

WOMEN IN CONSTRUCTION SUMMIT

MAY 1, 2025 | MELBOURNE CONVENTION CENTRE

DIGITAL ENGINEERING:

REDEFINING PROJECT DELIVERABLES,
TEAMS, AND CAPABILITIES

JOYLYN DELA CRUZ

LEAD CONSULTANT, AURECON
WOMEN IN BIM REGIONAL LEAD - MELBOURNE

OLA
I'M JOY!

Civil Engineer
6+ Middle East
Originally from

Philippines

Built Environment to Transport
Projects`

LEAD CONSULTANT

AURECON

30 year old with
30 years experience



JOYLYN DELA CRUZ

DIGITAL ENGINEERING LEAD | LEAD CONSULTANT



CHINA

2024 SHENZHEN SMART CITY AWARD

The Digital Twin foundation features detailed Digital models of nearly 10,000 key buildings.



DUBAI

2013

FIRST BIM MANDATE FOR OVER 40 FLOORS

2024

BUILDING E-PERMIT – BIM MANDATE



UNITED KINGDOM

2011

GOVERNMENT/INDUSTRY BIM PROGRAMME

2016

BIM MANDATE

UK Government Construction Strategy



AUSTRALIA

2016

NATIONAL DIGITAL ENGINEERING POLICY

2022

VICTORIAN DIGITAL ASSET STRATEGY

2024

VICTORIAN TRANSPORT DIGITAL
ENGINEERING TRANSFORMATION PROGRAM



DIGITAL ENGINEERING

“ Best Practice Application Of Digital Tools, Technologies and Processes To Design, Build, and Manage Engineering Projects, From Concept To Implementation and Operation



THE OLD WAYS: WHAT WE DELIVER

TRADITIONAL DELIVERY



PRINTED BLUEPRINTS TO 2D PDFS

**LIMITED HANDOVER DATA. OFTEN PAPER
BASED O&M MANUALS**

MANUAL QUANTITY TAKE OFFS

THE NEW WAYS: WHAT WE DELIVER

DIGITAL ENGINEERING



INTEGRATED AND COORDINATED 3D MODELS

**MODEL INCLUDES ASSET DATA FOR DIGITAL
HANDOVER AND FM.**

**MODEL BASED QUANTITY TAKE OFF AND 5D
COST ESTIMATION**

THE OLD WAYS: WHAT WE DELIVER TRADITIONAL DELIVERY



NOT SO COMMON ENVIRONMENT

THE NEW WAYS: WHAT WE DELIVER DIGITAL ENGINEERING

COMMON DATA ENVIRONMENT

AGREED SOURCE OF INFORMATION



aconex

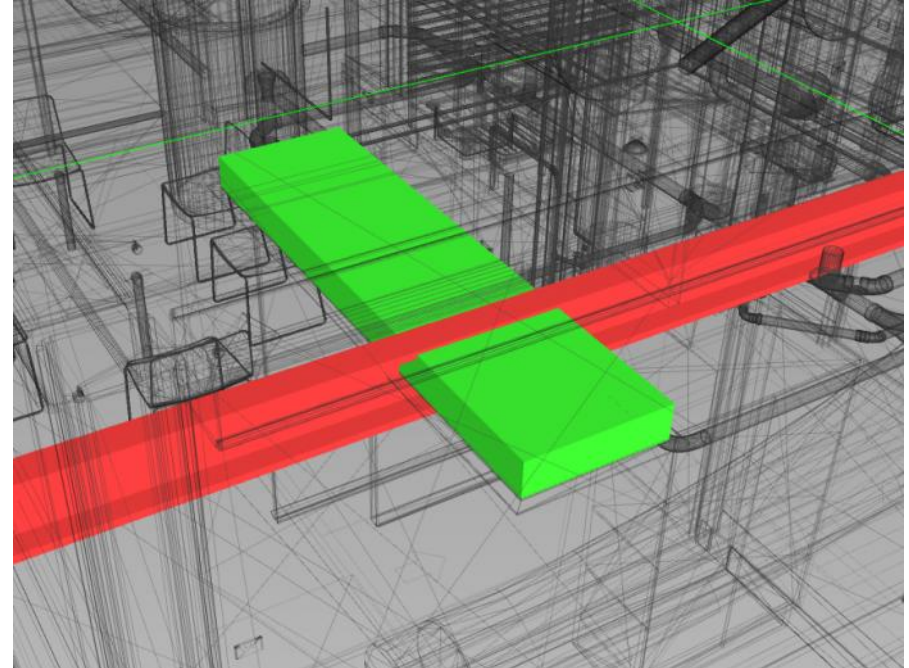
COMMON DATA ENVIRONMENT

THE OLD WAYS: SURPRISES TRADITIONAL DELIVERY



Typically discovered on-site or during construction.

THE NEW WAYS: MITIGATED RISKS DIGITAL ENGINEERING



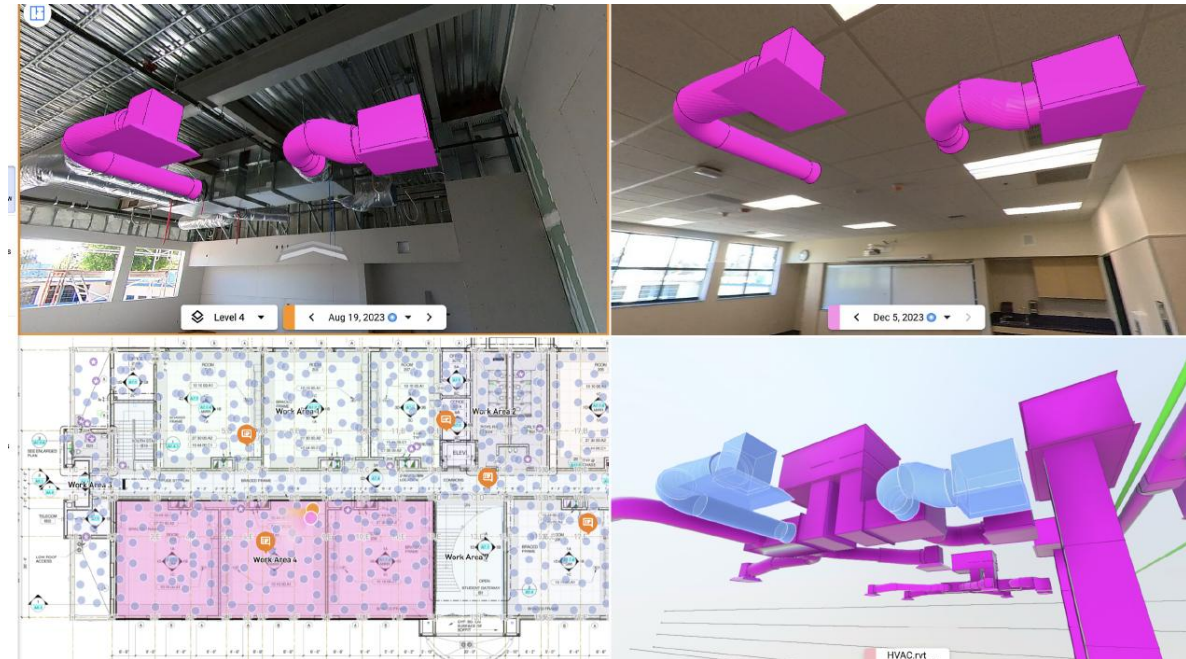
Identified and resolved during design phase using clash detection tools

THE OLD WAYS TRADITIONAL DELIVERY



SURPRISE!

THE NEW WAYS DIGITAL ENGINEERING



**REAL-TIME: AR and POINT CLOUD
SITE OVERLAY**

THE OLD WAYS
TRADITIONAL DELIVERY



MANUAL LABOR

THE NEW WAYS
DIGITAL ENGINEERING



DESIGN FOR MANUFACTURE & ASSEMBLY
3D PRINTING

THE OLD WAYS: HOW WE WORK

TRADITIONAL DELIVERY



THE NEED TO BE IN THE SAME ROOM.
LESS DIVERSITY

THE NEW WAYS: HOW WE WORK

DIGITAL ENGINEERING



WORK ANYWHERE.
WORK WITH EVERYONE

PRIVATE DEVELOPERS / OWNERS

MOST NOW MANDATES DIGITAL DELIVERY AT
MINIMUM AS PART OF THE COMMERCIAL CONTRACT

BASED ON MY EXPERIENCE

HOW REQUIREMENTS ARE WRITTEN

FROM “RECCOMENDS” TO “MUST”

BASED ON MY EXPERIENCE

THE PEOPLE IN THE ROOM

2016:	OWNER + DESIGN TEAM
2020:	OWNER + DESIGN + CONSTRUCTION
2021:	OWNER + DESIGN + CONSTRUCTION + ASSET MANAGERS
2024:	OWNER + DESIGN + CONSTRUCTION + ASSET MANAGERS + END USER

BASED ON MY EXPERIENCE

WHO'S IN THE MODEL

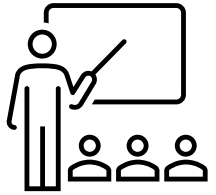
2014: BIM MODELLER + BIM COORDINATOR + BIM MANAGER

TODAY: ENGINEERS OWNING THEIR DESIGN
 CONTRACTORS
 ASSET MANAGERS
 OWNERS

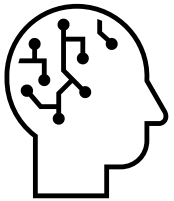
**THOSE ARE ACTUALLY OLD NEWS.
HERE'S WHAT'S NEXT**

BRINGING EVERYONE IN THE JOURNEY

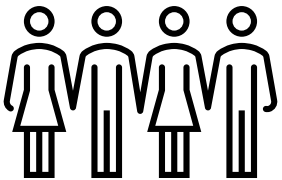
PEOPLE: TRANSFORMING TEAMS



EDUCATE



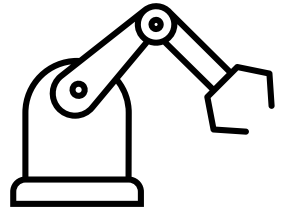
UPSKILLING ISN'T OPTIONAL



BE PART OF CONNECTED COMMUNITY

WHAT CAN WE DO BETTER AND FASTER

PROCESS: AUTOMATE



STREAMLINE AND AUTOMATE
CURRENT PROCESSES

AT **AURECON**, WE HAVE COMMITTED IN OUR BLUEPRINT TO
AUTOMATE OUR DELIVERY TASKS BY 20%

SCHEDULED EXPORT

REGULARLY EXPORT MODEL FORMATS FOR SHARING



WAKE UP



OPEN
MODELS



WAIT
IMPATIENTLY



EXPORT



UPLOAD



CRY



SLEEP WHILE
AUTOMATING



WAKE UP



CHECK

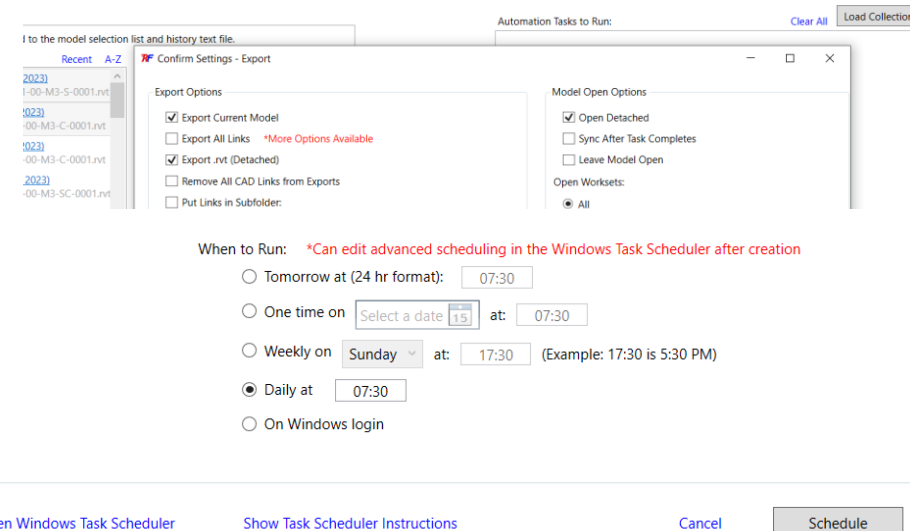


AMAZING!

NO CODE:



RUSHFORTH Automator for Revit



FEDUP – AUTOMATED FEDERATION



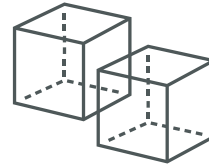
INTERNAL AURECON TOOL
**no copyright infringement intended*



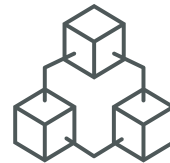
Download all Models



Group by Area / Zones



Breakdown by Disciplines

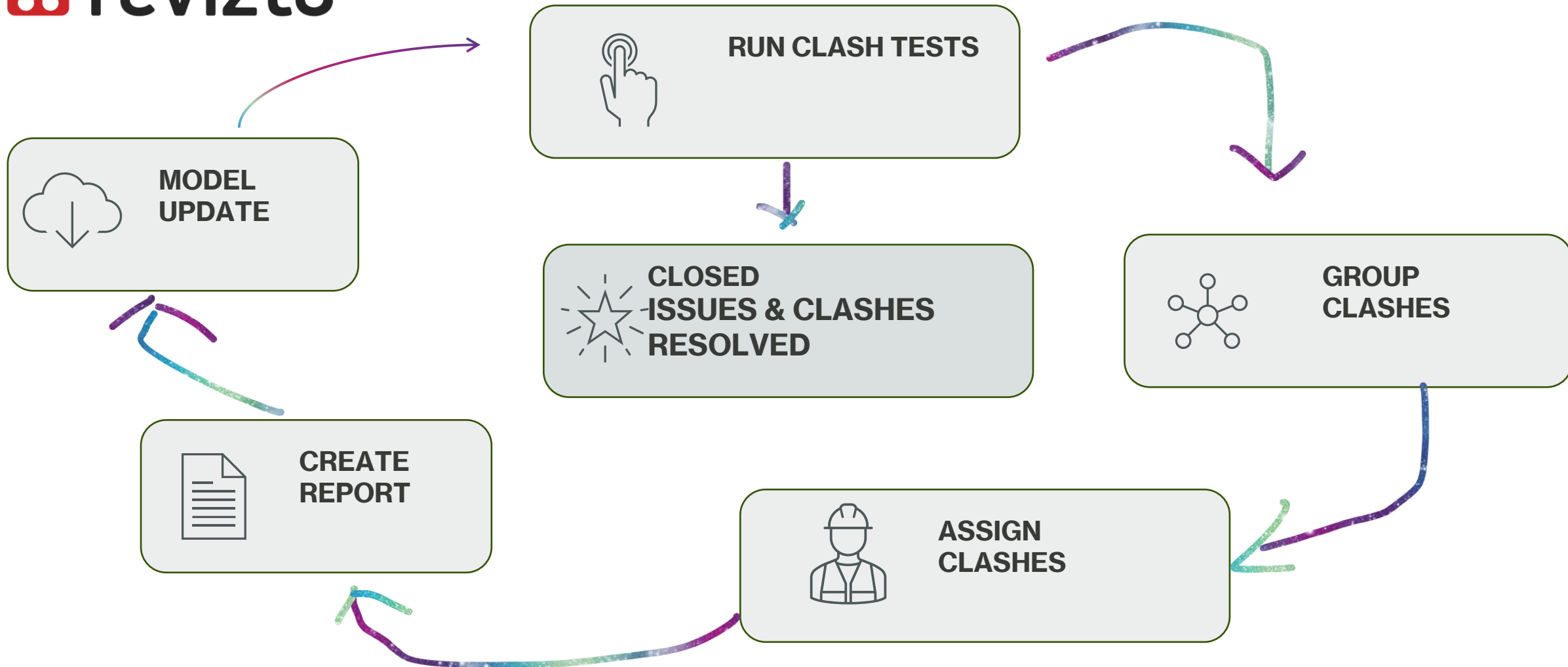


FEDERATE (like it's HOT!)

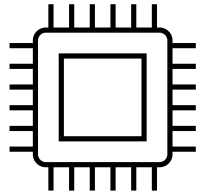
CLASH AUTOMATION



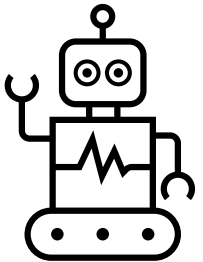
1. Create Sets
2. Create Zones*
3. Create Clash Test



WHAT'S THE EMERGING TOOLS **TECHNOLOGY** OF THE PRESENT & FUTURE



GENERATIVE AI



ROBOTICS IN CONSTRUCTION

CHINA

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WHAT DOES FUTURE LOOKS LIKE?
LET'S DISCUSS IT TOMORROW.
THANK YOU!

QUESTIONS?

Bringing
ideas
to life

 linkedin.com/company/Aurecon

 youtube.com/user/AureconGroup

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 instagram.com/Aurecon

 aurecongroup.com/podcast