

# BIM como modelo de negocio

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COWI

# Contenido

- > Breve presentación
- > BIM como plataforma digital
- > Gestión de información y datos
- > Oferta de servicios
- > Tendencias
- > Recomendaciones

# Ponente

**DAVID CUQUERELLA ALBERT**

**Vicepresidente**

Departamento de Edificación

## **Experiencia**

- > Profesor asociado UA y UJI
- > Mace, 2001-2005
- > QLT Group, 2005-2012
- > Sweco, 2012-2014
- > COWI, 2015->

## **Competencias**

- > Gestión de proyectos y obras
- > Dirección global de operaciones
- > Digitalización y estandarización de procesos
- > Gestión del cambio
- > Fusiones y adquisiciones

## **Formación**

- > Arquitecto Técnico, UPV 1999



# Presentación COWI

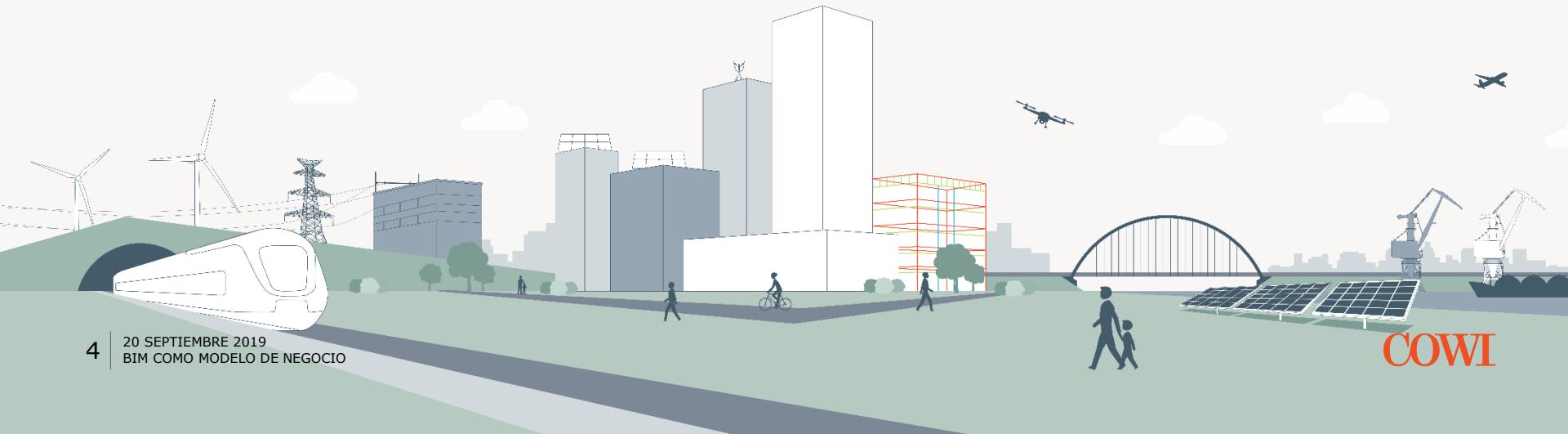
2018 net turnover:  
**831** M Euros

Approx. **7,300**  
employees

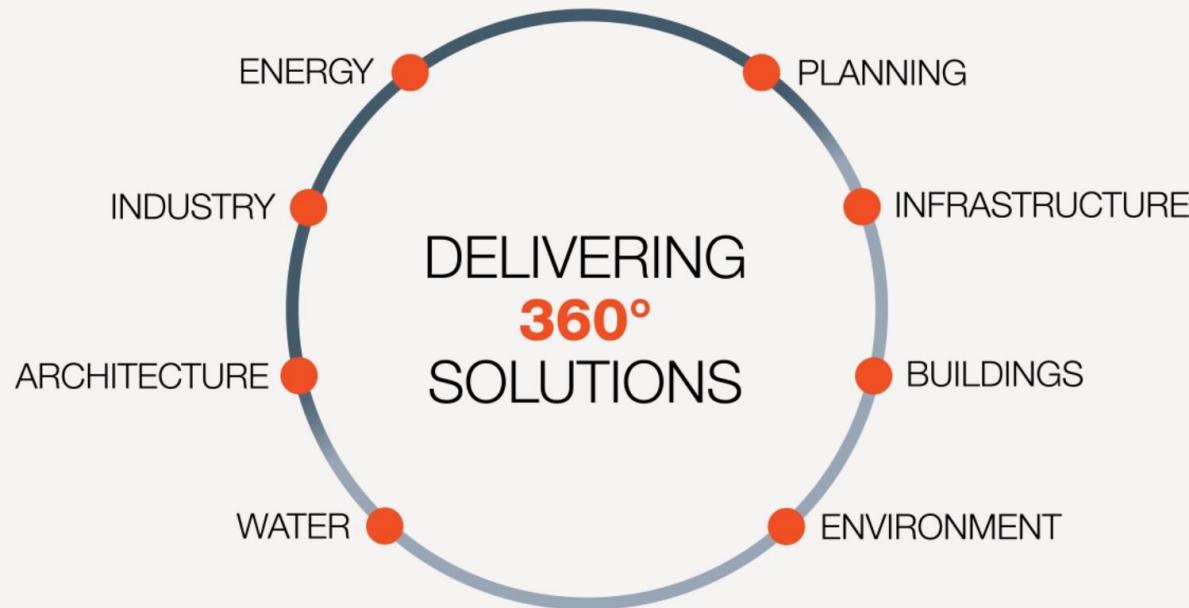
World-class  
competencies within  
**engineering,  
economics and  
environmental  
science**

At any given time,  
**12,000** ongoing  
projects

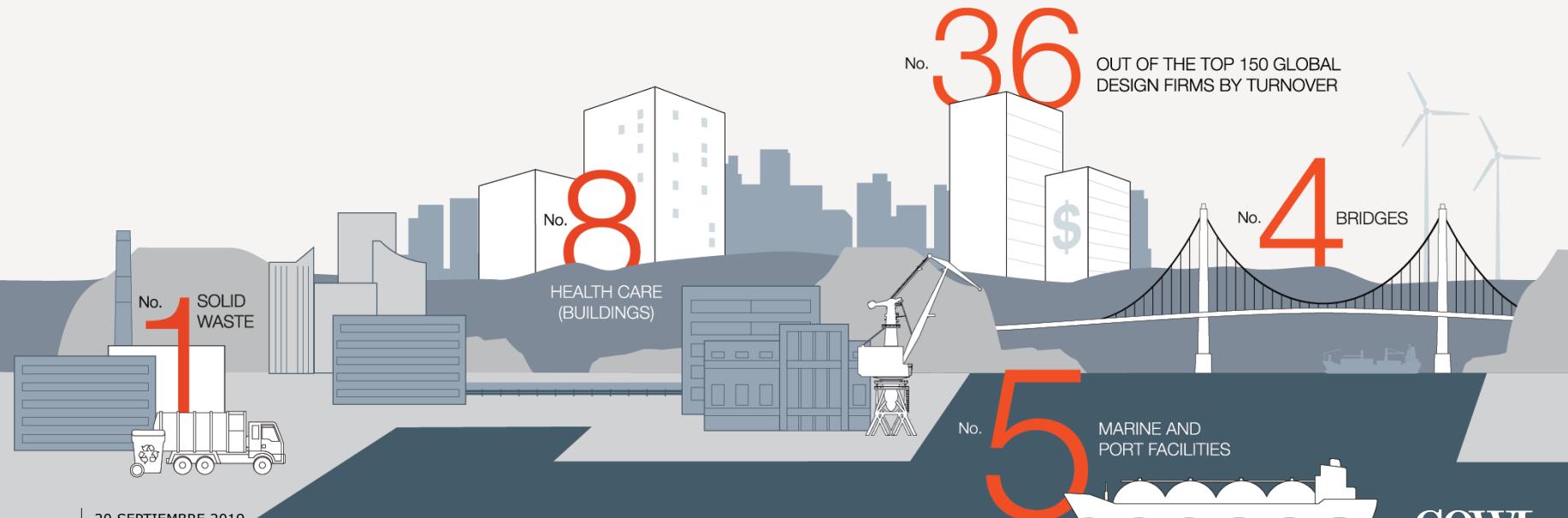
**25** countries and  
**89** years  
of history



# COWI como negocio



# Engineering News Record (ENR) rankings



# BIM como plataforma digital



# BIM como plataforma digital

## **Value creation**

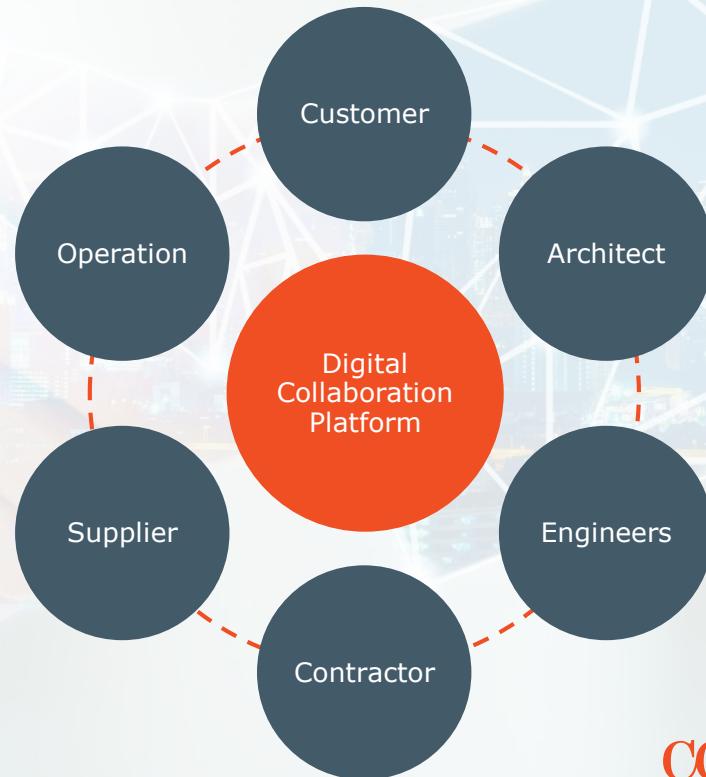
- › Build before Build
- › Take control of the entire value chain

## **Collaboration platform**

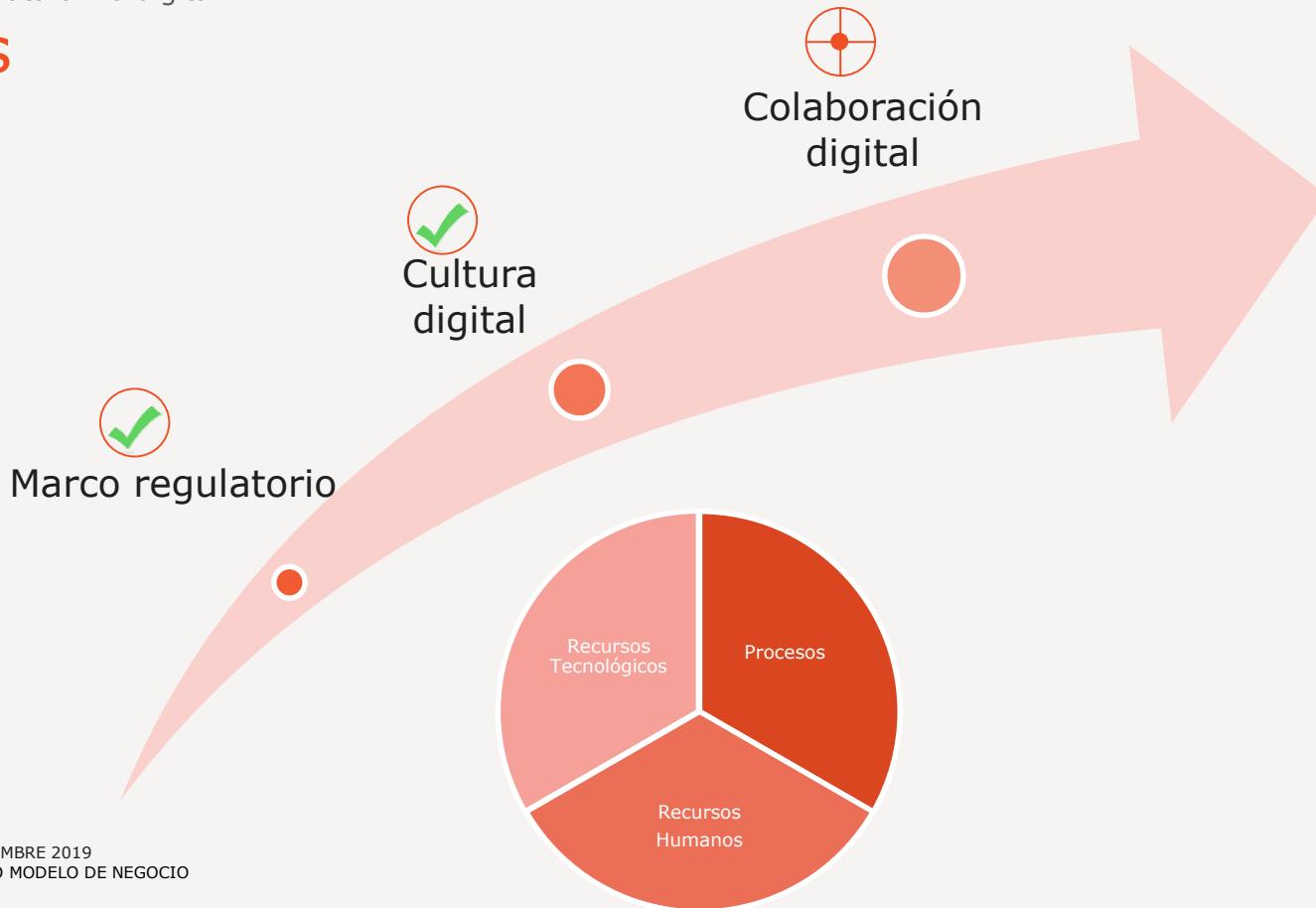
- › Responsible use and coordination of the model and data

## **Lean and Agile Design Management**

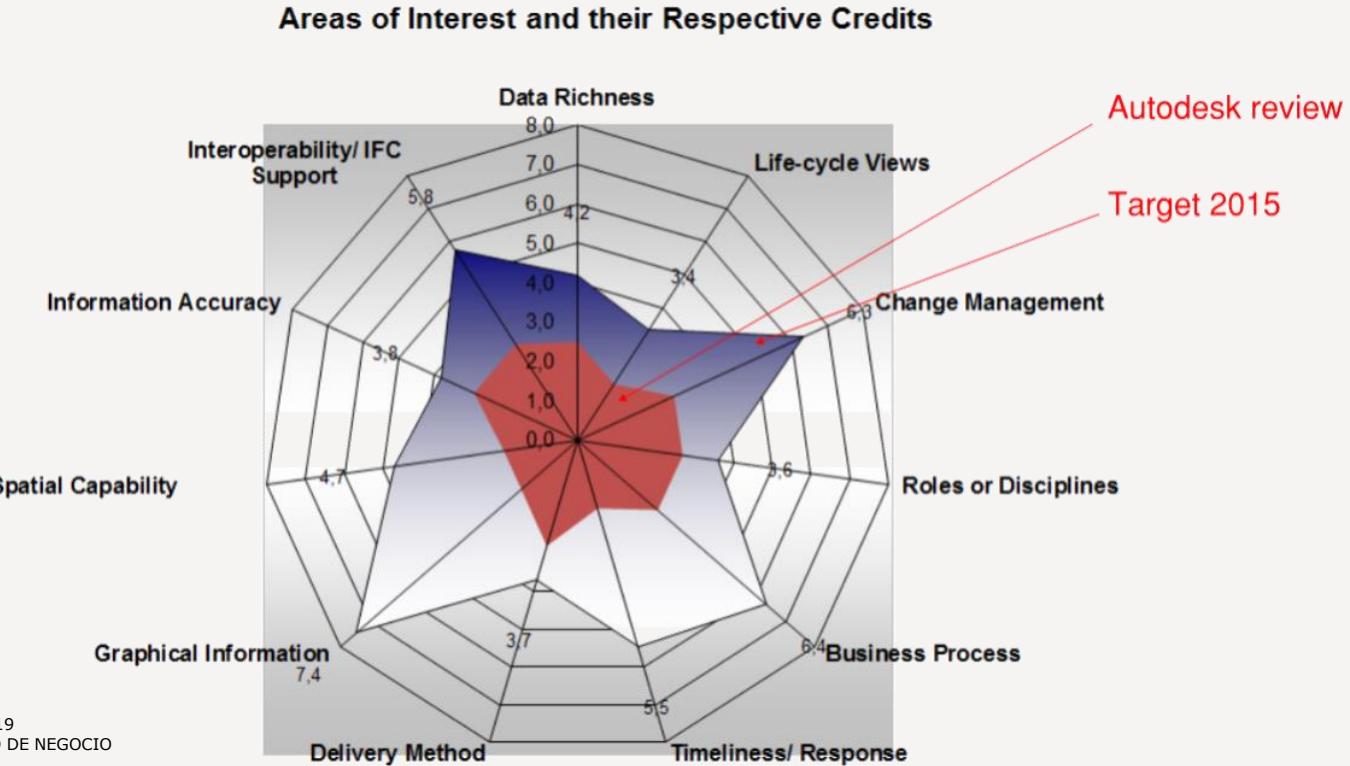
- › Better decision process and information flow is needed for digitalization to add value



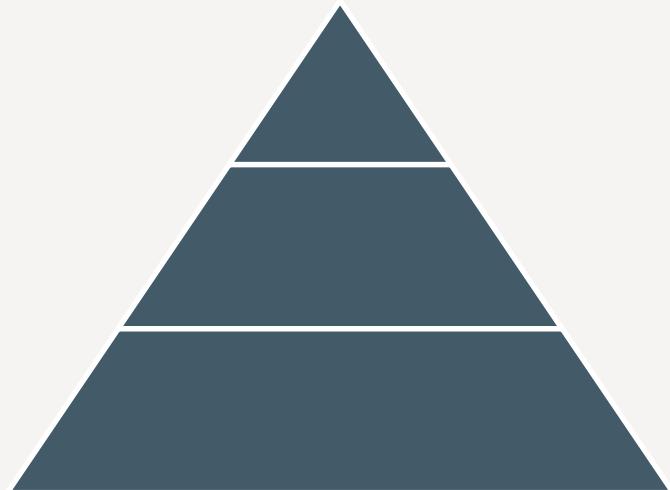
# Fases



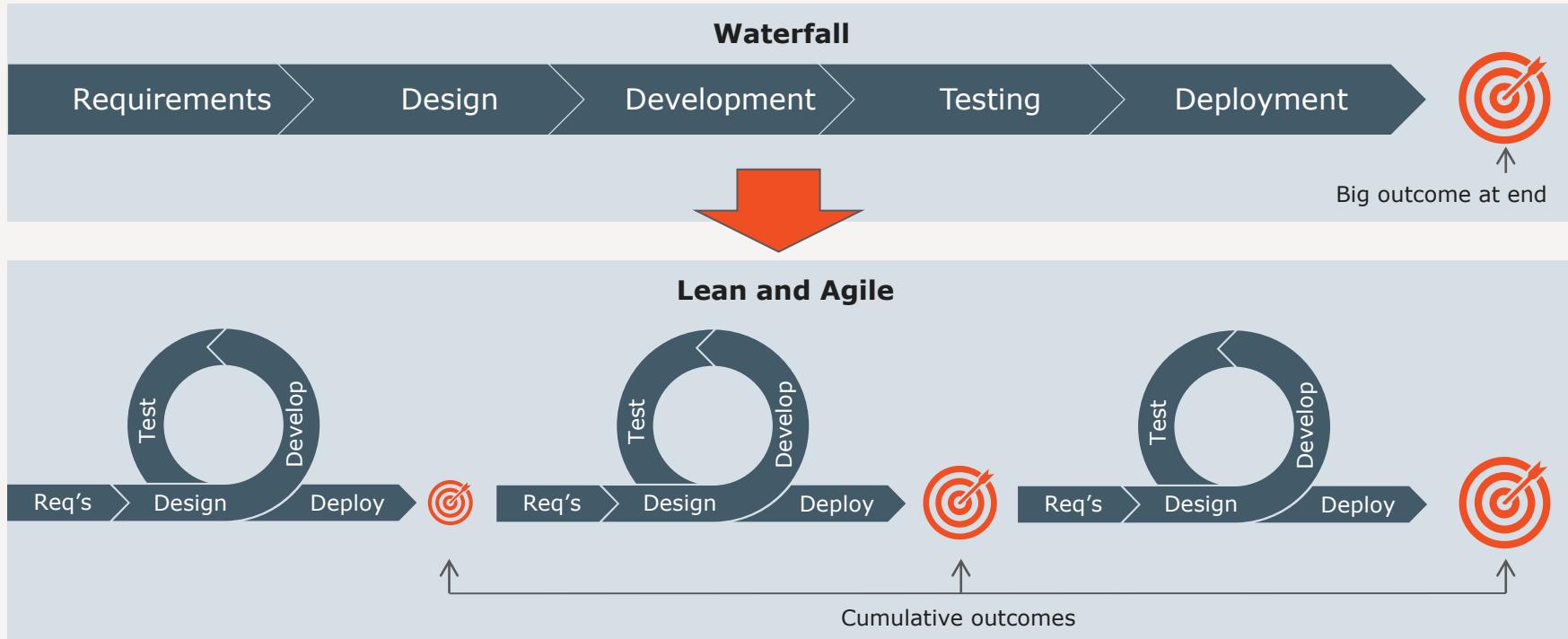
# Objetivos



# Modelos organizativos



# Procesos

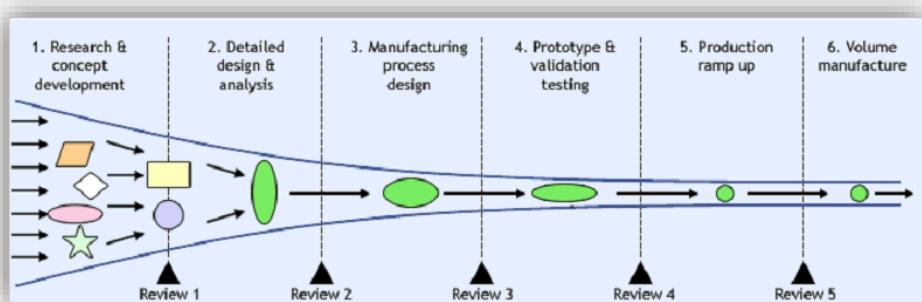


# Procesos

- › Simulations = Better decisions at the right time

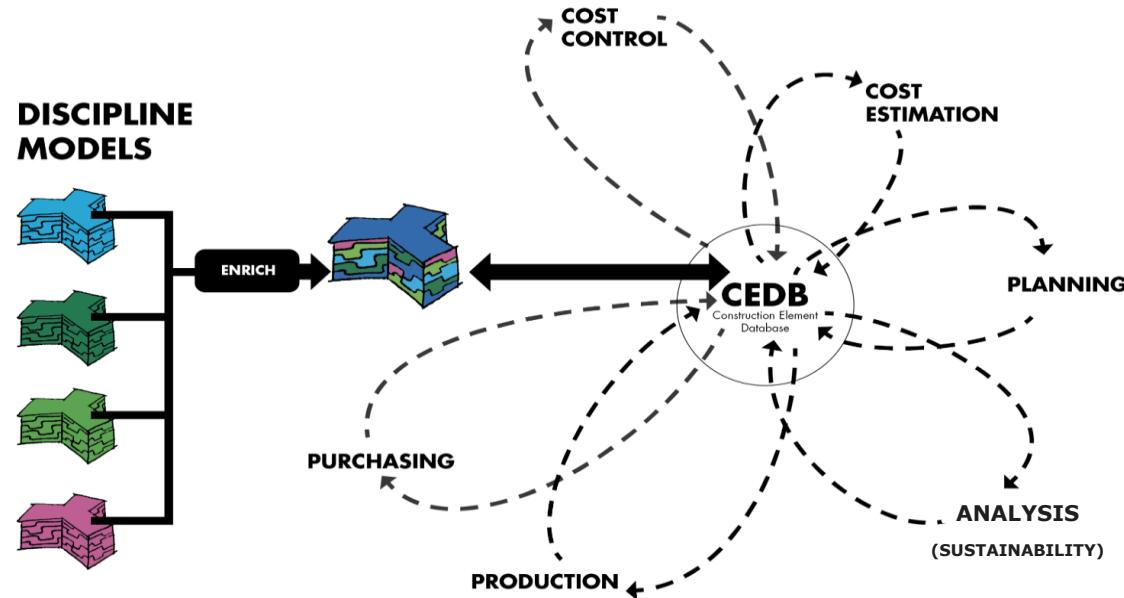


- › Co-location in design big rooms and pull planning

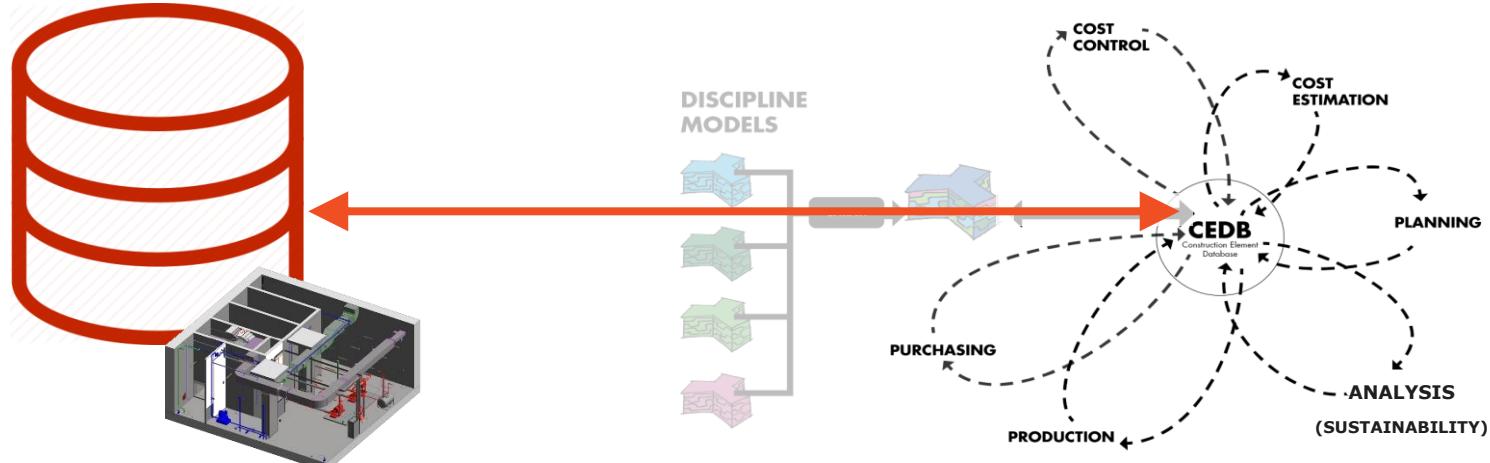


- › Data driven decision-making

# Diseño integrado



# Diseño integrado



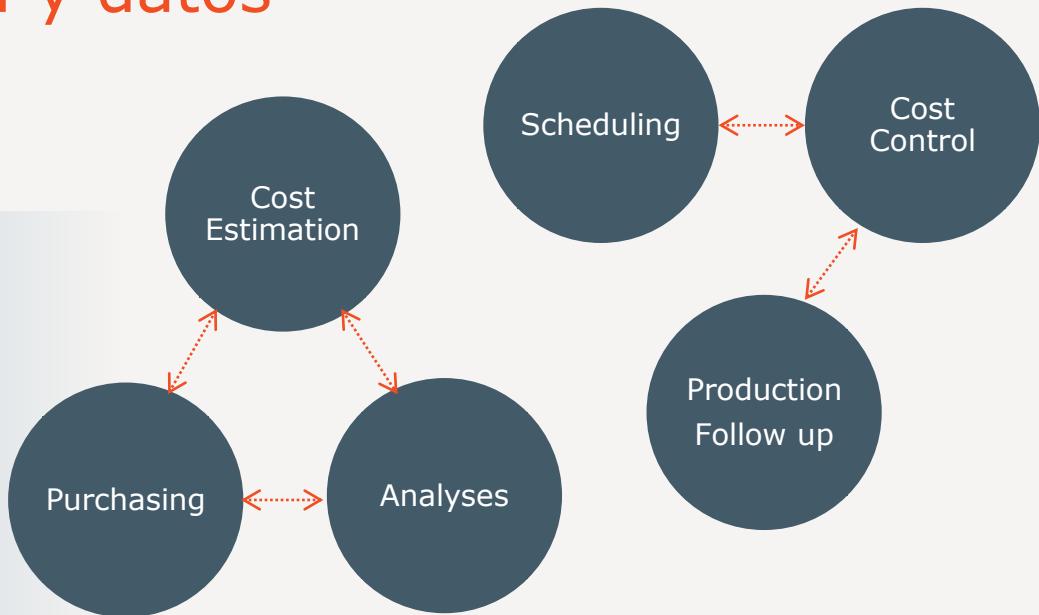
**Digital Deliveries**

# Gestión de información y datos



# Gestión de información y datos

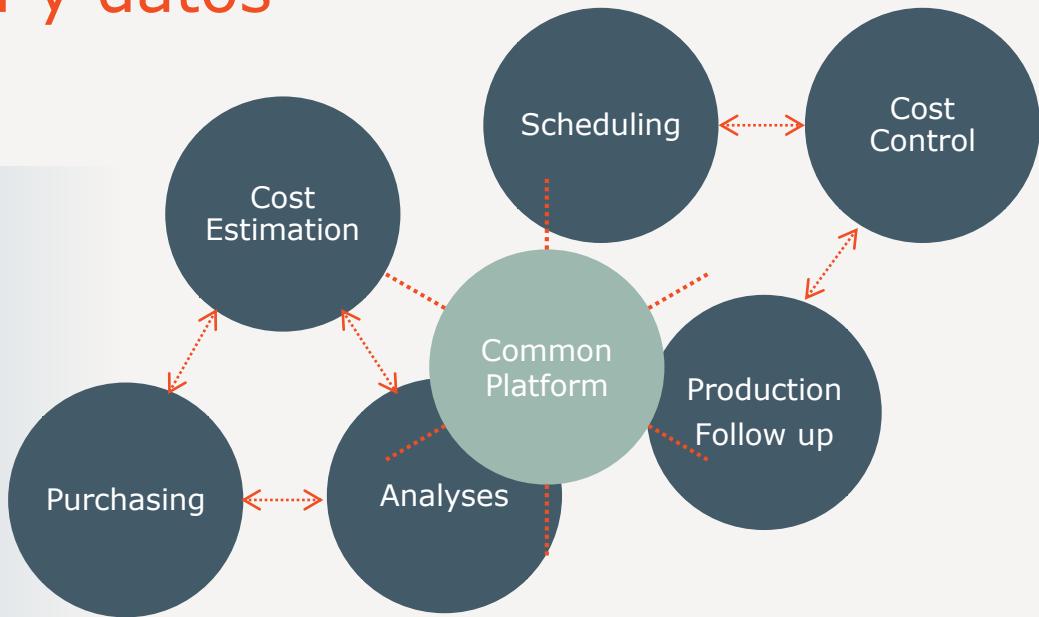
- › Construction element data is unstructured
- › Various way of working with project data – versions, locations
- › It takes too long for projects to get information



# Gestión de información y datos

## Digital Standardized structured construction elements gives:

- › Construction element data in same place
- › Fast feedback on design solutions
- › Fact based knowledge instead of individual best guess
- › Database for historical data, and not individual data across BL or sectors

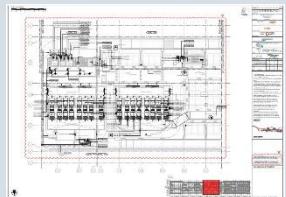


# Gestión de información y datos

## Traditional design process



Specifications

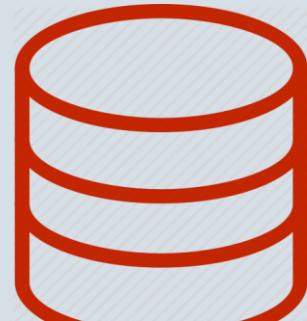


Drawings

BIM models

LOOSE CONNECTION

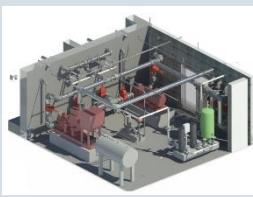
## Digital Integrated Design Process



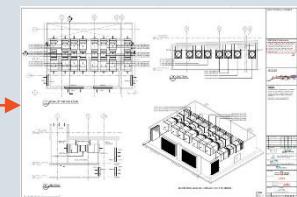
Construction Element Database



Specifications



BIM models



Drawings

# Gestión de información y datos

**Metro project**

**Attributes/Properties**

- › ID number
- › Type: Slabs, Columns, Doors etc.
- › Locations
- › Enterprise Codes, Mounting, Casting

Attribute	Value
Object	Parent
Name	SECRET TUBE
Type	SECRET TUBE
Category	SECRET TUBE
ID	730227
Dimensions	100x100x1000
Length	1000 mm
Height of Top Layer	1000 mm
Height of Bottom Layer	1000 mm
Base Treatment	No
Size	100x100
WLC_Slope	0%
WLC_Offset	0.0000 m
Level	0.0000 m
Horizontal offset, include U/N	0.0000 m
WLC_Offset_H	0.0000 m
Appeared	No
Base Cover - Other Faces	Reinforced/Type: Welded Cover
Extensible Analytical Model	Yes
Top Length, Top	1.0000 m
Post, T	0.0000 m
Front/rear thickness	50.0000 m
Max	100
Curvature radius	0.0000 m
Min	1.0000 m
Location of Bottom Surface	0.0000 m
Top, 1	1.0000 m
Front, 1	0.0000 m
72	0.0000 m
73	0.0000 m
74	No
Collaboration	None
Height (Other from Least)	0.0000 m
Height Cover - Top/Fast	0.0000 m
Reinforcement/Type: Welded Cover	None

## Administrative

- › Classification codes, identification numbers, project number ....

## Agreement

- › Law relevance, insurance, guarantee

## Function

- › Fire section, room usage (meeting room), .....

## Capability

- › U value, 30 meeting participants in a meeting room, energy consumption .....

## Material and/or product

- › Wooden floor, brick wall ....

## Form

- › Geometric value, HE profile, size of holes ....

## Placement

- › Geometric coordinates, tolerance for placement,

## Economy

- › Unit prices, exchange rate, indexes ....

## Time

- › Planned start date and time, elapse time for mounting ...

## Experience

- › Feeling of light, beauty and volume,

## Health and security

- › Risk, Means of protection, demolition considerations .....

## Relation

- › Connected to, sequence to production ...

## Production

- › Installation instructions, detail specifications, work activity type

## Quality

- › Documentations and controls, pictures and measurements, q-plans

## Maintenance

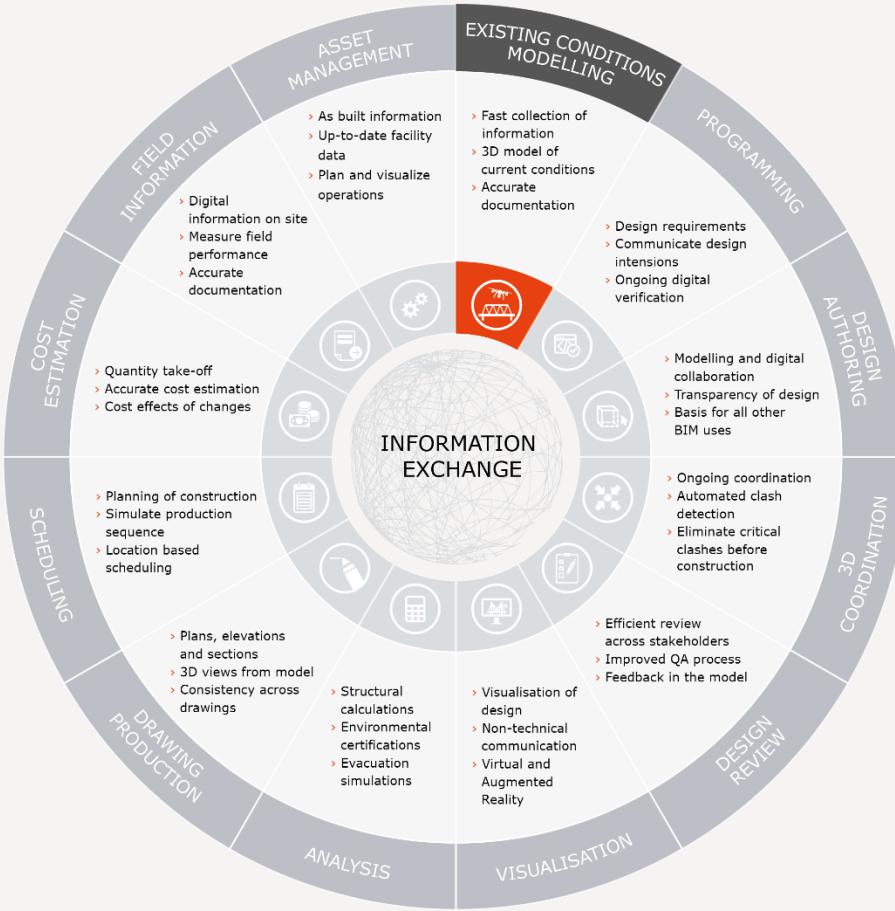
- › Maintenance requirements and frequency, cleaning tools, .....

# Oferta de servicios

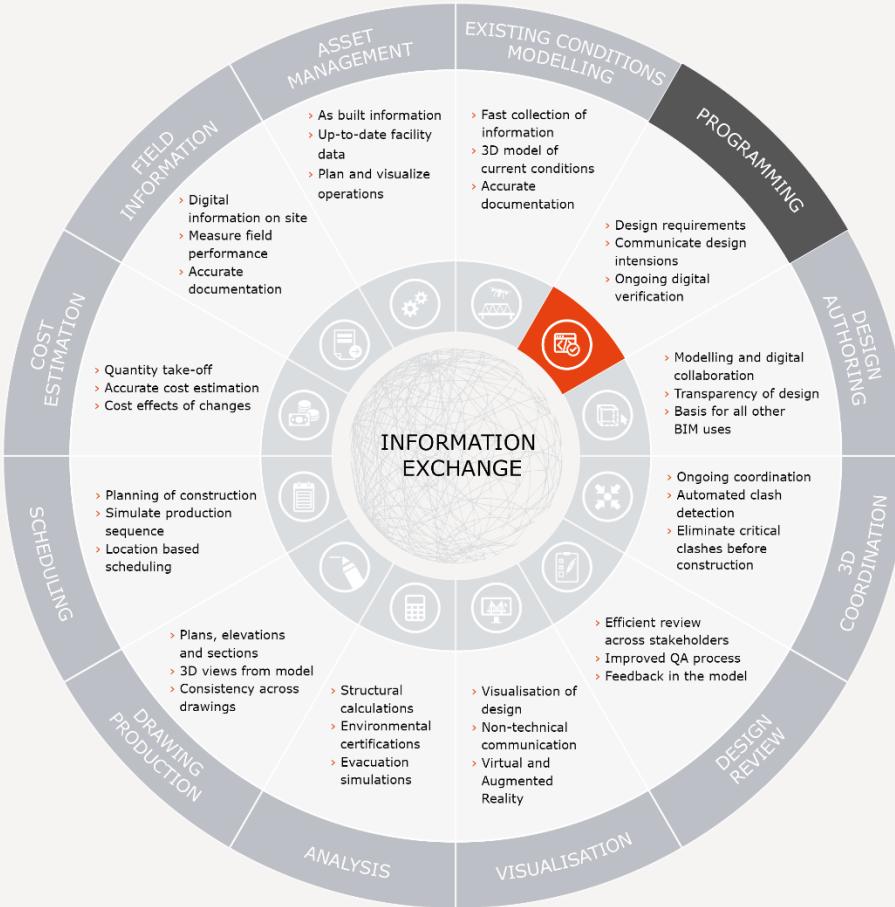


**COWI**

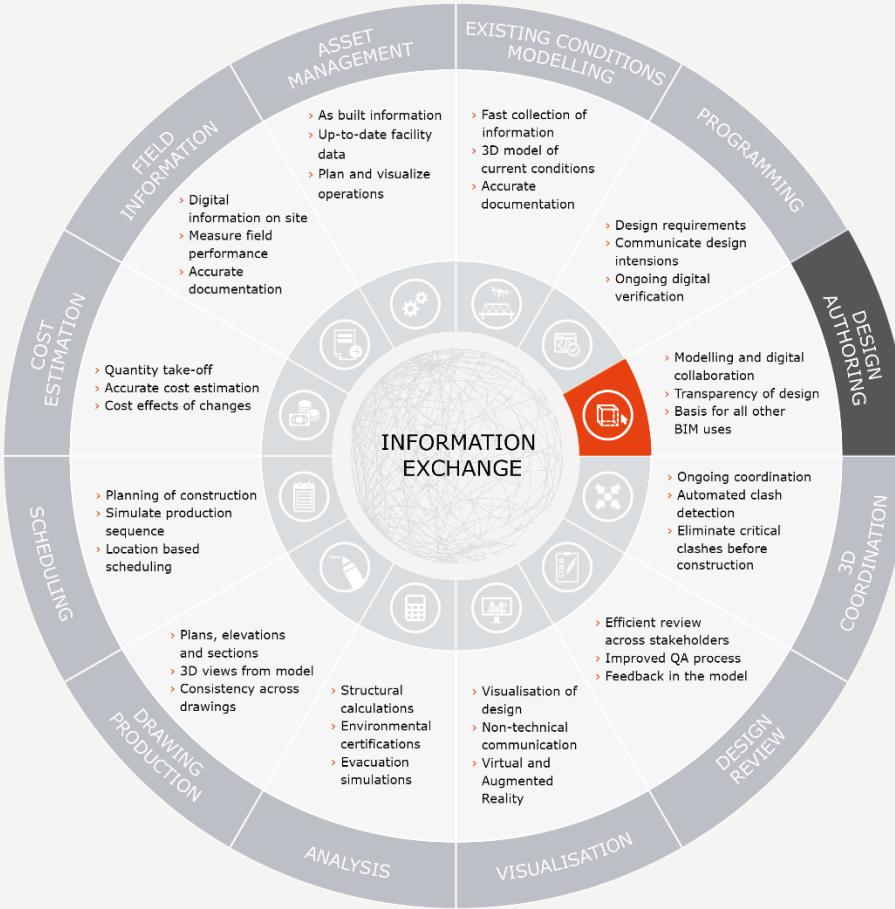
## Oferta de servicios



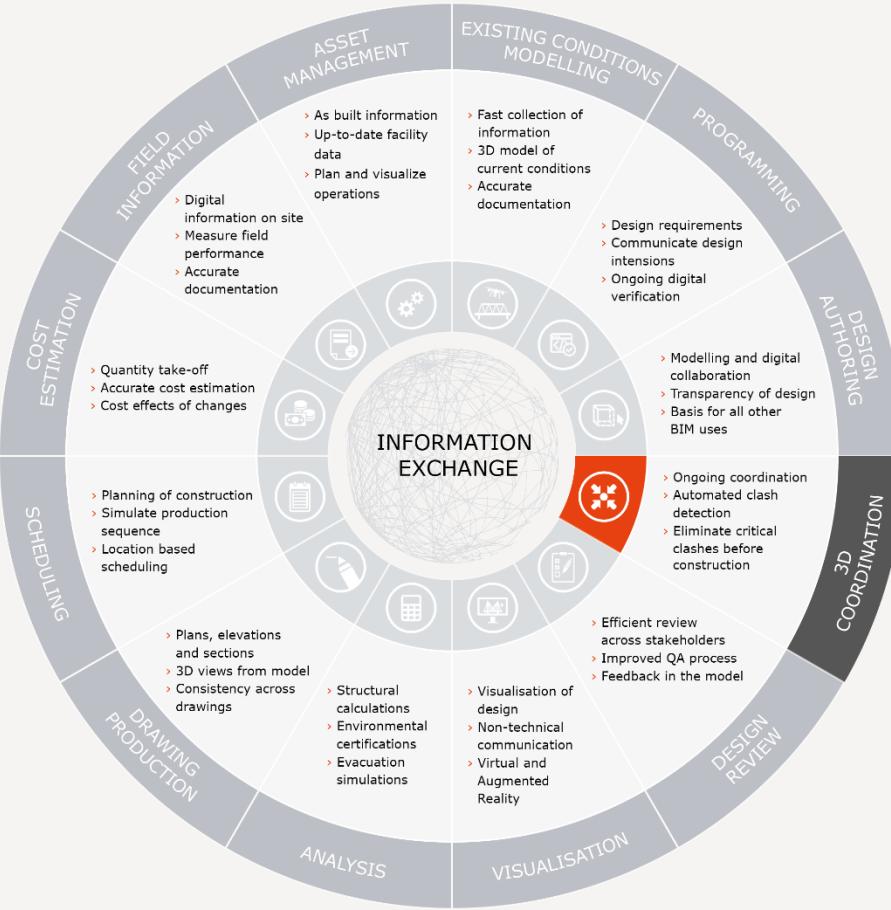
## Oferta de servicios



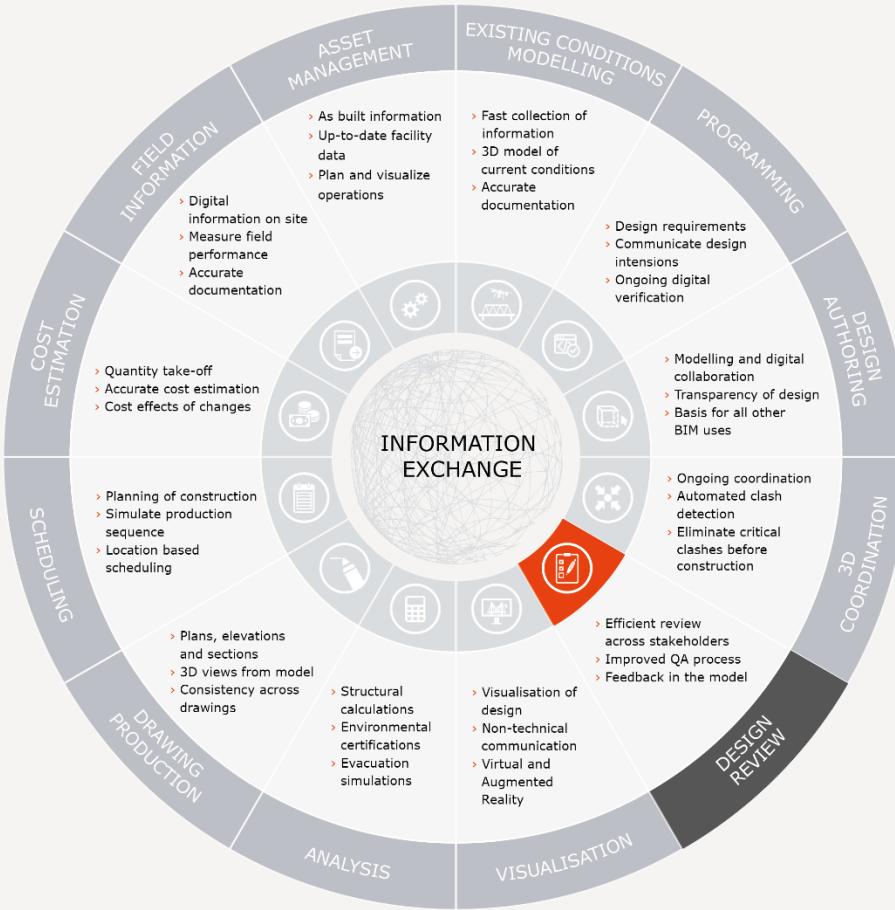
## Oferta de servicios



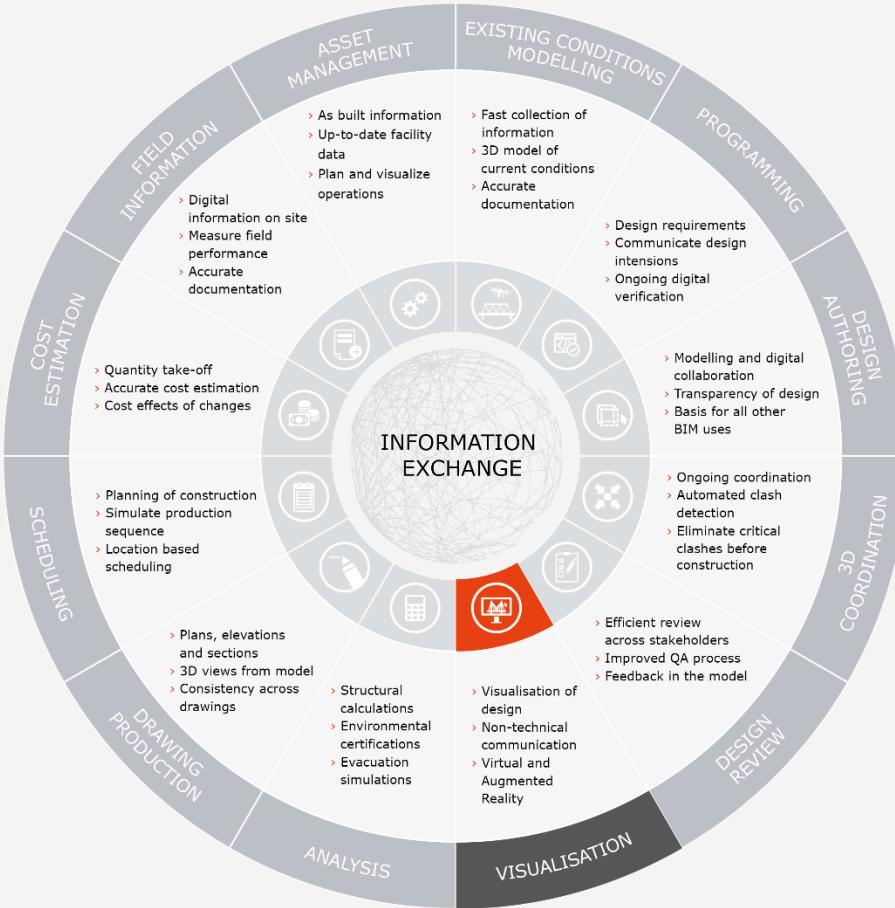
## Oferta de servicios



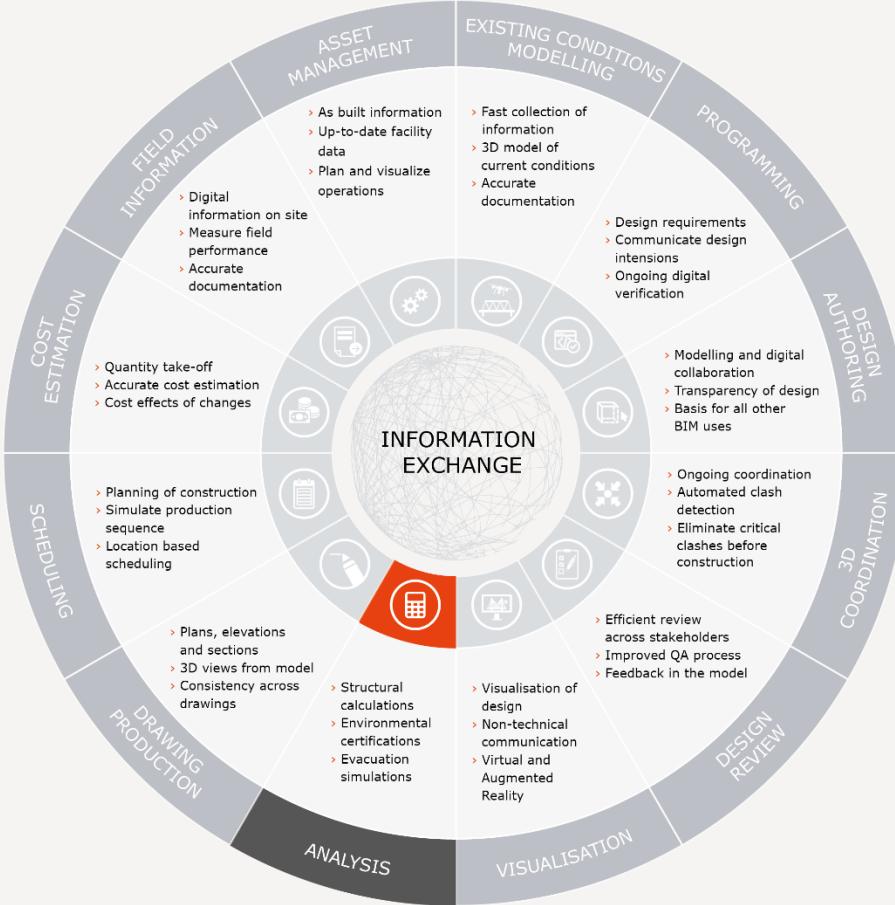
## Oferta de servicios



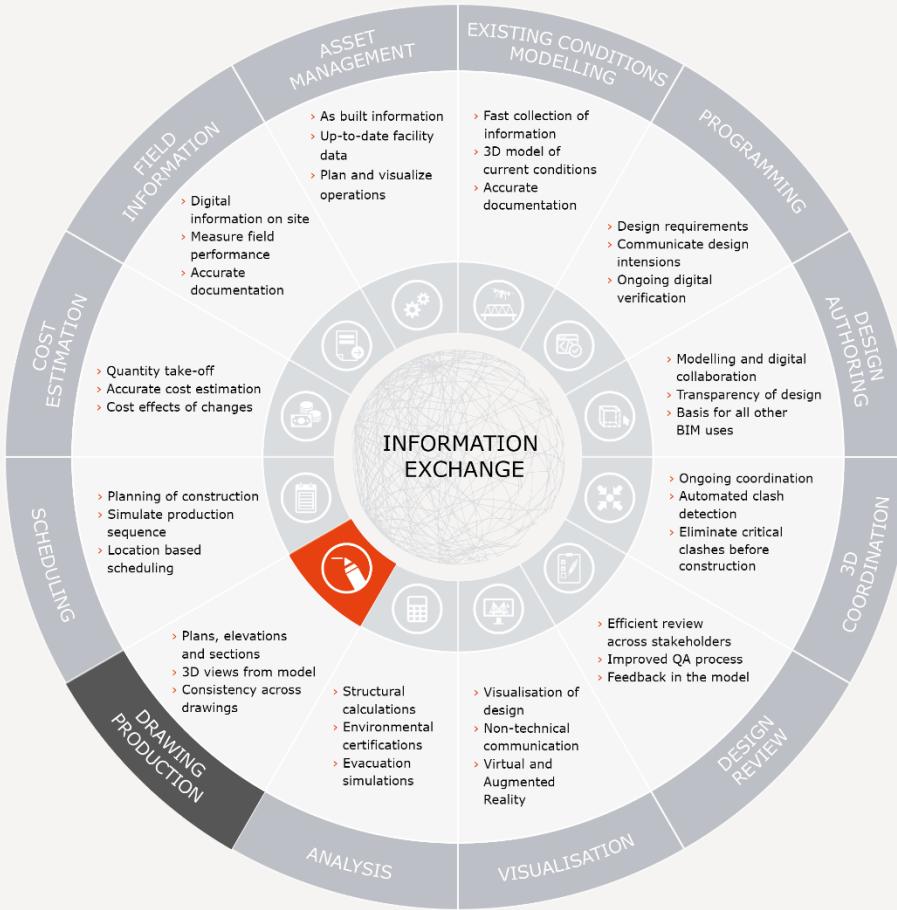
## Oferta de servicios



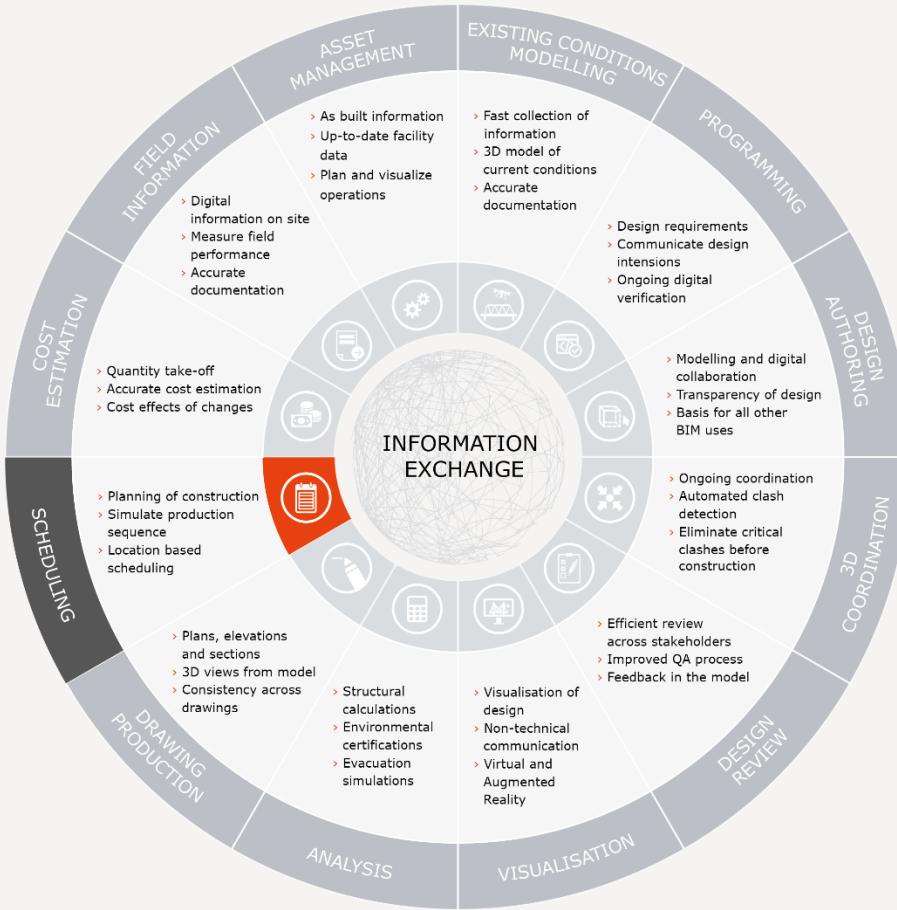
## Oferta de servicios



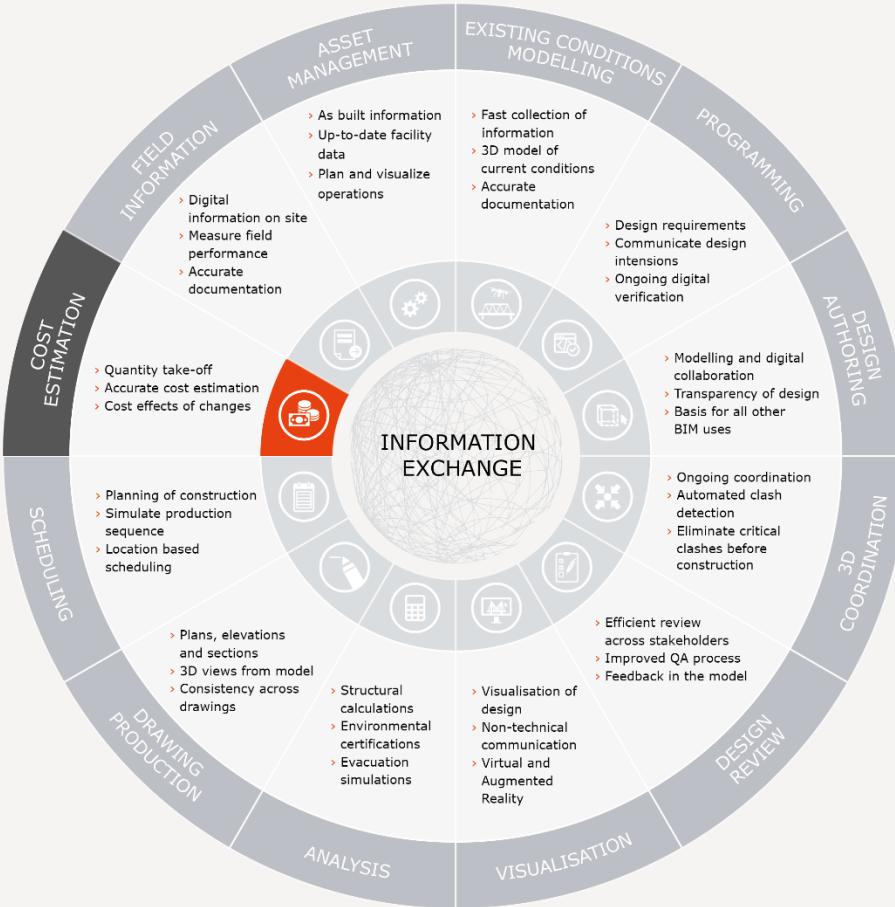
## Oferta de servicios



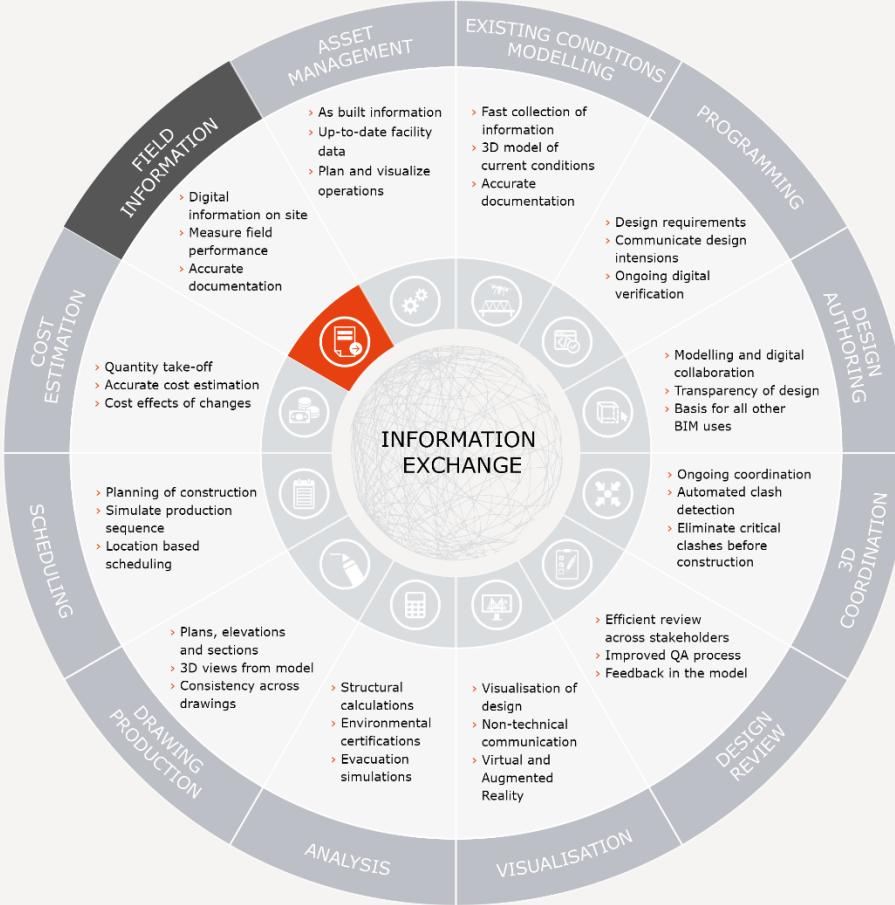
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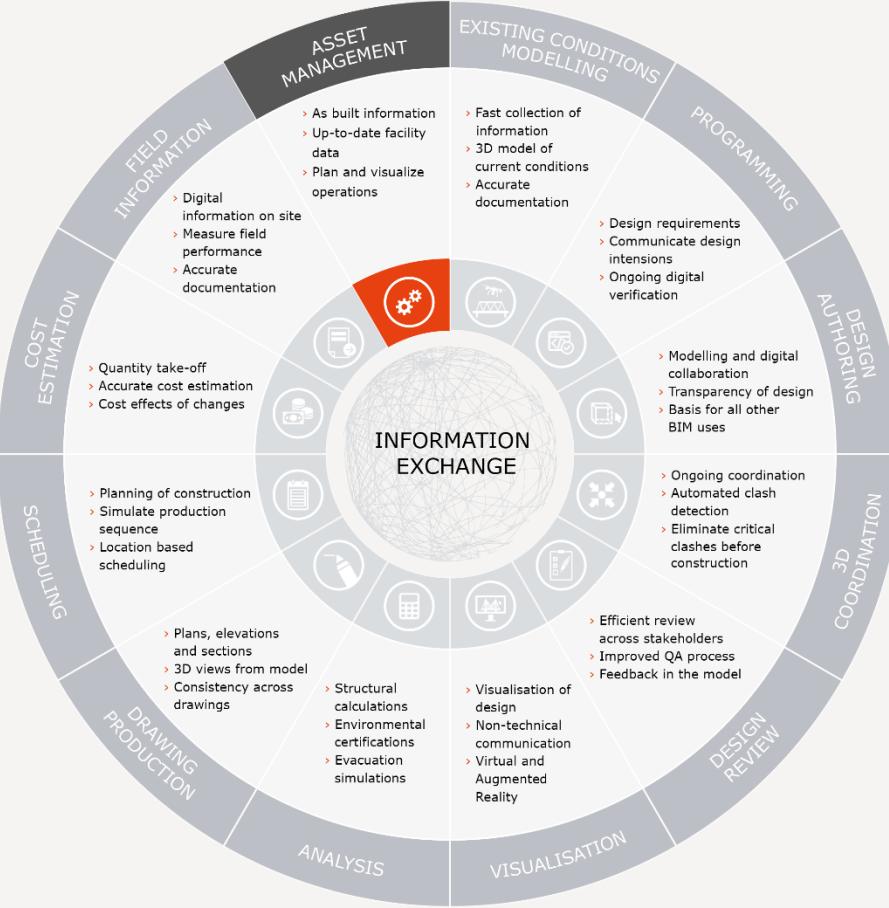
## Oferta de servicios



## Oferta de servicios



## Oferta de servicios



# Tendencias



# Tendencias – Largo plazo?

Sensor technology

Big Data analytics

Artificial Intelligence (AI)

Automated design

Applied Geospatial Science

IOT

Common data lake

Platforms

Gig Economy/Freelancing

BIM / ID / AR / VR

3D printing

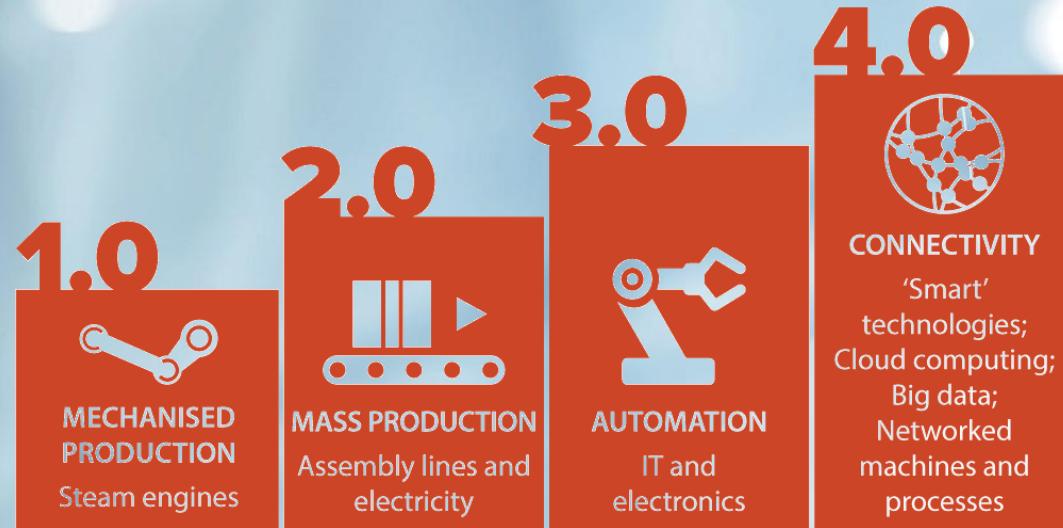
Robotics

Sharing Economics

Wearables

Blockchain

# Industry 1.0 -> 4.0



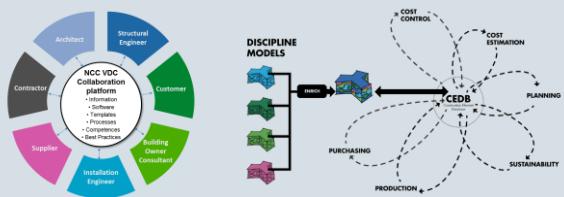
The stages of industrial development

Source: Oxford Analytica

Tendencias – Corto/Medio plazo

# Build 4.0

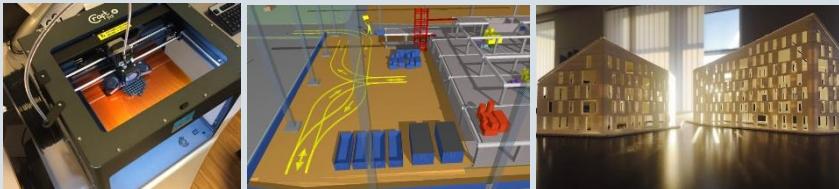
## Collaborative and integrated design processes



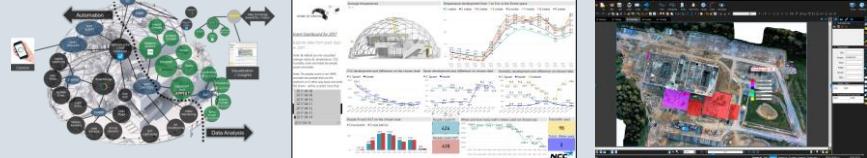
## Digital tools and automation



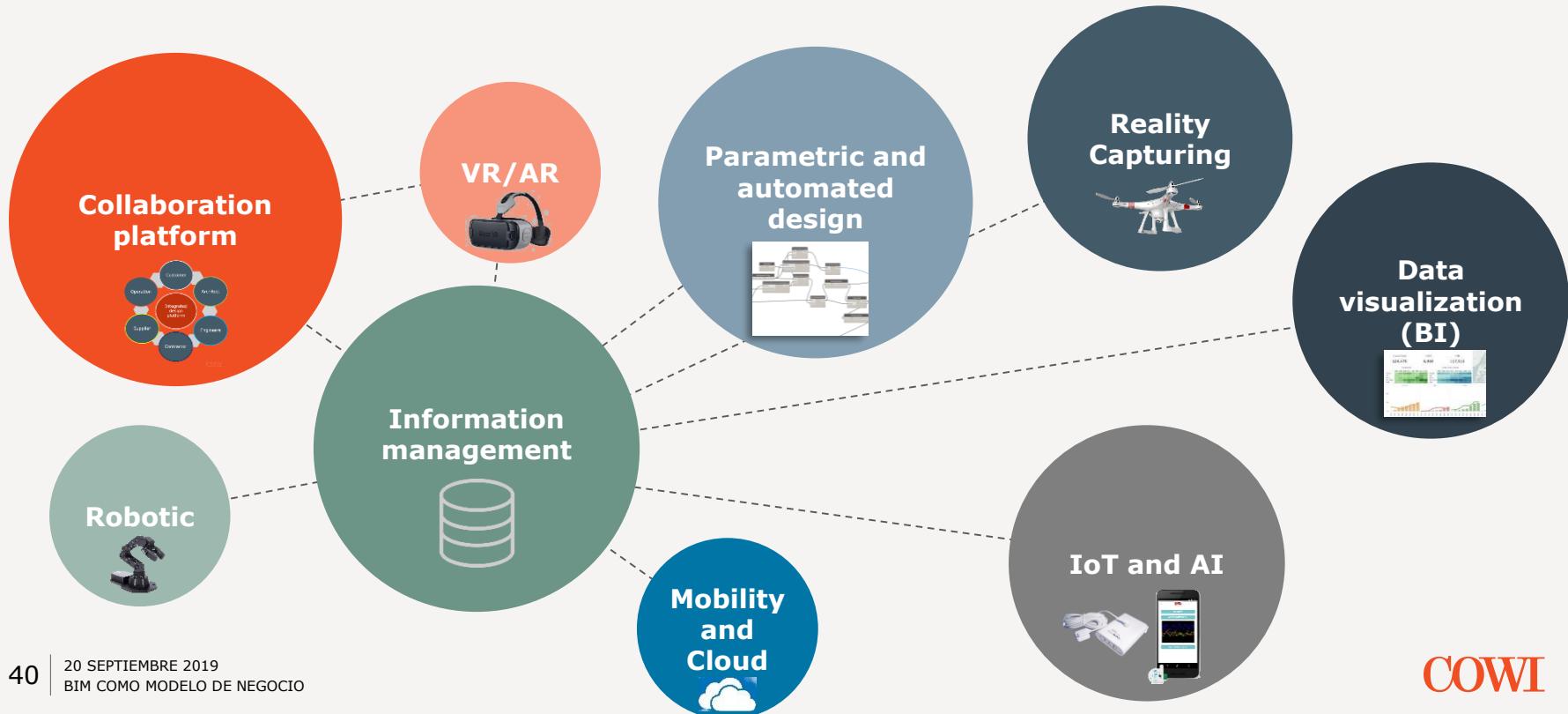
## Digital prototyping and simulations



## IoT – Internet of things



# Build 4.0



# Recomendaciones

1. Desarrolla una estrategia para implementar BIM
2. BIM es mucho más que 'software'
3. Define claros roles y responsabilidades
4. Busca alianzas
5. Invierte en I+D+i
6. Prototipa y marca objetivos antes de escalar
7. Sólo hay una constante: cambio, cambio y cambio





# Gracias por vuestra atención