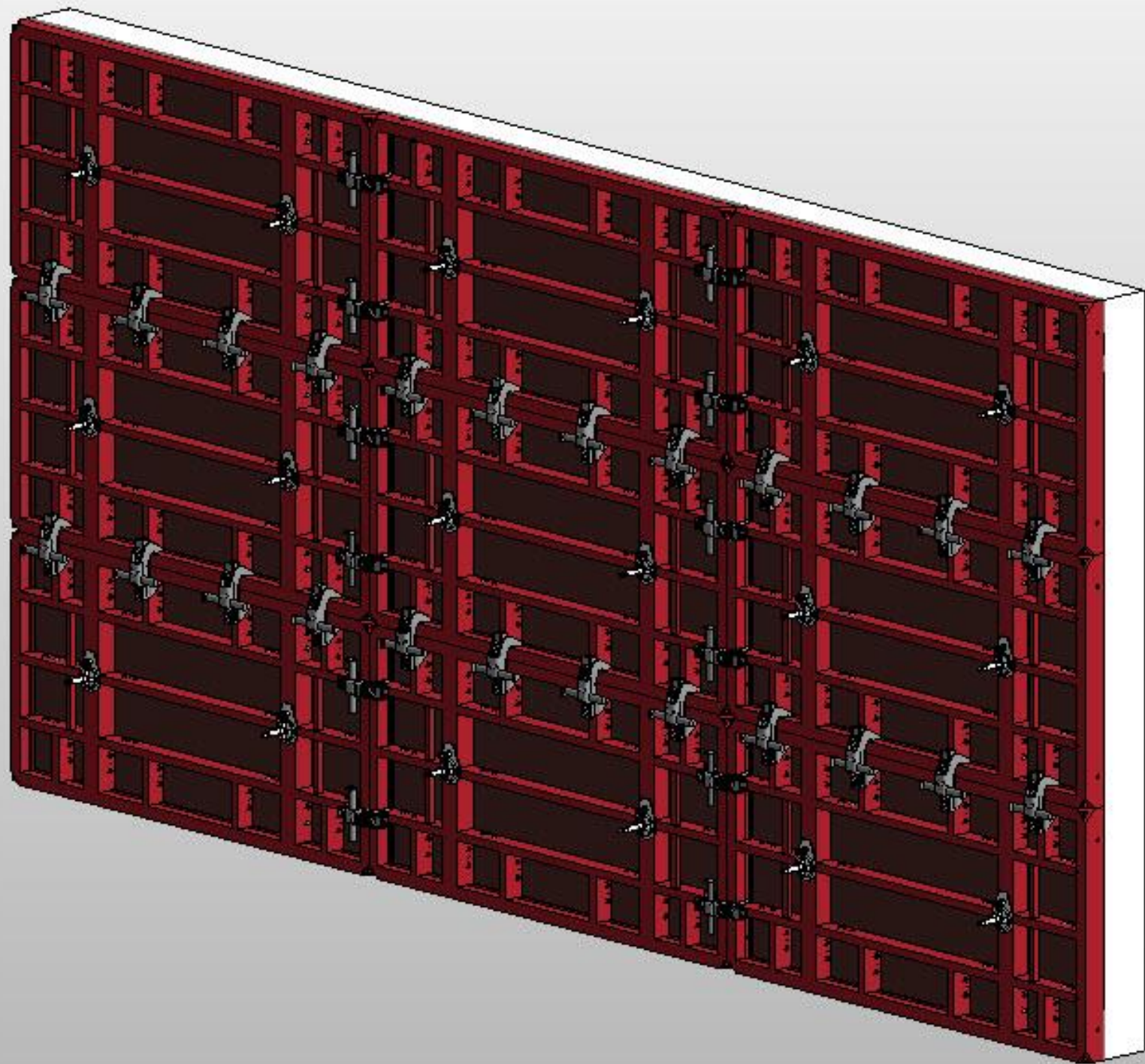
4. PERI Library+ for Revit – PERI

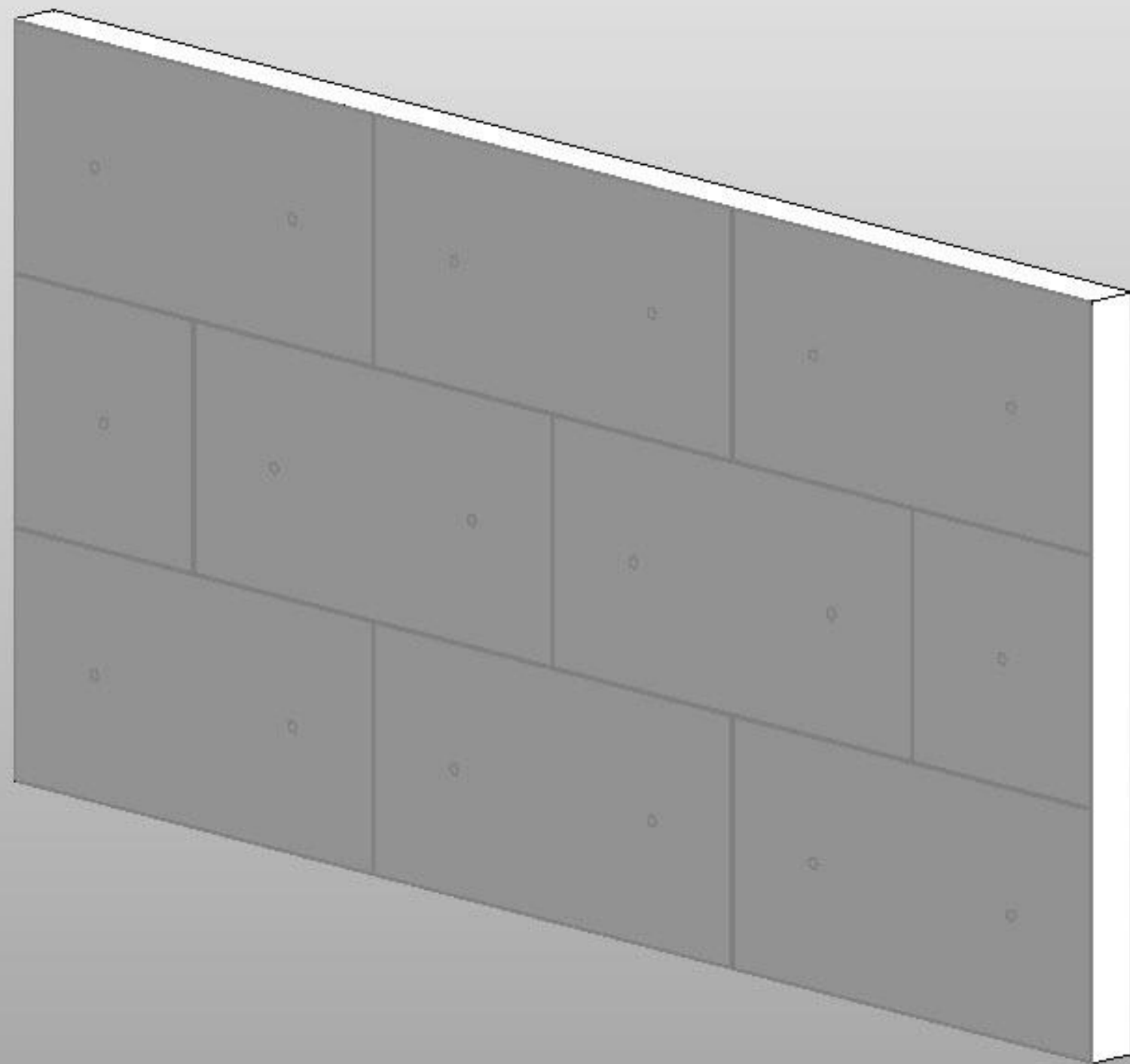
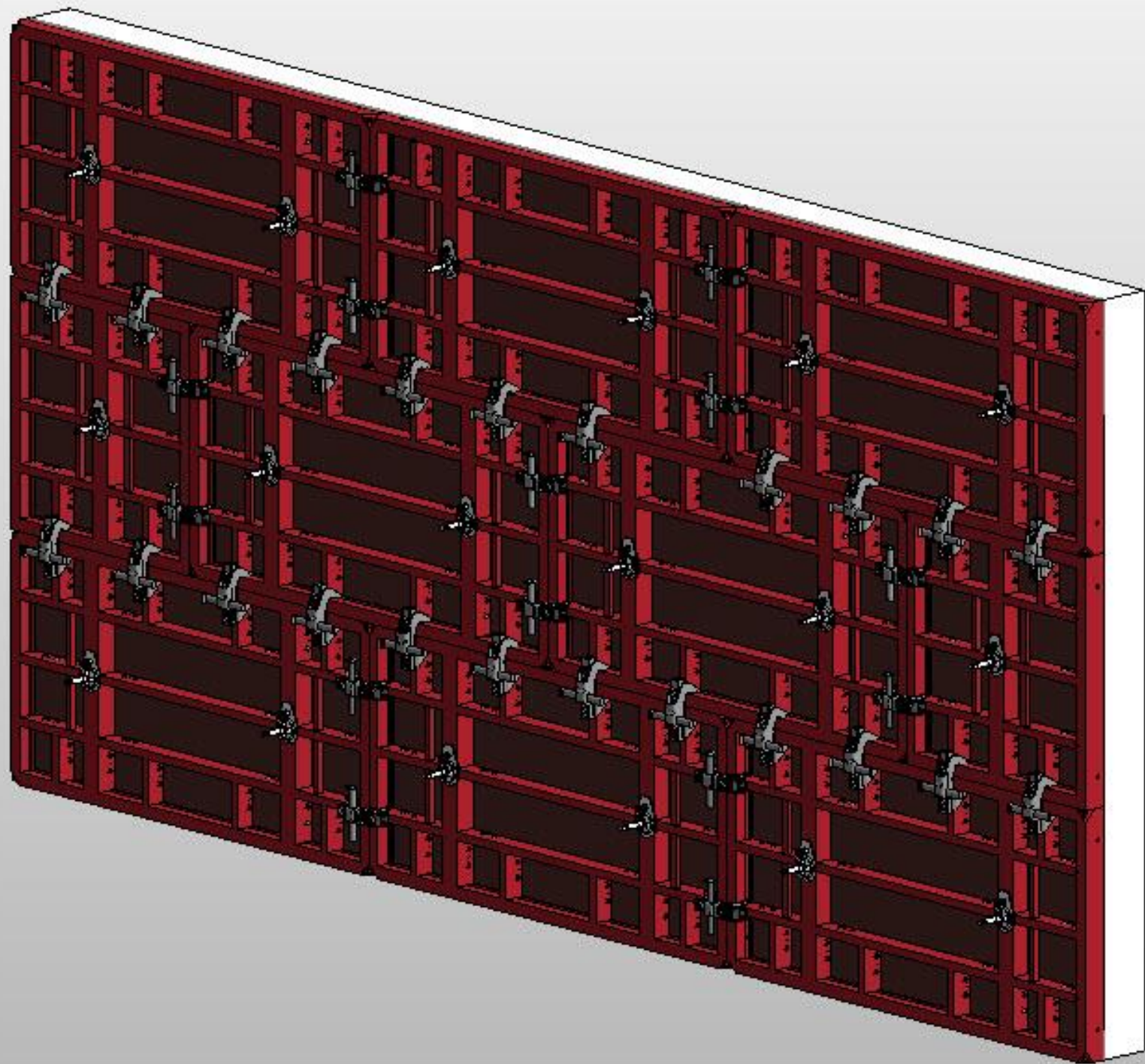


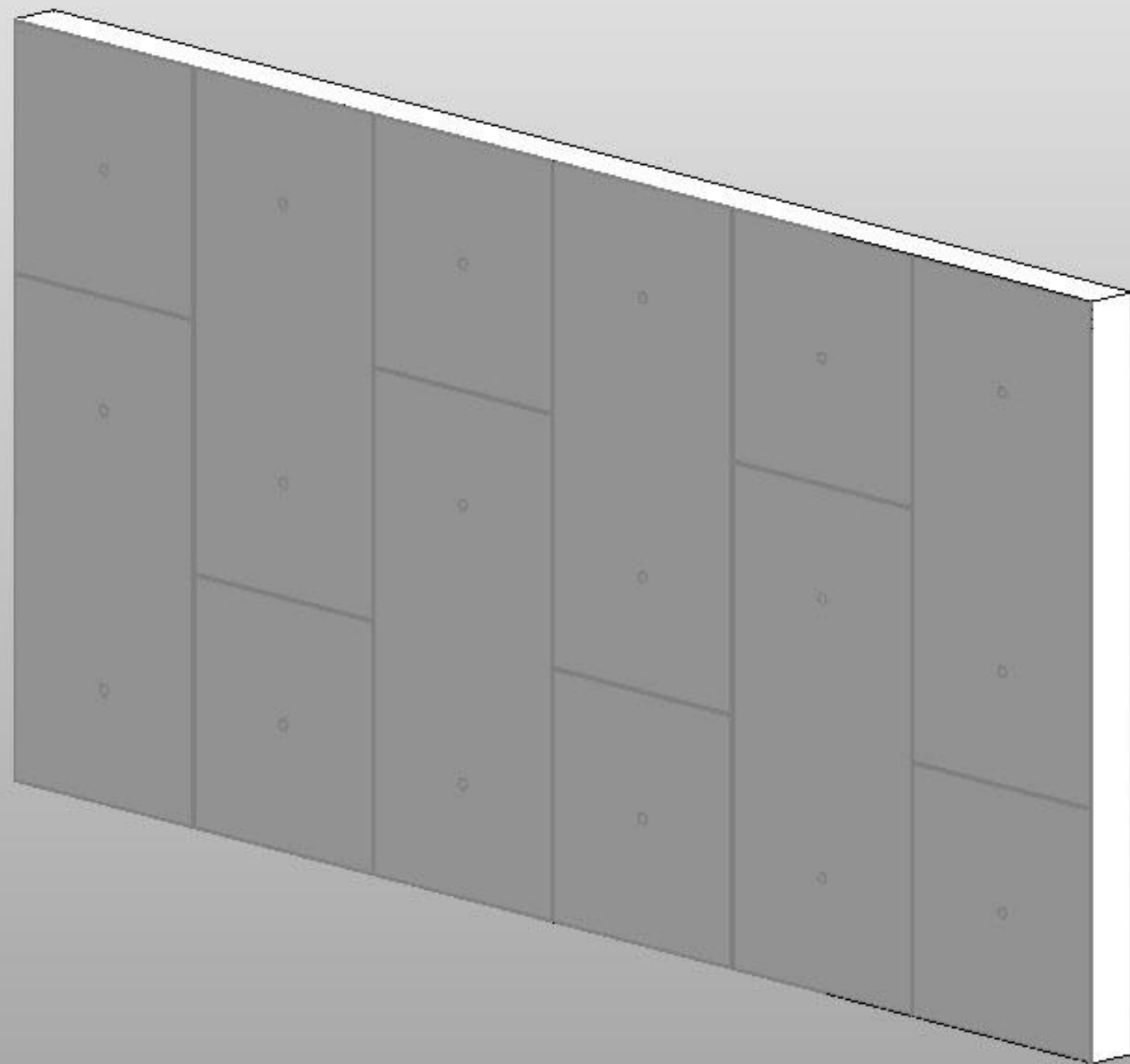
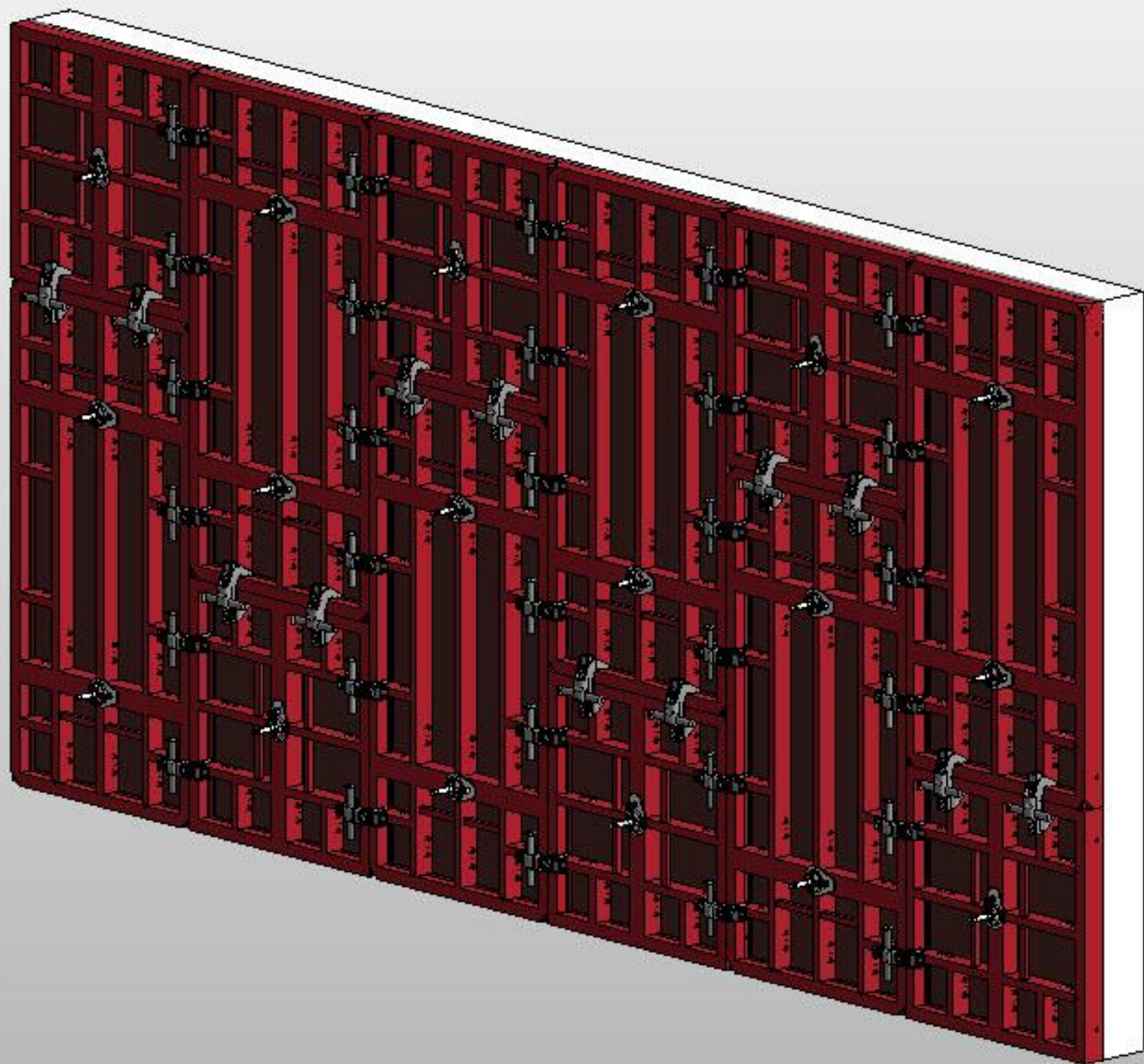
FRANCE

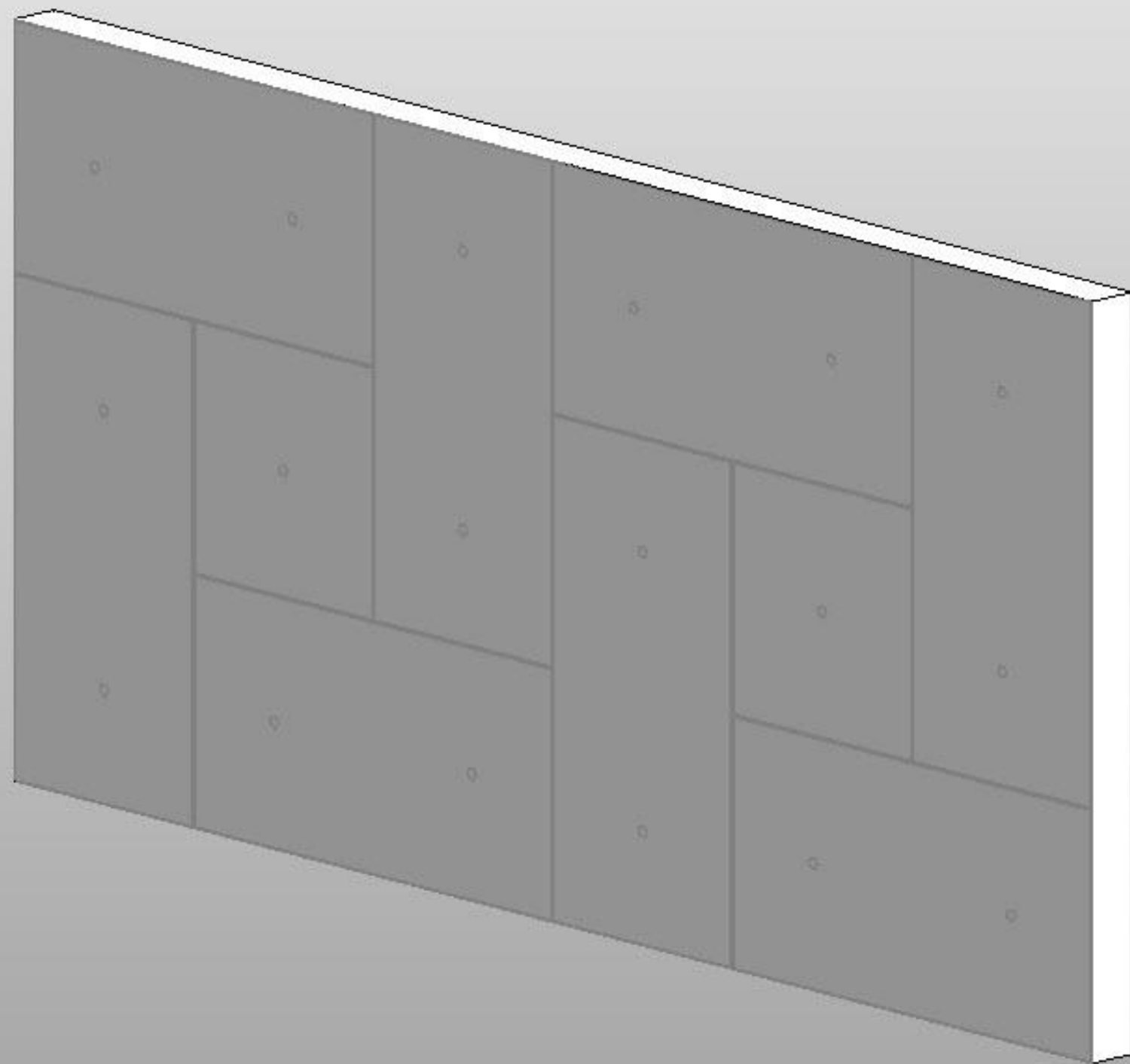
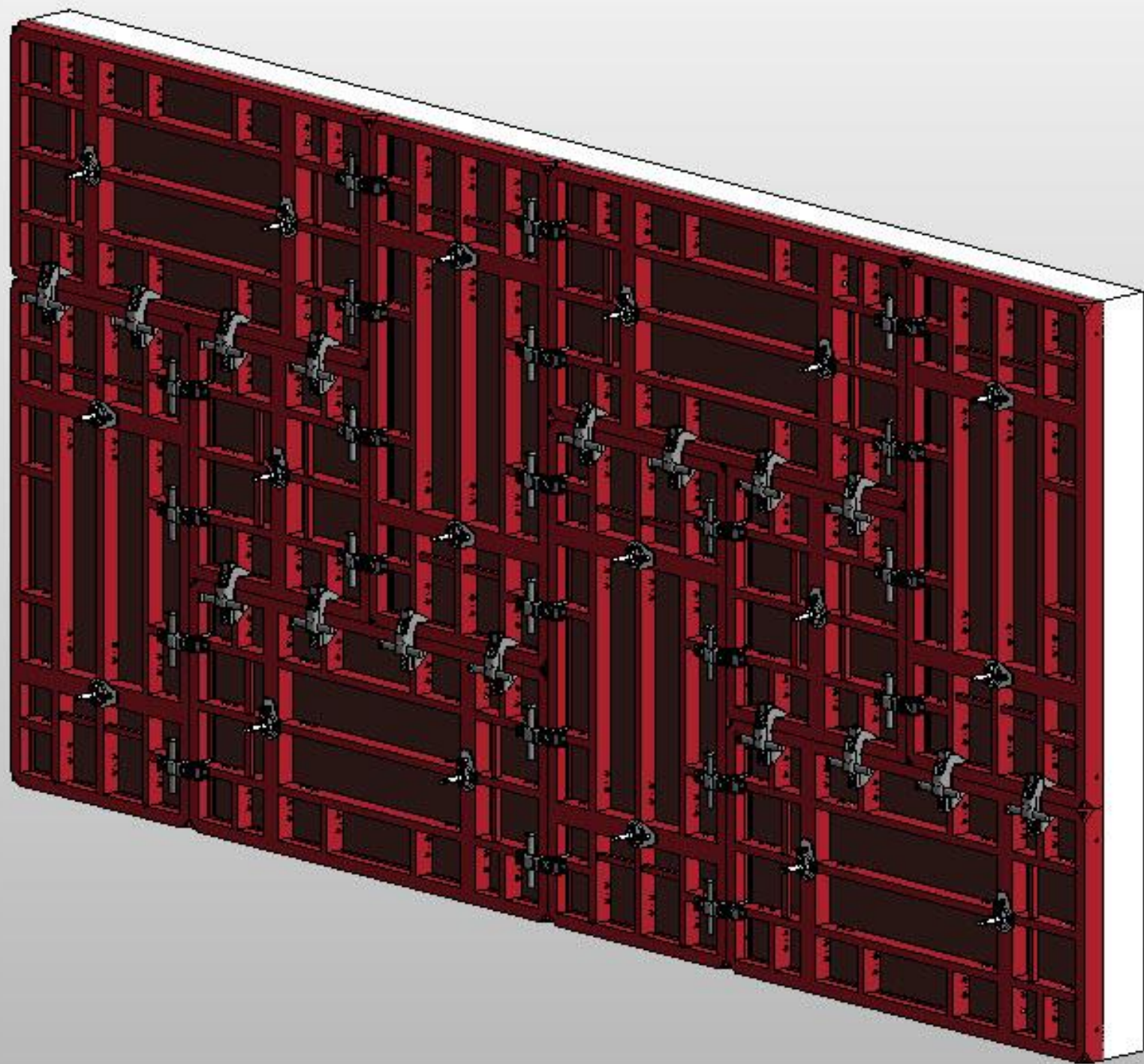
■ PERI Families











4. PERI Library+ for Revit – PERI



FRANCE

■ Download:

- <https://www.peri.com/en/products/software-and-apps.html>

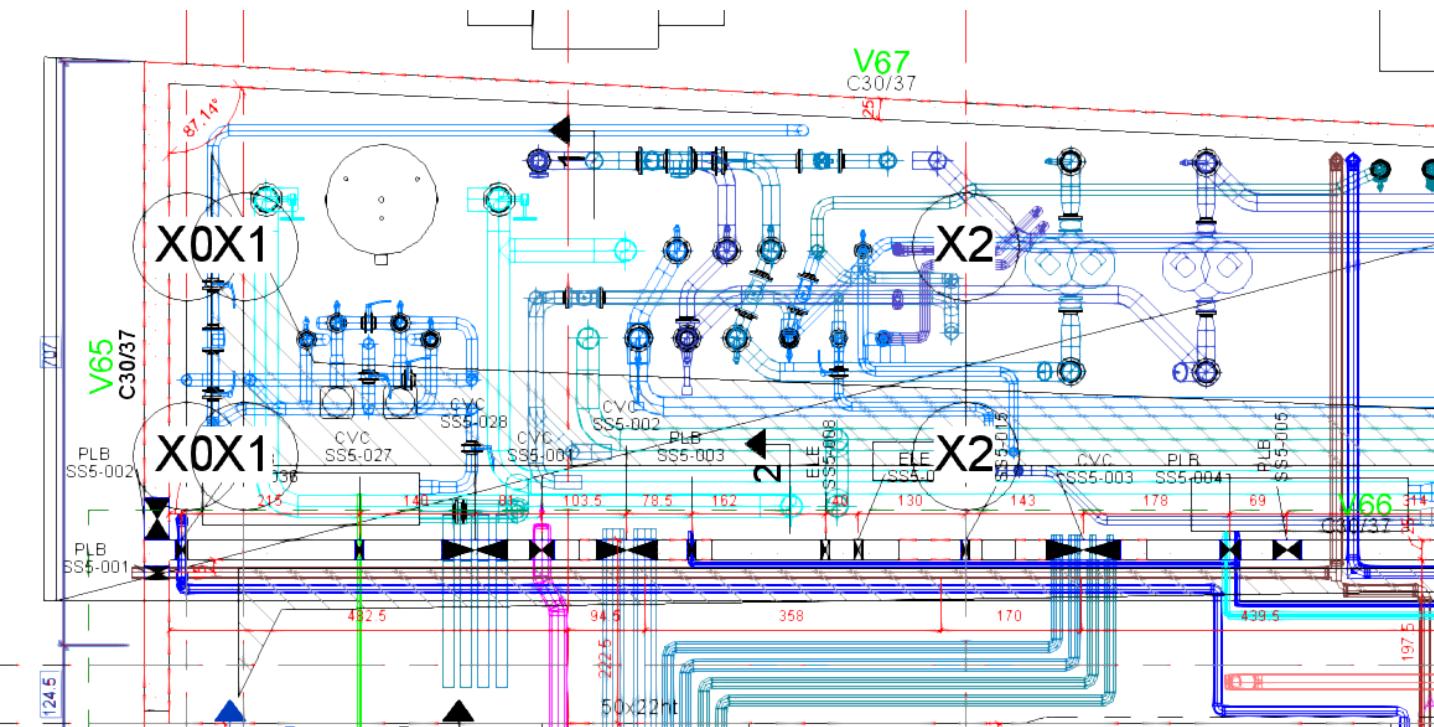
PERI Library+
for AUTODESK® REVIT®



5. MEP Coordination

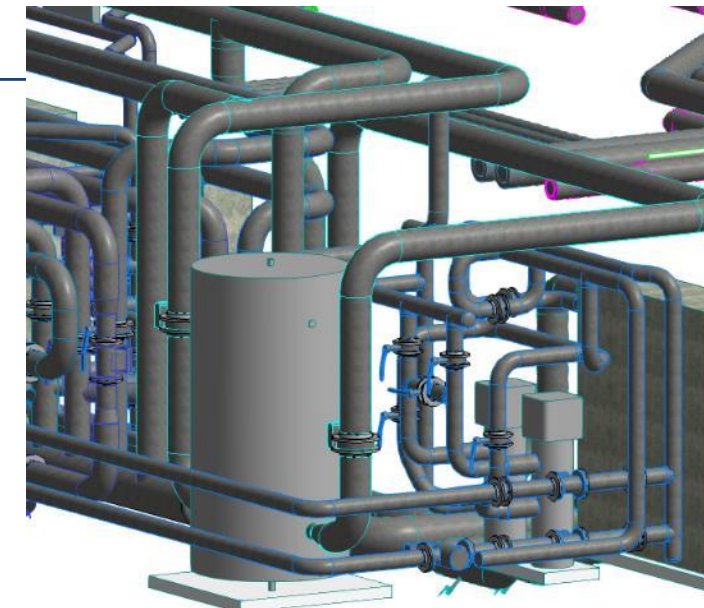


FRANCE

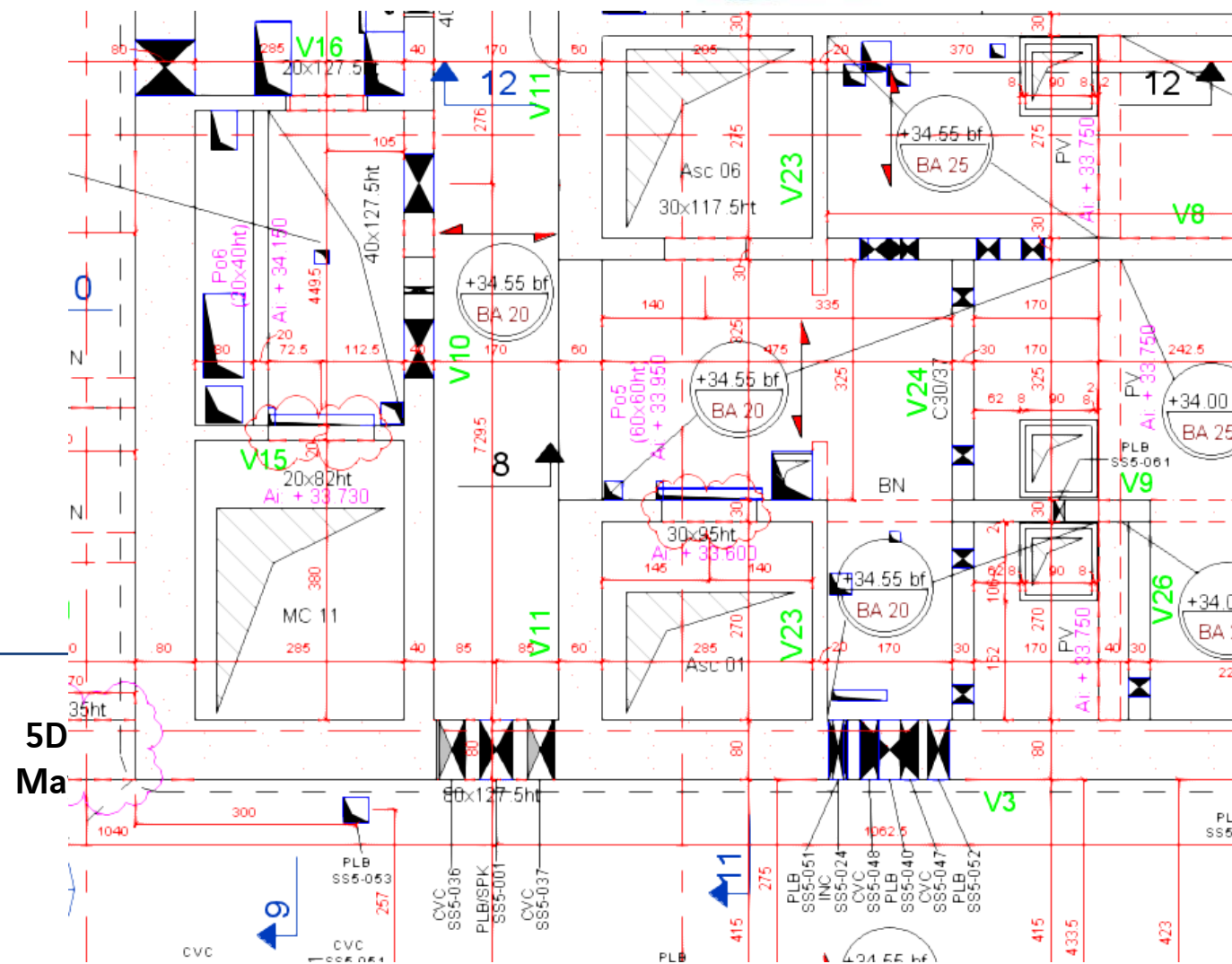
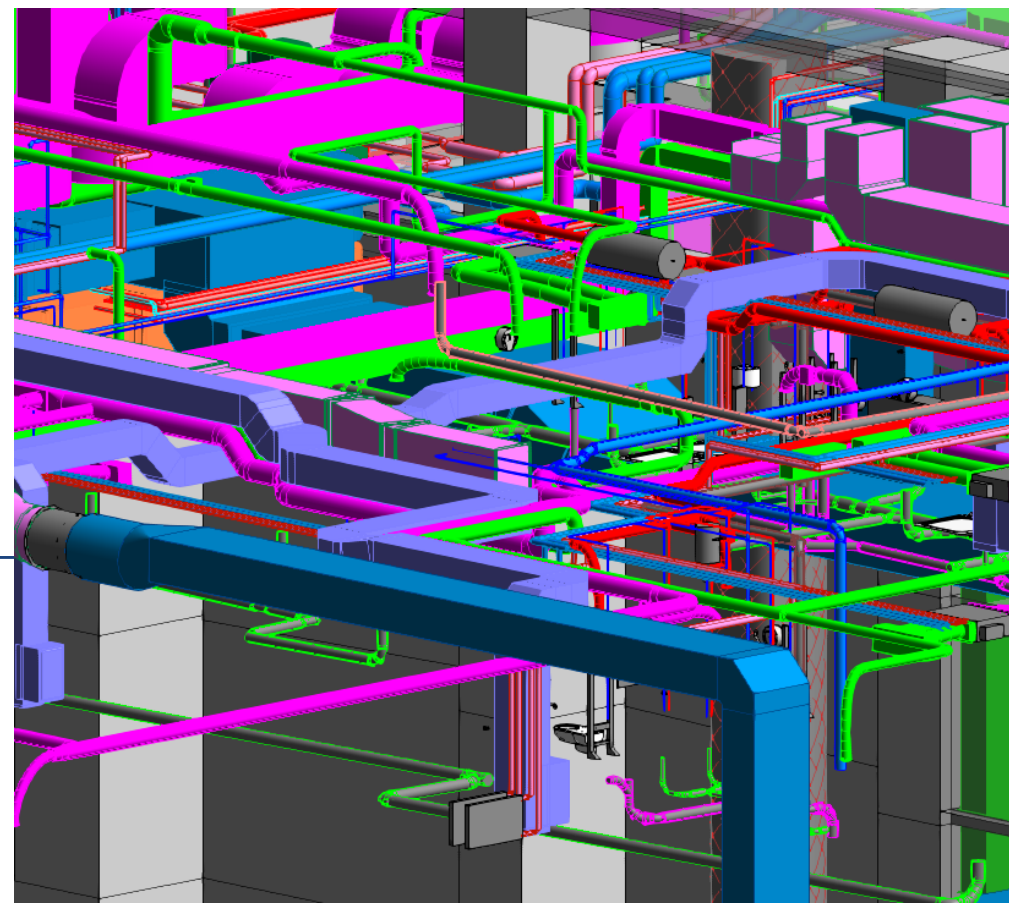


MEP Model

Coordination drawings



HVAC BIM-model



5D
Ma

Formwork
drawings

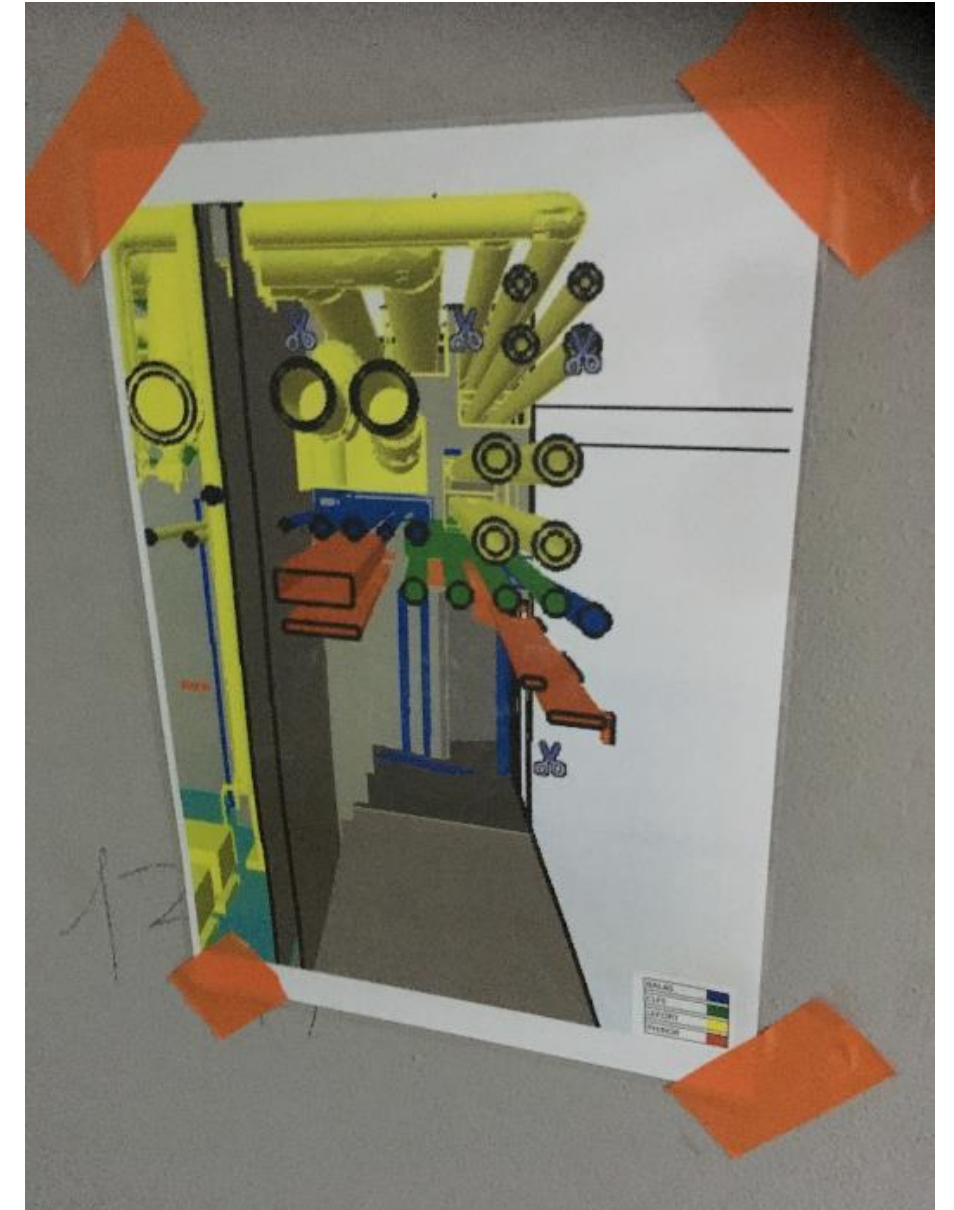
to BIM

5. MEP Coordination



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- The BIM model goes down to the site.
- The 3D views and elevations are used for the LEAN sequencing of MEP subcontractors installations during LPS meetings and then on site.



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6. BIM on Site through MR



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6. Connected BIM with Hololens MR : “to get BIM at fingertips”



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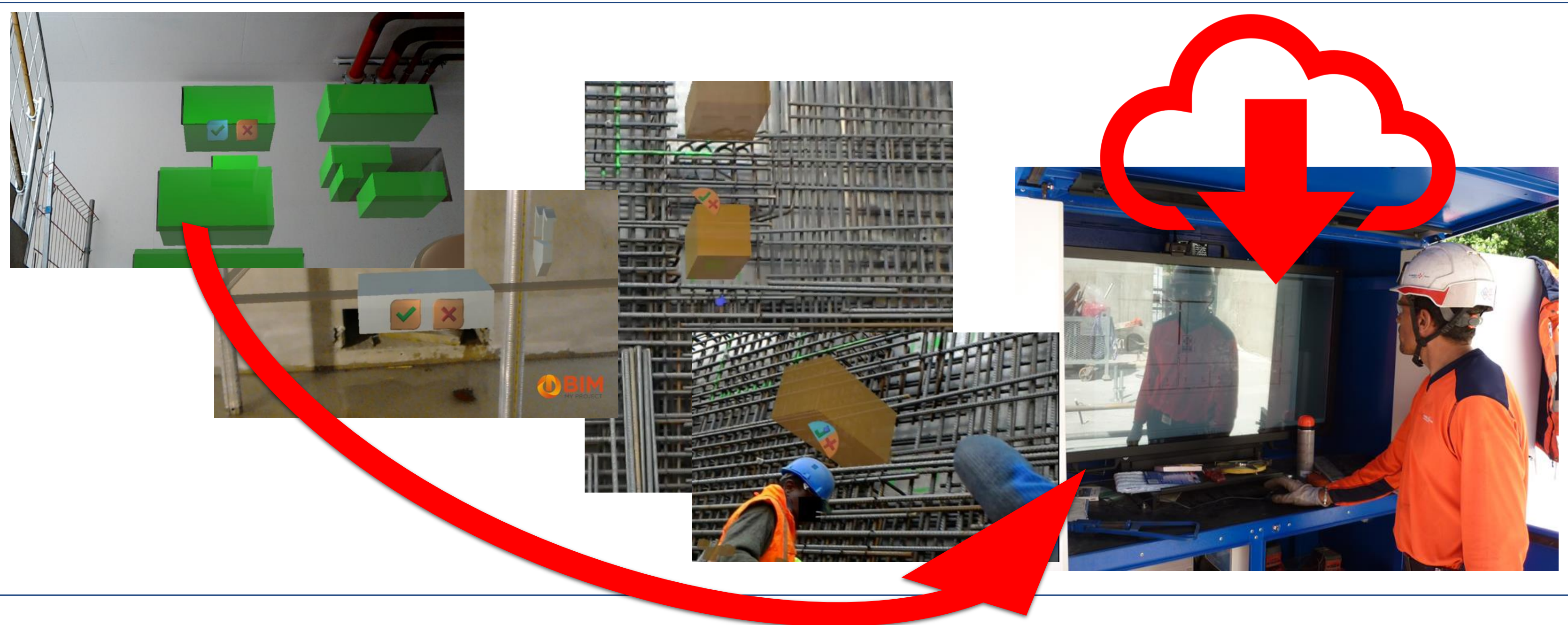
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Trinity Tower - BIM to site to BIM

6. Connected BIM with Hololens MR : “to get BIM at fingertips”



FRANCE



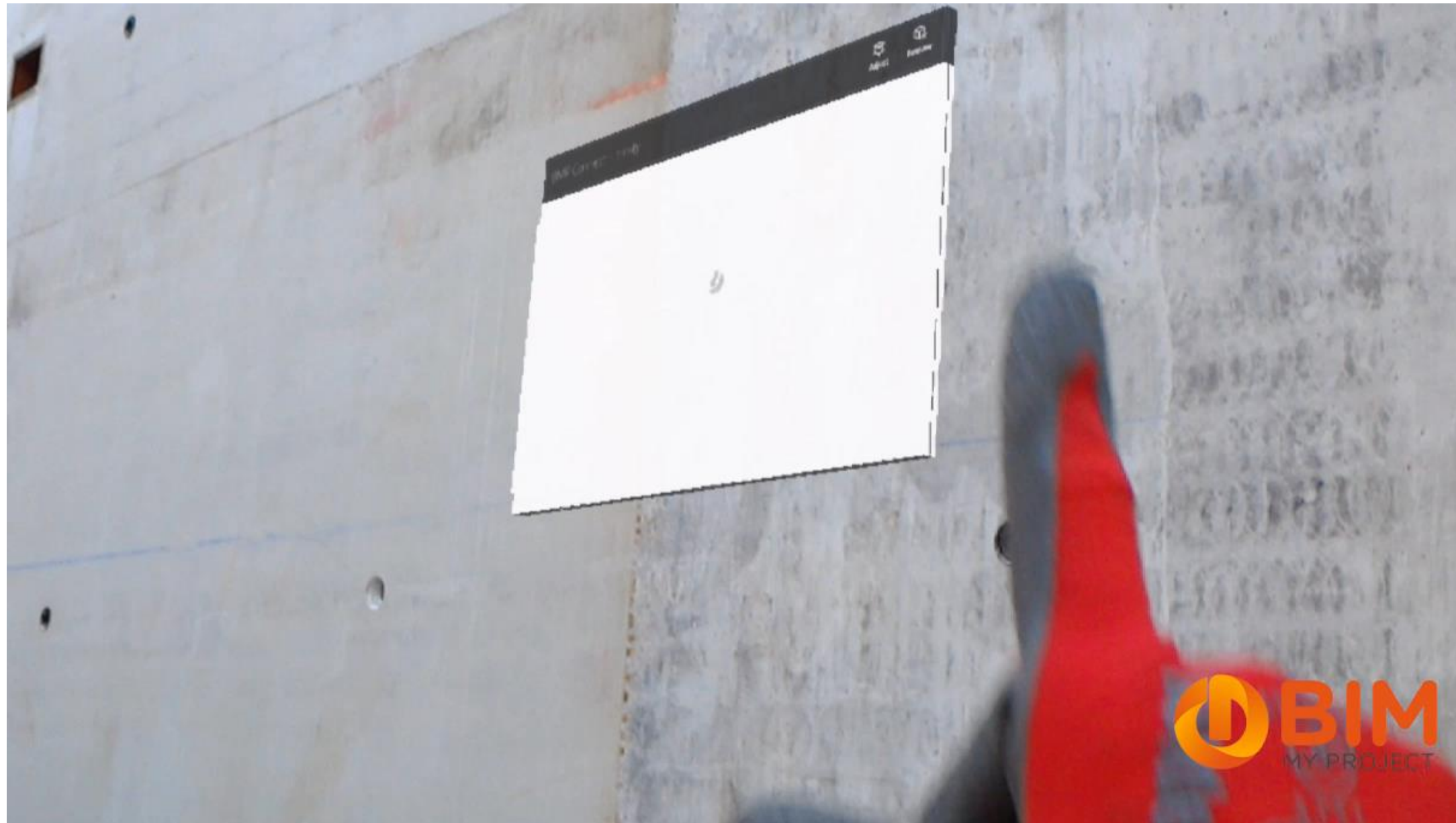
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Trinity Tower - BIM to site to BIM

6. Connected BIM with Hololens MR : “to get BIM at fingertips”



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on site MEP holes control

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7. BIM on Site through Site Digital Totem



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Trinity Tower - BIM to site to BIM

7. BIM on Site through Site Digital Totem



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It brings digital next to production in total safety and conviviality. It is smart, touch, connected, but robust and powerfull. An idea from VINCI Construction France, engineered by Itekube, improved with users.

➔ 30 are on our sites.



3.0 Site manager office with Itekube

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Trinity Tower - BIM to site to BIM

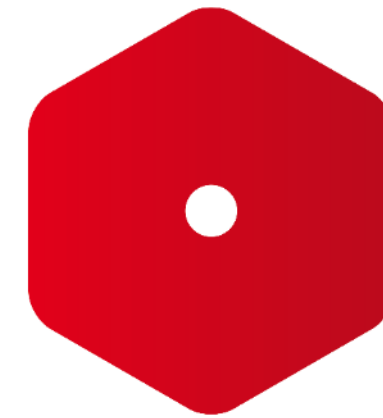
7. BIM on Site through Site Digital Totem



FRANCE

Helping people interact with complex information

2018 and beyond



itekube

7. BIM on Site through Site Digital Totem



FRANCE



Multitouch 3.0

Itekube Hardware

High Performance Multitouch Devices for Professionals

Combine high-end components and ergonomic design into efficient products

7. BIM on Site through Site Digital Totem



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Indoor devices

- ✓ 55 inch 4K Screen / 40-inch 4K screen
- ✓ Powerful integrated computer (i7+ 1070 up to Xeon+64G RAM+2xP6000 GPU - Windows 10)
- ✓ Every single component upgradable over time
- ✓ Can accommodate VR (HTC Vive, Microsoft, etc)



Model E

Model R



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Trinity Tower - BIM to site to BIM

Outdoor device : Model B



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- ✓ Ruggedized / 49-inch touch screen
- ✓ UPS, Battery, 4G antenna+router, etc

3 versions:

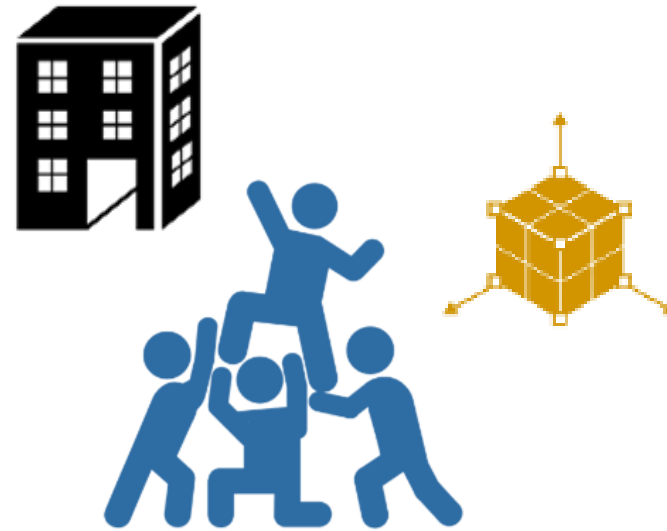
1. Outdoor
2. Shelter
3. Core for integration



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How to make BIM a success on site ?

1. Share BIM
2. Make BIM Project centric : BIM is done by and for everyone
3. Bring BIM really « on » site



Each stakeholder has to adopt and participate to the BIM evolution. VINCI Construction France has to lead the way.



R E A L
S U C C E S S
I S T H E
S U C C E S S
Y O U S H A R E