

OCTOBER 2023

Digital Engineering: Cloud-based Organizational Transformation

Company: VIVIX

Thiago Oliveira, AVEVA

AVEVA



Thiago Oliveira, M.Sc.

Director, Technical Support, Americas

- AVEVA
- thiago.oliveira@aveva.com



DIGITAL ENGINEERING: CLOUD BASED ORGANIZATIONAL TRANSFORMATION

vivix

VIDROS PLANOS

Our team



Aristóteles Terceiro Neto

Industrial Transformation Coordinator



Claudia Lima

Engineering Manager



Murilo Ferreira

Industrial Transformation Senior Analyst

VIVIX



100% BRAZILIAN CAPITAL

\$520 MM – FLOAT 1 INVESTMENT

900 MTON/DAY

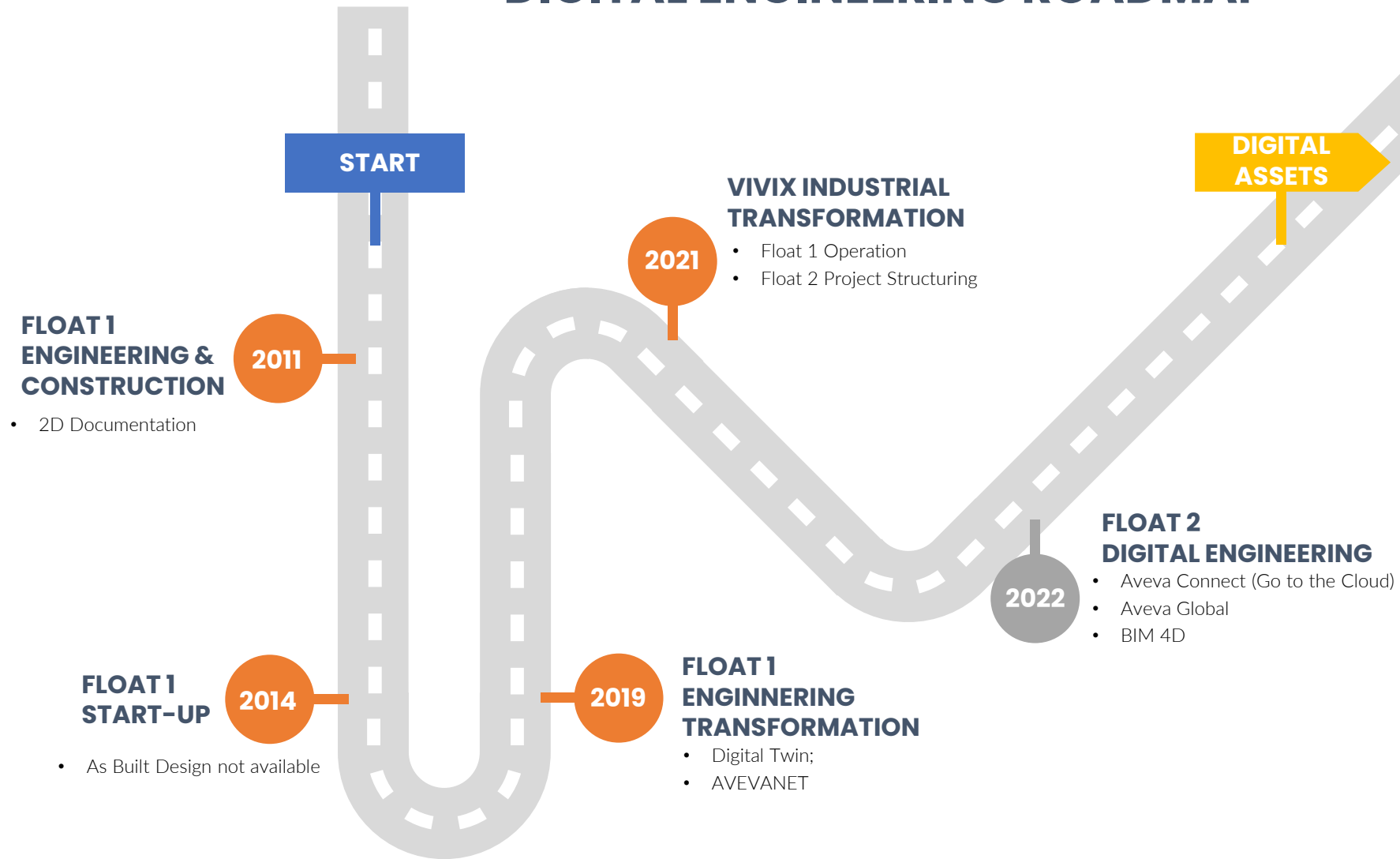
PROCESSING OF RAW MATERIAL

- Located at 12 km (7.5 mi) from Vivix
- Responsible for the extraction and processing of silica, feldspar and limestone

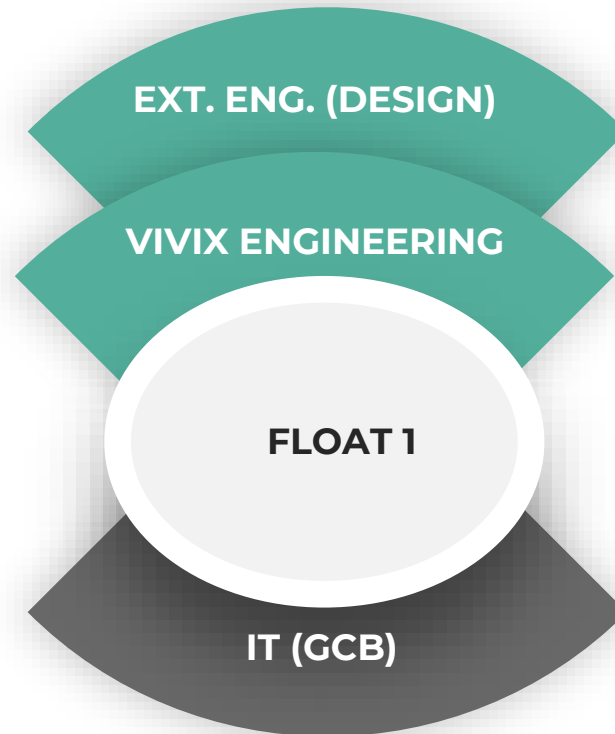
**Only plant
in Brazil having
their OWN MINE**



DIGITAL ENGINEERING ROADMAP



BEFORE 2019 – FLOAT 1 CONSTRUCTION AND BEGINNING OF OPERATION



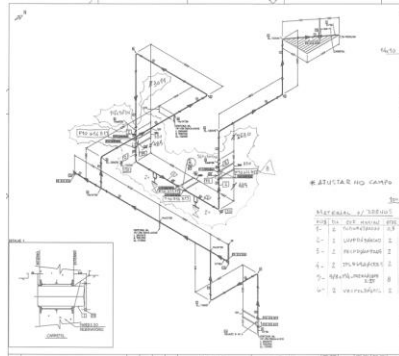
2D DOCUMENTATION
AS-BUILT DESIGN NOT AVAILABLE AFTER CONSTRUCTION
IMPROVEMENTS IMPLEMENTED AND NOT FULLY
DOCUMENTED

USE OF CONVENTIONAL 2D SOFTWARES
PROJECT DATA STORAGE: LOCAL SERVERS

BEFORE 2019 – FLOAT 1 CONSTRUCTION AND BEGINNING OF OPERATION



- **AS-BUILT DESIGN NOT AVAILABLE**
- **2D DOCUMENTATION**
- **ON SITE IMPROVEMENTS NOT ENTIRELY DOCUMENTED**

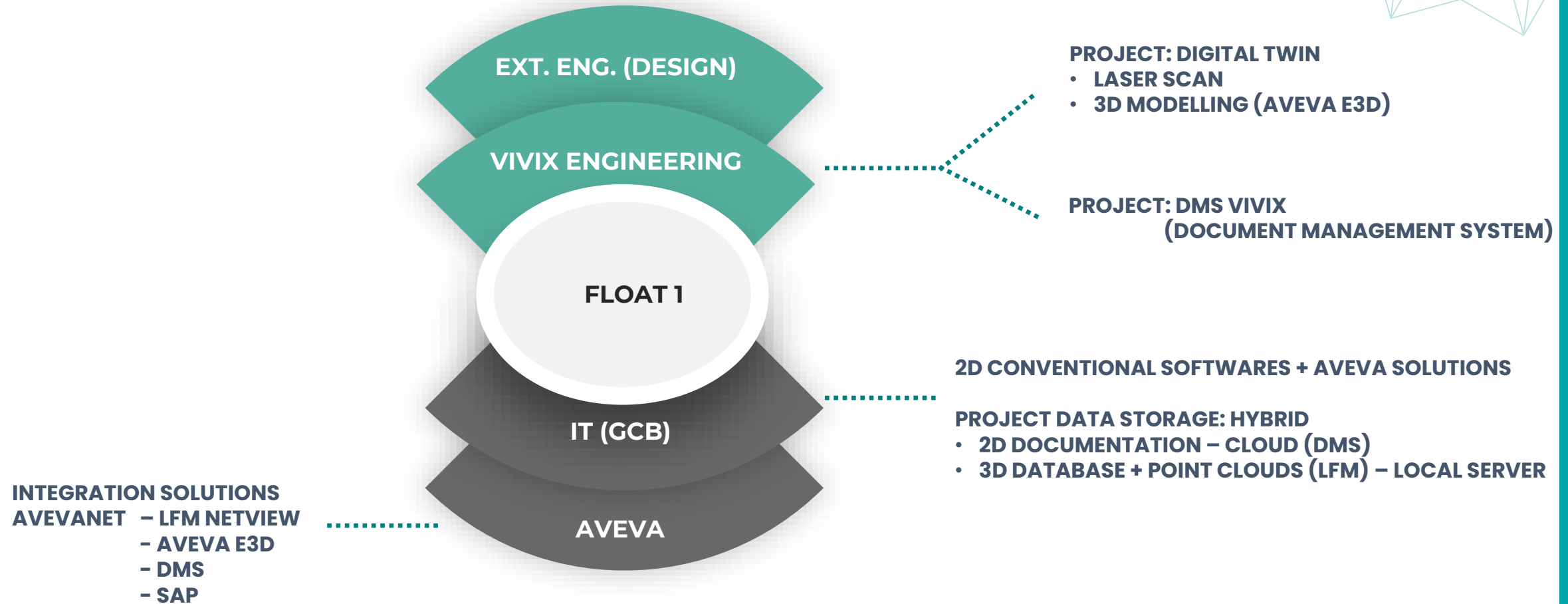


4.0 INDUSTRY



- **CUTTING EDGE DESIGN**
- **HIGH LEVEL OF AUTOMATION**
- **LOW ENERGY MELTER TECHNOLOGY**

2019 – DIGITAL TWIN: THE BEGINNING OF THE DIGITAL TRANSFORMATION



2019 – DIGITAL TWIN: THE BEGINNING OF THE DIGITAL TRANSFORMATION



LASER SCAN

- Basis for 3D Modelling
- 100% of the factory scanned
- 4.4 TB
- AVEVA Point Cloud Manager

3D MODELLING

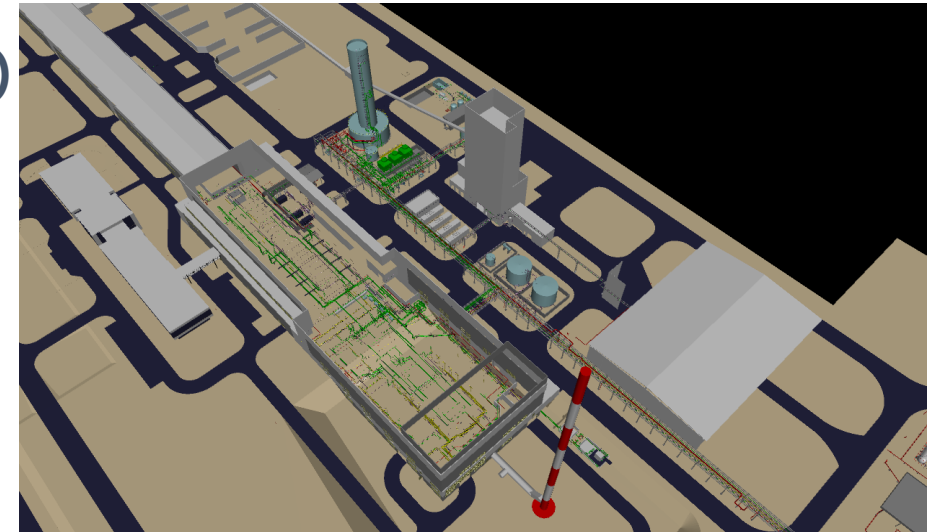
- AVEVA E3D Design
- VIVIX Data Library

INPUT NON-GRAPHICAL INFORMATION (BIM)

- Insert Project Data

AIM INTEGRATION

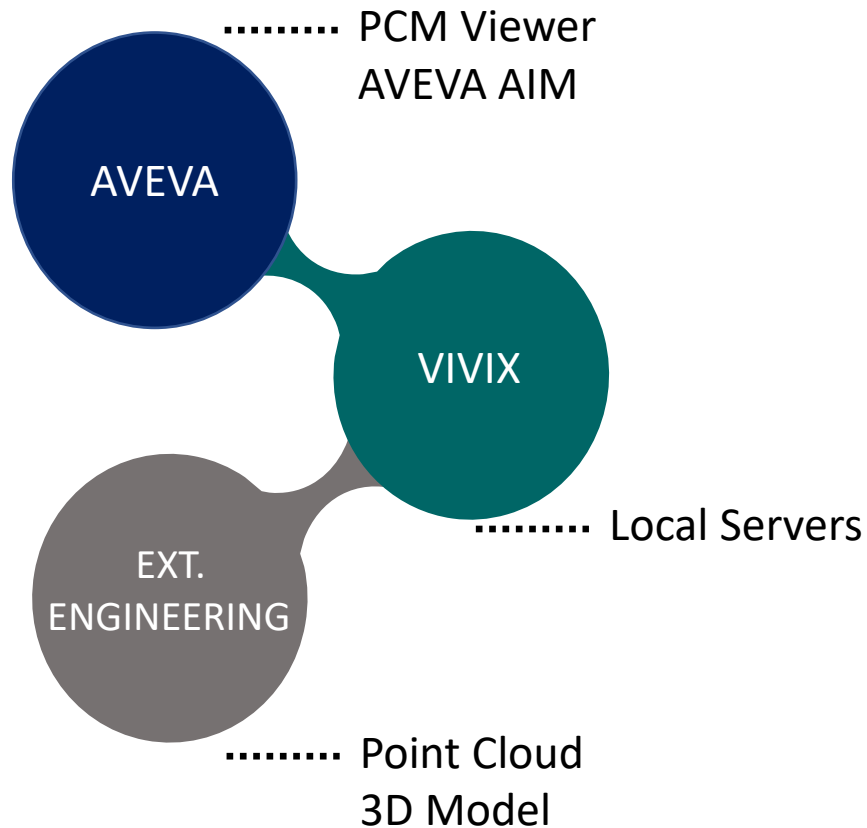
- Points Cloud – PCM Viewer
- 3D Model – AVEVA E3D Design
- DMS – ProjectWise
- Maintenance Report - SAP



2019 – DIGITAL TWIN: THE BEGINNING OF THE DIGITAL TRANSFORMATION

Gêmeo Digital - Utilizando
o AVEVA AIM - Asset
Information Management

2019 – DIGITAL TWIN: THE BEGINNING OF THE DIGITAL TRANSFORMATION



CHALLENGES

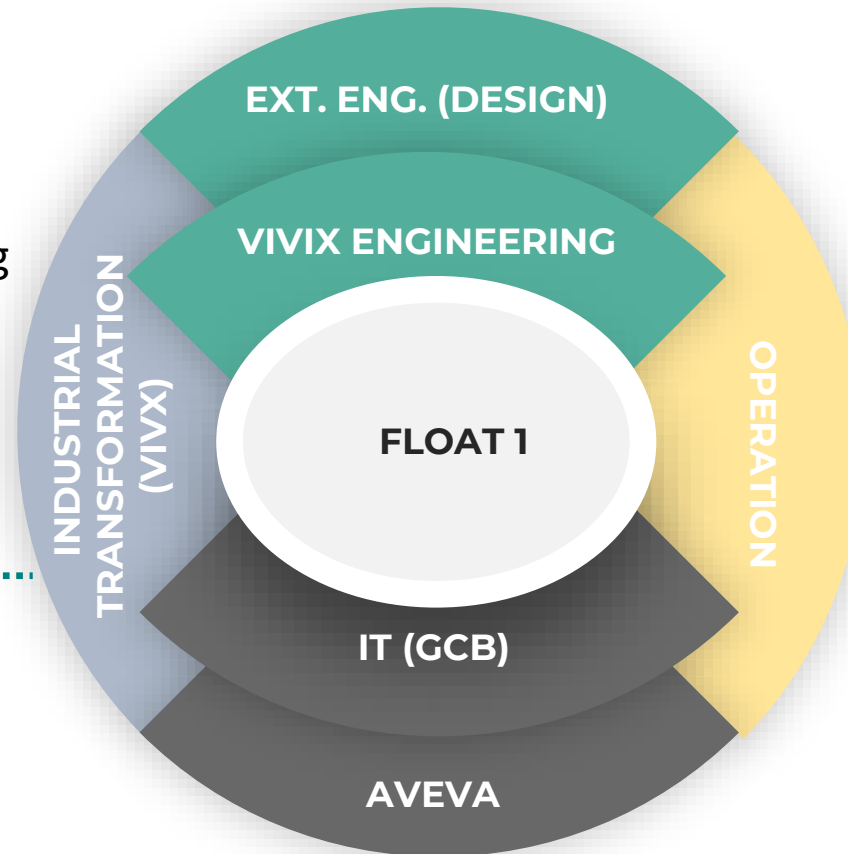
- ❑ Point Cloud Large Size: 4.4 TB
 - Internet transfer not feasible;
 - External HD;
 - Courier transfer (Engineering x Vivix x AVEVA);
 - Information Security;
 - Server slowness.
- ❑ 3D Database stored on the Engineering Company's Local Servers
 - Tracking de project's progress;
 - Verify the quality of the deliverables;
 - Weekly Design Review Meetings.

2021 – THE INDUSTRIAL TRANSFORMATION



Support and accelerating initiatives

- Innovation/AI
- Industry 4.0
- Data Science / Data Engineering
- Cyber Security
- Emerging Technologies
- Digital Engineering



Benefits

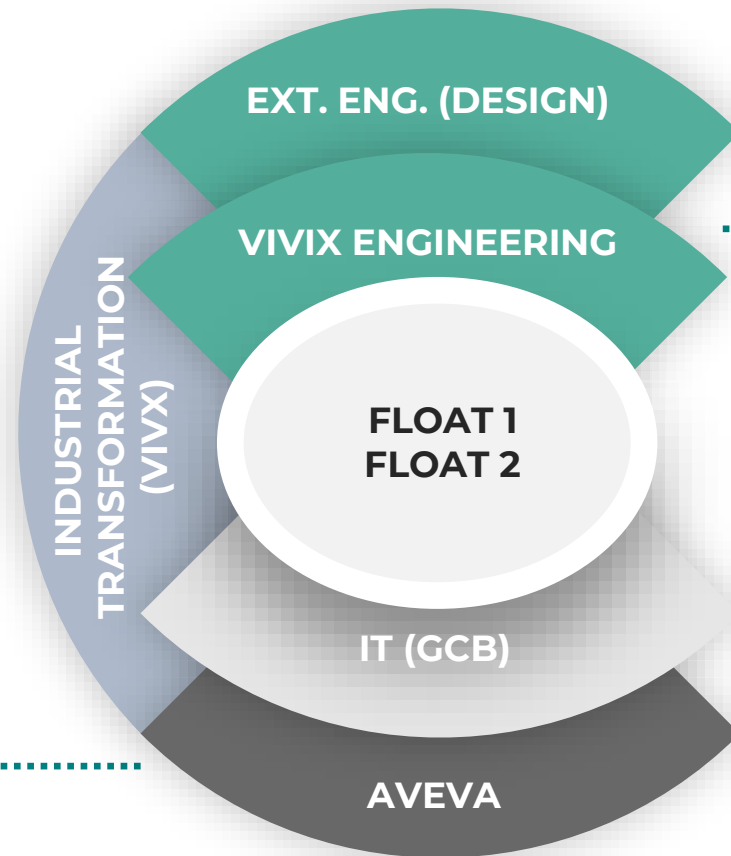
- Engineering cost optimization
- Improved decision-making process
- Data ownership
- Increased Safety
- Sustainability Improvement
- Increased Efficiency

2021 – PREPARING TO EXPANSION – FLOAT 2



3 STEPS FOR SUCCESS

- AVEVA SOLUTIONS
- AVEVA CONNECT
- AVEVA GLOBAL
- AIM
- UNIFIED ENGINEERING



FLOAT 2 PROJECT
COLLABORATIVE ENVIRONMENT – REAL TIME
OWNERSHIP OF INFORMATION

INFORMATION SECURITY SUPPORT

STEP 1 – FROM SERVERS TO CLOUD

AVEVA
Connect

VIVIX – DECISION POINT

GO

- **IT BENEFITS**

- Reduce server costs (new equipment, maintenance)
- Reduce Vivix dependency on IT services (external)
- Enable the data sharing
- Increase Storage Capacity and Scalability
- Improve Access Performance
- Ensure Information Security
- Ensure Data Availability and Security

- **MEET PROJECT REQUIREMENTS FOR FLOAT 2**

- Collaborative Environment
- Engineering Located in different places
- Vivix as the data owner of the project
- Information available in real time



STEP 1 – FROM SERVERS TO CLOUD

VIVIX – HYBRID ENVIRONMENT

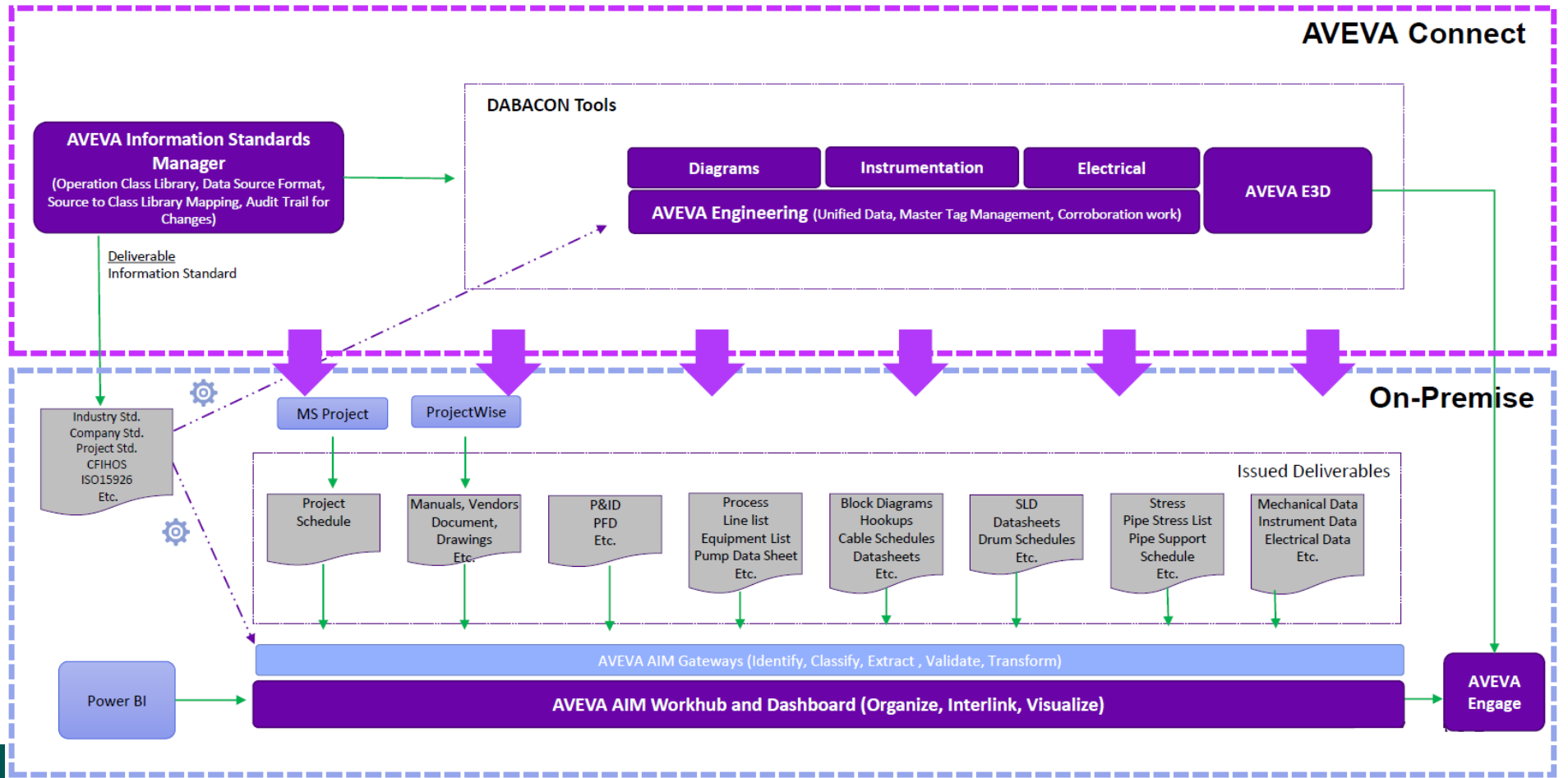
AVEVA
Connect

GO

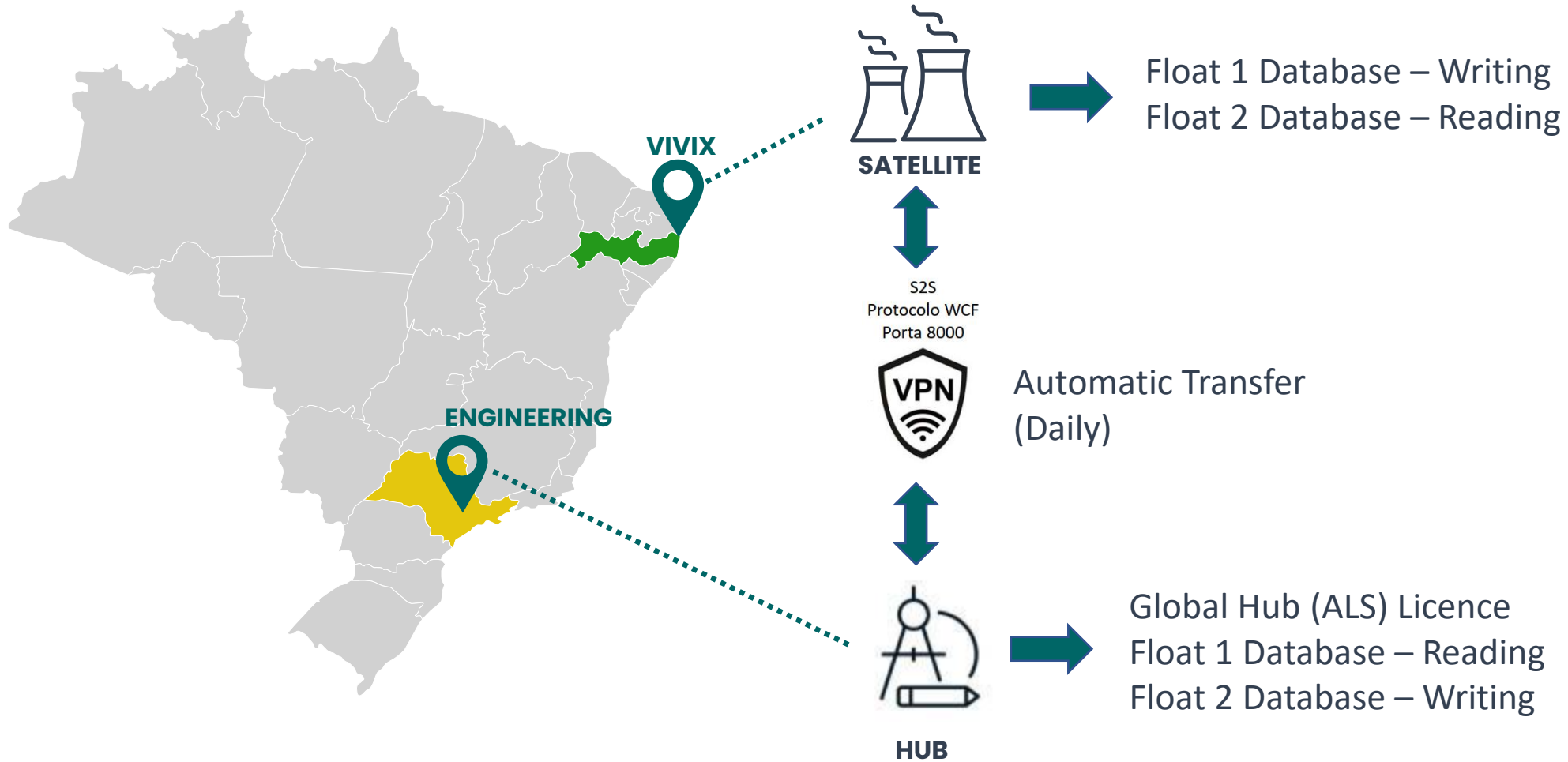
AVEVA
Unified
Engineering +
ISM



AVEVA
AIM



STEP 2 – DATABASE SHARING FOR FLOAT 2



STEP 2 – DATABASE SHARING FOR FLOAT 2

GLOBAL

COLLABORATIVE ENGINEERING

GO

- **BENEFITS**

- Single Catalog for Float 1 and 2, ensuring the standardization of projects;
- Ext. Engineering is responsible for the catalog updates;
- Vivix has owned the project's database from the beginning;
- Collaborative Environment to verify and approve the project in real time (daily update)



STEP 3 – DIGITAL ENGINEERING – BIM 4D LEVEL 2

ENGENHARIA
DIGITAL

BIM 4D LEVEL 2



GO

NEEDS:

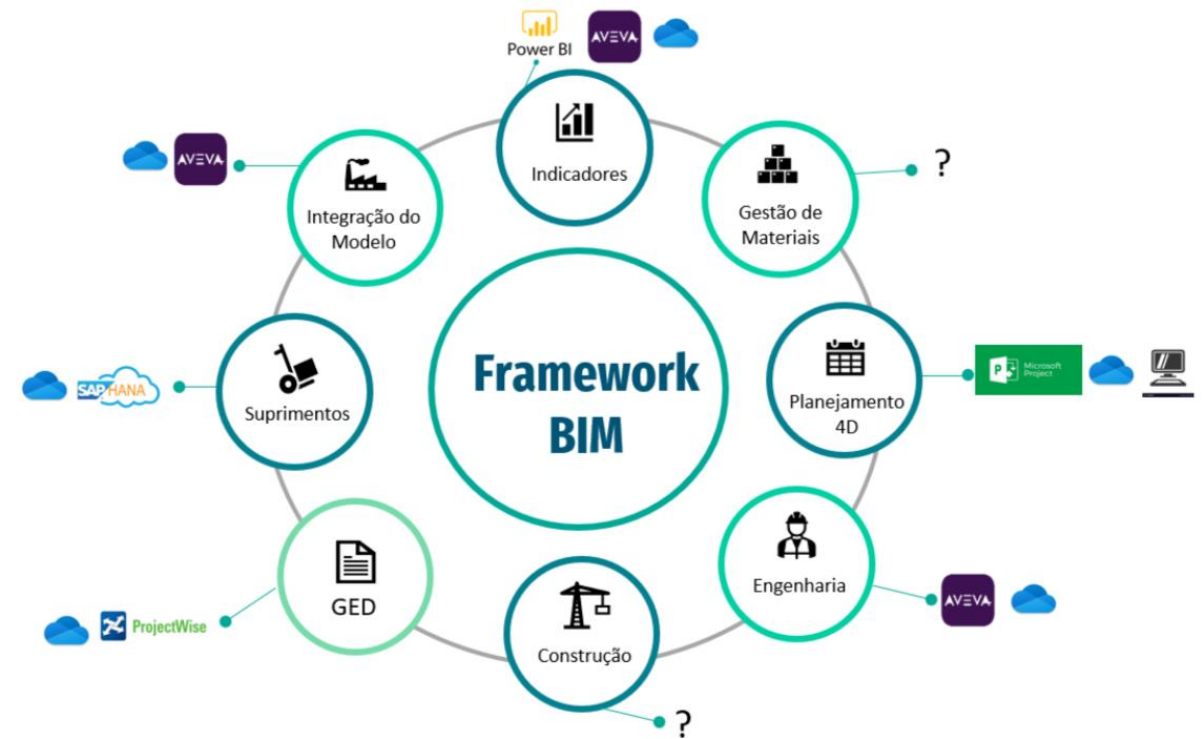
- Organize processes and methods for higher value creation and ROI from Engineering to Start-up.

SOLUTION

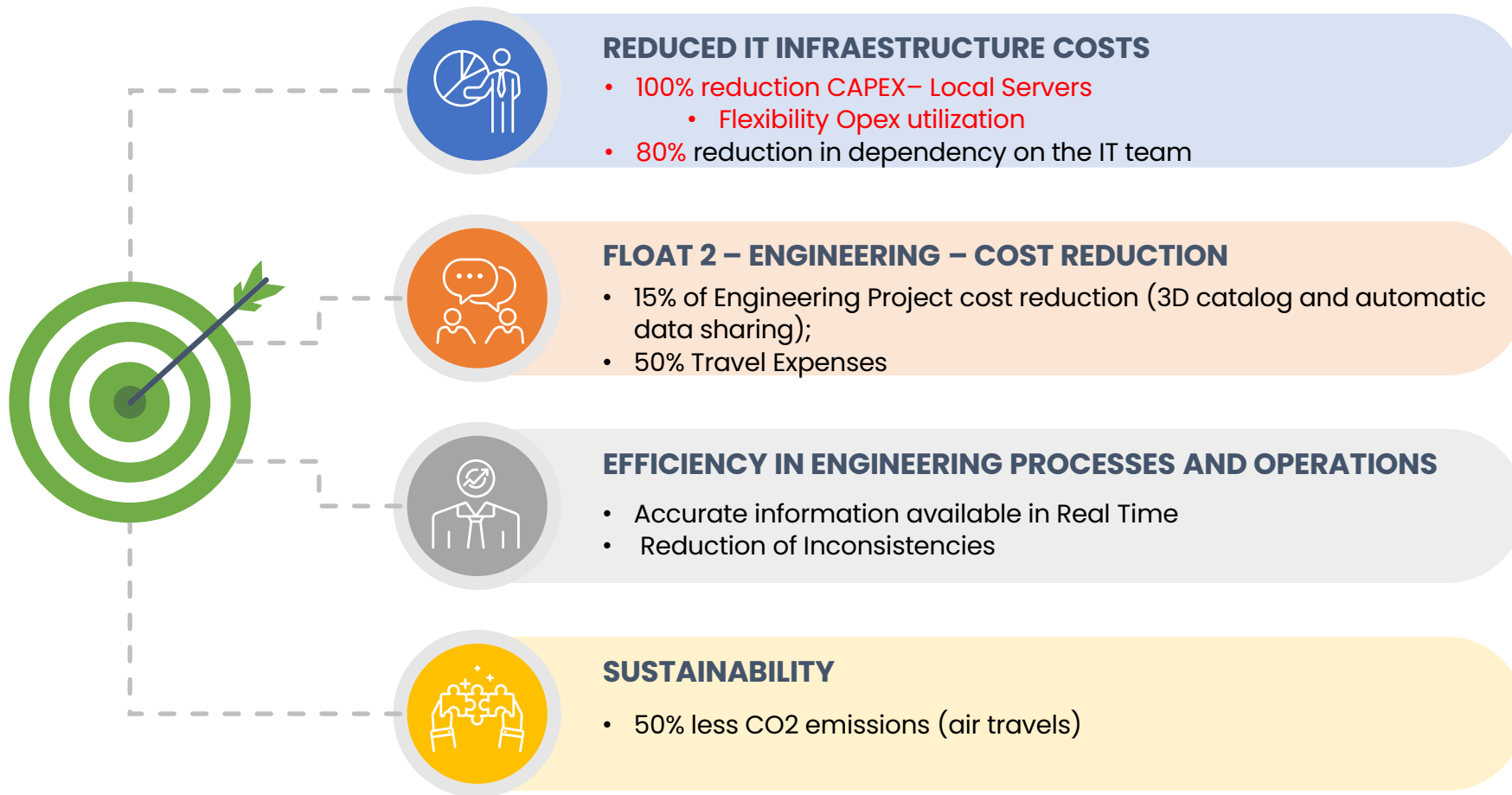
- Leverage BIM level 2 adoption.
- Opportunity for more productive projects, predictable, shorter duration and lower costs and higher quality.

OUTCOME

- Guarantee a better coordination and collaboration between teams and third parties;
- Reduction of claims;
- Finish projects on time or, if possible, ahead of schedule;
- Cash flow according to the project S progression curve;
- Zero quality deviation



ACHIEVED BENEFITS



LESSONS LEARNED FROM VIVIX



CALL TO ACTION

Consider team's mindset transformation

- check if you are including the “people” variable in your digital engineering journey

Cloud now

- overcome challenges that should stay in the past
- hybrid or not, you choose.

Industry 4.0 for all

- make sure you are moving both Engineering and Operations at the same pace

vivix

VIDROS PLANOS

CRIE O NOVO

 /vivixvidrosplanos

 @vivixvidrosplanos

 vivix.com.br

 vivixvidrosplanos1

This presentation may include predictions, estimates, intentions, beliefs and other statements that are or may be construed as being forward-looking. While these forward-looking statements represent our current judgment on what the future holds, they are subject to risks and uncertainties that could result in actual outcomes differing materially from those projected in these statements. No statement contained herein constitutes a commitment by AVEVA to perform any particular action or to deliver any particular product or product features. Readers are cautioned not to place undue reliance on these forward-looking statements, which reflect our opinions only as of the date of this presentation.

The Company shall not be obliged to disclose any revision to these forward-looking statements to reflect events or circumstances occurring after the date on which they are made or to reflect the occurrence of future events.