Visual Storytelling of

BIM Innovation at Foster + Partners

Lola Carbajal BIM & Design Systems Coordinator at Foster + Partners

Han Shi Head of BIM & Design Systems at Foster + Partners

Adam Menter Learning & Community at Autodesk

AUTODESK
UNIVERSITY

About the Speakers

Lola Carbajal

BIM & Design Systems Coordinator

Foster + Partners

Han Shi

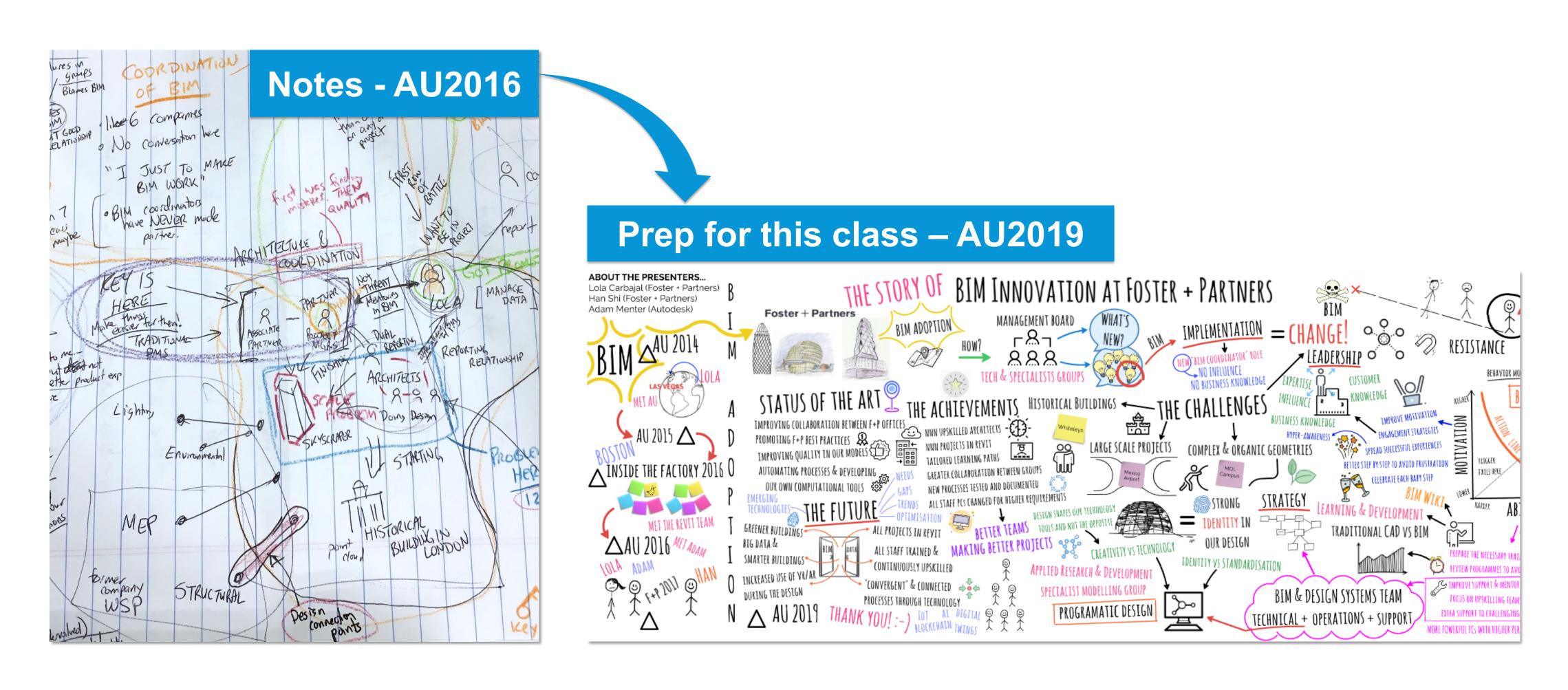**Head of BIM & Design Systems**

Foster + Partners

Adam Menter

Learning & Community

Autodesk

Conversations over the years…

Notes - AU2016

Prep for this class – AU2019

… how companies change & innovate

AU 2019

AU 2014

Mexico Airport Challenges
- Large scale project
- Complex geometry
- Design constraints

AU 2016

Jan 2015

BIM Strategy

Effectiveness Support the correct use of tools through standardised methodologies and processes

Efficiency Deliver with least effort/time

BIM A commonly understood reference for BIM within the Company

Commercial Clear relationships between scope, costs and fees

Collaboration Work better together across disparate teams and geographies

Output quality Alignment of output requirements against the Company's capabilities

Support Ensure issues do not affect timely progress

Productivity

Risk

Contractual Informed conversations and decision making

Capability

Skills Practice-wide capability across the entire design toolset

Integrated Leveraging the right tools for each deliverable in an efficient and integrated manner

Innovation Extending how tools are leveraged to best advantage through innovation

Quality Improve the quality of design output

BIM framework

March 2018

AU 2017
AEC Excellence Award

Nov 2017

Team size & structure adapts

Computational tools for large scale projects

Standards, Methods & Procedures

About Foster + Partners

"From the very beginning our practice was founded on a philosophy of innovation, sustainability and design.

We continue to learn from the past and creatively embrace the challenges of the future with a firm belief that good design makes a difference".
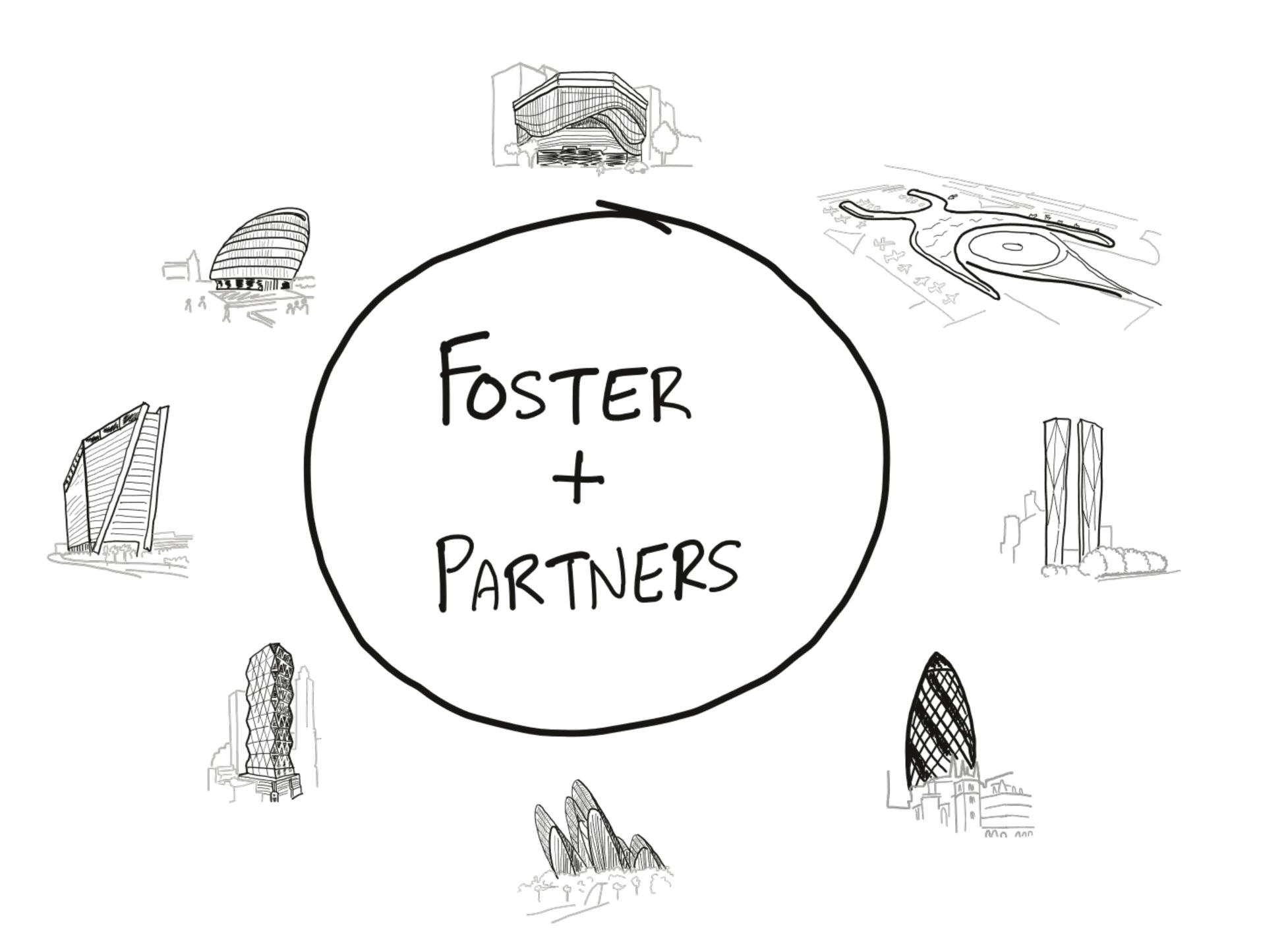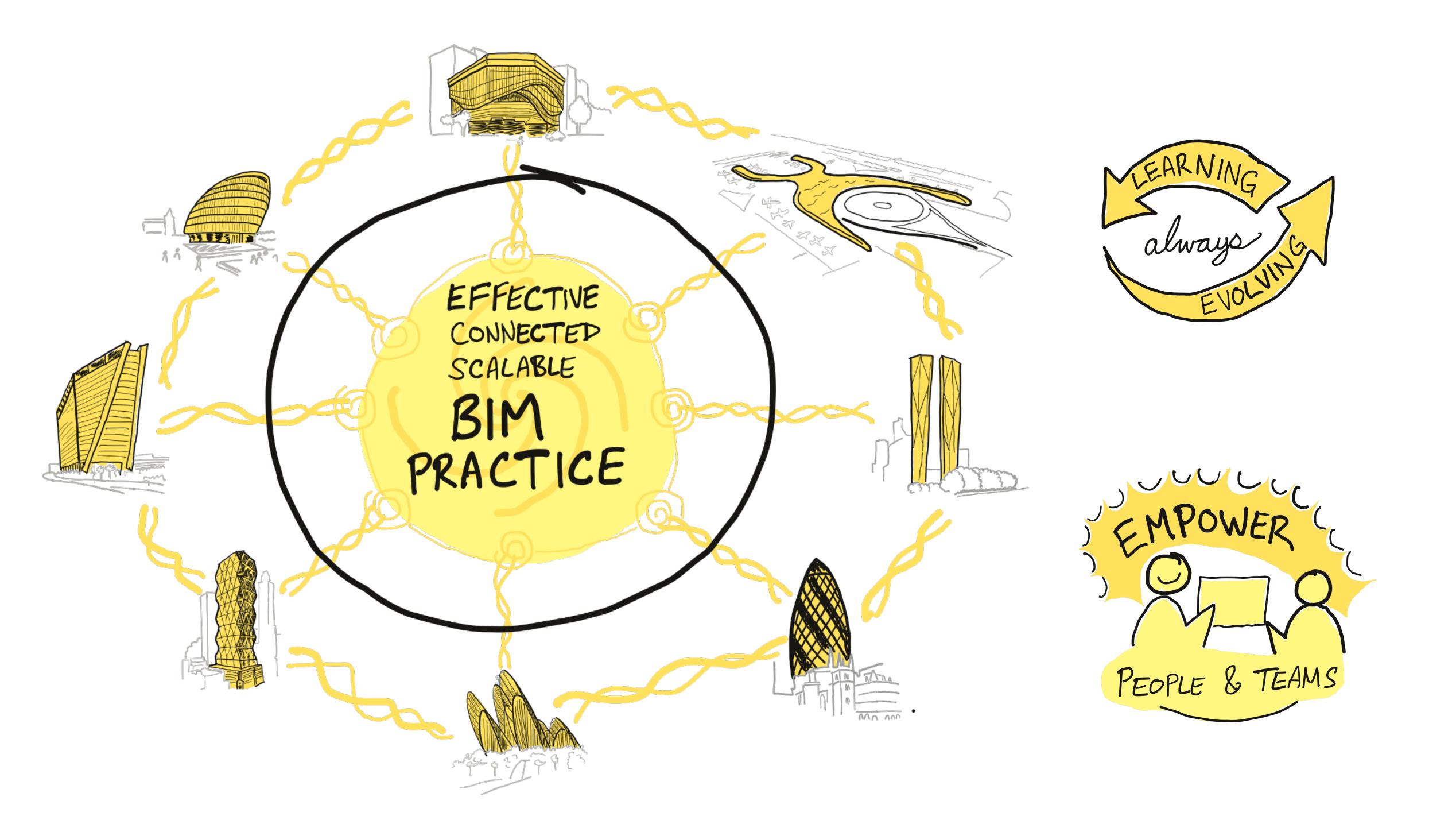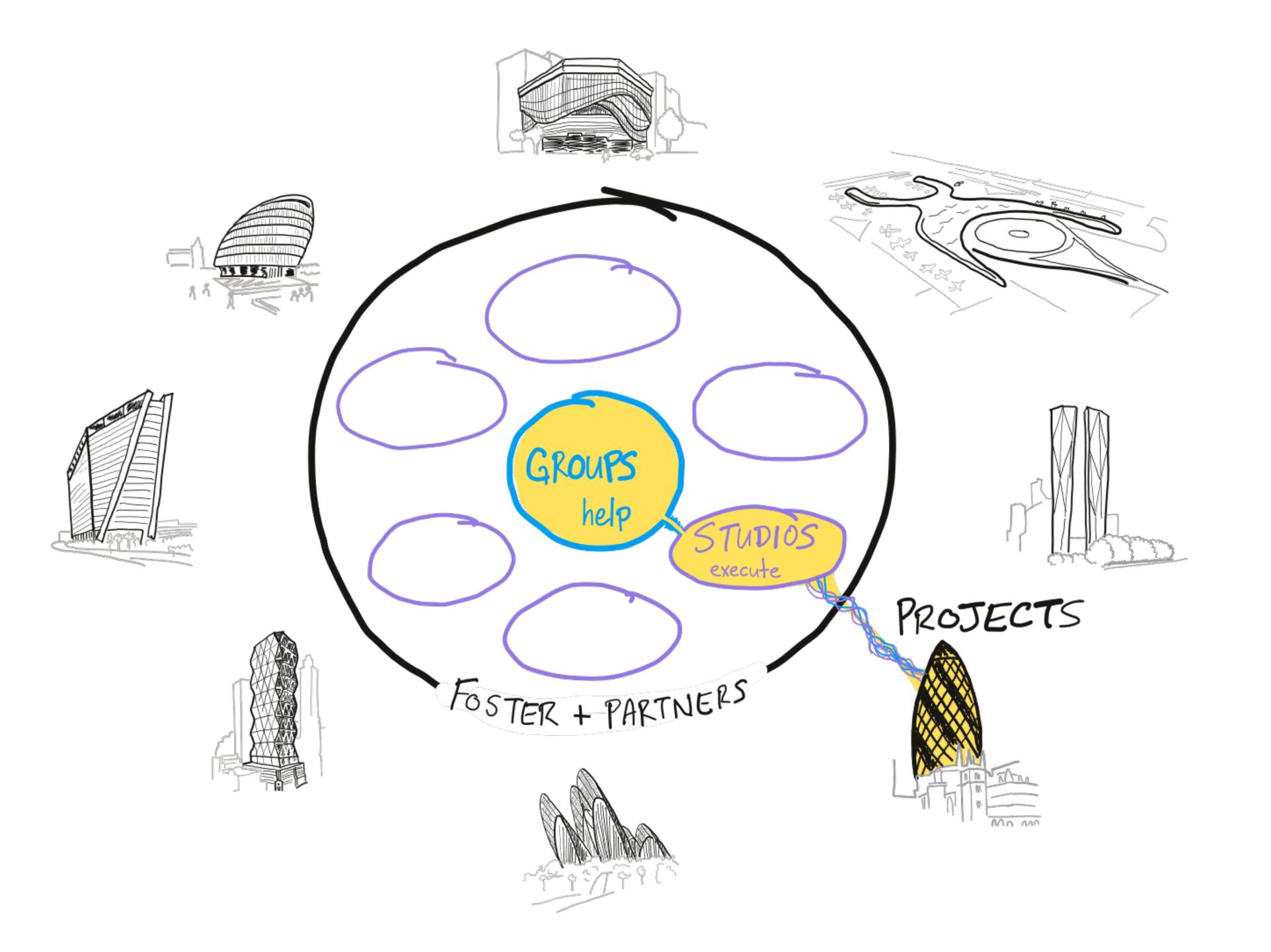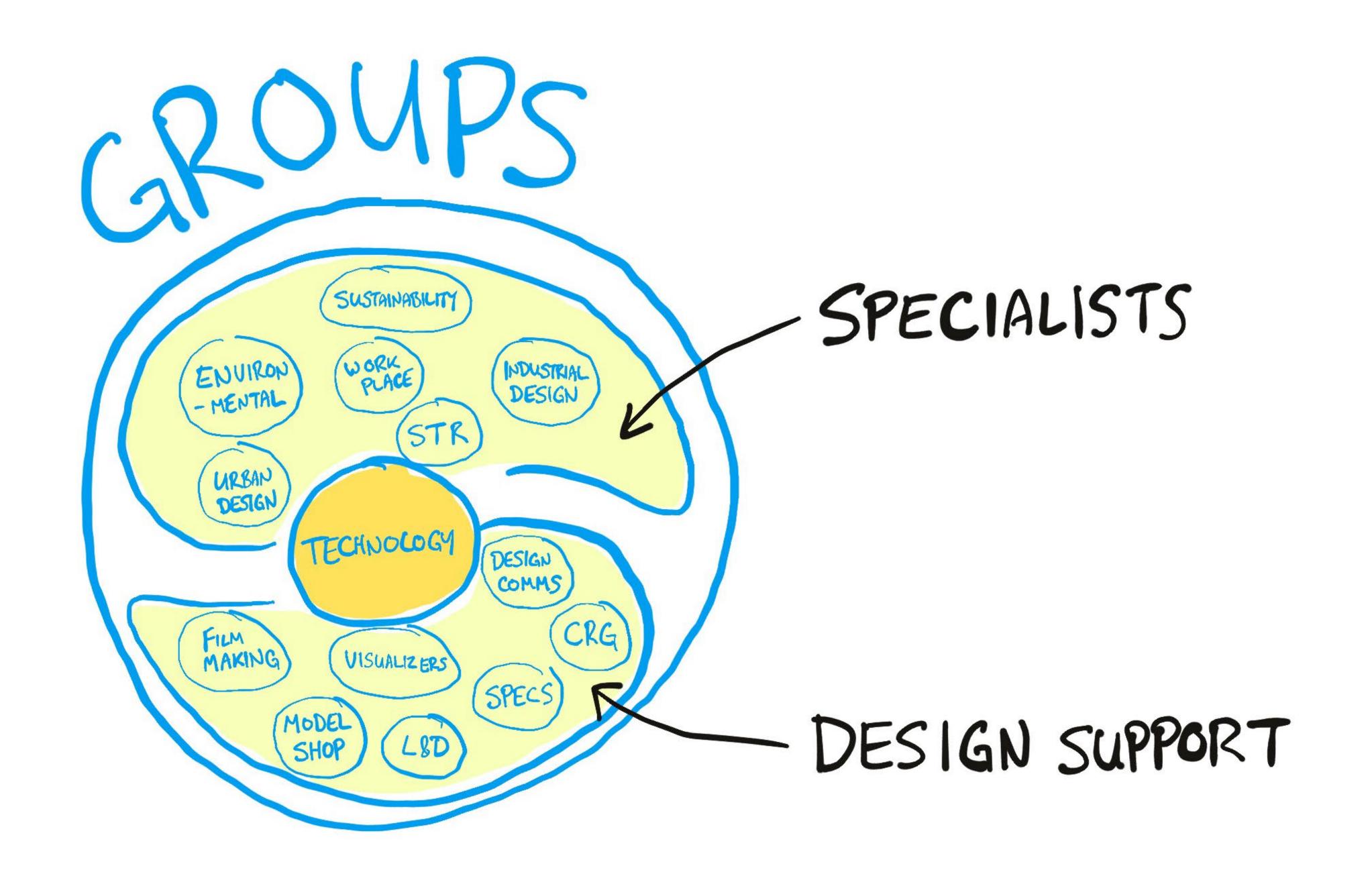
NORMAN FOSTER

Foster
+
Partners

EFFECTIVE
CONNECTED
SCALABLE
BIM
PRACTICE

LEARNING always EVOLVING

EMPOWER
PEOPLE & TEAMS

GROUPS
help

STUDIOS
execute

PROJECTS

FOSTER + PARTNERS

GROUPS

SPECIALISTS

SUSTAINABILITY

ENVIRON-MENTAL

WORK PLACE

INDUSTRIAL DESIGN

STR

URBAN DESIGN

TECHNOLOGY

DESIGN COMMS

FILM MAKING

VISUALIZERS

CRG

SPECS

MODEL SHOP

L&D

DESIGN SUPPORT

2019

BDS

2015

Early Days
of BIM

& the Mexico
Airport Project

PRACTICE BIM MANAGER

BIM MANAGEMENT TEAM

Only support team. BIM Coordinators working as part of the Studios

- **Geometrical complexity**
- **Terminal building 1,6 Km long**
- **5 buildings in total**

- **Two teams: Roof, Interiors. Different tools & workflows**

- **BIM as client requirement**

- **Limited Revit expertise**

- **Complex shell**

- **90 times bigger than a building**

- **1000 times worse**

- **737.463 elements**

- **1930 Km / 1200 miles**

- **Software-agnostic approach**

- **Shell with Rhino and Grasshopper**

- **6 different pieces of software**

- **MicroStation for visuals**

BIM Models

- 165 pieces
- Excel database
- Small workflows
- Dynamo scripts to import Excel data into Revit
- Automation

Models split by discipline, Level, zone and content: 165 models in total

Left panel

1st

NUEVO AEROPUERTO INTE[RNACIONAL]
Foster + Partners, FR-EE

2nd

EAST SIDE ACCESS
LiRo Group

3rd

ARNA-BERGEN, ULRIKEN T[UNNEL]
Norconsult AS

Center panel

INFRASTRUCTURE

1st PLACE

Project:
Nuevo Aeropuerto Internacional de
la Ciudad de Mexico

Firm:
Foster + Partners, FR-EE

Owner:
Grupo Aeroportuario
de la Ciudad de Mexico

Location:
Texcoco, Mexico City, Mexico

Software:
Autodesk Revit,
Autodesk Dynamo Studio,
Autodesk Navisworks

"

*There is no doubt that
the BIM models and the general
workflow helps the communication
and collaboration on this project—
not only within our own design
team, but also between all the
various consultants. It allowed us
to navigate through the model with
real-time rendering, giving us a better
understanding of existing issues and
to evolve collaborative solutions with
the various project teams.*

*Jesus Perucho Alcalde,
BIM Coordinator,
Foster + Partners*

Taking Off With BIM

For Mexico City's New International Airport (Nuevo Aeropuerto Internacional de la Ciudad de Mexico - NAICM), Foster + Partners and FR-EE had one core goal in mind: Put people first.

At 470,000 square meters, it will be one of the world's largest airports; its flowing form is inspired by flight. But its primary design focus is the passenger experience. With an open air concept, travelers will be able to see the gates and where they are heading in a space full of daylight. The design also anticipates the predicted increase in passenger numbers by 2028 and beyond, along with an expansion plan through 2062 for an eventual six runways.

The terminal itself is almost 1.5 kilometers in length and a single, continuous gridshell with an innovative roof and fixed boarding bridges in one enclosure. The computational design approach for the roof is unique in the world for its complexity of generating a double curvature light structure with long spans of 160 meters, serving as a roof, façade, and structure at the same time. With spans of more than 100 meters, the lightweight glass and steel structure is designed for challenging soil conditions as well.

"We believe that regardless of the size of the airport, people should always come first," says Martha Tsigkari, Partner, Applied Research and Development team, Foster + Partners. "Therefore, the primacy of passenger experience is a consistent theme throughout all our work. A complex building such as the passenger terminal building, involving collaboration with multiple disciplines, would not have been possible without the appropriate coordination workflows, procedures, tools, and technology."

First net-zero airport

From its inception, Foster + Partners and FR-EE also set out to design one of the most sustainable airports in the world. NAICM aims to become the first net-zero airport and achieve LEED Platinum certification for the terminal building and LEED Gold for the ground transportation center and control tower.

Check-in area. Image courtesy of Foster + Partners.

As part of the project, the surrounding natural landscape will be restored, improving the quality of life in the Valley of Mexico and the eastern half of the city. The airport will run on 100 percent renewable energy, using biogas generated from a sewage treatment center nearby and photovoltaic roof panels.

Water will be 100 percent reutilized. Rainwater will be harvested to support water supplies; wastewater will be treated to be reused in external areas. Three thousand hectares of greenery will be also created around the airport to offset the loss of vegetation due to construction. The biodiversity of the area will be maintained in collaboration with a group of specialists who will facilitate the management of plant and animal species.

Improving design decisions with BIM

With the ambitious sustainability and terminal design goals, BIM became crucial to making it happen. The sharing of the models from the very early stages made it possible for all teams to access updated information, enabling a smooth transition from the concept stage to a more detailed stage of the design as well as construction.

Image courtesy of Foster + Partners.

In the design stage of the terminal's interior, BIM was key for coordination and bringing together several options from different disciplines. The data extraction from the model provided more control when scheduling all of the elements as well as efficient quality auditing. The design teams solved both large and small clashes in the model while also identifying and eliminating duplicates and missing elements. A greater level of model analysis assisted design decisions, including the studies of lighting, wind, and energy.
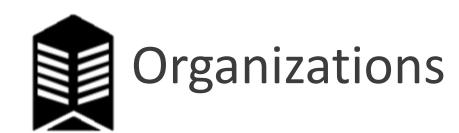
15,000 drawings created with BIM

The documentation for the terminal building was similar in scale to an urban-planning exercise. The team created directly from the model more than 10,000 construction documents and 5,000 data sheets for each of the rooms in the buildings. It's estimated that they would have had to hire 1.5 times more staff to produce the same amount of drawings without BIM.

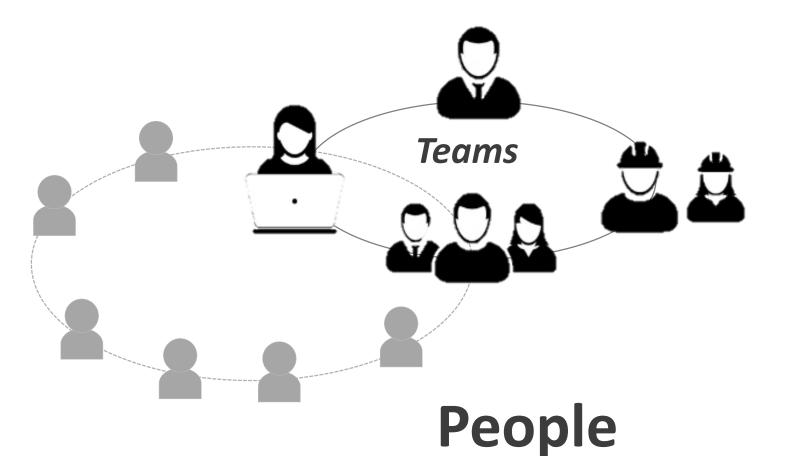A weekly BIM coordination schedule helped create an even faster workflow for collaboration, coordination, and production. This process included sharing and receiving multiple discipline models; processing, navigating, and analyzing the models; creating issue reports and collecting viewpoints; communicating the issues to the consultants sharing the viewpoints; and solving the issues—all in the same week. This workflow was repeated every week of the design stage and made it possible to achieve a better, more coordinated model.
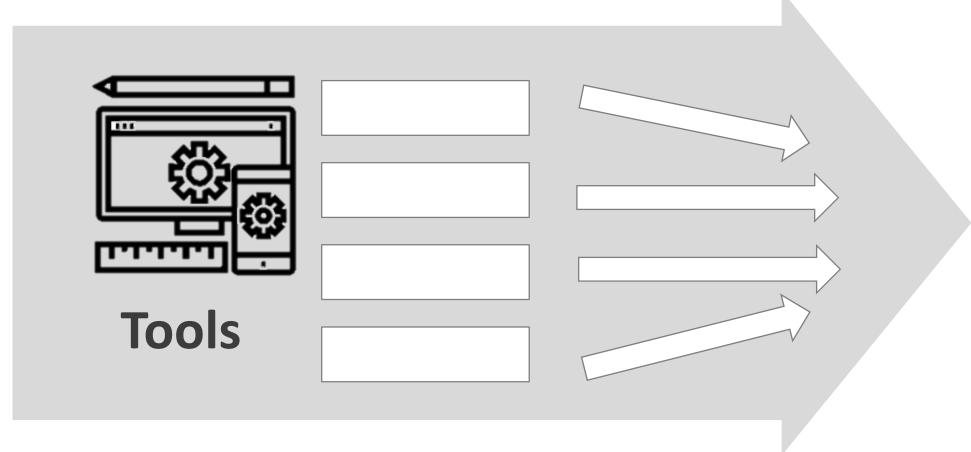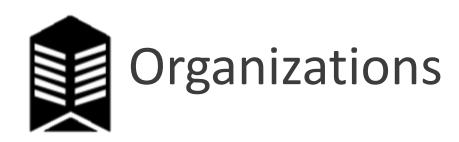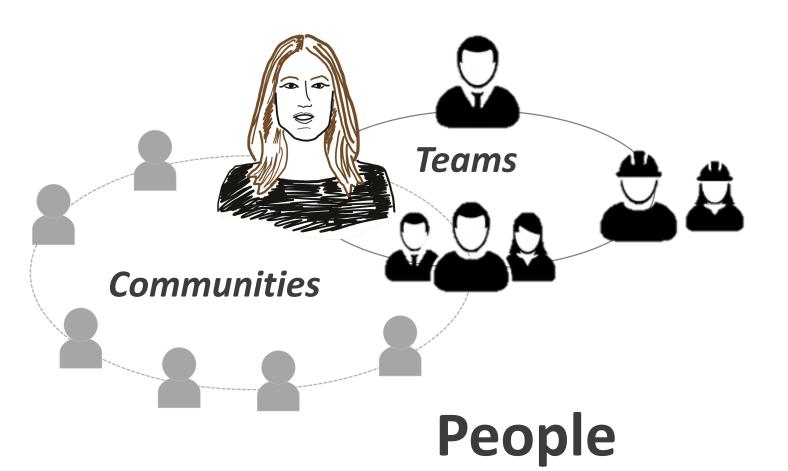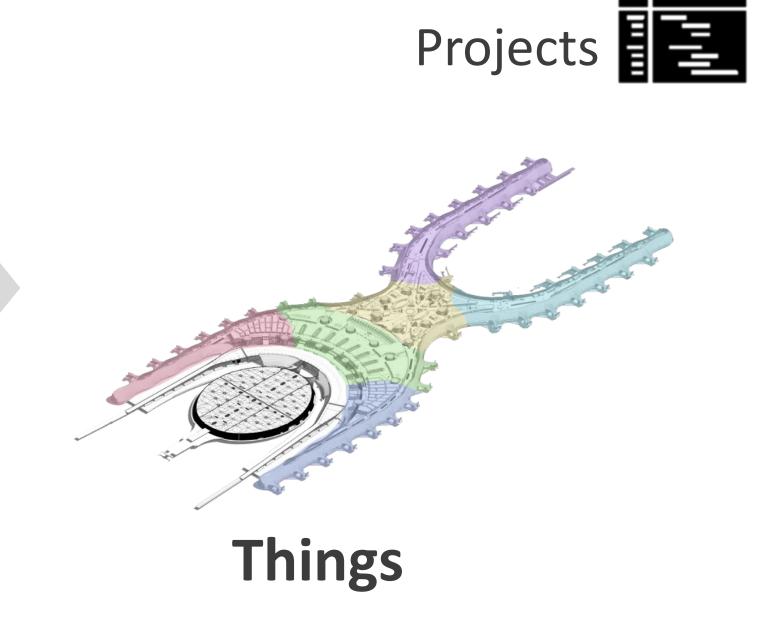
Right panel

AEC
Excellence
Awards
2017

A system model for making things

Laws & Standards

Organizations

Projects

Teams

People

Tools

Processes

Things

Organizations

Laws & Standards

Projects

People

Communities

Teams

Processes

Tools

Things

Organizations

Laws & Standards
& Contracts

Projects

Communities

Teams

People

Tools

Processes

.rvt files

Construction
Documents

Things

Organizations

Projects

Tools

.**rvt** files

Construction
Documents

Organizations

Projects

Tools

BIM SWAT TEAM

.rvt files

Construction Documents

FINISH LINE!

LESSON 1
Start with smaller projects if you can. In large projects, make sure you have systems to handle it.

Organizations

Projects

1

.rvt files

Construction Documents

- Massive scale
- Complex geometry
- Difficult site
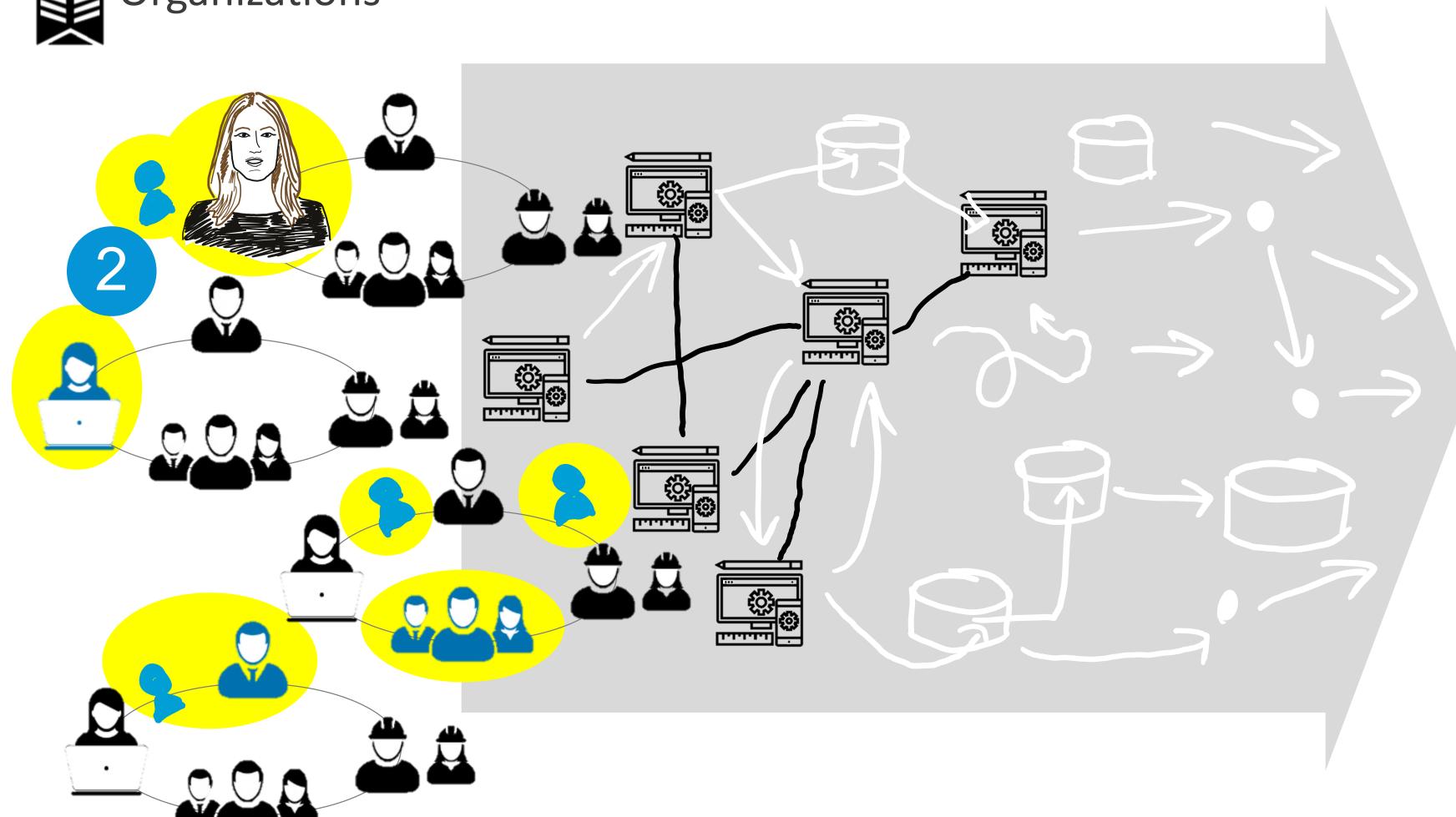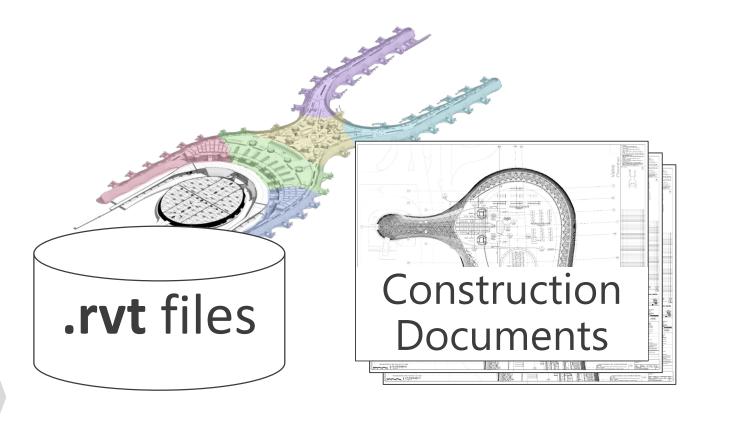
LESSON 2
Ensure there are enough people on the project
with the technical skills needed

Organizations

Projects

2

.**rvt** files

Construction
Documents
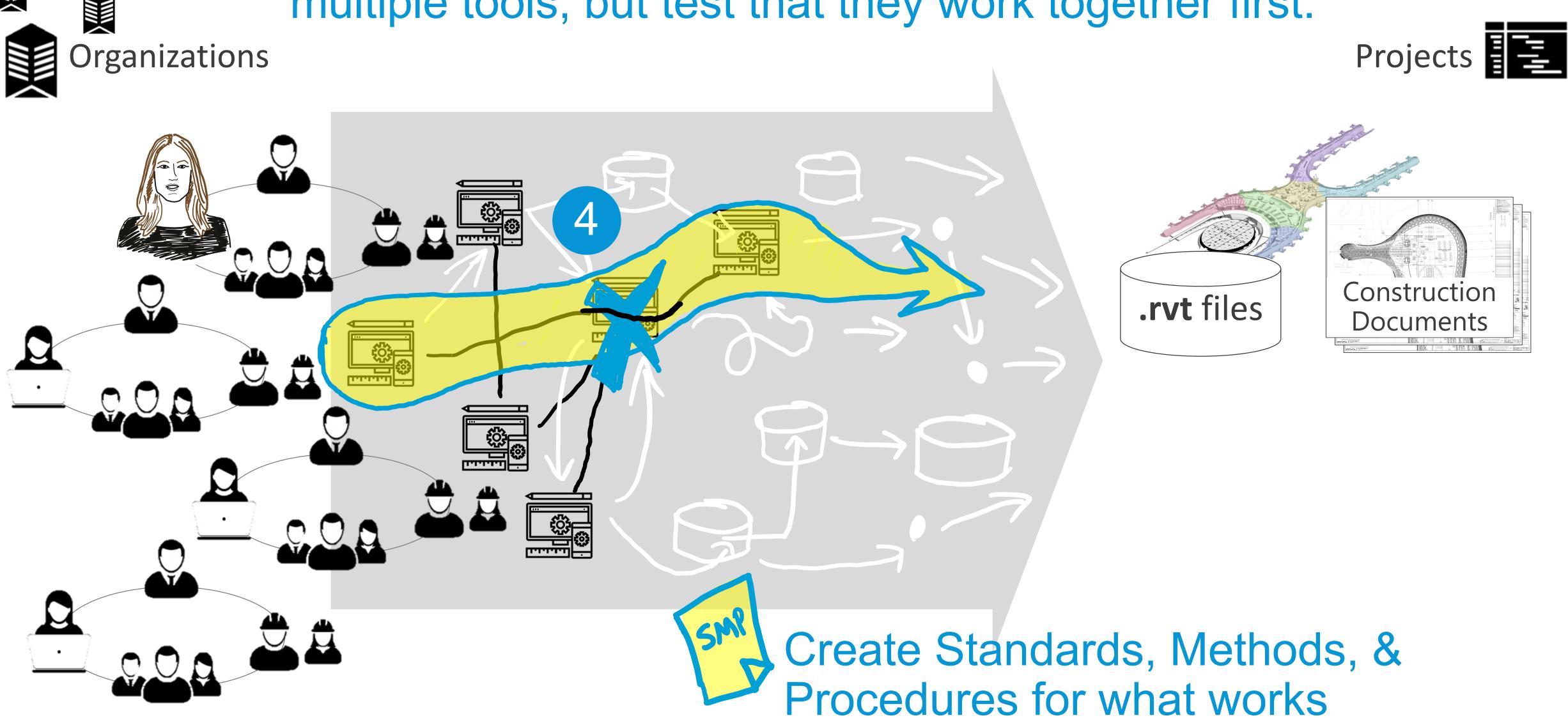
LESSON 3
Enroll key people to invest in BIM process.
a) **Project Managers**/ Job Captains can invest in process & tools
b) **Partners** & Execs can ensure investment is sufficient

3b

3a

Projects

.**rvt** files

Construction
Documents
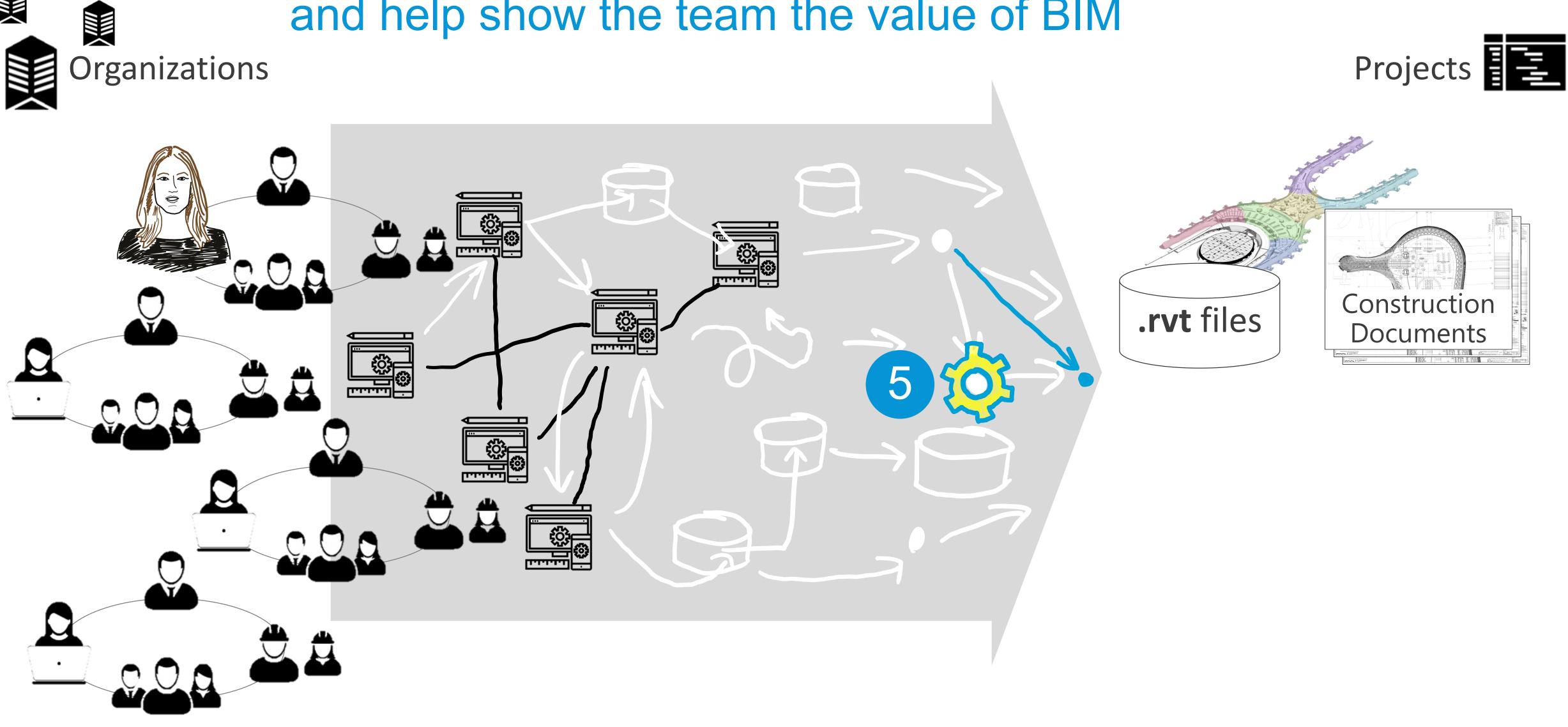
LESSON 4
Test and document workflows. You'll always use multiple tools, but test that they work together first.

Organizations

Projects

4

.rvt files

Construction Documents

SMP
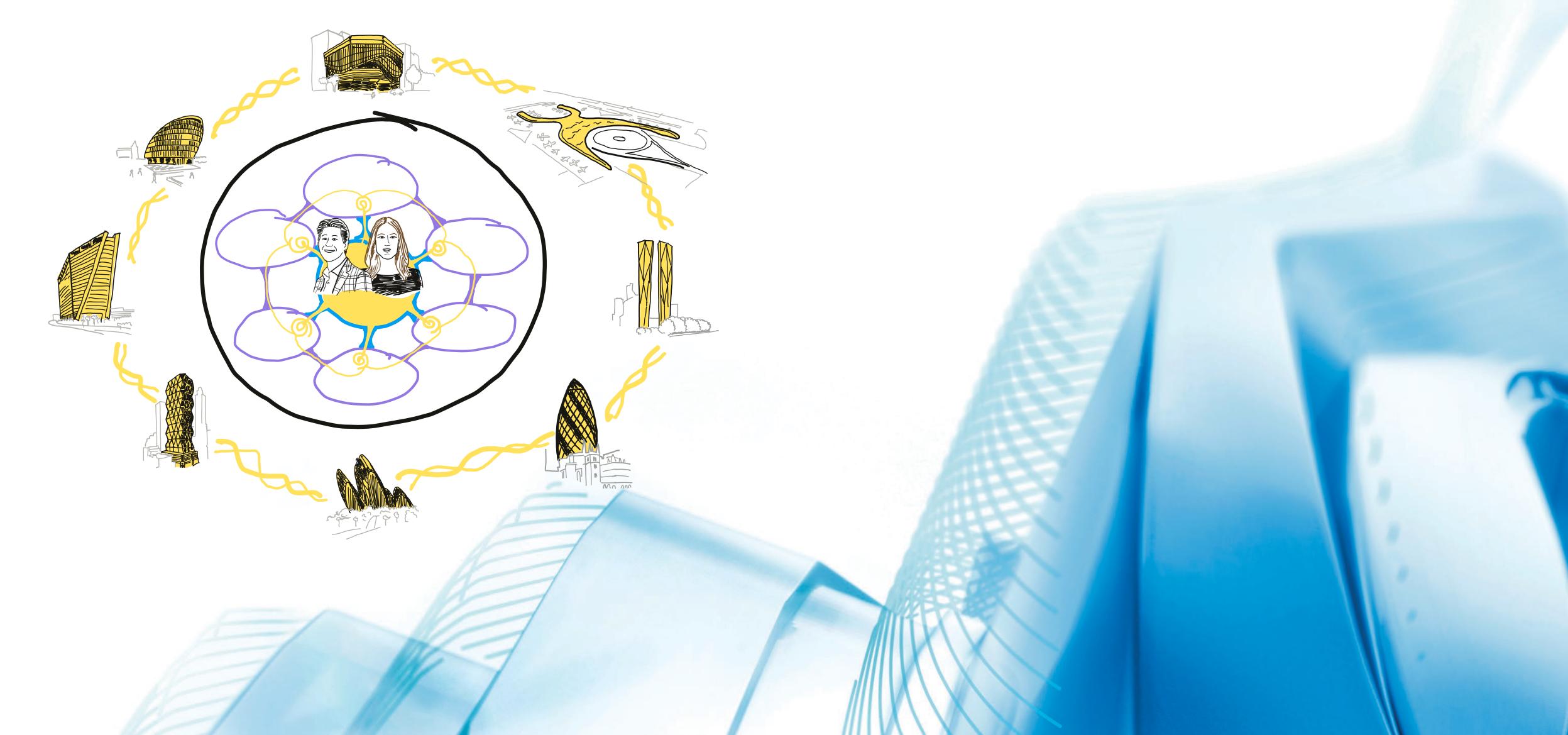
Create Standards, Methods, & Procedures for what works
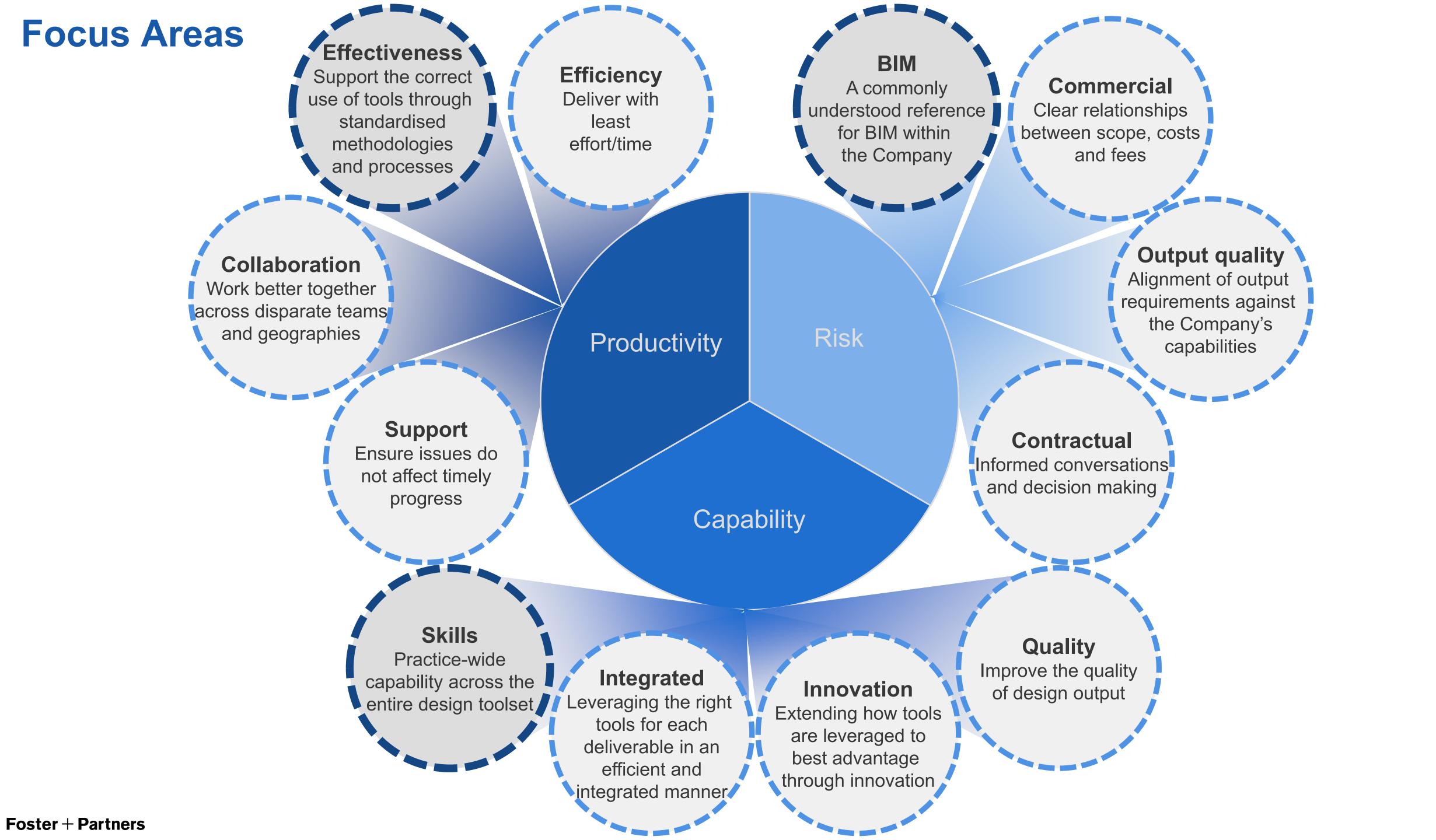
LESSON 5
Small automations & process improvements add up
and help show the team the value of BIM
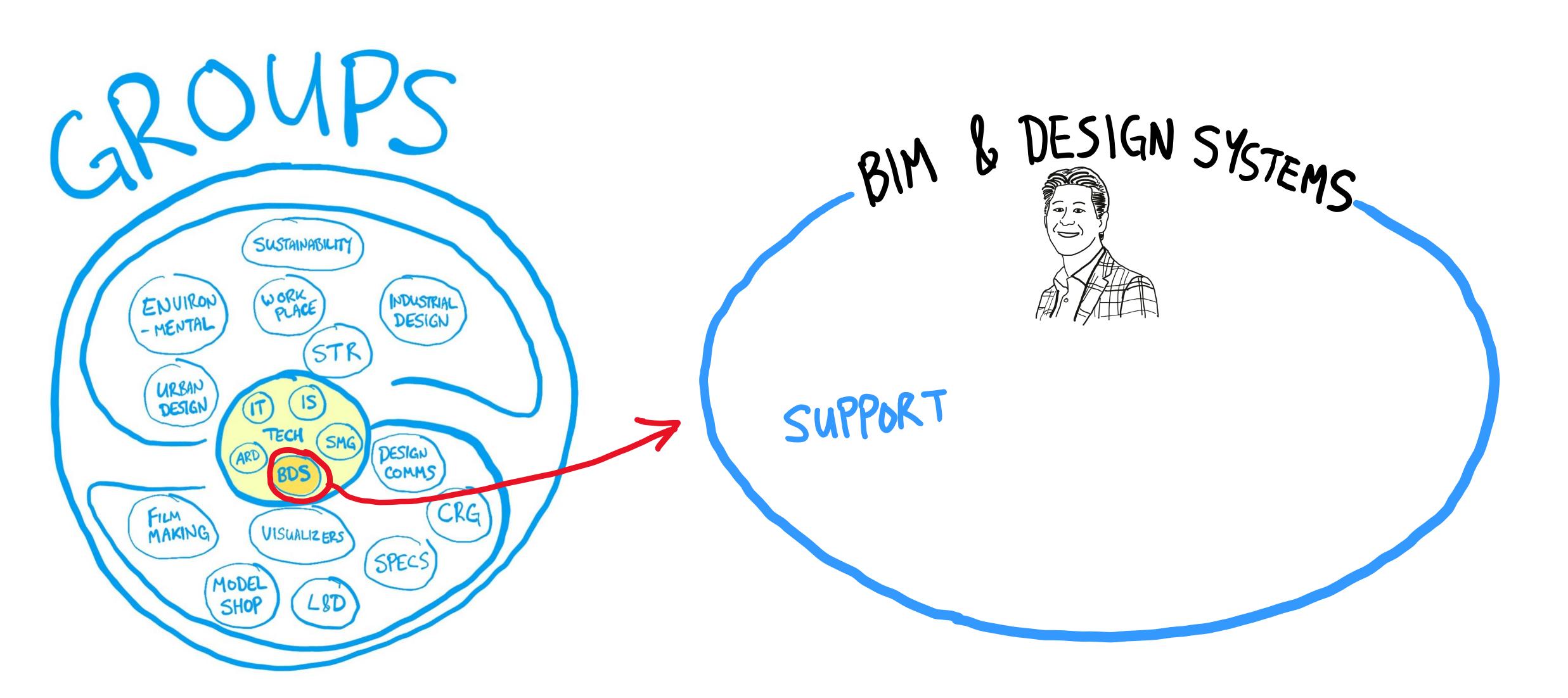
Organizations

Projects

5

.rvt files

Construction
Documents

Creating a Firm-Wide Strategy

Focus Areas

Effectiveness
Support the correct use of tools through standardised methodologies and processes

Efficiency
Deliver with least effort/time

BIM
A commonly understood reference for BIM within the Company

Commercial
Clear relationships between scope, costs and fees

Collaboration
Work better together across disparate teams and geographies

Output quality
Alignment of output requirements against the Company's capabilities

Support
Ensure issues do not affect timely progress

Contractual
Informed conversations and decision making

Productivity

Risk

Capability

Skills
Practice-wide capability across the entire design toolset

Integrated
Leveraging the right tools for each deliverable in an efficient and integrated manner

Innovation
Extending how tools are leveraged to best advantage through innovation

Quality
Improve the quality of design output

Foster + Partners

GROUPS

SUSTAINABILITY

ENVIRON-MENTAL

WORK PLACE

INDUSTRIAL DESIGN

STR

URBAN DESIGN

TECH
- IT
- IS
- SMG
- ARD
- BDS

DESIGN COMMS

FILM MAKING

VISUALIZERS

CRG

SPECS

MODEL SHOP

L&D

BIM & DESIGN SYSTEMS

SUPPORT

BIM & DESIGN SYSTEMS

SUPPORT

TECHNICAL

OPERATIONS

BDS

STUDIO

BDS

STUDIO

STUDIO

BIM!

PROJECT

TRAINING

BIM

A commonly understood reference for BIM within the Company

BIM
A commonly understood reference for BIM within the Company

GUIDELINES

STRATEGY

ITERATIONS

2019

ISO 19650

BIMForum

PAS 1192

BIMForum

F+P BIM FRAMEWORK

BIM INDUSTRY STANDARDS

2015

STEERING GROUP, PROJECT MANAGEMENT AND LEGAL REVIEWS

BIM Framework

Digital Collaboration Guide

"In the absence of a BEP a Digital Collaboration guide should be created for each project."

Digital Collaboration Guide

For review

Version 1.1

PLACEHOLDER
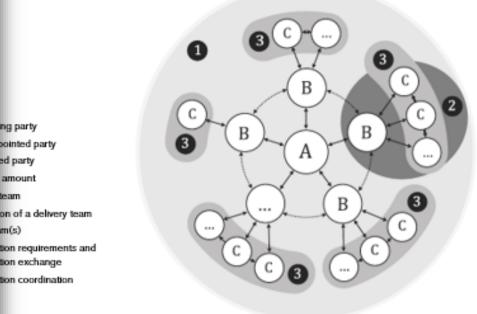
...tions and responsibilities

...on management functions below do not refer to design responsibilities. It is important not to ...tions and responsibilities with job titles or with professional or other designations.

...ners requires all task teams and parties with design responsibility to be familiar and capable of ...oftware to ease information exchange and signed up to the same level of requirements and ...s the Foster + Partners requirements and obligations. Each task team will produce information ...their assigned area of responsibility and commencing model information exchange at concept ...apability and capacity of each task team will be assessed using the appendix A – Digital ...Capability and Capacity Assessment Form in the mobilization phase.

...ct organisational chart

...ormation manager
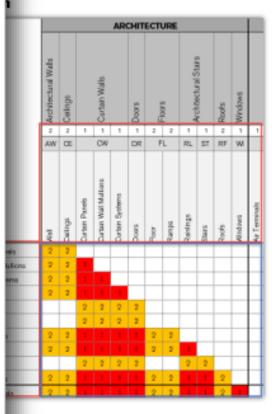
...nformation manager leads the implementation of digital collaboration (technology, policy, ...people) on the project for the project team and serves as focal point for digital collaboration ...the project. The project information manager governs the standards, methods and procedures ...the digital collaboration guide and is responsible for high level digital collaboration mobilisation, ...d assessment of the project team's compliance with the digital collaboration strategy. The ...mation manager will initiate the production of the DCG by hosting a digital collaboration kick-off

...nformation manager communicates and coordinates the implementation of the DCG and digital ...procedures with the task information managers from the project team

...and responsibilities of the project information manager will be transferred to the local ...architect (LCA) at the end of the detailed design delivery phase.

...nation manager

...ed party should appoint a task information manager, who is responsible for ensuring ...th and implementing the digital collaboration guide for the appointed party as per section 5.1 ...ol. This includes continuous compliance with the capability and capacity statement form, by for ...uring training of new project staff. The task information manager facilitates the publication of ...models in both Revit .rvt and Navisworks .nwc at each information exchange.

...tic design

...ns which clash test are included in the clash detection process for the

...al design- and spatial coordination meeting series and a level of ...three levels are critical, non-critical and acceptable.

...o or more model elements clashing, where at least one of them is not ...tent does not fit with the actual project design constraints.
...o two or more model elements clashing, where at least one of the ...ved to resolve the issue – this clash severity level should not be ...ive impact at the design and construction delivery phases if has not ...arly delivery phases.
...o two or more model elements clashing, where there is no need for ...ct in the design and construction delivery phases. This clash severity

...ks Clash Detection Matrix for clash detection tolerances.
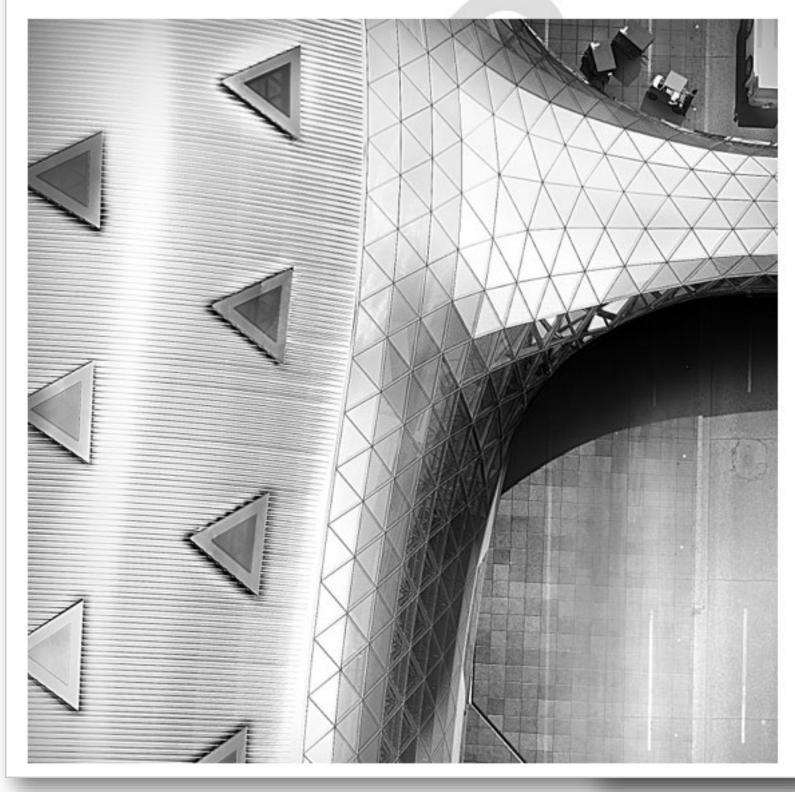
Standard Scope of BIM

"Summary of standards, methods and procedures (SMPs) for delivering best practice building information modelling (BIM)"

Foster + Partners

Standard Scope of BIM

For review

Version 1.2

Foster+Partners

BIM at Foster+Partners:

...ee the Building Information Modelling (BIM) process as a powerful collaborative ...rdination. The primary aims of implementing a BIM process on our projects is to ...l of coordination between the design team members and also with the various ...ed.

...s process are collaboration, design coordination and clash detection. Generally, ...building are part of this process, with specific emphasis given to critical areas of ...there may be spatial limitations and design coordination complexities.

...re familiar with working with BIM Protocols, Execution Plans and Standards from ...whether these are international BIM standards or client specific project

...an fulfil the role of BIM Manager on our projects, and are also able to act under ...client designated BIM Manager during the Design Phases of the project, if

...rovision of BIM is subject to the scope and limitations as described by the Main ...erms and Conditions as agreed with the Client.

...ks to identify our Standard BIM scope offering for BIM in lieu of the Main ...agreed.

Plan (BEP):

...uidance document prepared at the start of the project, and revised by the BIM ...ut the lifecycle of the project. The BEP will record the project specific BIM ...es and methodologies required to meet the project requirements. The BEP will ...ail the protocols and standards to be applied to the BIM process. This will ...al methodology of sharing and coordinating the models between design team ...echnical standards by which this information is produced.

...agreed between all the parties and referenced in the Foster+Partners Main ...non-contractual working document. ...r involved in producing, using or reviewing information within the BIM process of ...m adherence to the BIM Execution Plan as part of their appointment.

...cement, a BIM Kick-Off meeting will be held with all Design Team members to ...the BIM requirements of the project.

...g each design stage, the BIM Execution Plan will be reviewed and amended in ...t requirements. Where amendments are required, these will be established by ...ed, and implemented by the client appointed BIM Manager, and declared in the

...dels produced by Foster+Partners are 'Design Intent Models', for 'Reference Only' and ...l for spatial coordination and clash detection in the design phases of a project.

...Intent Models' are not 'Construction Information Models'. The responsibility for 'shop ...oduction and modelling of each sub-contractor package remains with the appointed

s Table

	Yes	No	?D	FOSTER+PARTNERS Comment
Coordination	X		3D	
...ction	X		3D	
...ation	X		3D	
...eneration	X		3D	
...views	X		3D	
...nning and Optimisation	X		3D	
...n & Communication	X		3D	
...dules – limited to Door	X		3D	
...ification e.g. Uniclass or Omniclass		X	3D	
...n Sequencing		X	4D	
...d analyse construction systems e.g. glazing and scaffolding		X	4D	
...Quantities		X	5D	
...ation		X	5D	
...gement		X	5D	
...agement - communicate location ...ation for property assets (6D)		X		
...ghting, Environmental and Building ...alysis		X		F+P can offer this as an add service – if required.
...he actual building performance ...e design		X		
...nt Analysis - identify breakdown of ...o ensure logical procurement		X		
...ce		X		
...rication		X		
...ics		X		
...nagement		X		
.../ Record Modelling		X		
...and communicating as built		X		
...n Sheet		X		F+P can offer this as an add service – if required.
...rers Details		X		F+P can offer this as an add service – if required.
...d Elements Schedules		X		F+P can offer this as an add service – if required.

...l be developed up to a maximum of LOD 300 at Construction ...BEP, after which the models will be handed over to the

...Element may be graphically represented in the model with a symbol ...neric representation, but does not satisfy the requirements for LOD ...nation related to the Model Element (i.e. cost per square metre, ...HVAC, etc.) can be derived from other Model Elements

...Element is graphically represented within the Model as a generic ...ect, or assembly with approximate quantities, size, shape, location, and ...Non-graphic information may also be attached to the Model Element.

...Element is graphically represented within the Model as a specific ...ect, or assembly in terms of quantity, size, shape, location, and ...Non-graphic information may also be attached to the Model Element.

...Element is graphically represented within the Model as a specific ...ect, or assembly in terms of quantity, size, shape, location, and ...detailing, fabrication, assembly, and installation information. Non- ...ormation may also be attached to the Model Element.

...Element is a field verified representation in terms of size, shape, ...antity, and orientation. Non-graphic information may also be attached ...ements
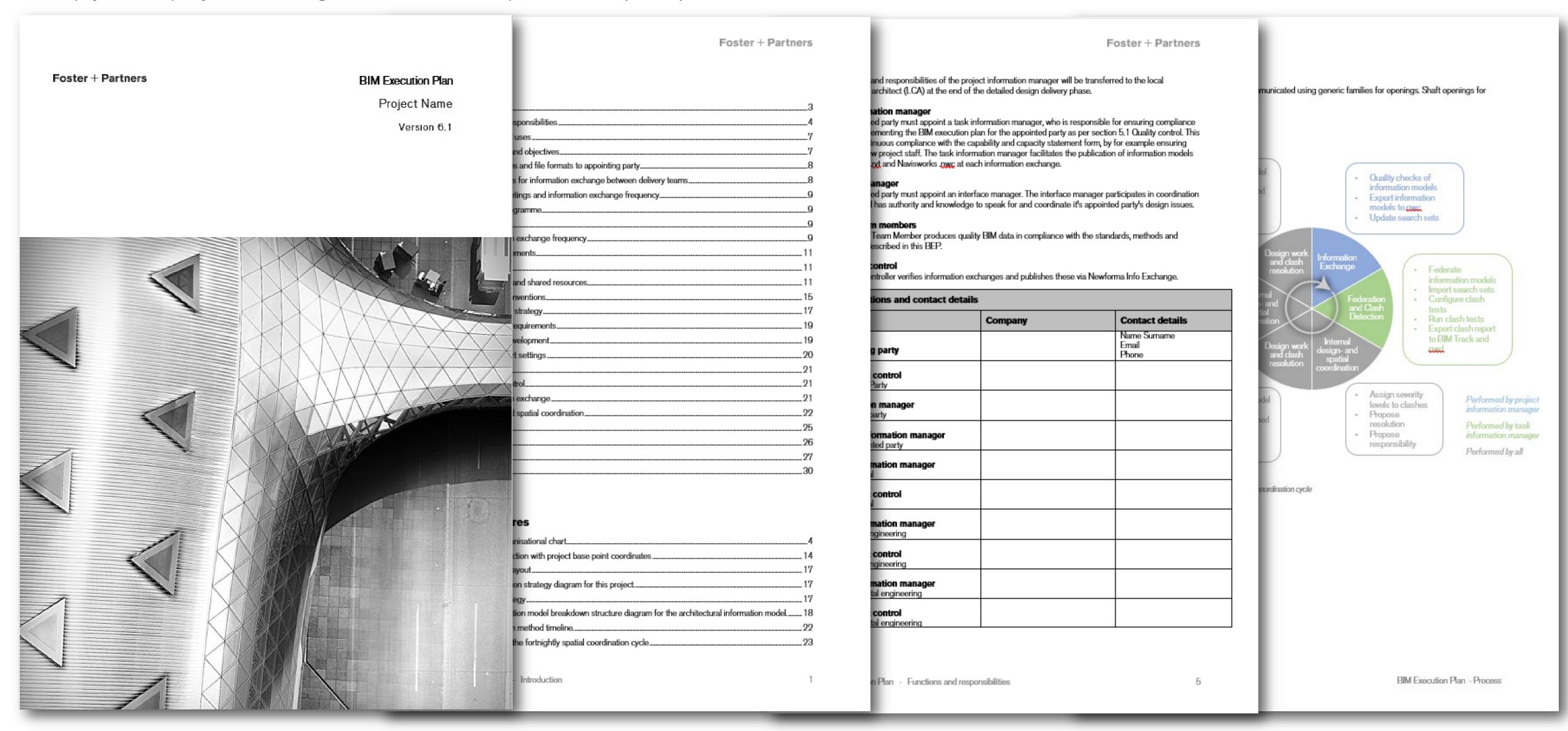
...e model throughout the Construction Phase, nor at the end of ...Owner or Contractor requested Design Changes will be ...dditional Services and Changes. Significant Design Changes ...ster+Partners model issued to the Contractor for clarity on the ...d and approved on a case by case basis.
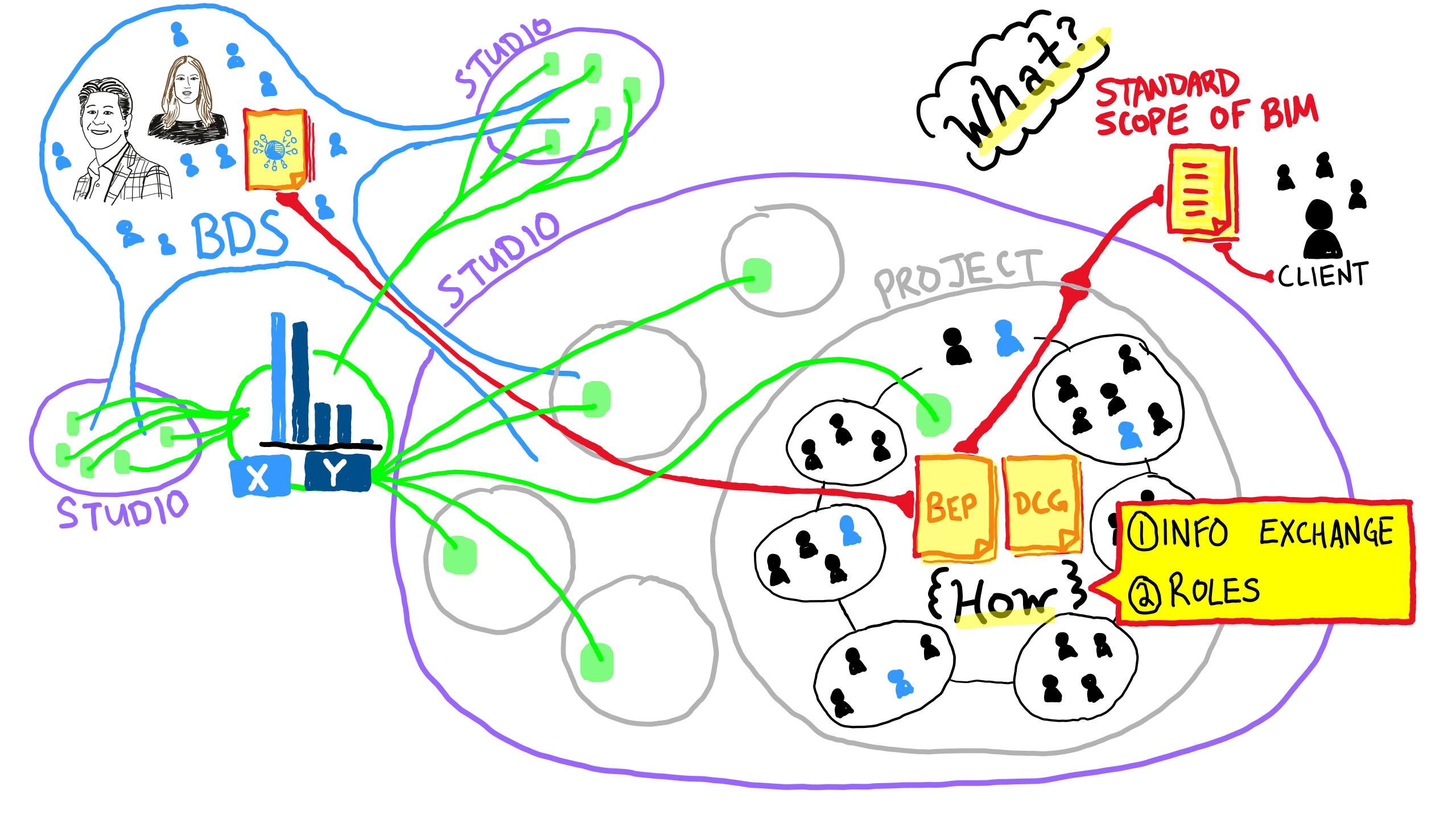
...del(s) will be issued to the Contractor for development. This ...ent to the BIM model(s) or producing a new model(s) based on

...to assist the contractor in assembling their model. These ...tional Service with additional resource requirements and fees

BIM Execution Plan

In reply to Employer/Exchange Information Requirements (EIRs)

Foster + Partners

BIM Execution Plan

Project Name

Version 6.1

...and responsibilities of the project information manager will be transferred to the local ...architect (LCA) at the end of the detailed design delivery phase.

...ation manager

...ed party must appoint a task information manager, who is responsible for ensuring compliance ...ementing the BIM execution plan for the appointed party as per section 5.1 Quality control. This ...inuous compliance with the capability and capacity statement form, by for example ensuring ...w project staff. The task information manager facilitates the publication of information models ...xt and Navisworks .nwc at each information exchange.

... manager

...ed party must appoint an interface manager. The interface manager participates in coordination ...l has authority and knowledge to speak for and coordinate it's appointed party's design issues.

...m members

...Team Member produces quality BIM data in compliance with the standards, methods and ...escribed in this BEP.

...control

...ntroller verifies information exchanges and publishes these via Newforma Info Exchange.

...ions and contact details

	Company	Contact details
...g party		Name Surname Email Phone
...control ...Party		
...n manager ...arty		
...ormation manager ...ted party		
...mation manager ...l		
...control		
...mation manager ...ngineering		
...control ...ngineering		
...mation manager ...al engineering		
...control ...al engineering		

...mmunicated using generic families for openings. Shaft openings for

- Quality checks of information models
- Export information models to .nwc
- Update search sets

Information Exchange

Federation and Clash Detection

Internal design- and spatial coordination

Design work and clash resolution

- Federate information models
- Import search sets
- Configure clash tests
- Run clash tests
- Export clash report to BIM Track and .nwc

- Assign severity levels to clashes
- Propose resolution
- Propose responsibility

Performed by project information manager

Performed by task information manager

Performed by all

...coordination cycle

STUDIO

BDS

STUDIO

STUDIO

STUDIO

X Y

PROJECT

What?

STANDARD SCOPE OF BIM

CLIENT

BEP   DCG

{How}

① INFO EXCHANGE
② ROLES

Effectiveness
Support the correct use of tools through standardised methodologies and processes

Standards, Methods and Procedures

Foster+Partners
Revit Content Naming Standards

Foster+Partners
Revit Content Parameters Standards

Foster+Partners
Revit Content Subcategories Standards

Foster+Partners
Revit Scheduling

Foster+Partners
Revit to Modelshop

Foster+Partners
Design & Spatial Coordination Workflow

Foster+Partners
Hidden Lines and White Renders

Foster+Partners
Coding Standards for Grasshopper and Dynamo

Foster+Partners
Coding Standards for Grasshopper and Dynamo – Compliance Checklist

Foster+Partners
Best Practice Guide for developing Grasshopper and Dynamo definitions

Foster+Partners
Revit to Design Communications

Foster+Partners
Revit Model Audit Report

Foster+Partners
Rhino to Revit Workflows

Foster+Partners
Design Options Revit Guide

Foster+Partners
BIM Track Implementation Workflow

Foster+Partners
Specification T-Sheet Codes Revit Workflow

Foster+Partners
Revit to Industrial Design

Foster+Partners
Revit to Workplace Consultancy

Foster+Partners
Revit to Sustainability

Foster+Partners
Revit Materials Library

Foster+Partners
File Naming Standards

Revit Model Audit Report

Foster+Partners

Revit Model Audit Report

Prepared by: Lola Carbajal

Revision	Revision Date
0.00	03.10.2019

Foster + Partners
Riverside
22 Hester Road
London
SW11 4AN
United Kingdom

Contents

AUTOMATED HEALTH CHECKS AND FIXES:

Foster + Partners

MODEL AUDIT REPORT — 75

Date of Last Audit: 13/05/2019
Type of Audit: Weekly

Project:
F+P Project Number: 2259
Model Name: WHIT-FAP-BA-ZZ-M3-A-0041_Basement.rvt
Discipline: Architecture
Project Stage: RIBA Stage 3
BIM Coordinator: Laura Gonzalez Arribas

Model Summary:
File Size: 113.62 MB
Model Elements: 6479 elements
File Creation Date: 29/03/2019. Please re-create the file
Model Groups: There are no Model Groups in this file.
In-place Families: 5 In-Place families. Consider replacing them by family components.
Design Options: There are no Design Options
Project Browser: Any view has been deleted during the Audit. Your Project Browser looks great.
Families >2MB: None

Project Standards:
Project Location: Correct
Shared Levels & Grids: The amount of Levels is not correct.
Project Units: Millimeters
Copy/Monitor Alerts: None
Subcategories: 45% objects without Subcategory assigned

External References:
Revit Links: 18 Links. 5 loaded.
Paths to Revit Links: 13 Revit Links not found
CAD Links: 1 Links. None loaded.
Paths to CAD Links: Linked DGN or/and Imported CAD files have been moved to the BIN Workset
Paths to Images: Correct
Paths to "Shared Parameters File": Review Shared Parameters file path.
Paths to "Keynote Table": Review Keynote Table file location.

! Urgent Actions:
- Review Warnings in the file and minimise their number
- There are Revit Links not found. Please review and amend this issue
- CAD Imports have been moved to the BIN workset. Link them instead, and remove them
- Replace In-place families by Family Components

F+P Naming Standards:
F+P File Naming Convention: File naming doesn't follow F+P File Naming convention
Element Naming Convention: 72% Correct. Family Names cannot contain hyphens. Full Names (including Type) cannot be longer than 50 characters

Warnings Review:

LEGEND
- Performance Warnings
- Calculations, Design Options & Constraints Warnings
- Geometry errors

Total Warnings	485
Performance Warnings	55
Copy/Monitor Alerts	0
Lighting Calculations	0
Stair & Ramp Calculations	2
Railing Calc. and Geometry	8
Rooms, Areas & Spaces	116
Design Options	0
Geometrical Constraints	5
Groups, Arrays & Repeaters	0
Consistency errors	114
Inaccuracy	33
Hosting errors	1
Keynoting errors	0
Geometry Warnings	151
Informative Warnings	0

* The number at the end of the bars shows the total of elements affected by that warning type.

BEST PRACTICES GUIDE:

Best Practices for Revit
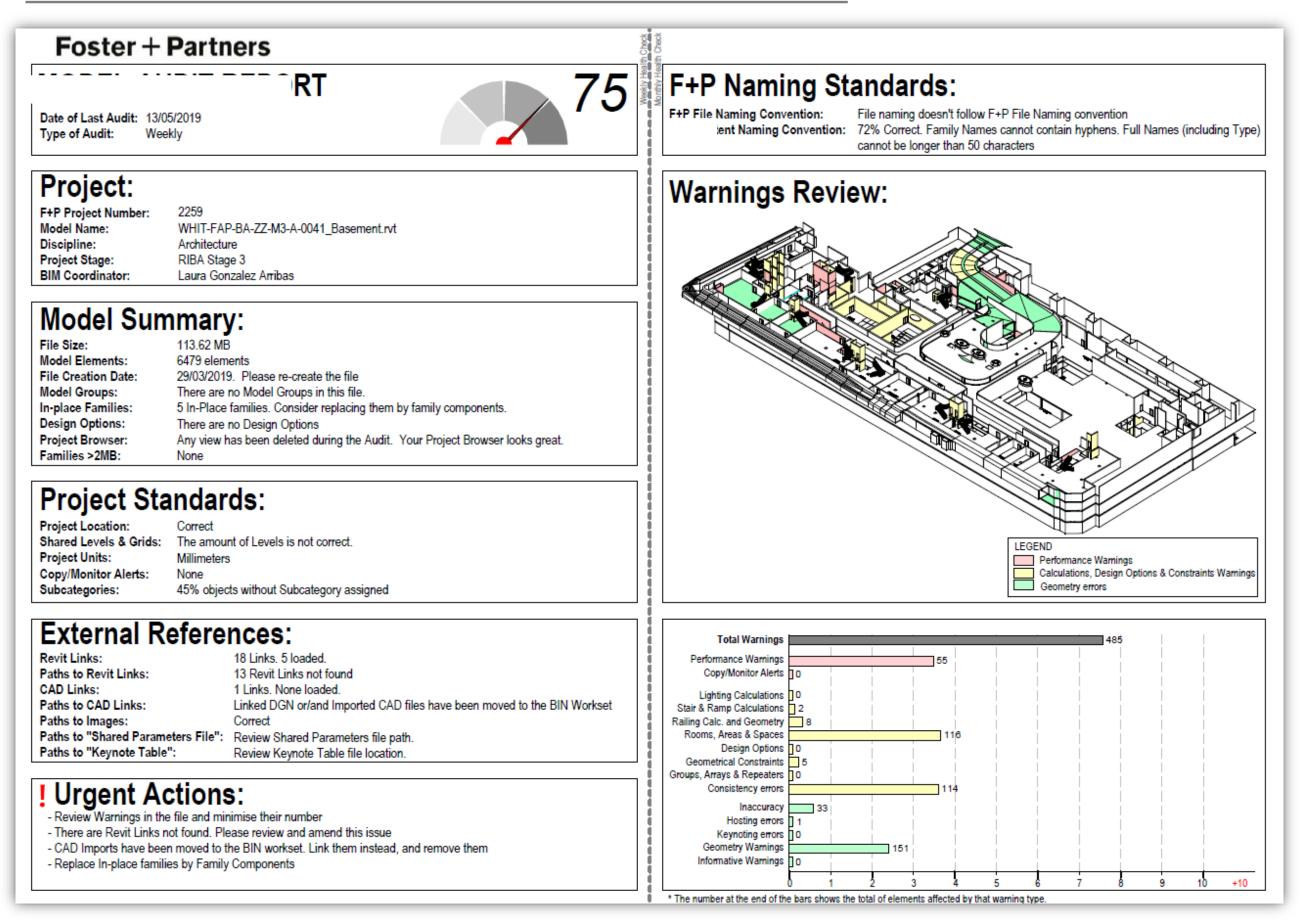
Prepared by: Lola Carbajal

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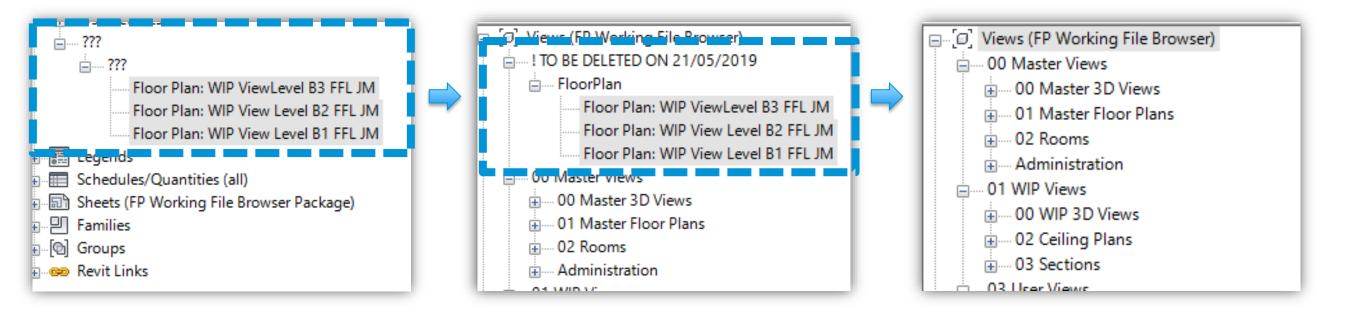
Foster + Partners
Riverside
22 Hester Road
London
SW11 4AN
United Kingdom

Index of Contents

PROJECT BROWSER ORGANISATION

???
  ???
    Floor Plan: WIP ViewLevel B3 FFL JM
    Floor Plan: WIP View Level B2 FFL JM
    Floor Plan: WIP View Level B1 FFL JM
  Legends
  Schedules/Quantities (all)
  Sheets (FP Working File Browser Package)
  Families
  Groups
  Revit Links

Views (FP Working File Browser)
  ! TO BE DELETED ON 21/05/2019
    FloorPlan
      Floor Plan: WIP ViewLevel B3 FFL JM
      Floor Plan: WIP View Level B2 FFL JM
      Floor Plan: WIP View Level B1 FFL JM
    00 Master Views
      00 Master 3D Views
      01 Master Floor Plans
      02 Rooms
      Administration

Views (FP Working File Browser)
  00 Master Views
    00 Master 3D Views
    01 Master Floor Plans
    02 Rooms
    Administration
  01 WIP Views
    00 WIP 3D Views
    02 Ceiling Plans
    03 Sections

Kinship

Data Management
KIWI CODES SOLUTIONS LTD
REVIT API SPECIALISTS

ideate BIMLink

Collaboration
TALON
AUTODESK REVIT SERVER
AUTODESK BIM 360
BLUEBEAM REVU 2018 EXTREME

Visualization
ENSCAPE
unity
oculus
ARCHVISION
V-ray
3

Reality Capture
R PRO

Design Authoring
R

RTV TOOLS
Simple . Effective . Solutions to automate BIM

Power Tools

Duct Crosser

Automation
Urban Design Tools
Style Manager
BIM Modelling Tools
Subcategory Manager
Hermes

Parametric Design
Gehry Technologies

SOLIBRI

Clash Detection
BIM TRACK

SW

Id

Documentation
Ai
Ps

A
N
F

Environmental
AUTODESK INSIGHT 360

Organizations

DATA-DRIVEN DECISIONS

SUPPORT & TRAINING

Projects

TOOLS & AUTOMATION

S STANDARDS

M METHODS

P PROCEDURES

.rvt files

Construction Documents

Skills

Practice-wide capability across the entire design toolset
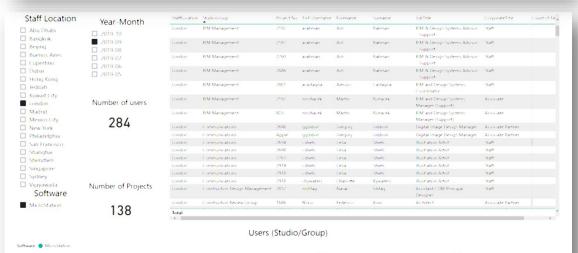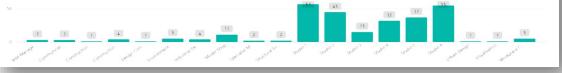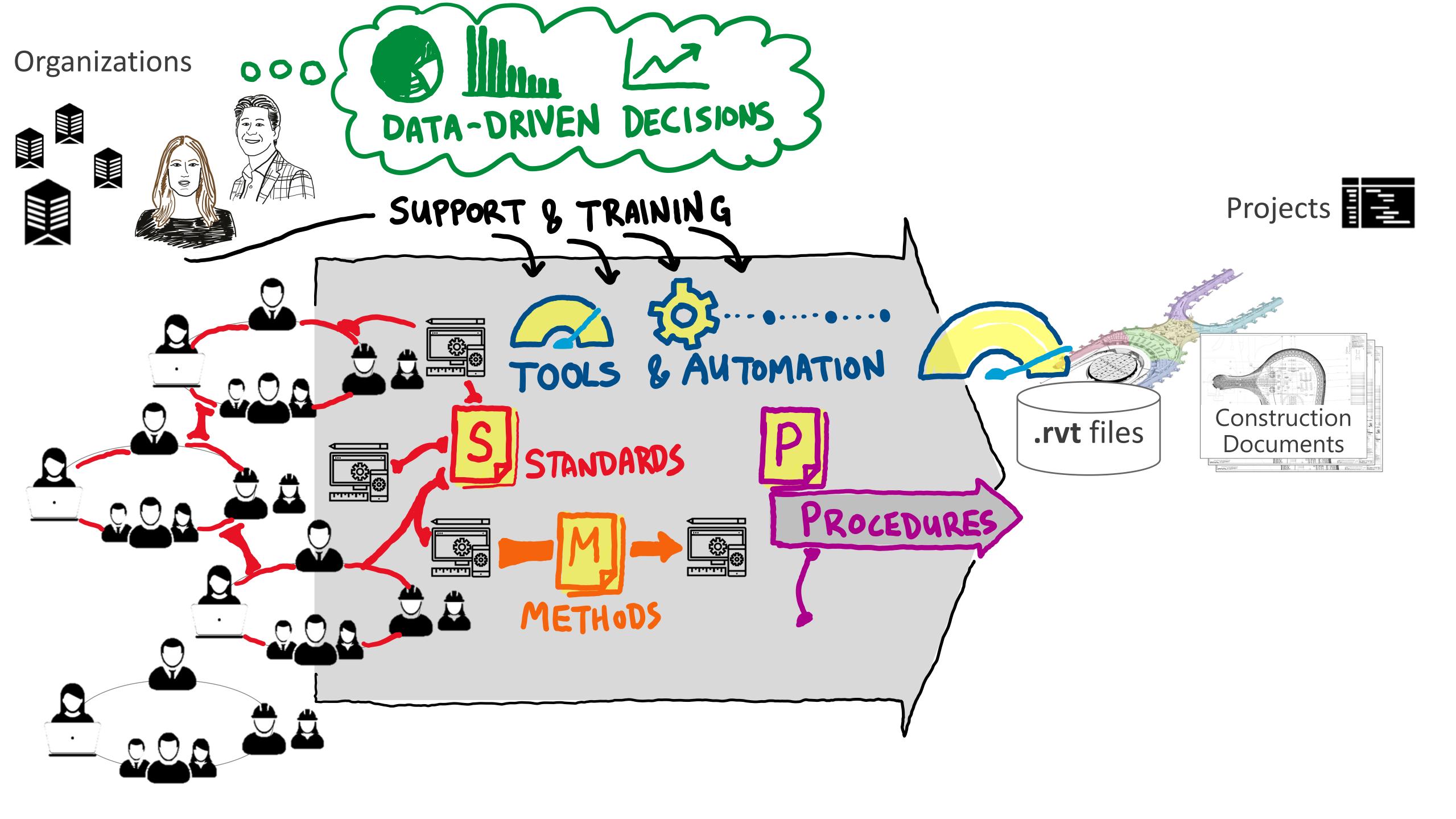
Skills
Practice-wide capability across the entire design toolset

Effectiveness
Support the correct use of tools through standardised methodologies and processes

DOWNLOADABLE GUIDES

F+P BIM STANDARDS, METHODS & PROCEDURES TRAINING

2019

LEARNING PATH
Foster + Partners Revit Architecture Essentials
Added by Foster + Partners

BIM & Design Systems

MENTORING

MOTIVATION · SUCCESS · COACHING · GOAL · DIRECTION · SUPPORT · TRAINING · ADVICE

Foster+Partners
Revit to Workplace Consultancy

Foster+Partners
Revit Model Audit Report

Foster+Partners
Coding Standards for Grasshopper and Dynamo

Knowledge
Linkedin Learning
Online training learning paths, courses and videos for both professional and personal development. Training on the go.

BIM WIKI

Welcome to the BIM/CAD Wiki
From the BIM Management Team, this is a searchable store of useful information on CAD & BIM Project Workflows, Resources, Standards, Software and more...

Standards · Revit · NavisWorks · Dynamo

Microstation · Rhino · Grasshopper · Wiki

LEARNING PATHS & ONLINE COURSES AVAILABLE FOR ALL THE STAFF

Foster + Partners
Revit Architecture 2016
Essentials

Foster + Partners
Revit Architecture 2018
Essentials

Skill self-assessment
Please update your skills, experience and qualifications.

IN-HOUSE & THIRD-PARTY TRAINING

2015

REVIT ESSENTIALS TRAINING FOR ALL NEW STAFF

SKILLS ASSESSMENT

KNOWLEDGE SMART

Learning Resources

Calendar	Design Systems Learning Paths	Personal Development	Professional	LinkedIn Learning
View Courses →	Watch videos →	View Courses →	View Resources →	Watch videos →
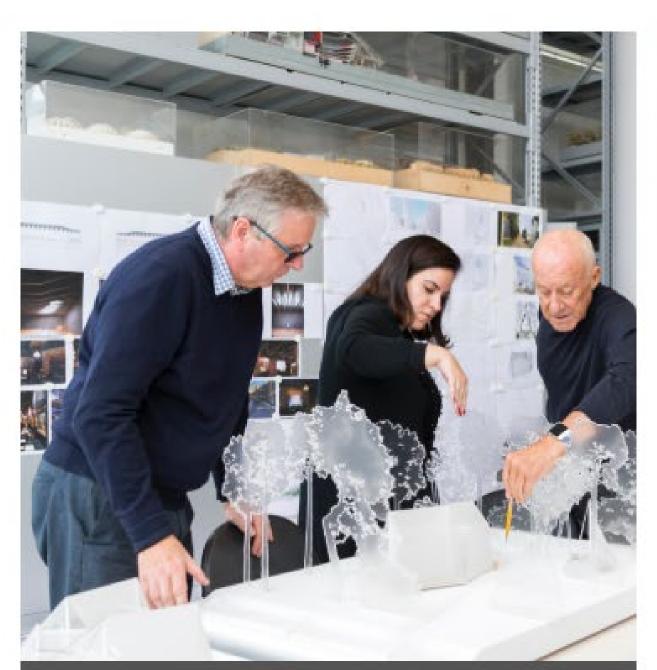
Learner home
Access and search for training courses, and view your training record.

LinkedIn learning
Browse through curated online learning content.

Skill self-assessment
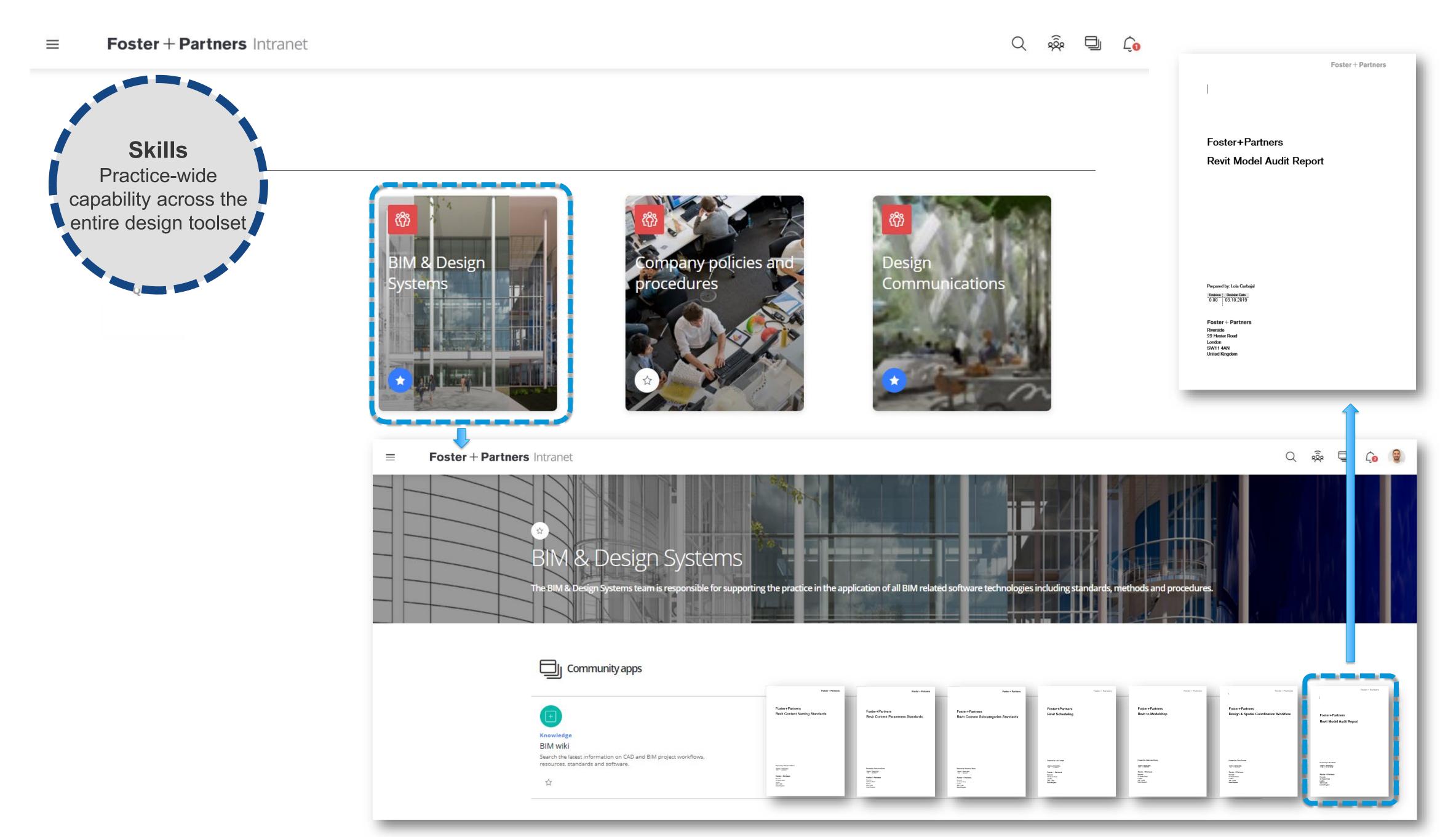Please update your skills, experience and qualifications.

Performance
View your performance appraisals, objectives and development plans.

Foster + Partners: Talks
View recorded talks and lectures.
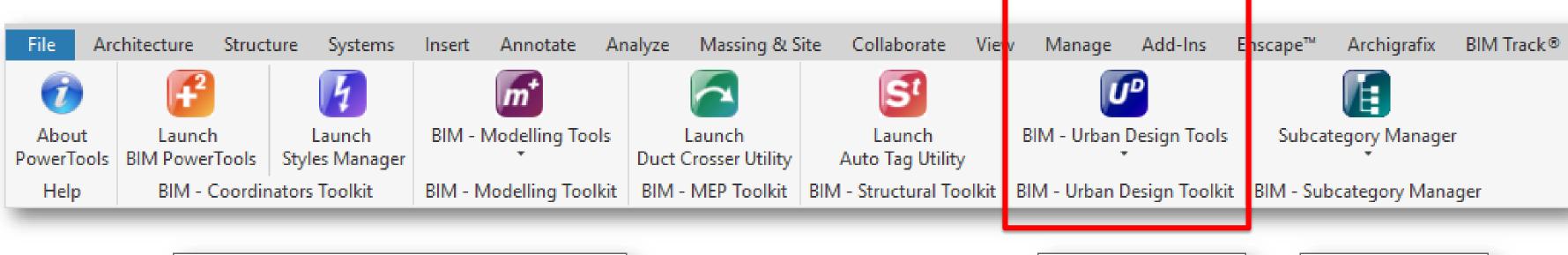
BIM & Design Systems Community page

BEP DCG S M P

KNOWLEDGE MGMT

STUDIO

STUDIO

PROJECT

TRAINING

MENTORING

Innovation
Extending how tools are leveraged to best advantage through innovation

PowerTools

File | Architecture | Structure | Systems | Insert | Annotate | Analyze | Massing & Site | Collaborate | View | Manage | Add-Ins | Enscape™ | Archigrafix | BIM Track®

About PowerTools — Help
Launch BIM PowerTools | Launch Styles Manager — BIM - Coordinators Toolkit
BIM - Modelling Tools — BIM - Modelling Toolkit
Launch Duct Crosser Utility — BIM - MEP Toolkit
Launch Auto Tag Utility — BIM - Structural Toolkit
BIM - Urban Design Tools — BIM - Urban Design Toolkit
Subcategory Manager — BIM - Subcategory Manager

Create Adaptive Panels from Rhino Surfaces

Create 3D Model Curves from RHINO elements

Create Model Curves from RHINO elements

Create Floors from RHINO elements

Create Walls from RHINO elements

Create TopoSurface from RHINO Surface

Create Areas from RHINO elements

Split RHINO or CAD Import to Solids

Convert RHINO or CAD Import to Generic Family Instance

Create Masses From Areas

Create Isovist Filled Region

Colour Elements By Parameter value

Place components on TopoSurface

Create Floor from TopoSurface

Create solid from TopoSurface

Create Multiple Wall Faces

Export Shapefile

Import Shapefile

Import OSM file

Show Orphans

Linked Files

Assign Layers

F+P BIM Power Tools

Welcome to PowerTools

Warnings
Parameters
Tags
Links & Imports
Sheets & Views
Levels & Grids
Filters
Phases
Doors
Document

Document Summary

Foster + Partners
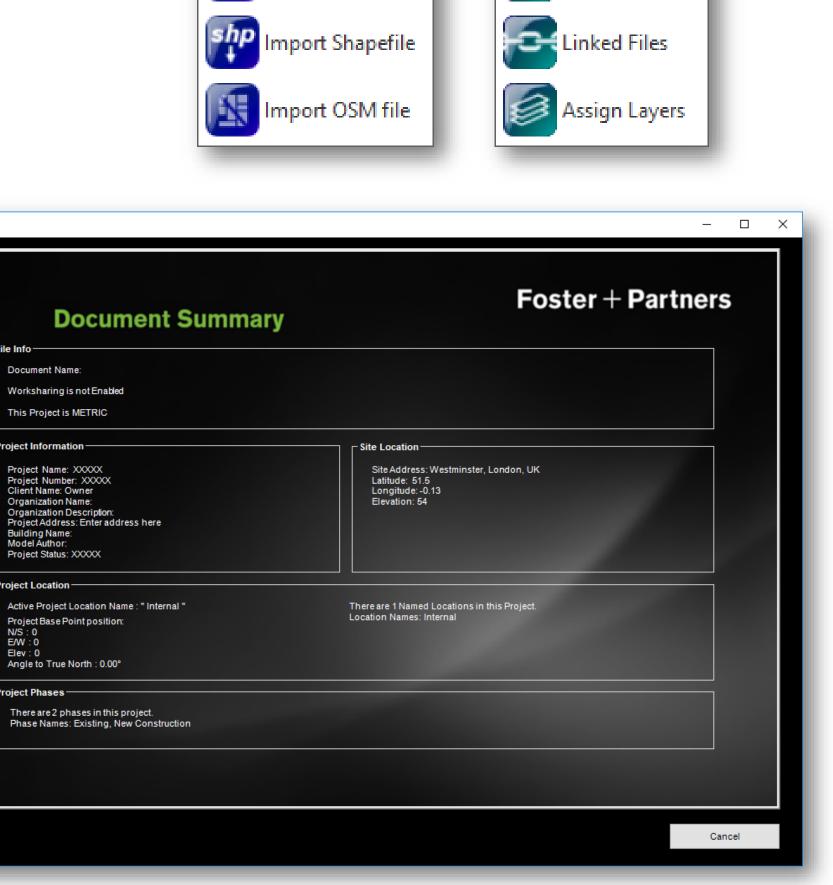
File Info
Document Name:
Worksharing is not Enabled
This Project is METRIC

Project Information
Project Name: XXXXX
Project Number: XXXXX
Client Name: Owner
Organization Name:
Organization Description:
Project Address: Enter address here
Building Name:
Model Author:
Project Status: XXXXX

Site Location
Site Address: Westminster, London, UK
Latitude: 51.5
Longitude: -0.13
Elevation: 64

Project Location
Active Project Location Name : " Internal "
Project Base Point position:
N/S : 0
E/W : 0
Elev : 0
Angle to True North : 0.00°

There are 1 Named Locations in this Project.
Location Names: Internal

Project Phases
There are 2 phases in this project.
Phase Names: Existing, New Construction

Cancel
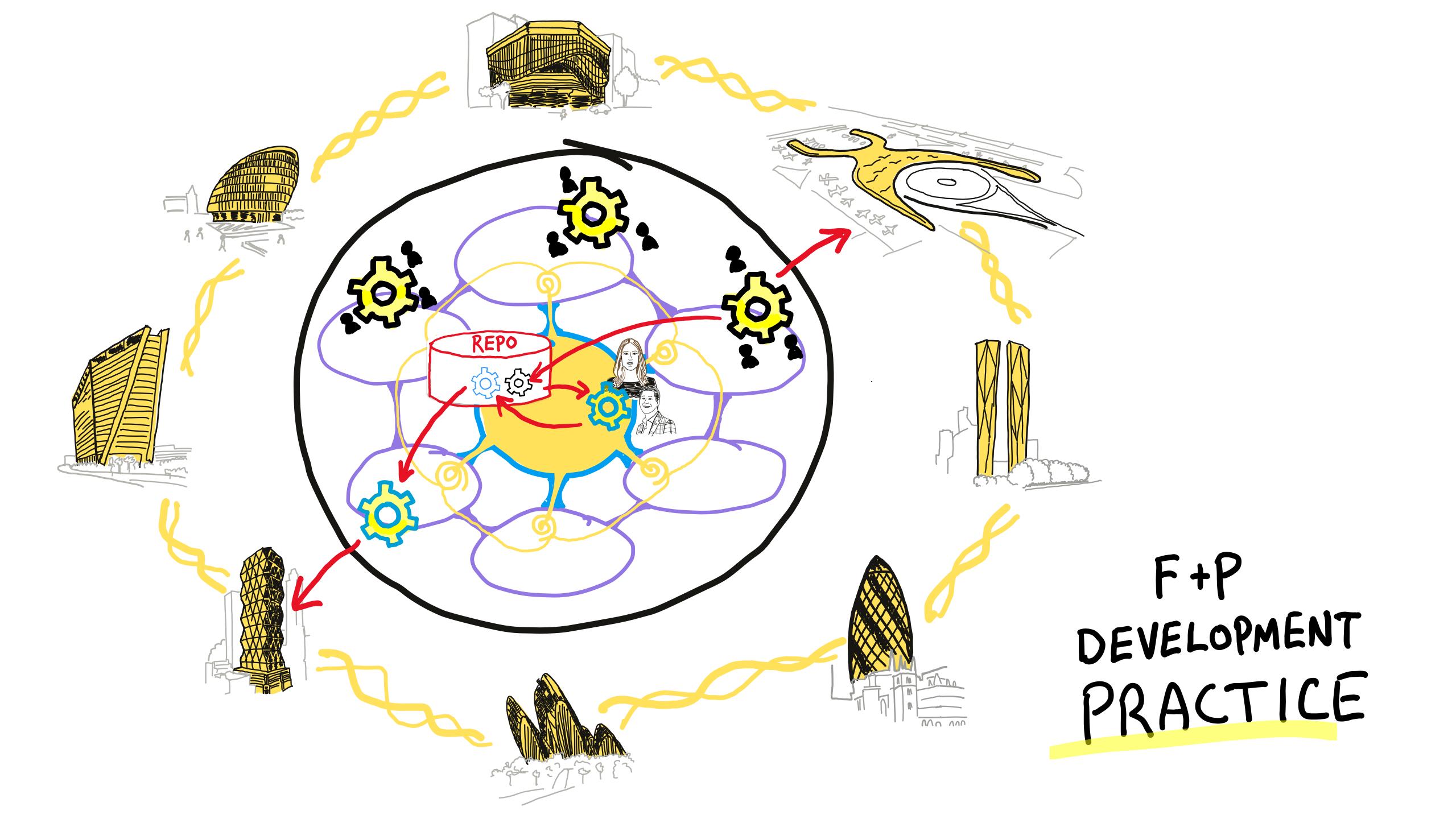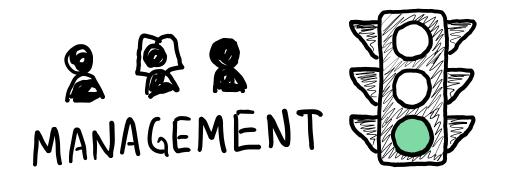
F + P
DEVELOPMENT
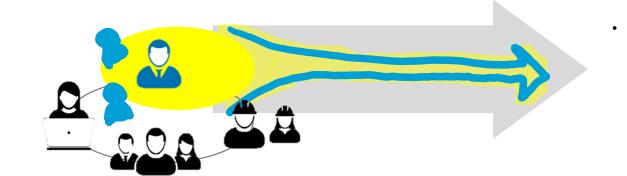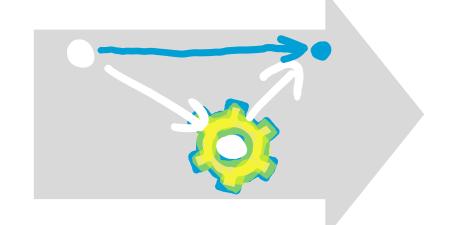PRACTICE

Some Key Takeaways

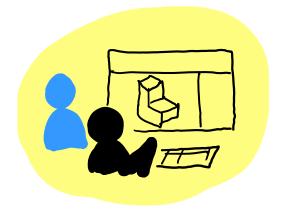1. BIM mandate from management is a must

2. Ensure teams have the required expertise to deliver, are enthusiastic and positive
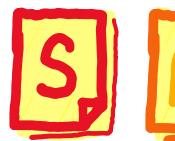
3. Requires investment in R&D for automation to increase efficiency

4. Management to mandate time for learning, upskilling, and mentoring

5. Constantly review and improve standards, methods and procedures