AUTODESK UNIVERSITY

Using Forge to Build Connected and Customized Workflows in BIM 360

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Meet the Speakers

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Using Forge to Build Connected and Customized Workflows in BIM 360 - BES500028

Matthew Anderle
Director of Digital Practice & Technology, Buildings+Places

EXPERT ELITE MEMBER

AECOM

Russ Dalton
BIM Director, Digital Practice & Technology, Americas



Matthew is a BIM and technology evangelist with over 21 years of experience establishing global digital delivery workflows. He serves AECOM as a leader in the implementation and advancement of digital processes, analytics, and collaboration strategies, enabling global offices to work efficiently and effectively as one entity.

Russ is a seasoned professional with 30 years of experience in the Architecture, Engineering and Construction arena. His primary function is implementing BIM technology into a company's natural workflow to optimize results through financial gain, design and construction excellence and competitive advantages for value added delivery.

Session Introduction

Session Introduction

Using Forge to Build Connected and Customized Workflows in BIM 360 - BES500028

Description

Forge enables companies to connect data and processes, build custom integrations, and streamline workflows to extend Autodesk product capabilities. Enterprise customers can elevate the ROI of BIM 360 software to the next level by maximizing Forge web services that come with BIM 360 subscriptions. In this session, AECOM will share innovations and stories about how the firm uses Forge to connect BIM 360 with company-specific project administration workflows in a large enterprise environment, and optimize the design collaboration, review, and submittal processes for project teams. You will get a better understanding of what's available in and applicable from Forge to BIM 360, and gain inspiration for driving business value with models and data.

Learning Objectives

- Learn about what Forge can provide to BIM 360 enterprise customers
- Discover AECOM's vision on technology innovations
- Learn how AECOM is using Autodesk cloud products and Forge to build innovative solutions to solve industry challenges
- Gain insights on the business values of Forge and ideas of use cases

Autodesk Forge for BIM 360 Enterprise Accounts

Forge for BIM 360

Introduction

Forge takes components from Autodesk's library of software and delivers them as cloud-based building blocks for companies to create their own new solutions. "forge.Autodesk.com"

Autodesk Forge is synonymous with discussions about Application Programming Interface (APIs) and connecting to the cloud-hosted services.

Consider the functionality of the BIM 360 environment as the building blocks for your custom application and Forge is the interface that provides the integration for those functions and connection to cloud-data.



Forge for BIM 360

Key Integrations

Forge gets the right data to stakeholders, when and where they need it, so they can make the daily project decisions that drive quality and efficiency. “forge.Autodesk.com”

Forge is used by their own Autodesk developers but also has key integrations for consumers which include the following:

- Software developers building new applications
- System integration developers to connect data
- Companies improving efficiency or workflows



AECOM’s Vision: Technology & Innovation

AECOM’s Vision:

Technology & Innovation

For our Clients

Our clients count on us to think without limits. By harnessing the power of digital technology and innovation, and connecting our technical experts and visionaries around the world, we deliver tailored solutions and transformative outcomes for our clients and the communities they serve.

Partnering for Impact

We’re collaborating with experts and innovators to pioneer new solutions. Through our work with partners such as Google Cloud, Microsoft and Autodesk, we apply data science in unique ways, building industry-leading automated design tools and creating collaborative digital platforms that are transforming the infrastructure sector.

AECOM’s Vision:

Efficient and Automated Design + Construction

Technology is rapidly transforming how we design and construct. We are embracing fully digital workflows to deliver faster, smarter, better and safer solutions to our clients’ biggest challenges.

Efficient design tools and the use of artificial intelligence and machine learning automate repetitive manual tasks, enabling greater creativity whilst providing more reliable design and construction outcomes.



Photograph by: Robb Williamson

Innovative Solutions for Industry Challenges

The Challenge

Innovative Solutions for Industry Challenges

Dealing with all the Data



An estimated 2.5 quintillion bytes of data is generated every day. That's **2,500,000,000,000,000,000** bytes of data.



Complexity of access fidelity and efficiency at a global scale.



Presenting data to the end-user in consumable formats and quantities.

File Transfer Scheduler

Introduction

AECOM required a tool to migrate data, distribute data, and synchronize data through the BIM 360 environment.

BIM 360 – File Transfer Scheduler was developed to mitigate the challenges of managing and moving data in the cloud by enabling our teams to schedule data transactions during off-peak hours.



File Transfer Scheduler

Key Features



Credentials

2FA Autodesk ID validation is used to confirm user permissions



Connect

Application has connectivity to several company resources



Centralize

Jobs are configured and stored within the project site

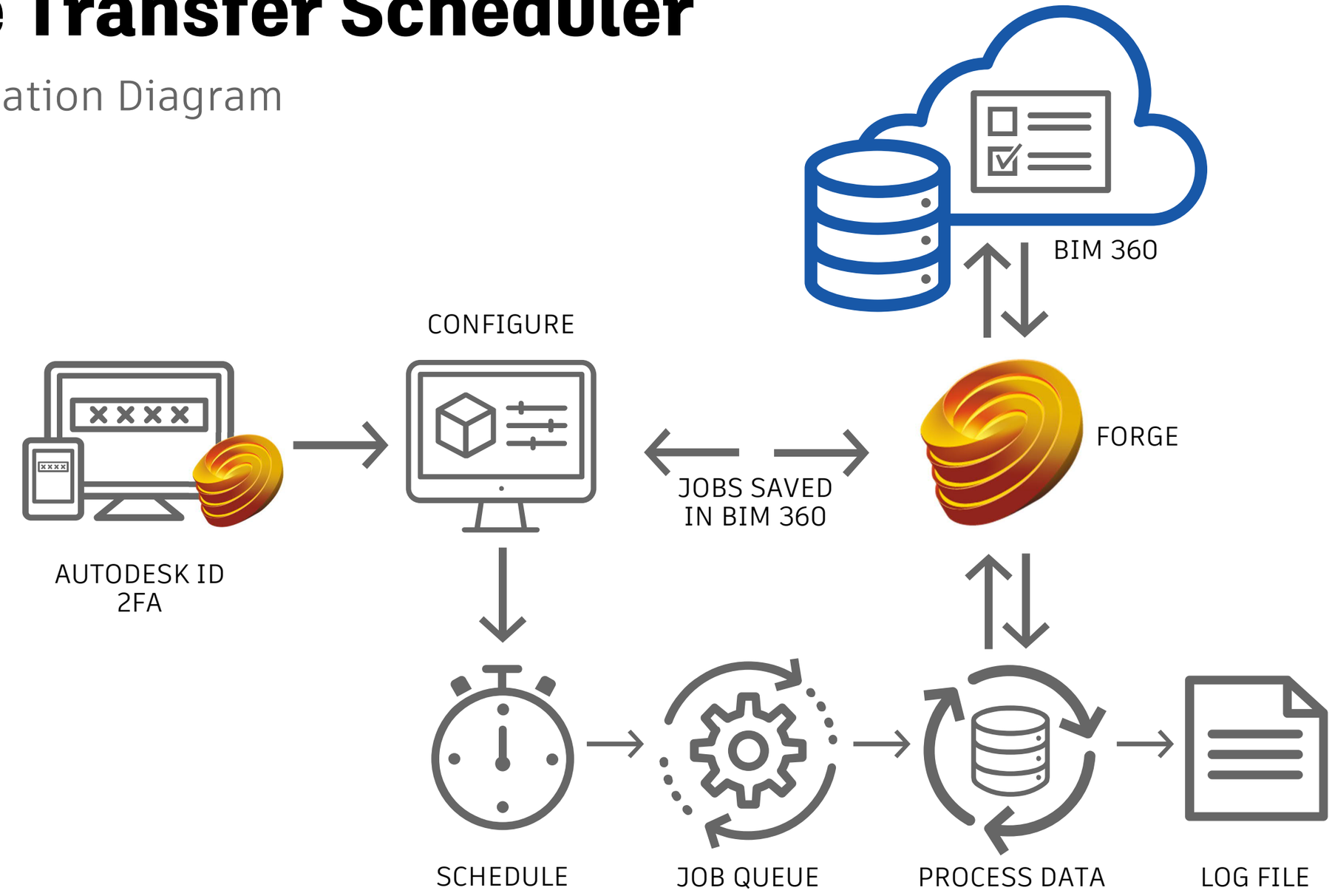


Cadence

Jobs can be scheduled to run at any time on any frequency

File Transfer Scheduler

Application Diagram



Model Performance Analytics

Introduction

AECOM is embracing the data made available to project teams through BIM 360, and by leveraging Forge, we gain knowledge and an enhanced level of certainty about our project's digital health, efficiency, and composition.

The Model Performance Analytics platform AECOM has developed, leverages Forge to process over 10,000 models in our North American Hub across more than 3,200 projects. Our innovative approach to project analytics is pushing the boundaries of what is possible.



Model Performance Analytics

Key Features



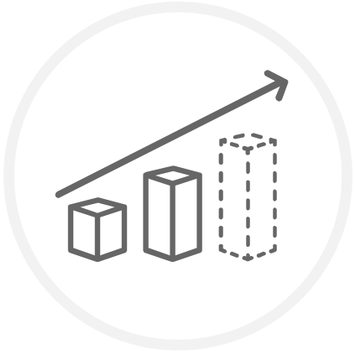
Credentials

2FA Autodesk ID validation is used to confirm user permissions



Access

Web-based administration and project management



Analyze

Models are processed based on project activity triggers

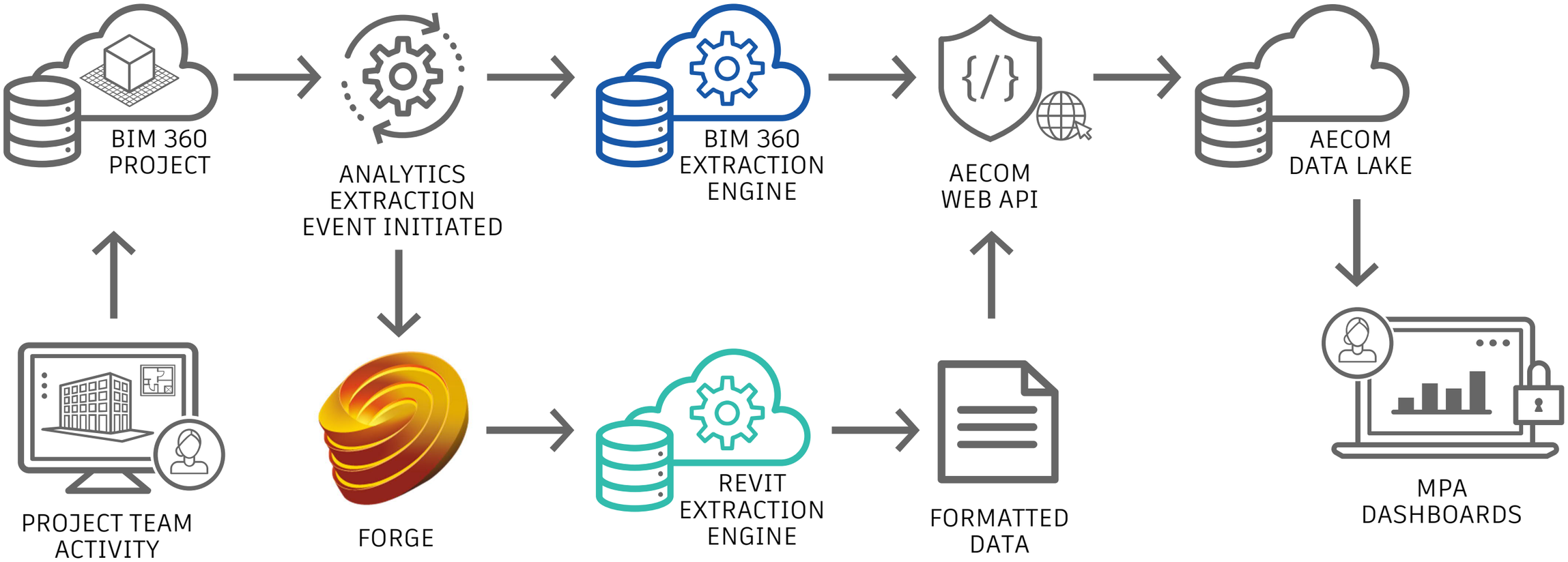


Visualize

Centralized data lake records can be visualized in dashboards

Model Performance Analytics

Application Diagram



Project Visibility

Introduction

AECOM is continually improving digital delivery methodologies and quality tracking processes to enable our teams to successfully design and construct the world's most complex projects.

The Project Visibility platform AECOM has developed, leverages Forge and several other key data integrations to analyze and report real-time data throughout the project lifecycle. We use these reports to obtain three levels of certainty in our strategy: Geometric Certainty, Cost Certainty, and Operational Certainty.



Photograph by: Robb Williamson

Project Visibility

Key Features



Credentials

2FA Autodesk ID validation is used to confirm user permissions



Connectivity

Extracts data from multiple management platforms



Tracking

Activity, Change, Cost, RFI, Quality, and Safety are some key metrics

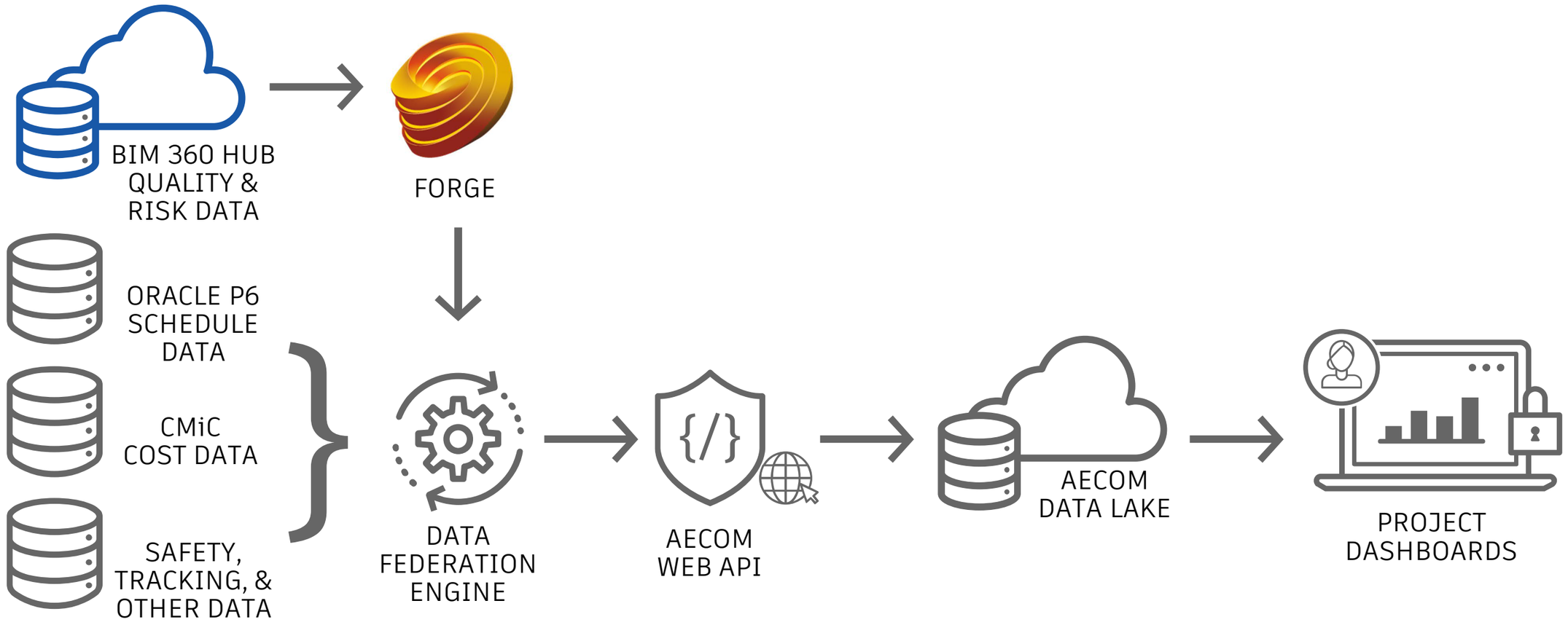


Visualize

Database records can be visualized via dashboards on-demand

Project Visibility

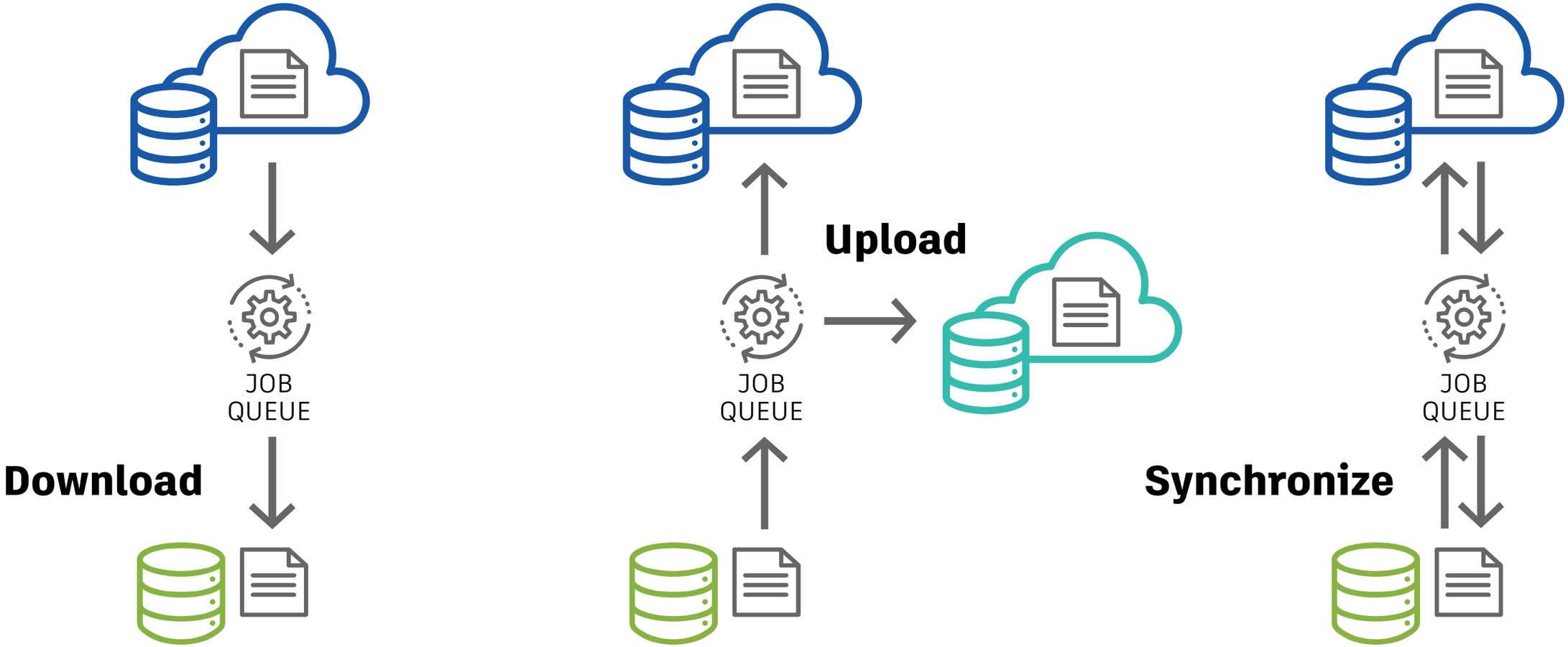
Application Diagram



Business Value & Use Cases

File Transfer Scheduler

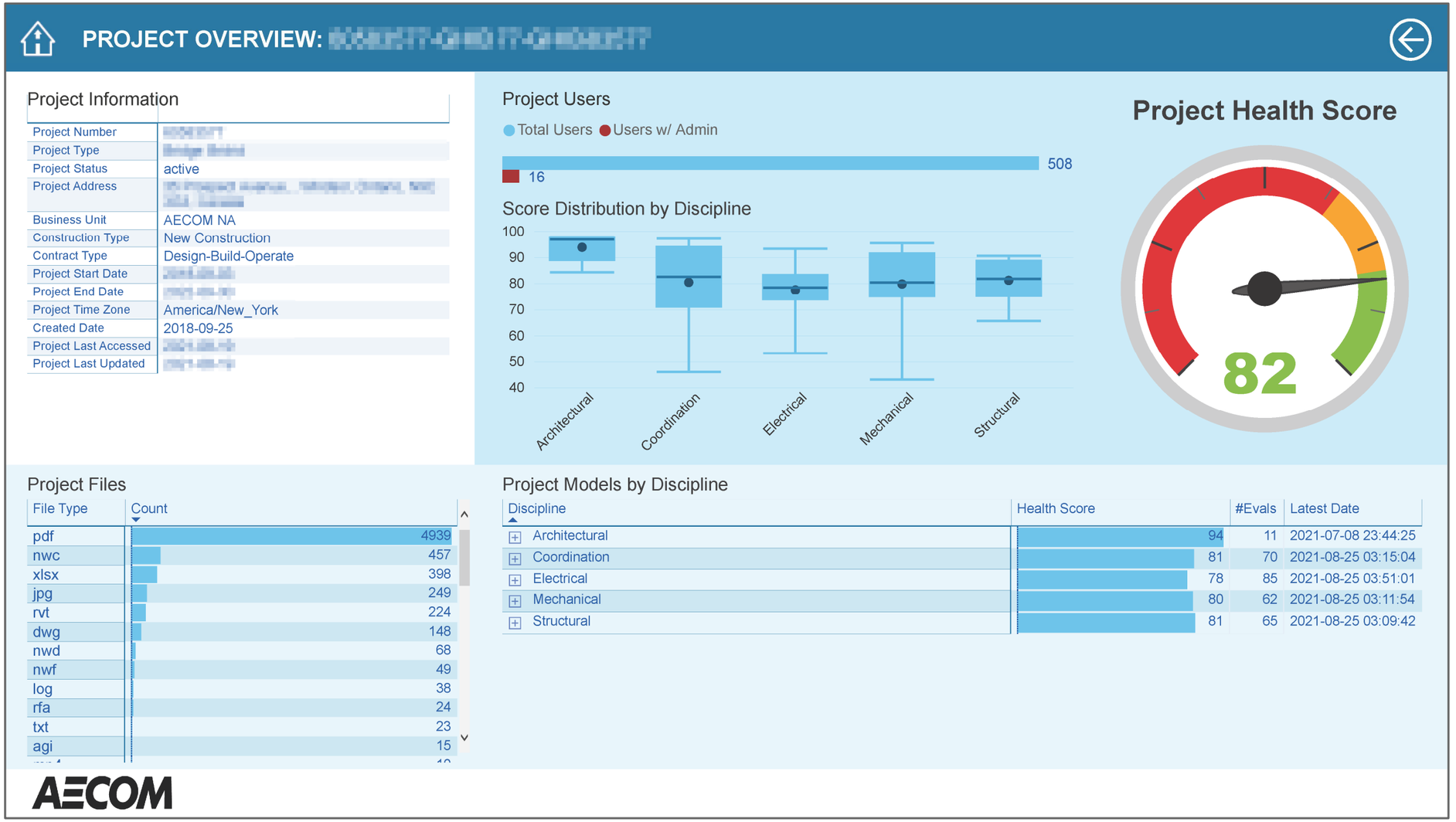
Business Value & Use Cases



Model Performance Analytics

Business Value & Use Cases

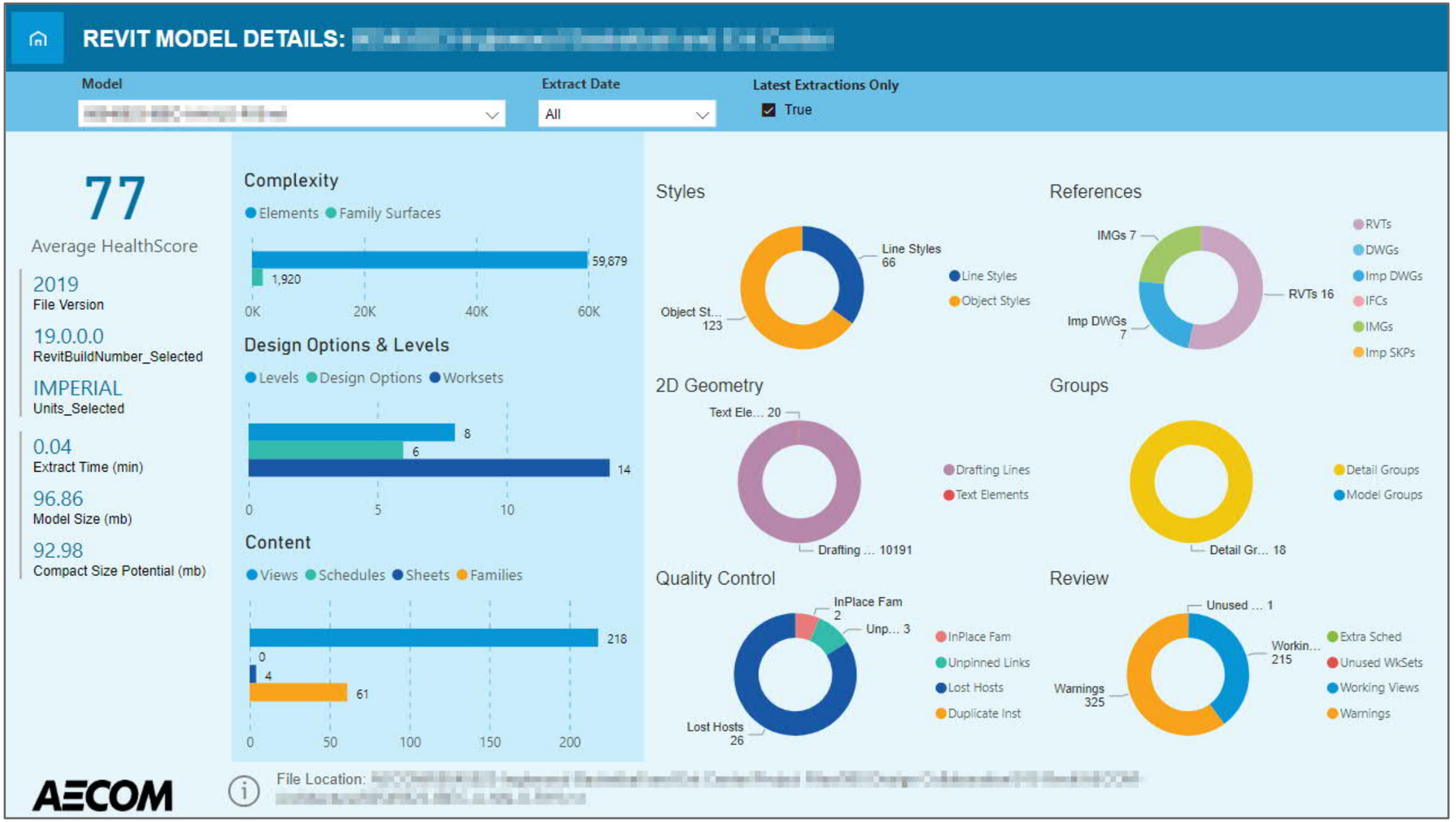
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Model Performance Analytics

Model Composition Details

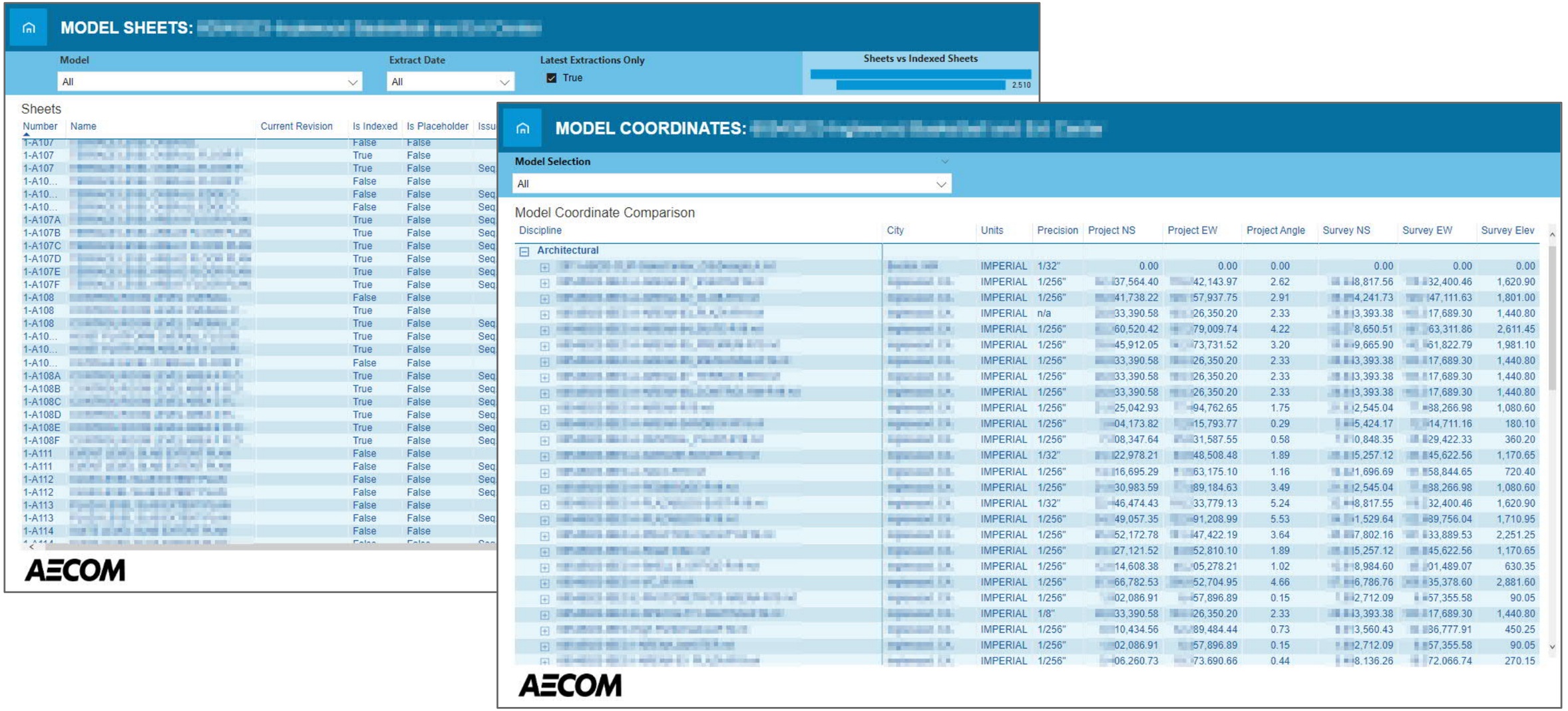
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Model Performance Analytics

Digital Delivery Management

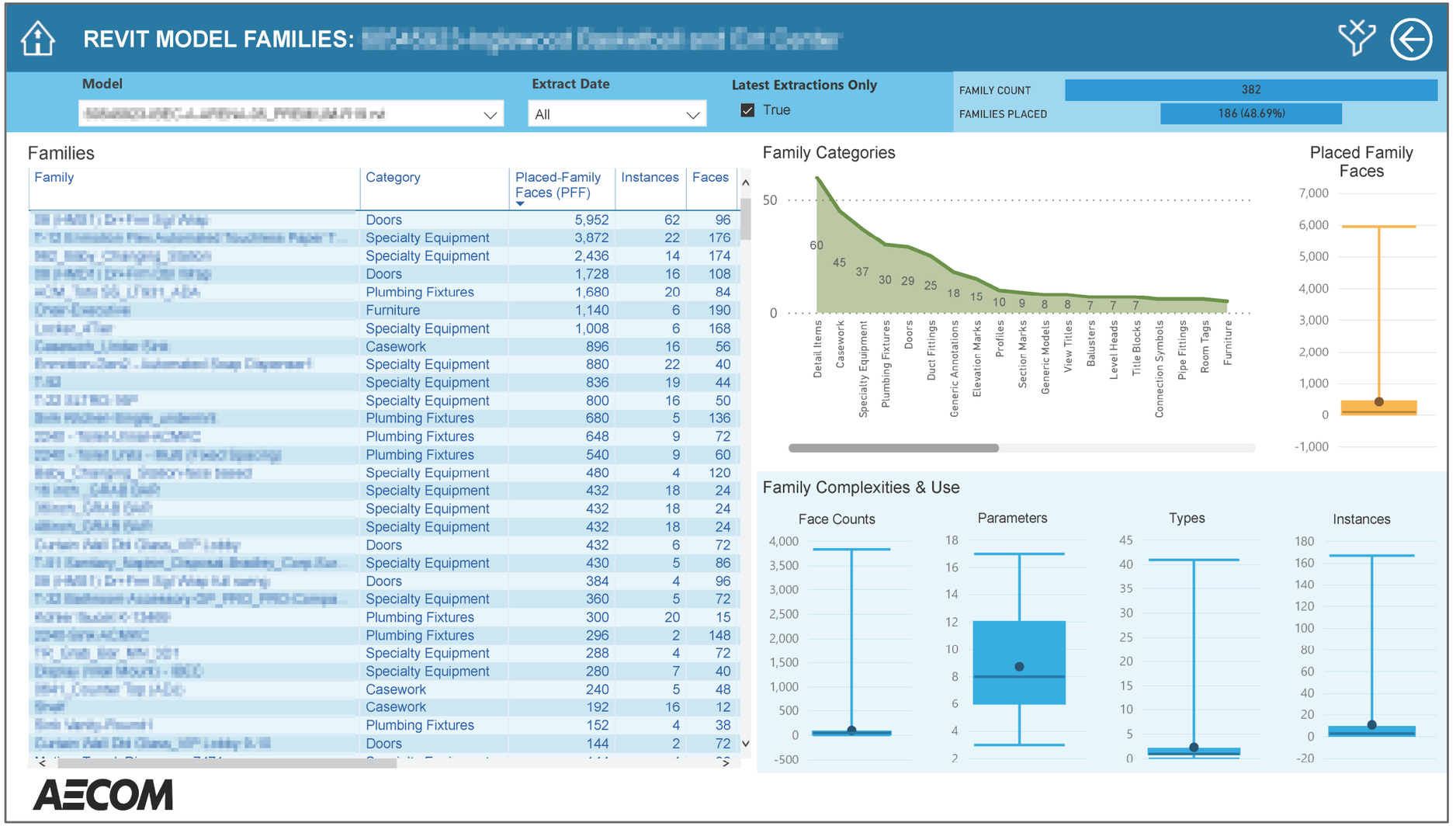
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Model Performance Analytics

Family Fidelity

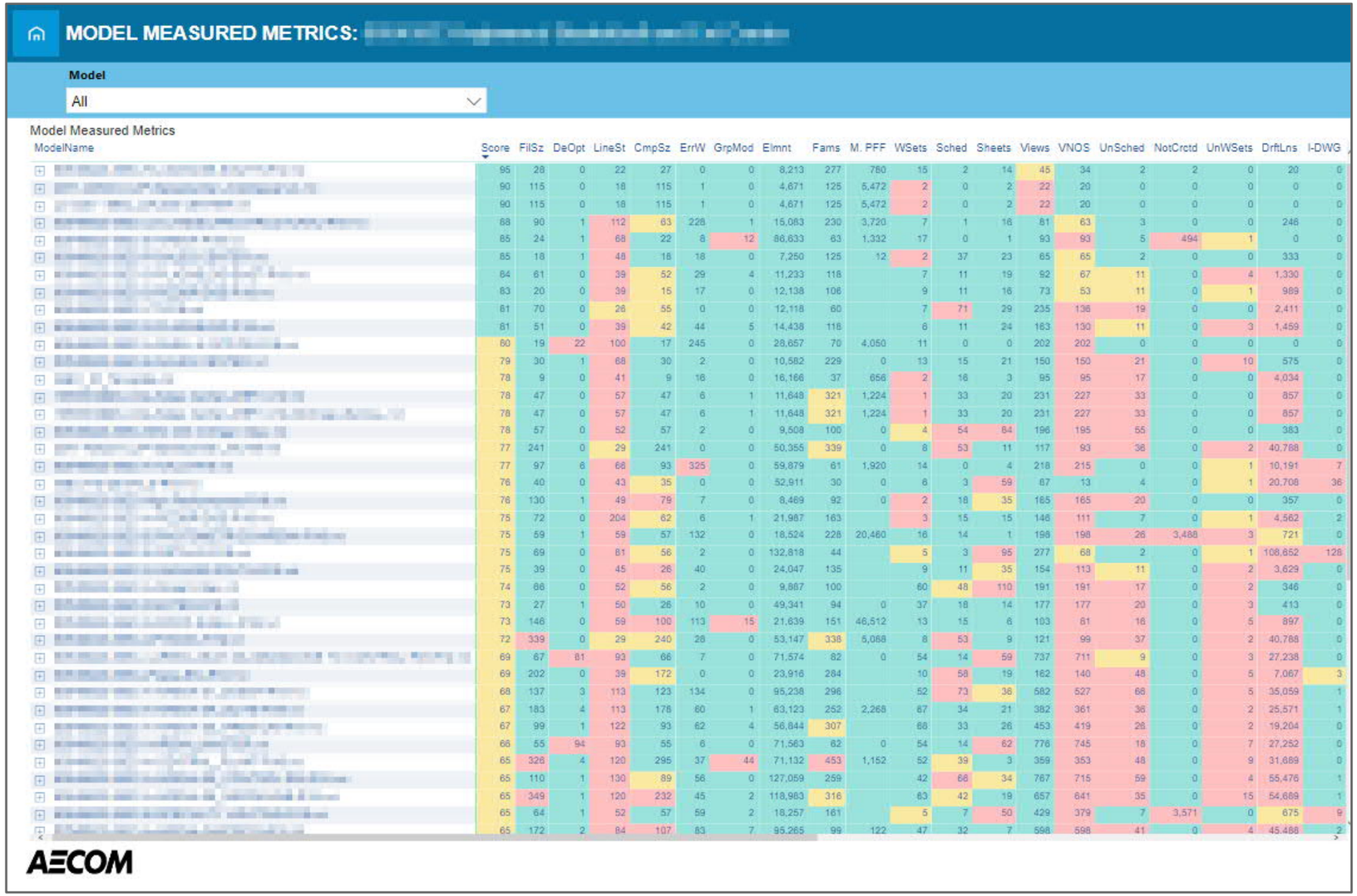
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Model Performance Analytics

Risk Matrix

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MODEL MEASURED METRICS: [redacted]

Model

All

Model Measured Metrics

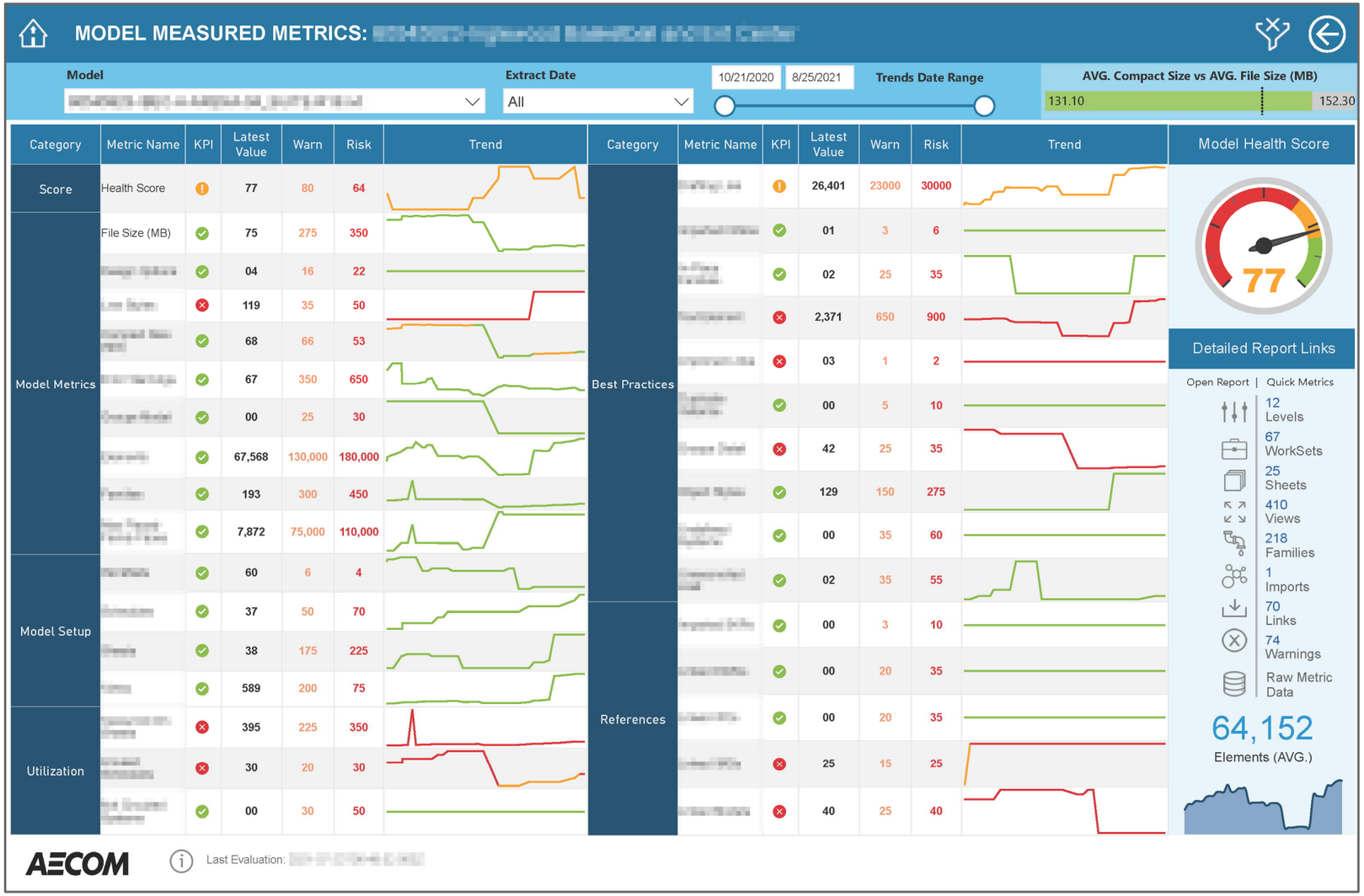
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AECOM

Model Performance Analytics

Model Health Trends

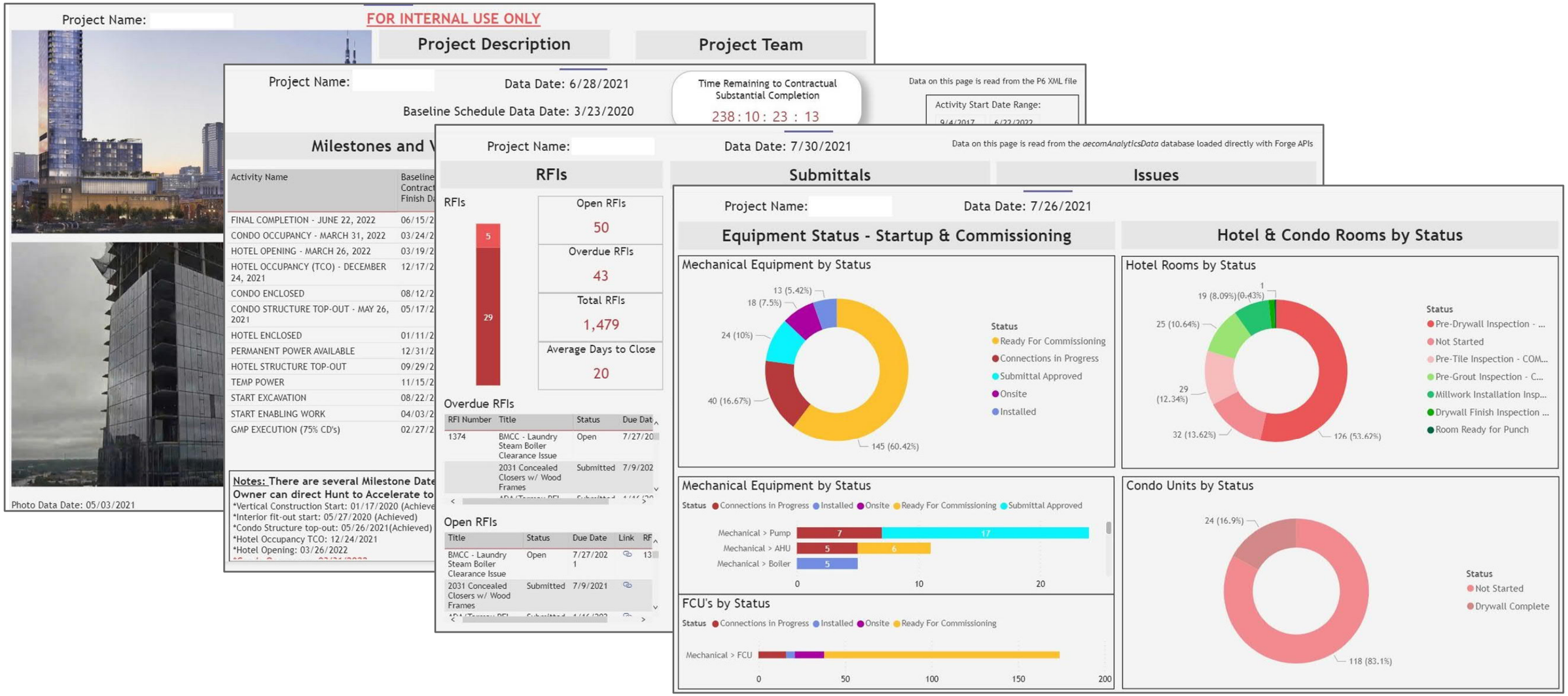
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Project Visibility

Business Value & Use Cases

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Project Visibility

Project Landing Page

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Project Name:

FOR INTERNAL USE ONLY



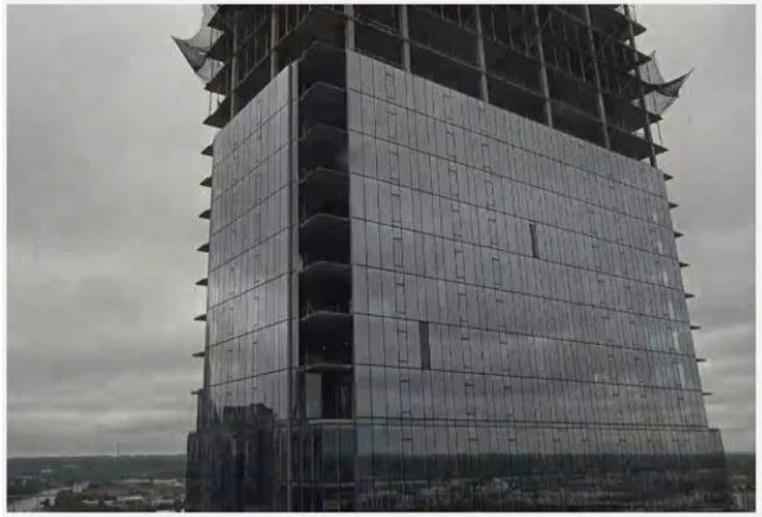


Photo Data Date: 05/03/2021

Project Description

New Construction of a 41 Story 5 Star Hotel and Private Residences. There are 232 Guest Rooms and 143 Condo units, multiple roof top amenity spaces as well as a full restaurant, spa and pool area.

Project Team

Business Leader: Bob May

Project Executive: Doug Utt

Vice President: Tyler Baumgardt

Cost Control: Jack Newgent

Accountant: Bonnie Konz

Scheduler: Christian Velasco

Quality: Nathan Lane

Project Information

Owner: 151 LP

Designer: Solomon Caldwell Beunz

Associate Partner: AECOM Tishman

Delivery Type: CM-GMP

Insurance: CCIP

Builders Risk By: Owner

GC Type: Actuals to a Cap

Contract Terms

LDs:

Hotel: Days 1-30: $0
Days 31-60: $15K/Day
Days 61-90: $35K/Day
Days 90+: $55K/Day

Condo: Same as Hotel

Capped at 50% of Fee

Fee Enhancement Opportunities:

Early Completion Incentive
(Days 1-15: $5K/Day. Days 16+: $7.5K/Day)

Pickup on Rates: TBD

Contingency Savings: First $750K to Hunt. Balance split 75% Owner / 25% Hunt

CCIP Savings: TBD

Project Visibility

Schedule Visibility

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Project Name:

Data Date: 6/28/2021

Baseline Schedule Data Date: 3/23/2020

Time Remaining to Contractual Substantial Completion

238 : 10 : 23 : 13

Data on this page is read from the P6 XML file

Activity Start Date Range: 9/4/2017 6/22/2022

Milestones and Variance

Activity Name	Baseline Contract Finish Date	Current Finish Date	Variance (Calendar Days)
FINAL COMPLETION - JUNE 22, 2022	06/15/2022	06/22/2022	-7
CONDO OCCUPANCY - MARCH 31, 2022	03/24/2022	03/31/2022	-7
HOTEL OPENING - MARCH 26, 2022	03/19/2022	03/26/2022	-7
HOTEL OCCUPANCY (TCO) - DECEMBER 24, 2021	12/17/2021	12/24/2021	-7
CONDO ENCLOSED	08/12/2021	08/31/2021	-19
CONDO STRUCTURE TOP-OUT - MAY 26, 2021	05/17/2021	05/21/2021	-4
HOTEL ENCLOSED	01/11/2021	01/07/2021	4
PERMANENT POWER AVAILABLE	12/31/2020	12/21/2020	10
HOTEL STRUCTURE TOP-OUT	09/29/2020	09/01/2020	28
TEMP POWER	11/15/2019	11/15/2019	0
START EXCAVATION	08/22/2019	08/22/2019	0
START ENABLING WORK	04/03/2019	04/03/2019	0
GMP EXECUTION (75% CD's)	02/27/2019	02/27/2019	0

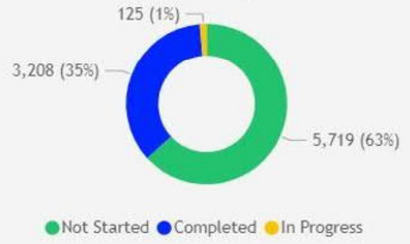
Notes: There are several Milestone Dates in the Contract that the Owner can direct Hunt to Accelerate to Achieve:
*Vertical Construction Start: 01/17/2020 (Achieved)
*Interior fit-out start: 05/27/2020 (Achieved)
*Condo Structure top-out: 05/26/2021(Achieved)
*Hotel Occupancy TCO: 12/24/2021
*Hotel Opening: 03/26/2022

Activities

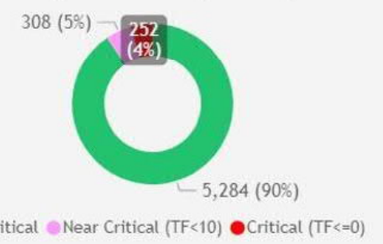
Projected Substantial Completion	Substantial Completion Total Float	Projected Final Completion	Remaining Weather Days
03/26/2022	0	06/22/2022	0

Total Activities	Activities with durations over 20 days	Activities with Positive Float over 100 days	Baseline Weather Days
9,052	658	563	0

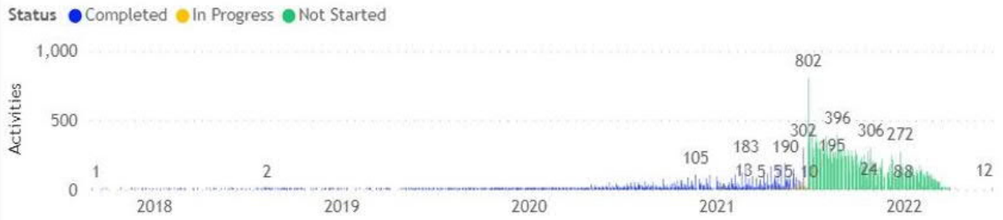
Total Activities by Status



Incomplete Activities by Criticality



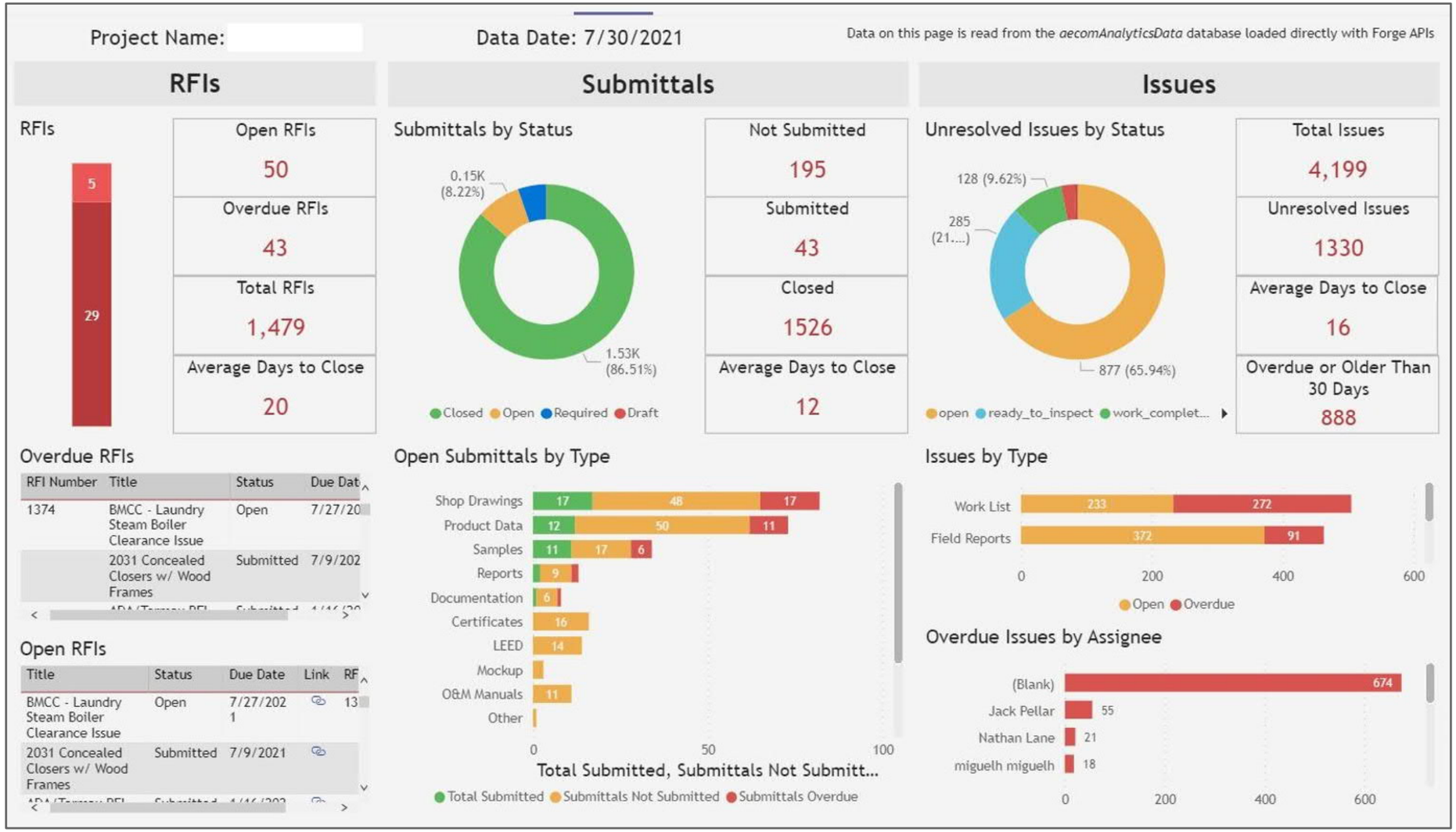
Schedule Density



Project Visibility

Quality Visibility

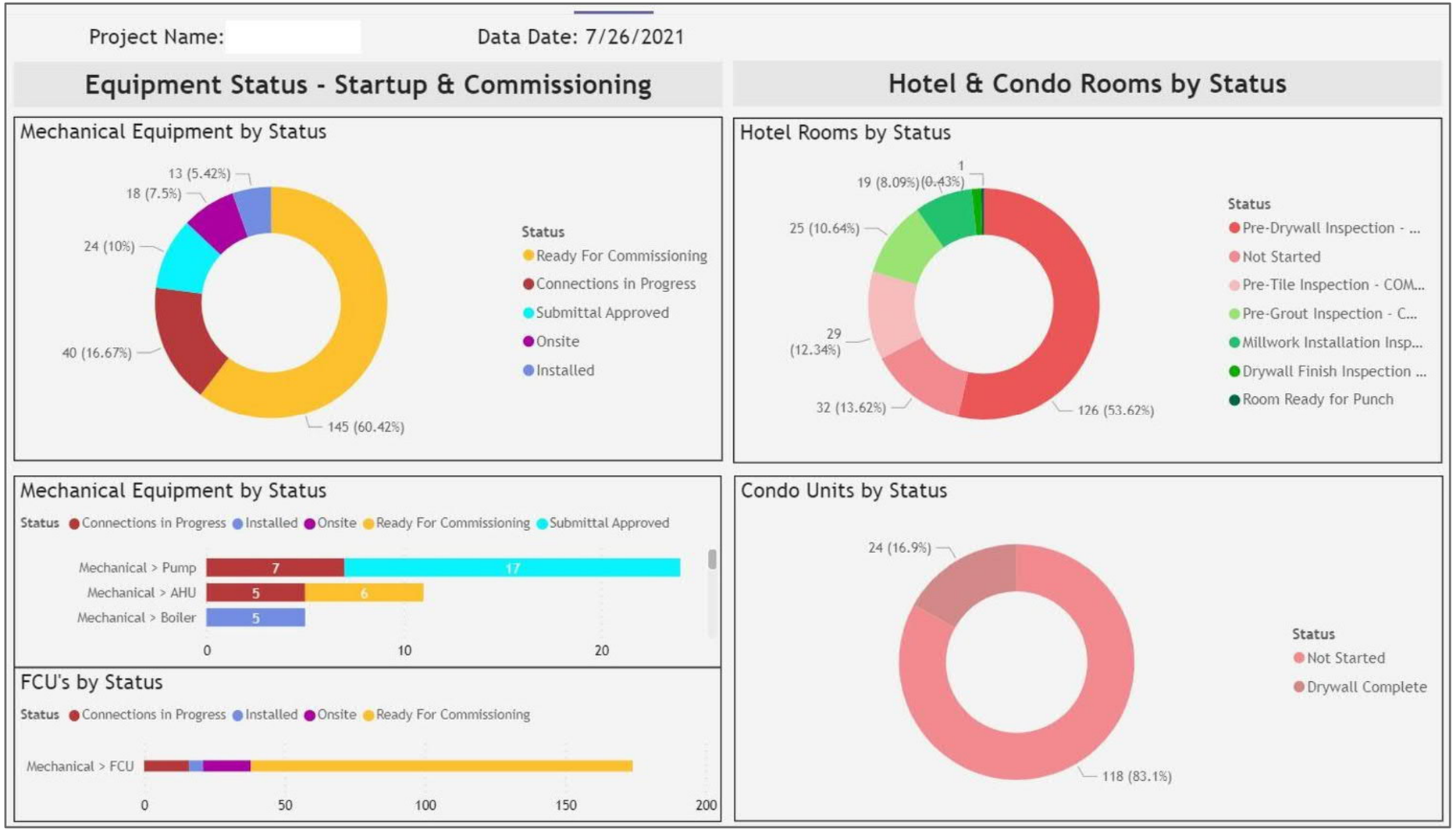
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Project Visibility

Operations & Punch-List

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Closing Remarks

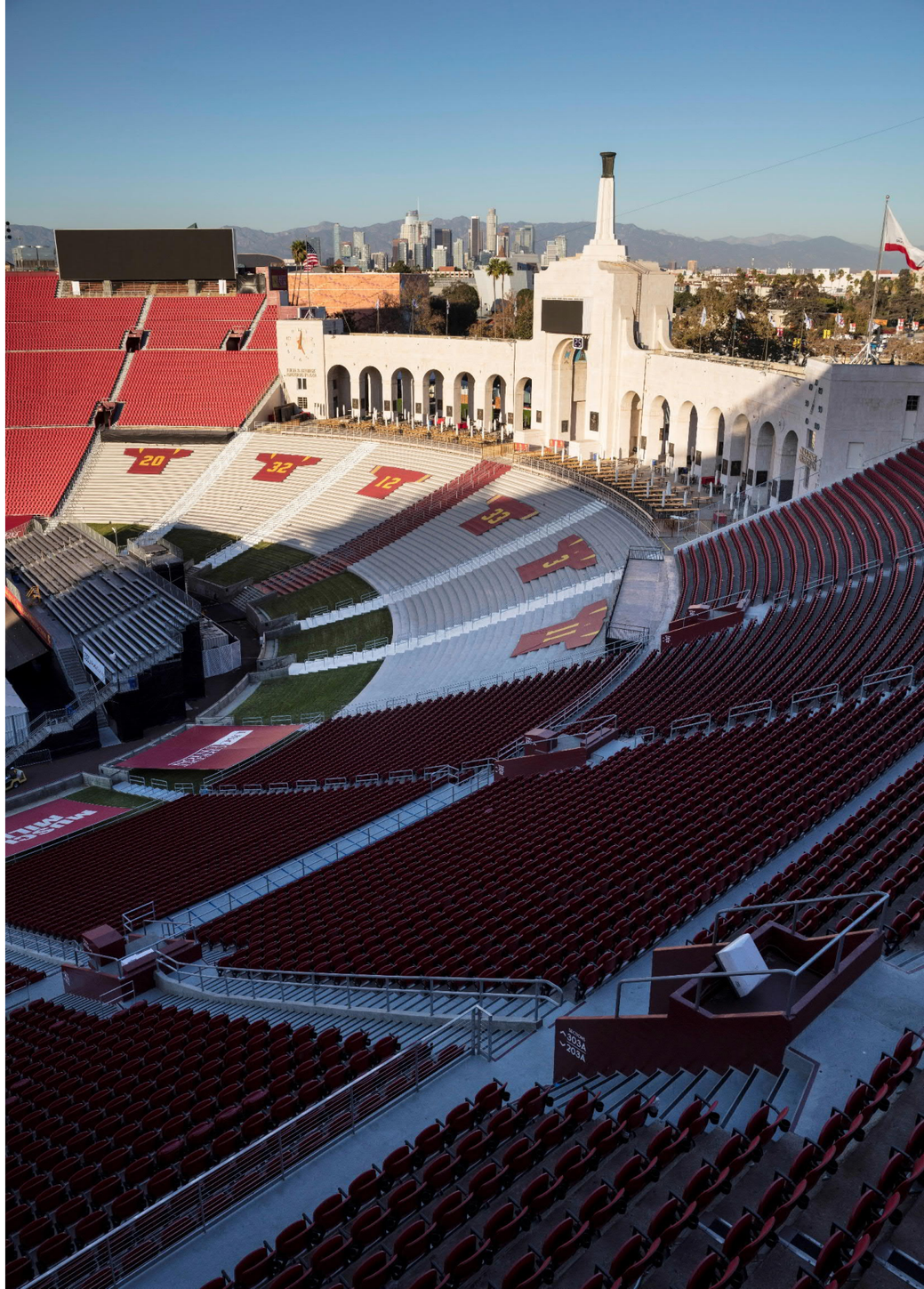
Closing Remarks

Using Forge to Build Connected and Customized Workflows in BIM 360 - BES500028

Leveraging your business needs through the power of Forge, elevates the ROI of BIM 360.

We are honored to talk about AECOM's advancements in cloud-based automation and thank you for attending.

AECOM





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