AUTODESK. UNIVERSITY

IPD: A Lean and BIM approach with BIM 360

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México 🇲🇽

Spicy food, spicy people.

Photo credit goes here

Tacos

You’re welcome.

Traditional Mexican dish consisting of a small hand-sized tortilla topped with a filling, then folded and eaten by hand.

Tequila

You’re welcome, again.

Distilled beverage made from the blue agave plant, primarily in the area surrounding the city of Tequila northwest of Guadalajara, Mexico.

About the speaker

Daniela Gutierrez

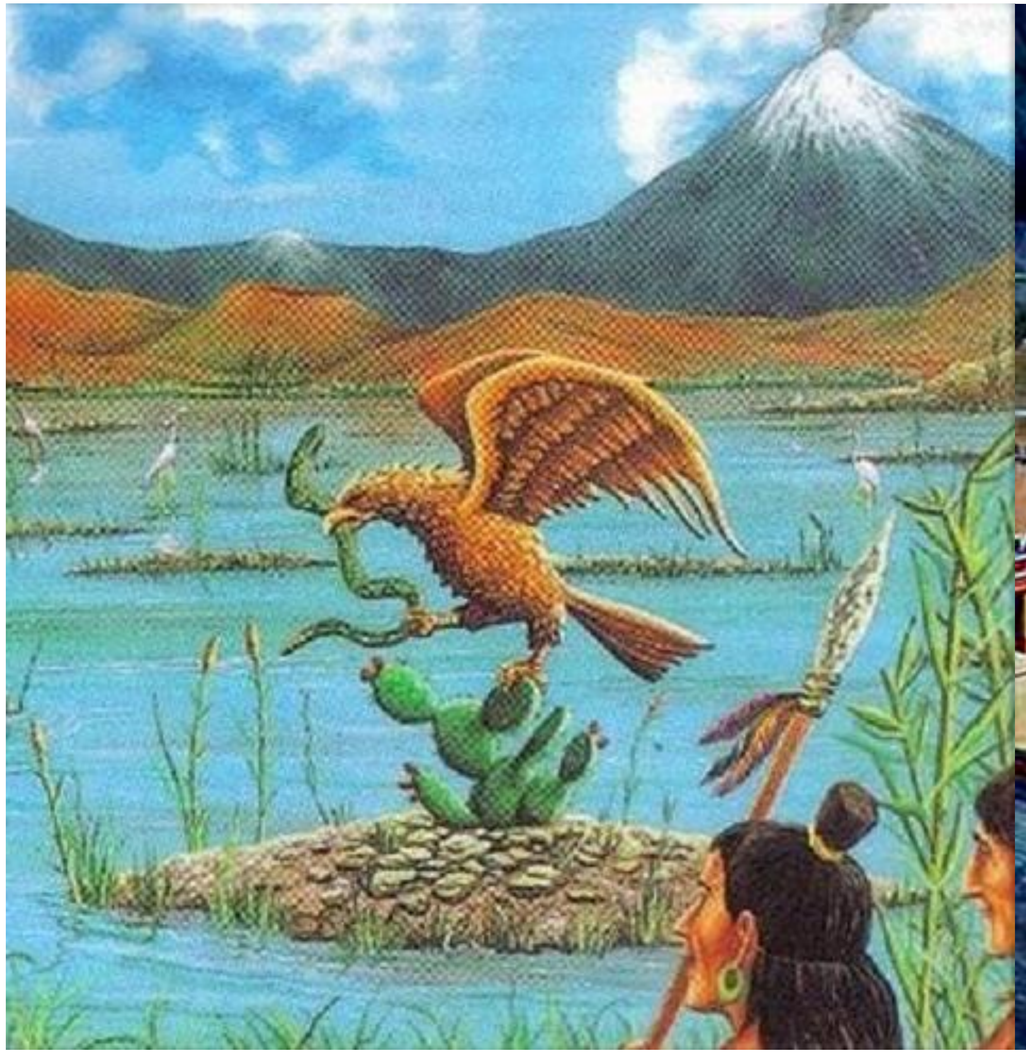
Daniela is a Lean Construction and BIM oriented architect who currently works in Hermosillo. As a VDC Manager, she is responsible for developing, implementing, and reinforcing VDC strategies and technologies within the company.

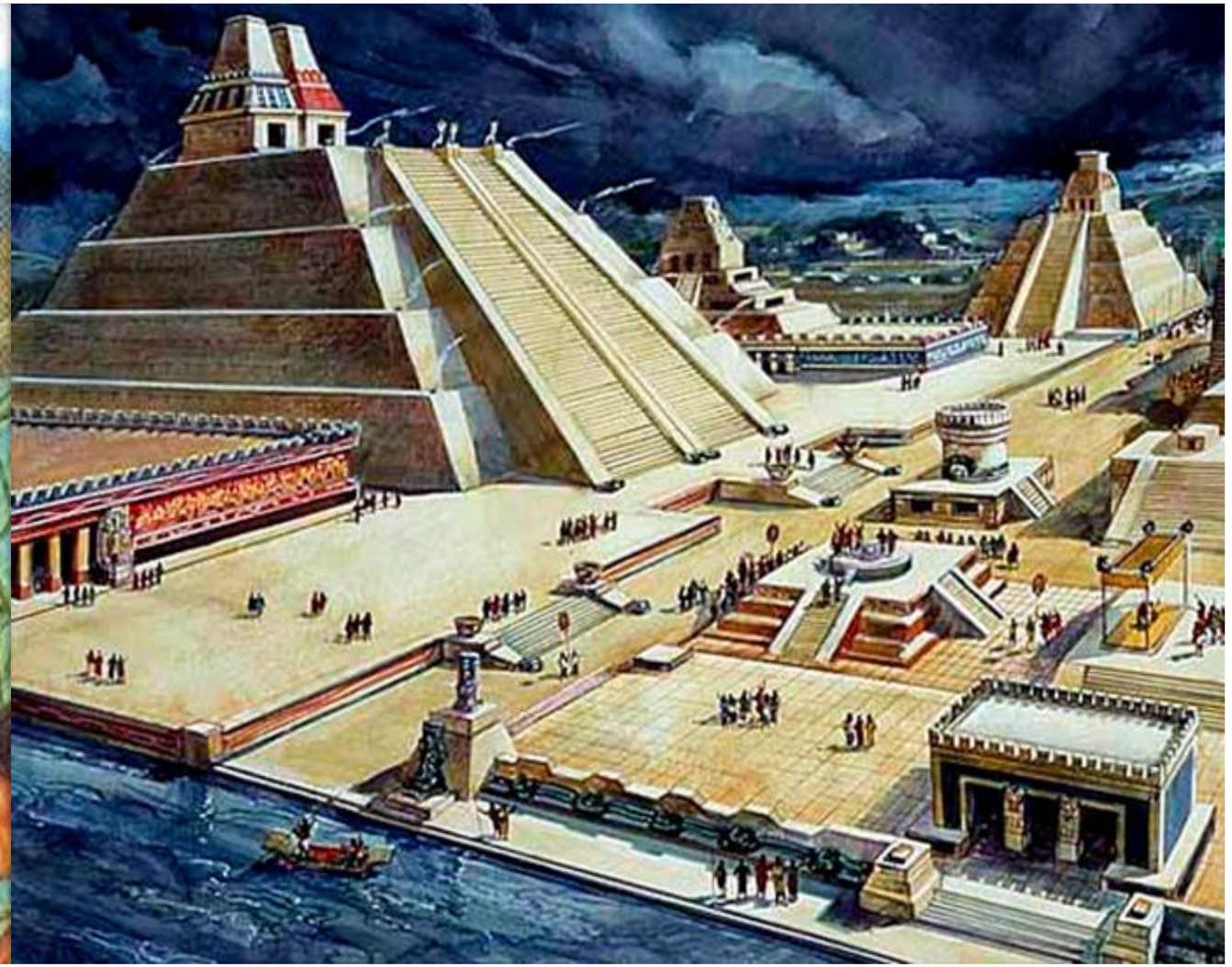
About the speaker

Arturo Flores

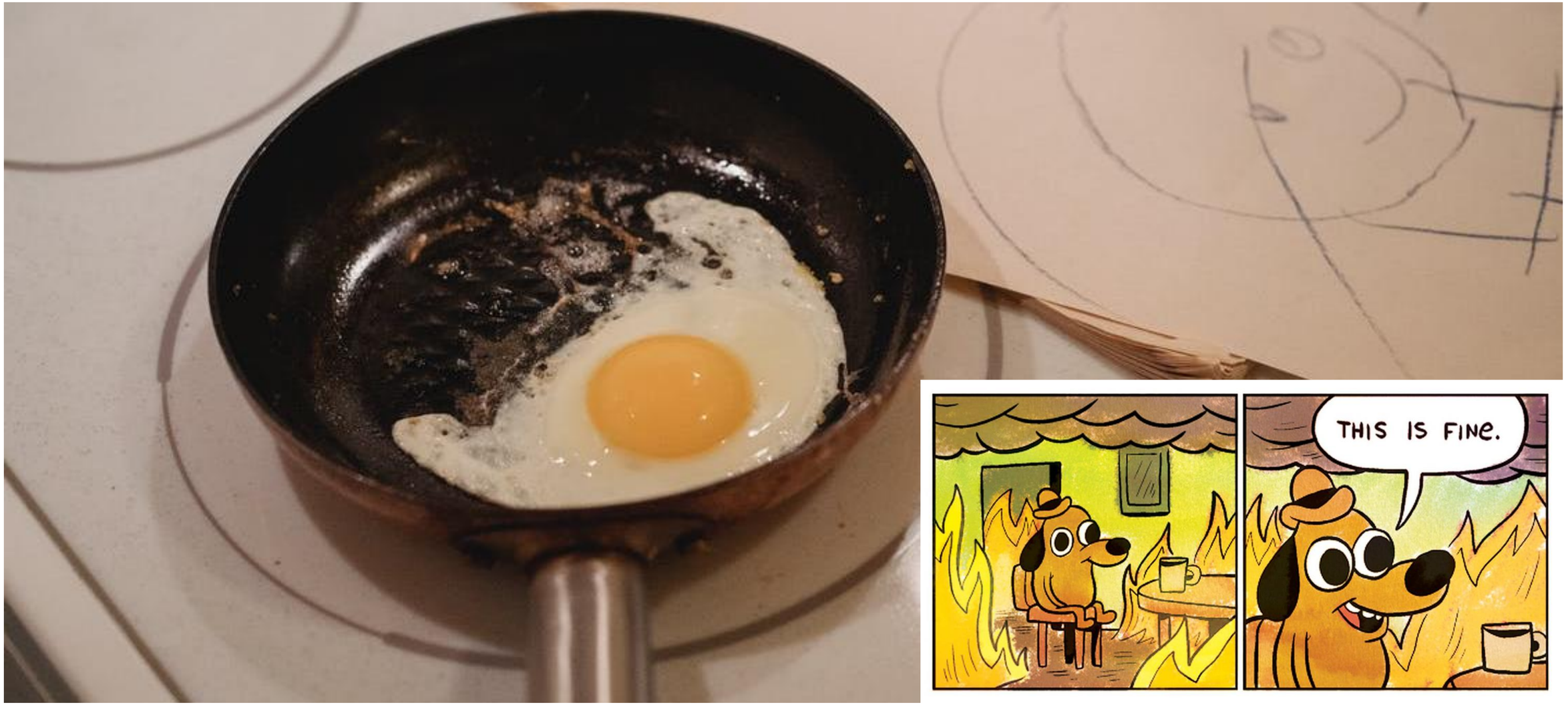
Arturo is a design, sustainability and BIM oriented architect who currently works in Hermosillo. As a VDC Manager, he is responsible for supporting and monitoring different teams and strategies across the company. Currently working on projects focused on design automation, generative design and augmented reality.

Mexico City





Mexicali



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Class Description

IPD: A Lean and BIM approach with BIM 360

We are going to talk about how BIM 360 helped us, as the CM to streamline the IPD workflows between stakeholders outside our company and how powerful data helped us monitor the possible risks. We will tell you how we leveraged the different modules to help us efficiently manage the project.

Class Description

IPD: A Lean and BIM approach with BIM 360

IPD = HOW?

Class Description

IPD: A Lean and BIM approach with BIM 360

IPD = LEAN + BIM + BIM360

Case Study

The Story

ACT 1

THE MYSTERY

We tell you what to do when you have no idea of what you are doing.

ACT 2

THE PLOT THICKENS

We tell you what we had to do in order to start a successful IPD project.

ACT 3

THE UGLY TRUTH

We tell you the good, the bad and the ugly from our experience.

THE END

THE RAINBOW

We tell you why should still consider using BIM 360 with your first IPD project.

Learning Objectives

OBJECTIVE 01

Explain the key differences between a traditional siloed data project and a BIM 360 project.

OBJECTIVE 02

Determine the necessary BIM 360 modules for a successful IPD project.

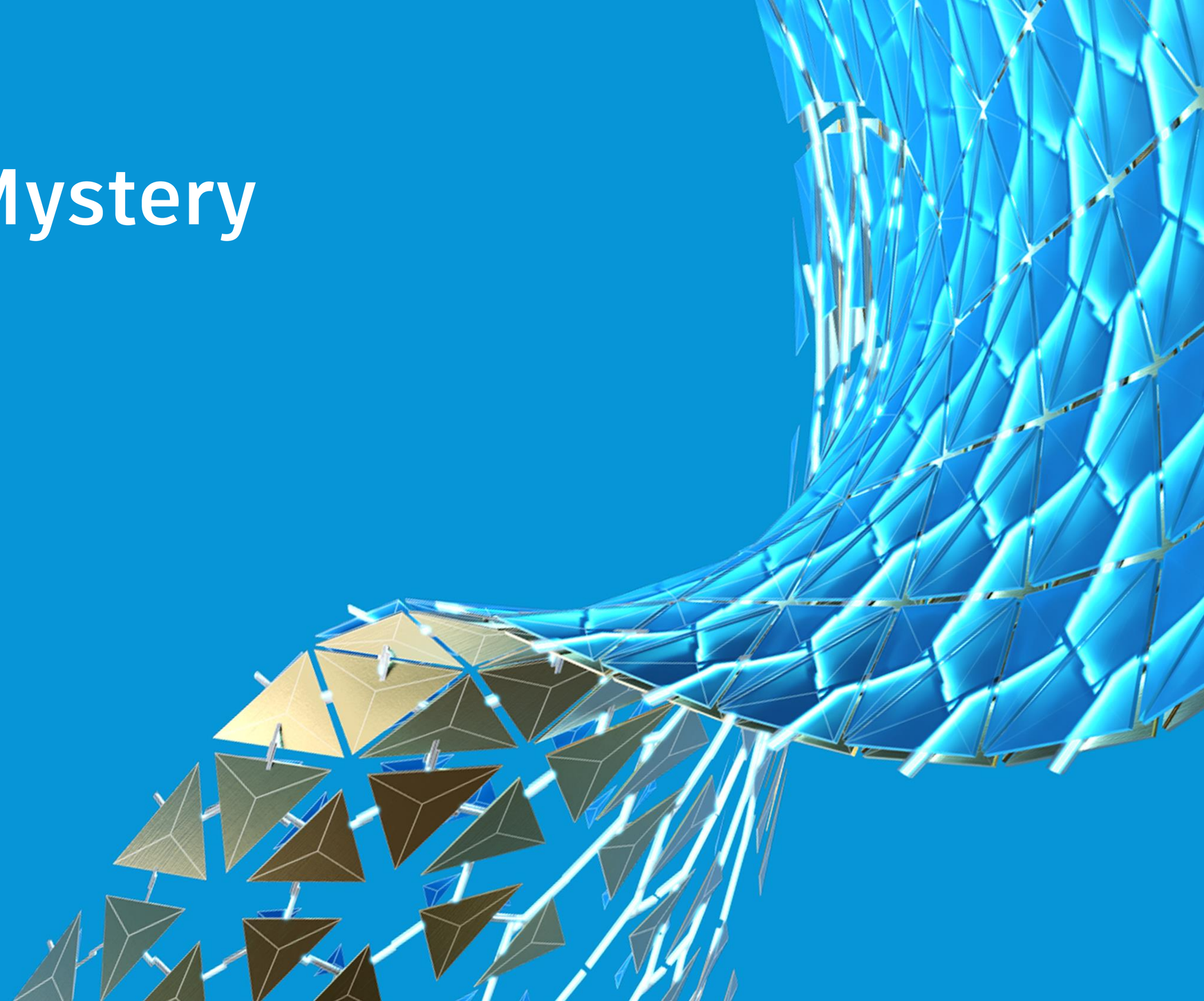
OBJECTIVE 03

Establish the project's BIM 360 roles and workflows for each phase.

OBJECTIVE 04

Identify the project's delays and potential risks through BIM 360 Insight dashboards.

ACT 1: The Mystery



Where do we start?

The problems

Time, cost and quality.

Owners are aware of the existing problems in design and construction projects and want **better outcomes.**

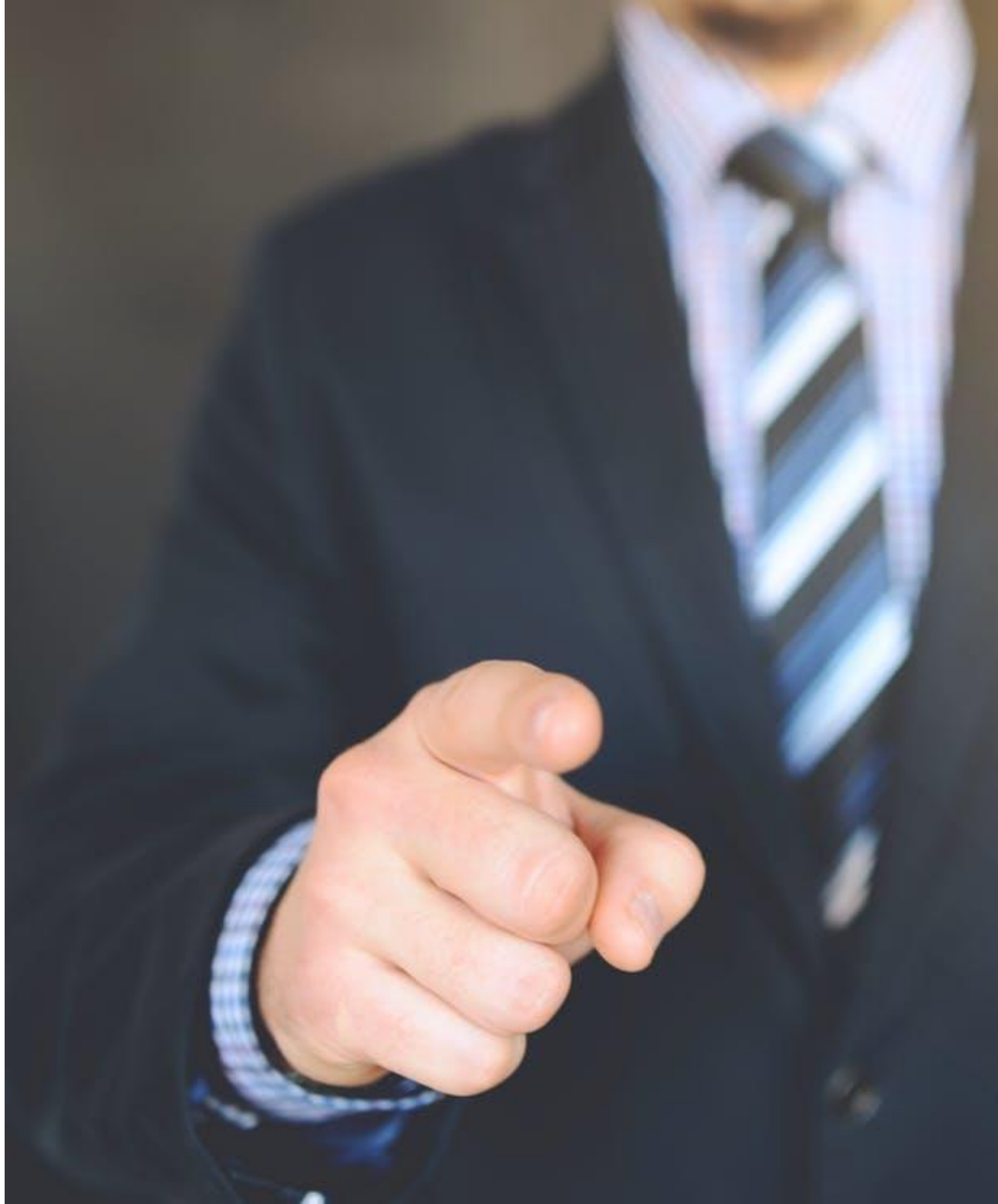
HOW CAN WE EXPECT DIFFERENT RESULTS IF WE DON’T DO THINGS DIFFERENTLY?

IPD: What is it?

A form of contract agreement that integrates all parties into the same contract.

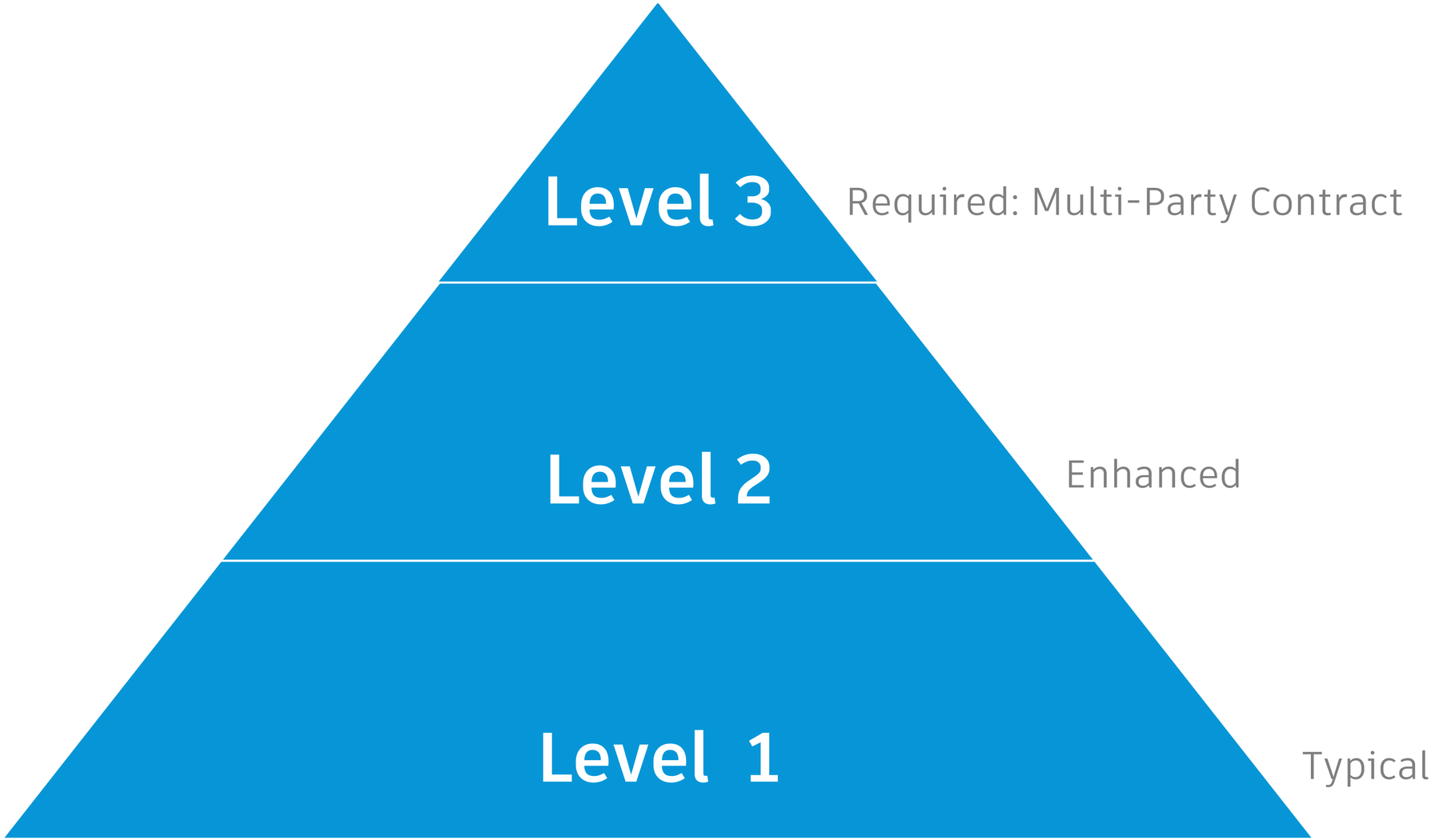
- It is based on a risk-reward sharing environment. The objective is for all partners to stay on budget.

- The owner is usually the driver for this type of delivery method.



IPD Goal: Collaboration

Levels of Collaboration



Key IPD Collaboration Principles

- It must be contractual
- It involves behavioral changes
- It requires the presence of catalyst

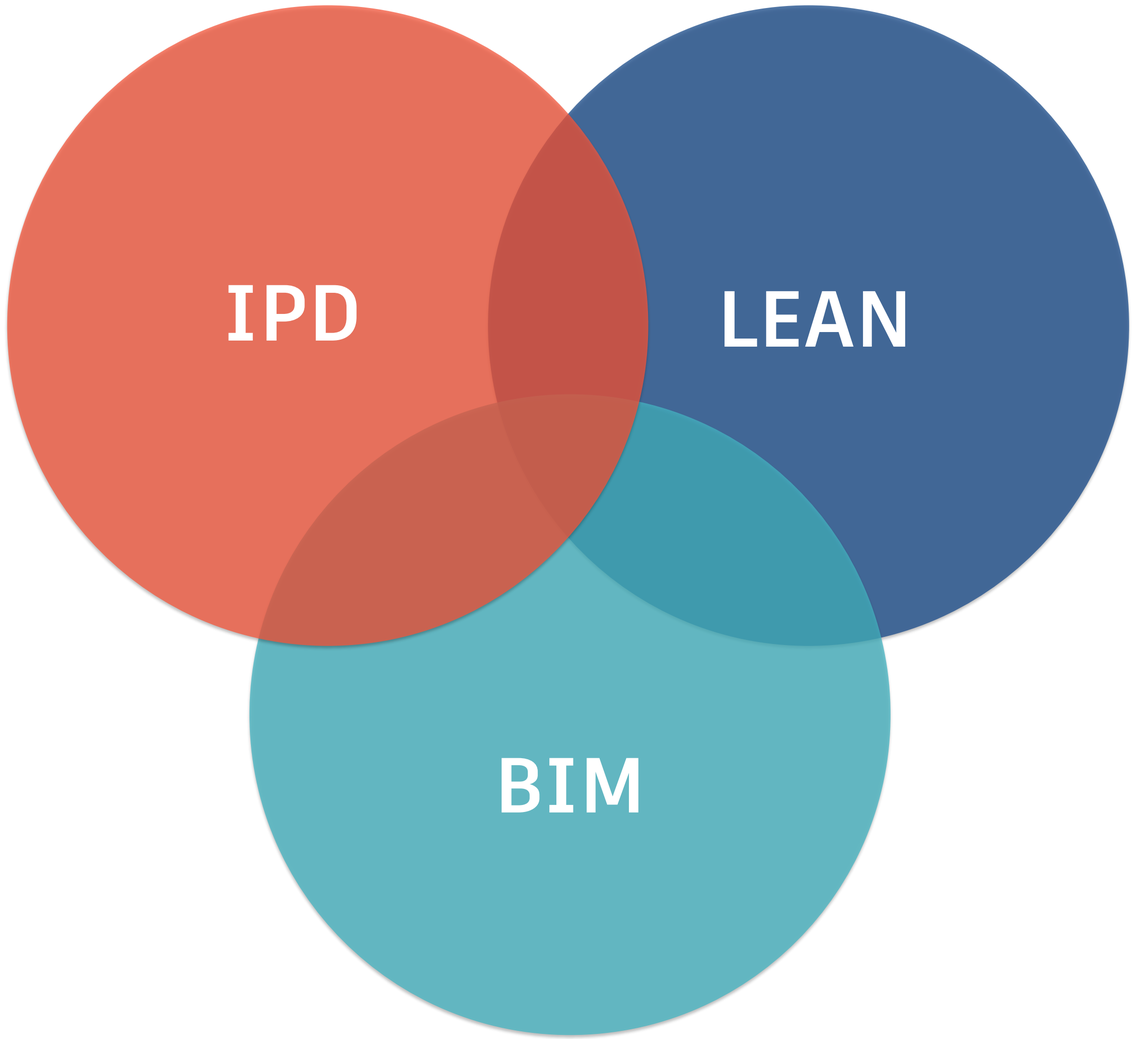
IPD Advantages: What's the prize?

Main advantages

- High quality design
- Schedule optimization
- Shared savings
- Reduced liabilities
- Coordination
- Enhanced relationships

The value of collaboration

How to get there



LEAN+BIM Mindset

IPD requires the creation of **structures** and **work processes** to efficiently execute the project.

- IPD Strategy + IPD Teams
- BIM Execution Plan + BIM Kick-Off Meeting
- Common Data Environmental (CDE)

Traditional vs. IPD

- Teams
- Planning
- Processes
- Technology
- Agreements

Traditional

Different…

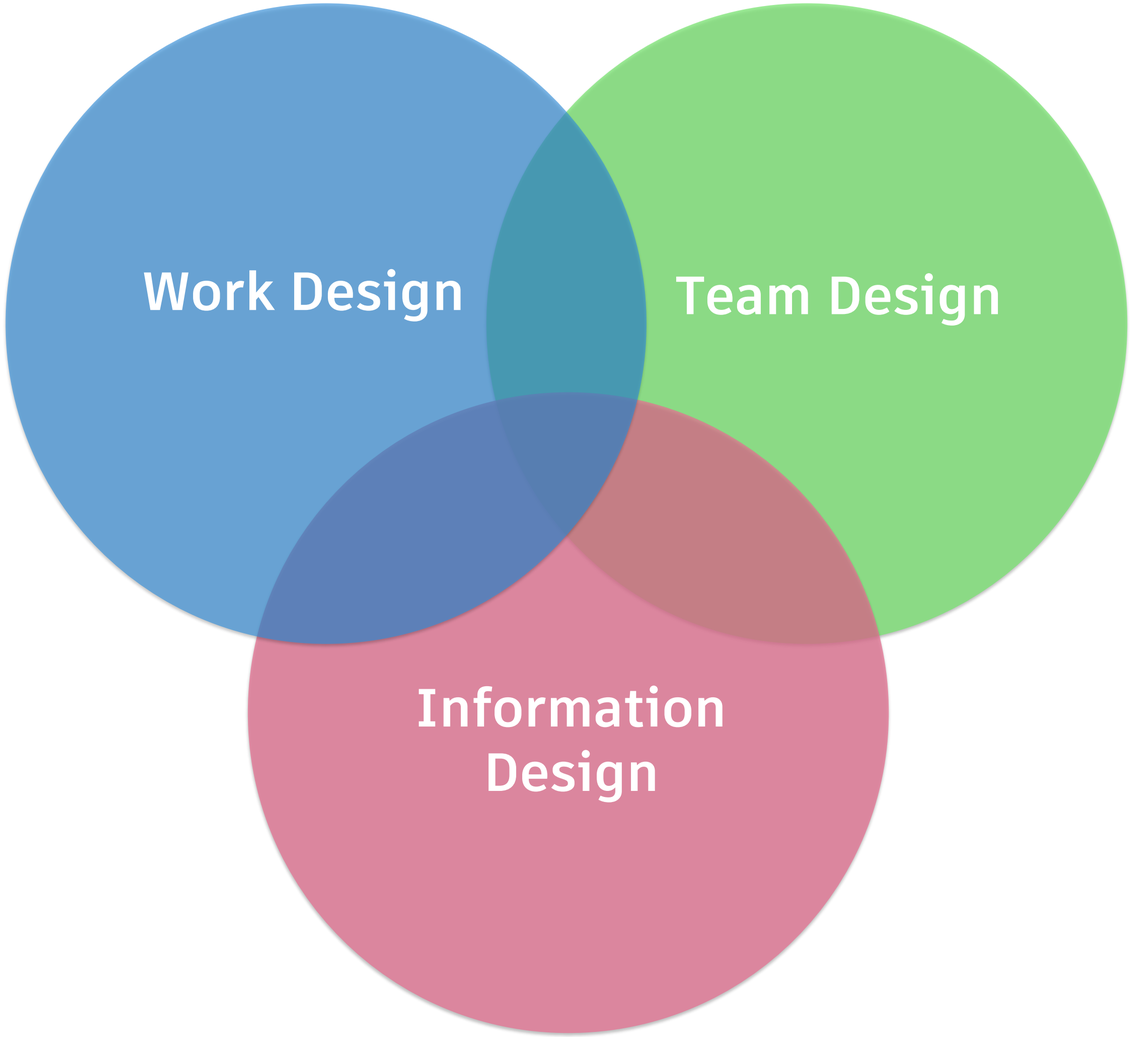
- Standards
- Workflows
- Team organization
- Work strategy

Results

Eventually…

- Broken communication
- Delays
- Cost overruns
- Adversarial relationships

IPD Strategy: What it should address?

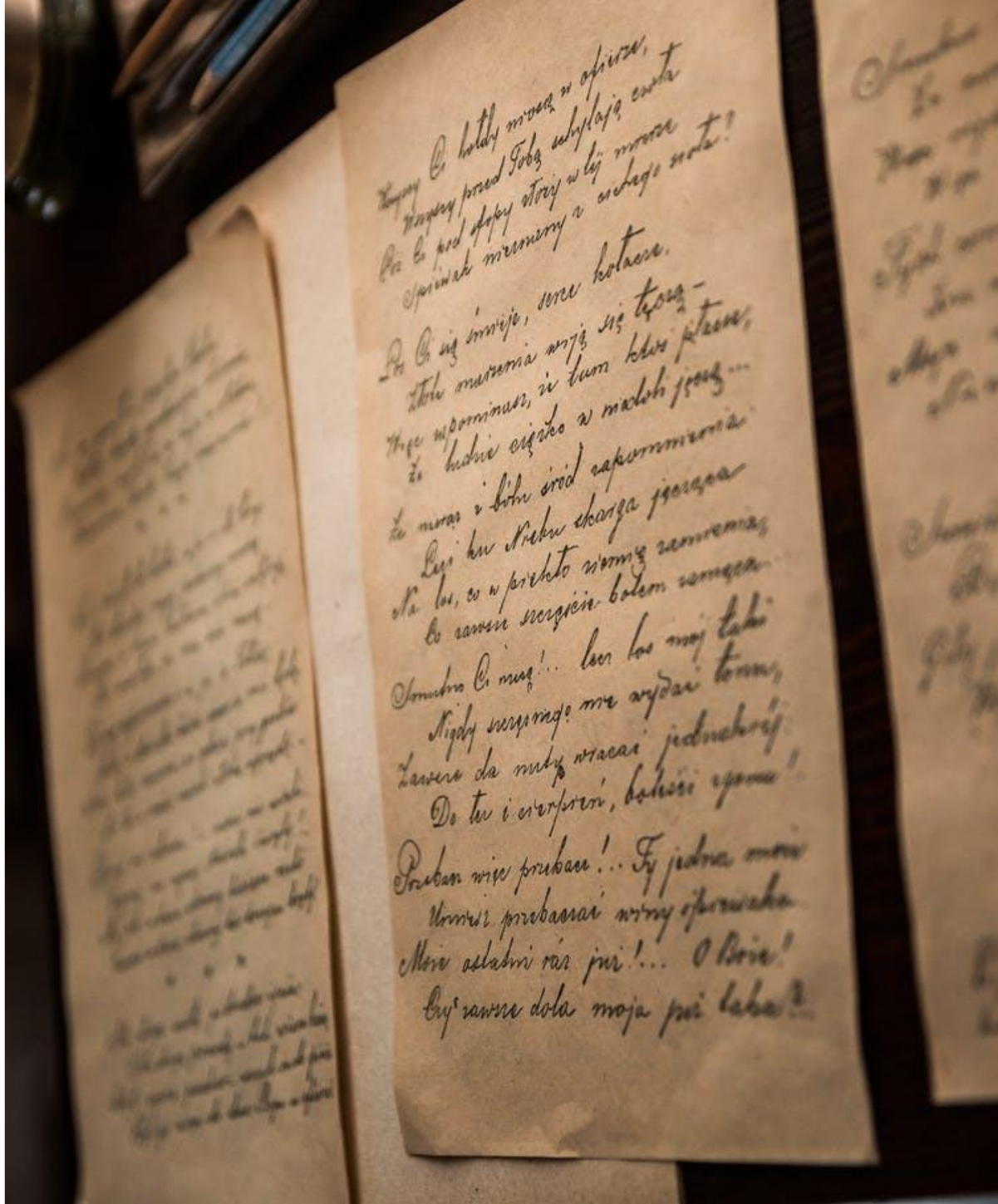


HOW DO WE START TO ORGANIZE THIS DATA?

BIM Execution Plan

BIM Execution Plan

- General Information
- Goals
- Model Uses
- Process
- Information Exchange
- Infrastructure



BEP: Transparency

BIM Kick-Off Meeting

Construction Manager + Owner + Architect + Trade Partners

This meetings promote higher engagement and better understanding of the deliverables.

EVEN SOCCER TEAMS HAVE FORMATION.

We actually don’t know anything about sports.

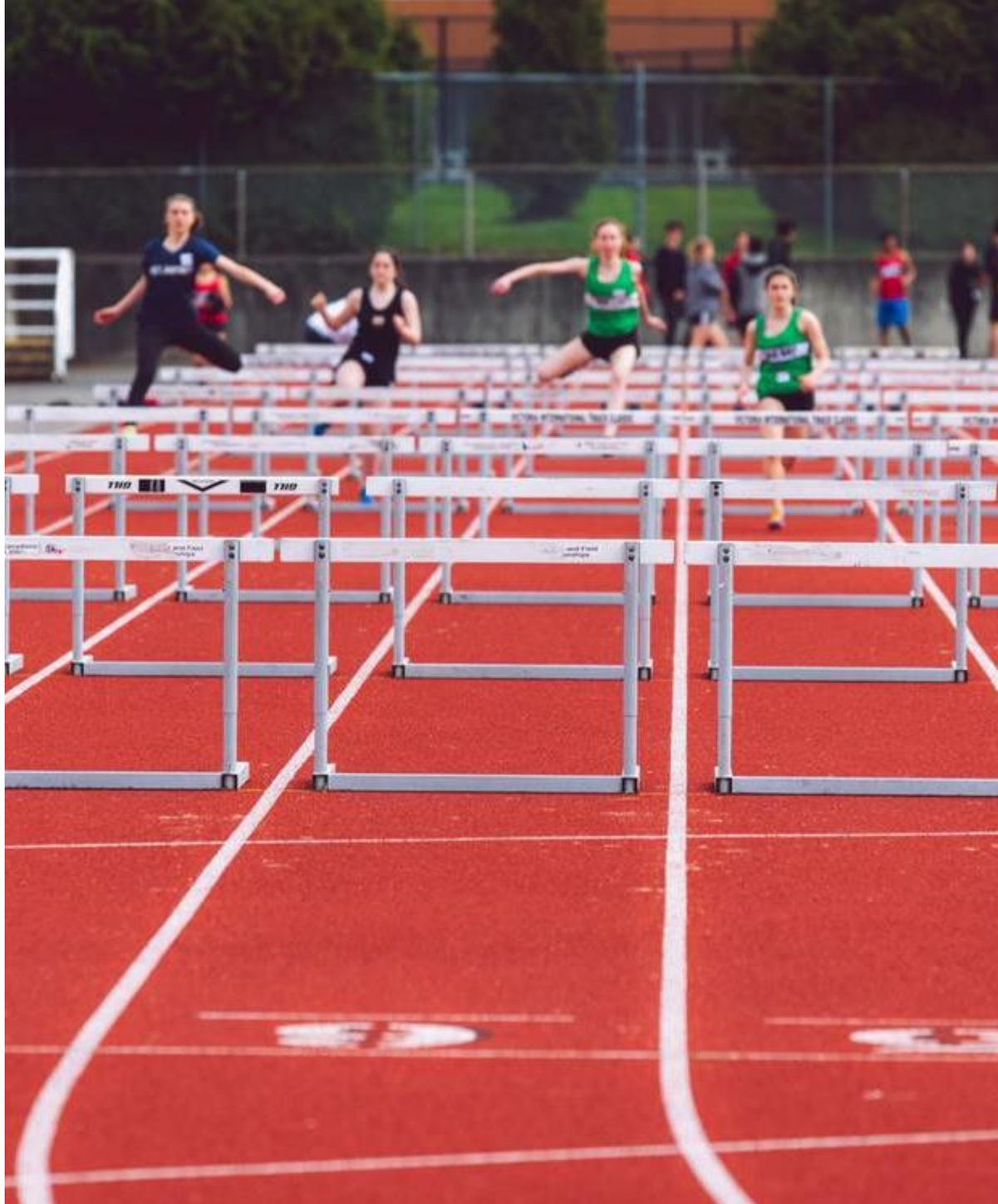
Structuring IPD Teams

- Senior Management Team (SMT)
- Project Management Team (PMT)
- Project Implementation Team (PIT)

Addresing the situation

The challenges

- Core team members unexperienced with IPD
- Industry’s uneven Lean adoption
- Team members unexperienced with BIM management
- Differences in the nature and timing of work of partners
- Comfort with true collaboration
- Team alignment around goals
- Partners co-location



WHAT CAN HELP US OVERCOME THESE CHALLENGES?

Remember the spoilers? We’re here.

The need: A cloud-based solution

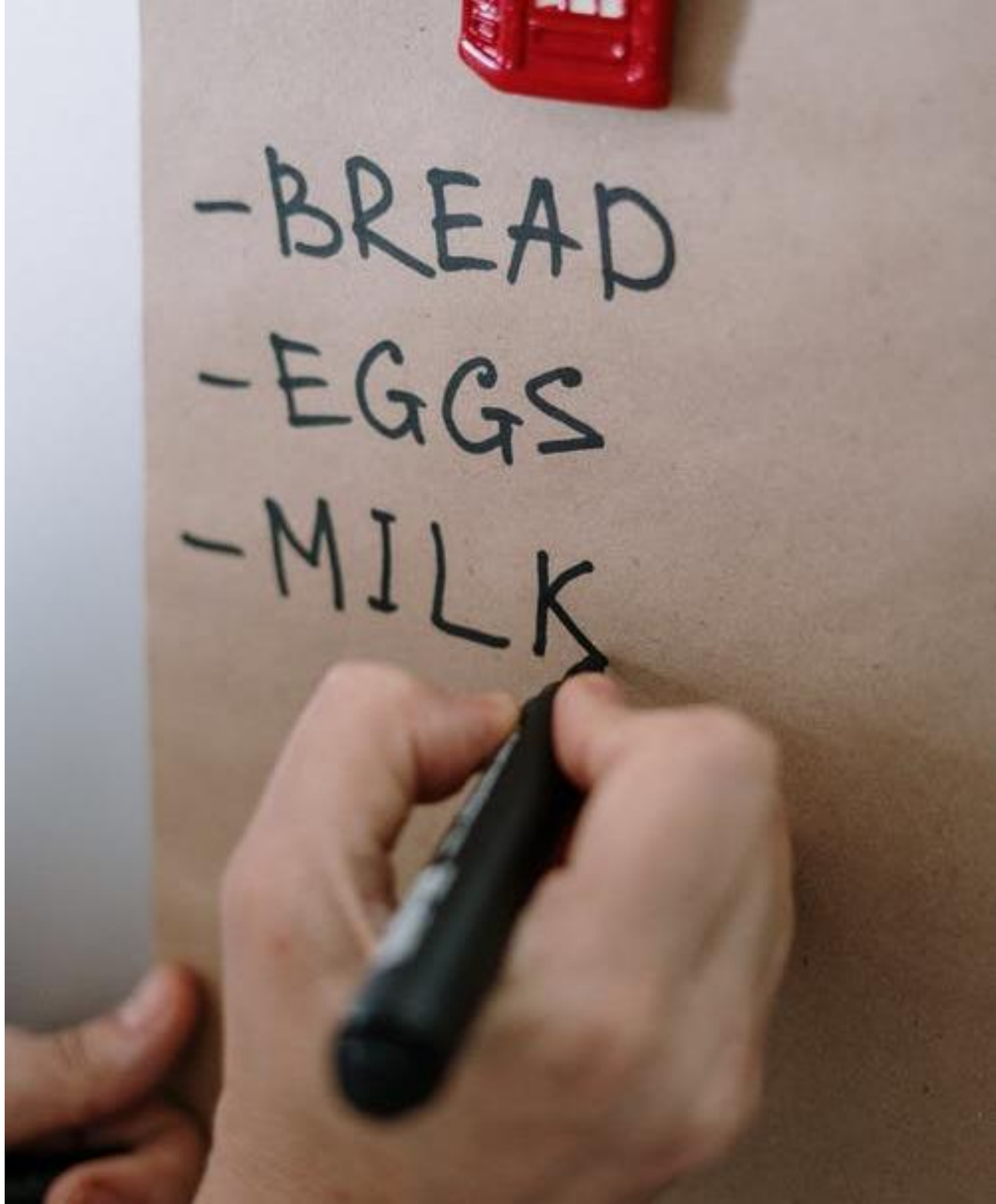
CDE: Common Data Environment

A single source of information.

Making data available to all team members with seamless information sharing reduces the need of time wasted looking for information in different systems, repositories, and emails, as well as promoting collaboration between stakeholders.

The requirements

- Access for all team members
- Workflow optimization and traceability
- Open and transparent communication
- Standardized information for all partners
- Appropriate information being pulled
- Capitalize Building Information Modeling
- Storage security within the cloud



Why BIM 360?

There’s plenty of fish in the sea.

Finding the best solution

Define which one would help us achieve the project’s objectives as a team.

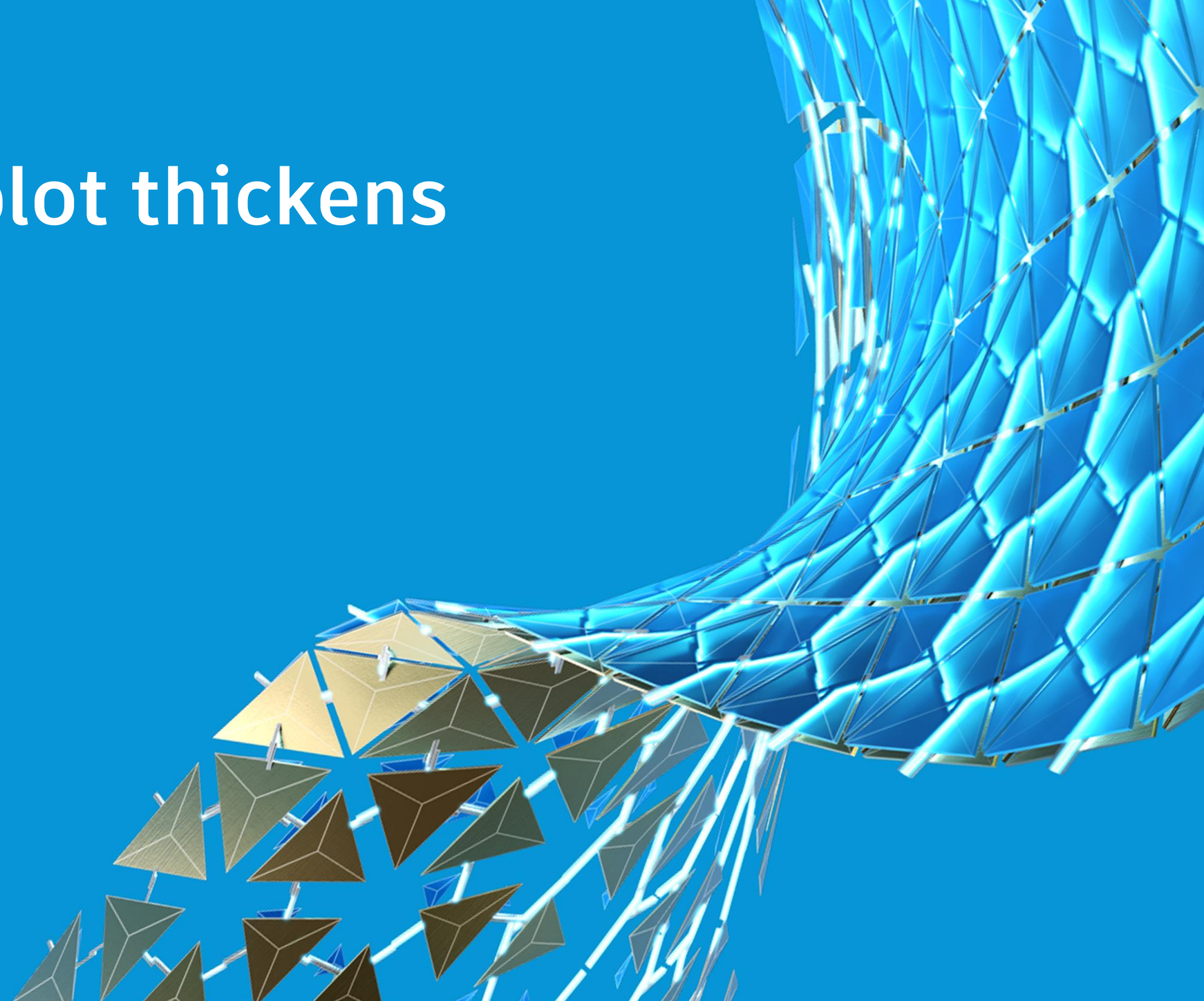
- **Ease documentation management**
- **Overcome BIM limitations**
- **Enhance collaboration**

BIM 360 Benefits

Optimizes project management through its lifecycle.

- User friendly interface
- Seat assignment flexibility
- Unlimited storage
- Interactive visualization
- Reporting and risk monitoring
- Integration with other systems
- Continuous platform improvements
- Modules for each project phase

ACT 2: The plot thickens



Project Key Figures

97
MEMBERS

Actively collaborating in the project.

4
PARTNERS

Involved in one single contract.

4
BIM MANAGERS

Representing each partner.

4
BIM 360 MODULES

Used to achieve different objectives.

IPD: BIM 360 Roles and Workflows

Strategic definition of roles, responsibilities and workflows.

We were able to unify the core team’s roles and establish a joint organizational structure for the platform’s workflows.

BIM 360 Roles

Getting into character.

- BIM Manager
- Single point of contact
- Architect – Engineer
- Owner and Project Managers
- Superintendent and Field Engineer

Blattling lonely BIM

Strive for social BIM

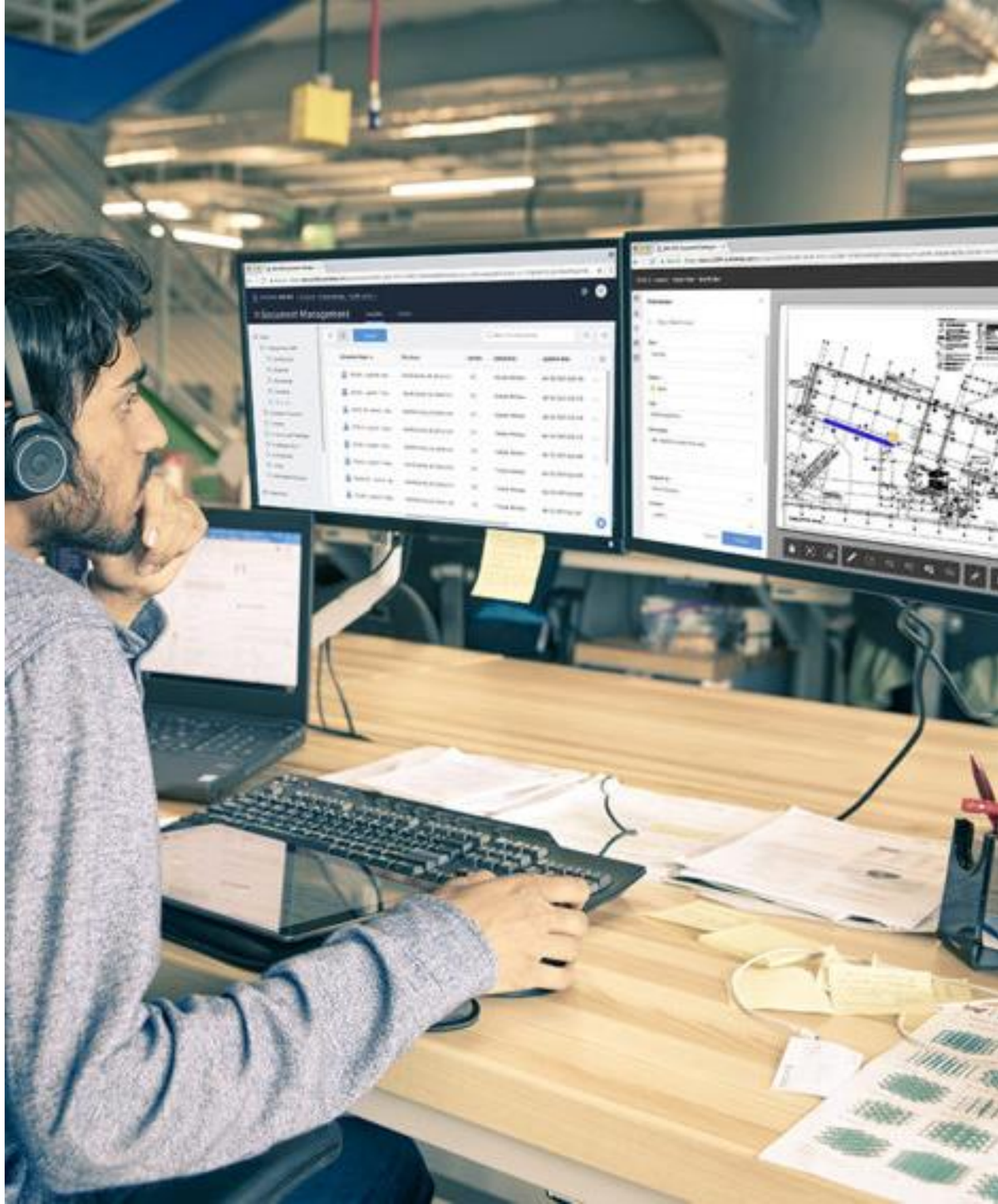
- **Modules**

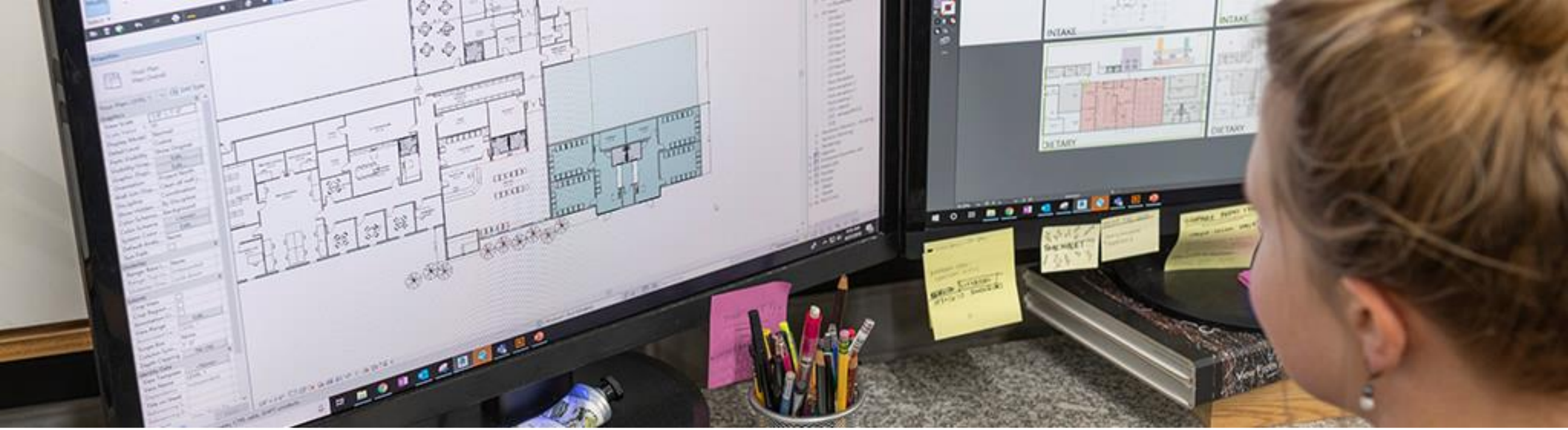
  1. Document Management
  2. Design Collaboration
  3. Model Coordination
  4. Project Management
  5. Field

1. Document Management

The repository of all the project's information. Every module will connect with Docs to retrieve or create information.

- **Collaboration Tools:**
  - Issues
  - Markups
  - Review Processes
  - Transmittals
  - Model and sheet visualization





2.Design Collaboration

This module works with Revit Cloud Worksharing

- It allows the design teams to **work and synchronize** their models with the **cloud**

3. Model Coordination

This module provides a coordination space to **upload, review and detect clashes** between component models.

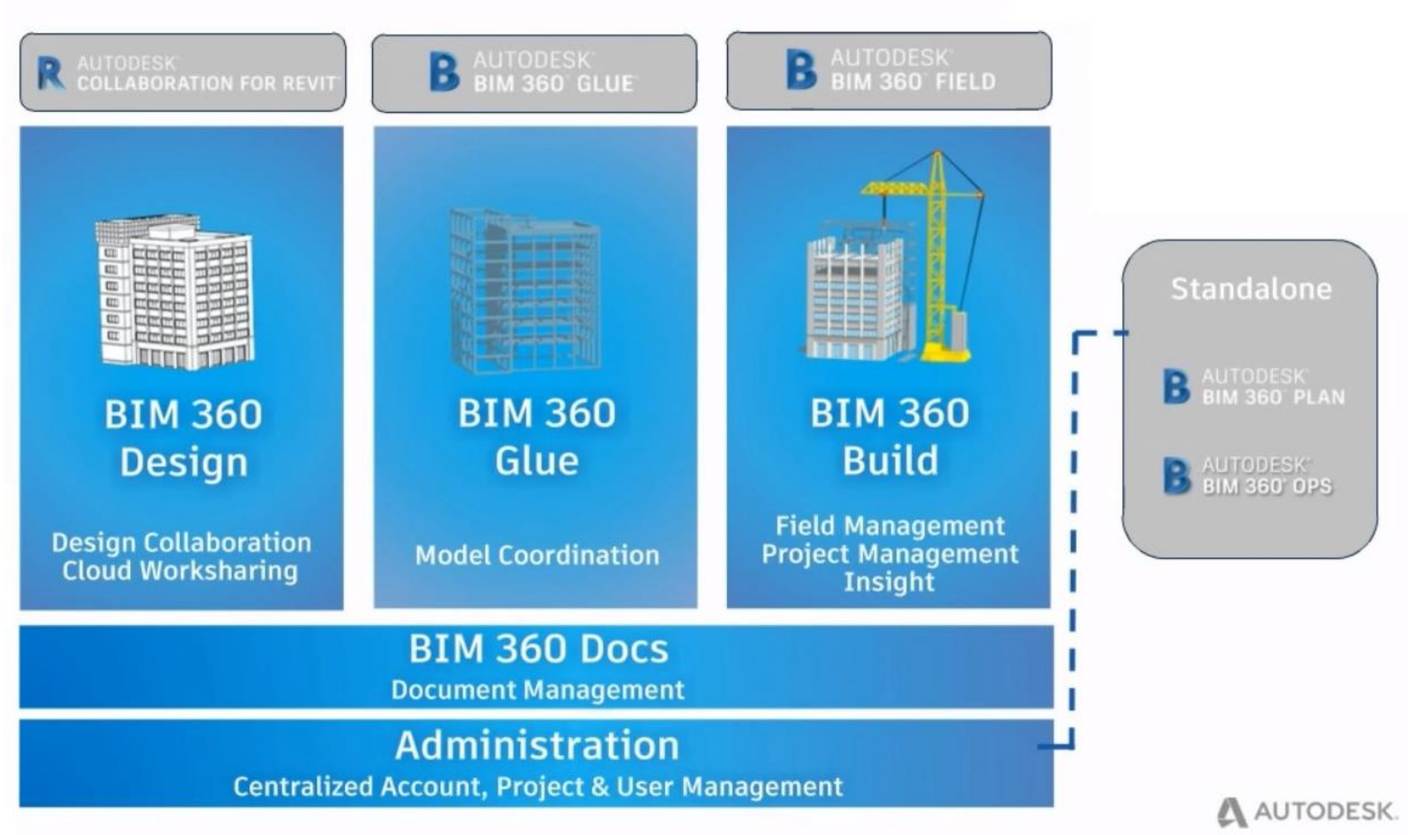
4. Project Management

This module works for **submittals and RFI’s** workflows throughout the project’s lifecycle.

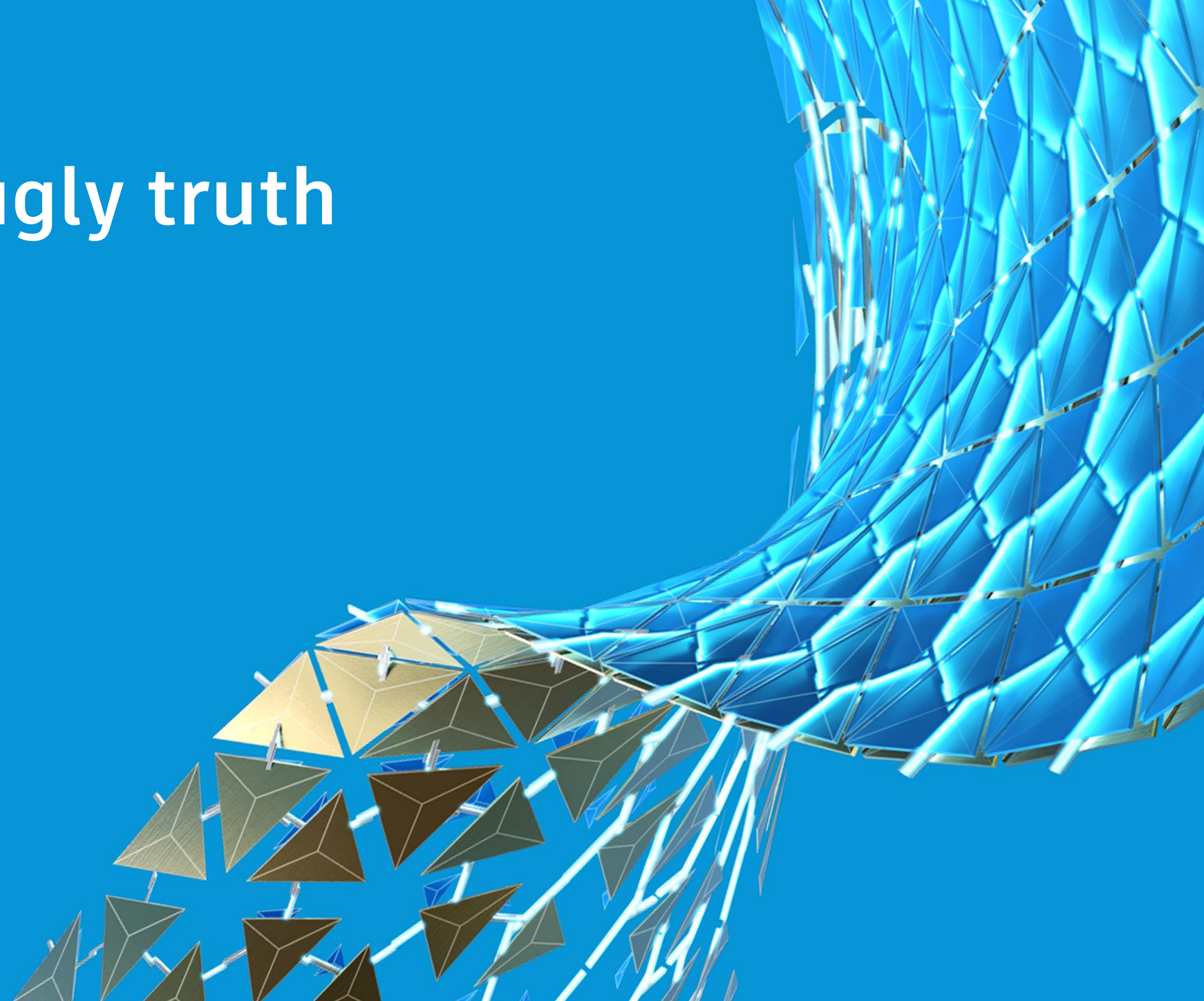
5. Field

This modules connects with the site team for **quality assurance and issue tracking** through checklists.

BIM 360 Overview



ACT 3: The ugly truth



What do we do with all this data?

Performance and Monitoring

Implementing a risk strategy.

Identify possible risks, uncertainties and prioritize them, as well as promoting accountability due the collaborative nature of the project.

Mitigation Strategy

Type of potential risks:

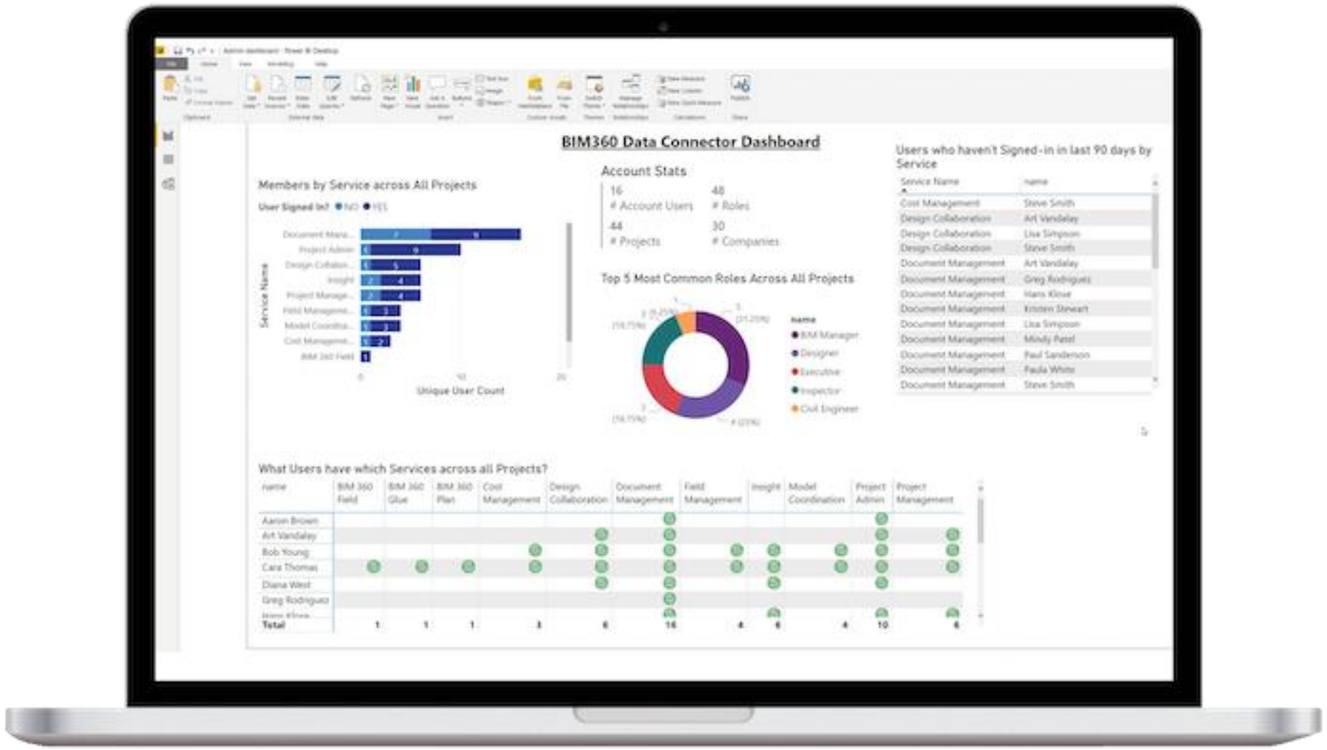
- Unanswered RFIs
- Incomplete submittal workflows
- Incomplete checklists
- Overdue design reviews
- Overdue issues
- Incomplete documentation
- Schedule delays

Dashboards

We were able to get information from project dashboards through a Power BI integration.

- Schedule indicators
- Lean last planner indicators (PPC and constrains)
- Document control overdue items (Issues, review processes, RIFs and submittals)
- Quality and safety checklist conformance

Power BI Integration



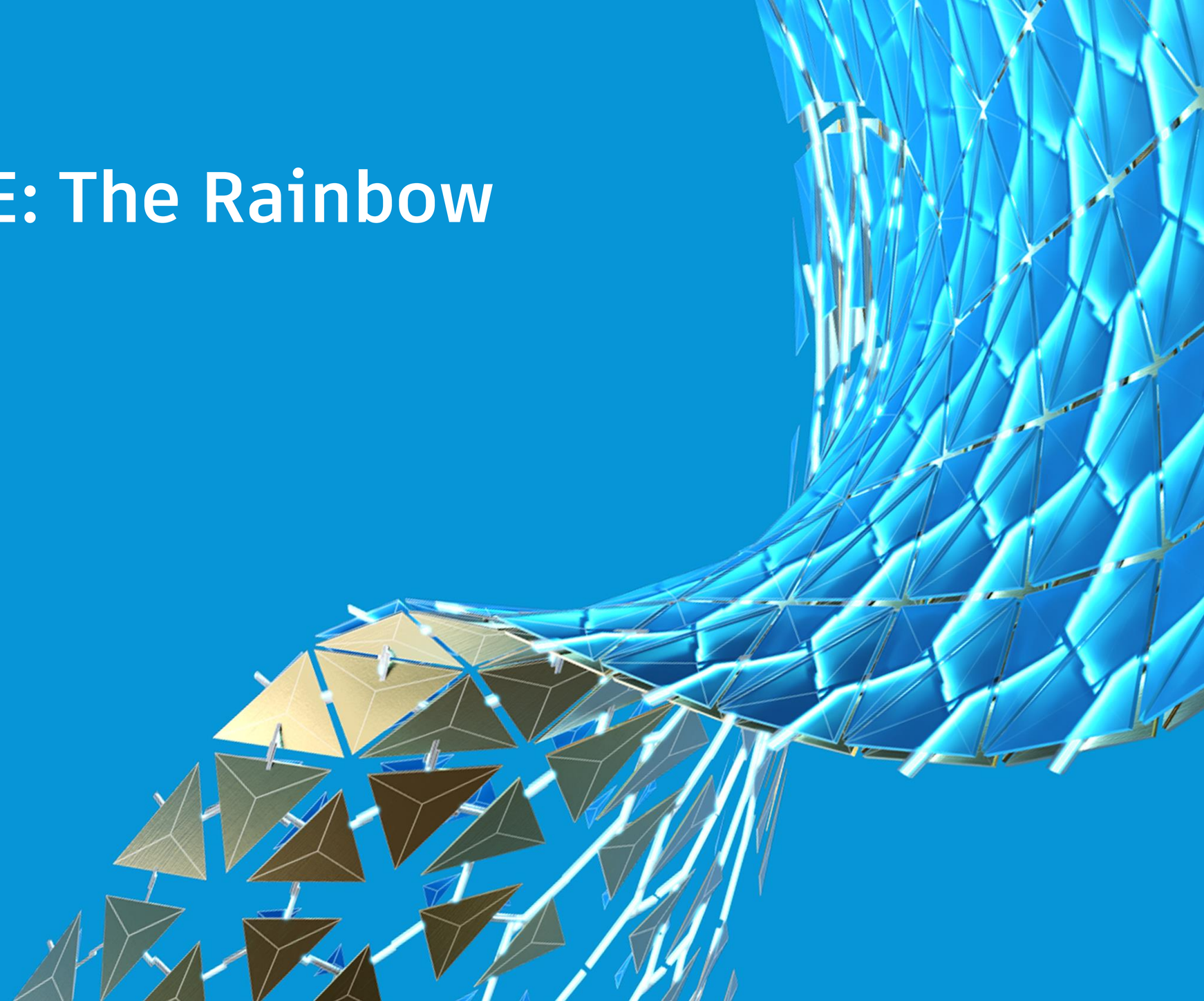
How did we do it?

What’s the secret?


Collaboration


WE’RE ALL IN THIS TOGETHER

GRAN FINALE: The Rainbow



What did we learn from this experience?

5 Lessons Learned

1. Be aware that Lean and BIM **maturity level** between IPD partners are uneven.

2. The BEP needs to be tied to the project's scope and goals. **Level of development** needs to be clear.

3. BIM 360 project hosting and **number of licenses** must be established during the contract development.

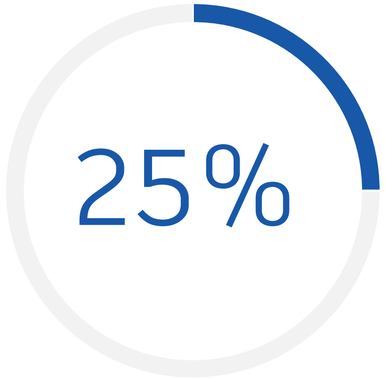
4. IPD partners need to consider the **BIM Manager role** for their organizational charts.

5. The project's roles must be **standardized** with BIM 360's workflows.

Key Outcomes

RESPONSE TIME

Reduction in the responding time for RFIs and submittals.



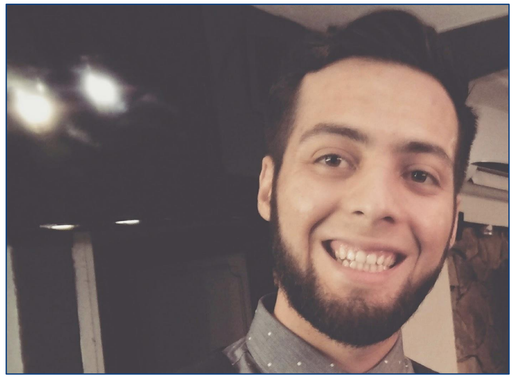
DESIGN CHANGES

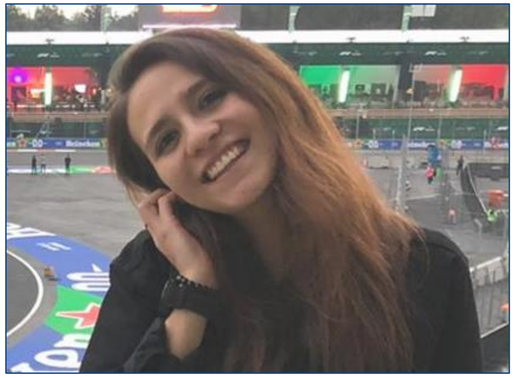
Less changes in design during the construction phase.

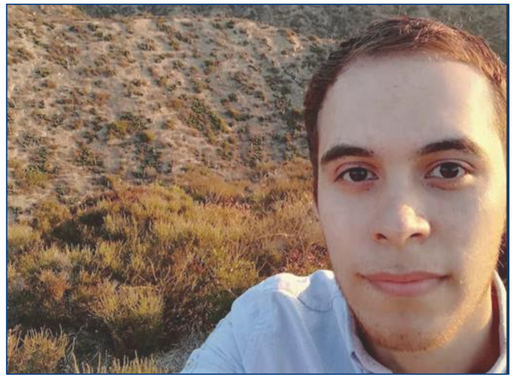
The path to agility is paved with information.

We don’t know the author, but someone said it.

Hermosillo’s VDC Team







The end.

Hope you’re still awake.