CGX Aero

ICAO MID

IFP Provision
Operational perspectives & Challenges

PANS-AIM supporting safety
How to monitor automation?

Version : 2.0
Date : 2025-12-09

The IFPD Safety and oversight challenges

Getting the foundations ready!

Implementation best practices & samples

ICAO MID

Please scan me

IFPD Oversight : what are the main challenges?

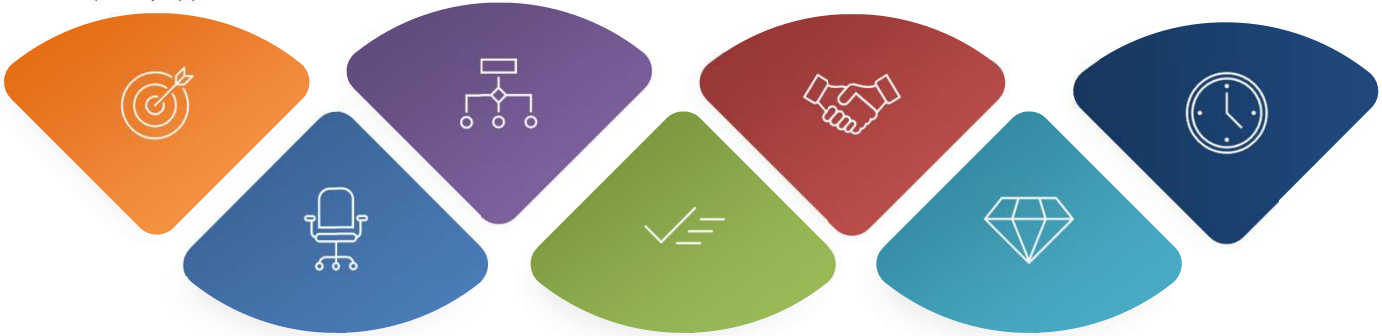
The IFPD Safety and oversight challenges

Public Safety Concerns
community concerns, Complexify approval

Complex Regulations
may vary significantly

Coordination with Stakeholders
Collaborating, conçus, communication

Approval Timelines
Duration vs projects timelines



Changing Requirements
standards can evolve, necessitating revisions to designs or plans

Design Compliance
Codes, Standards, requiring thorough knowledge and expertise

Budget Constraints
Budget vs high-quality and reliable design and equipements design

CGX Aero

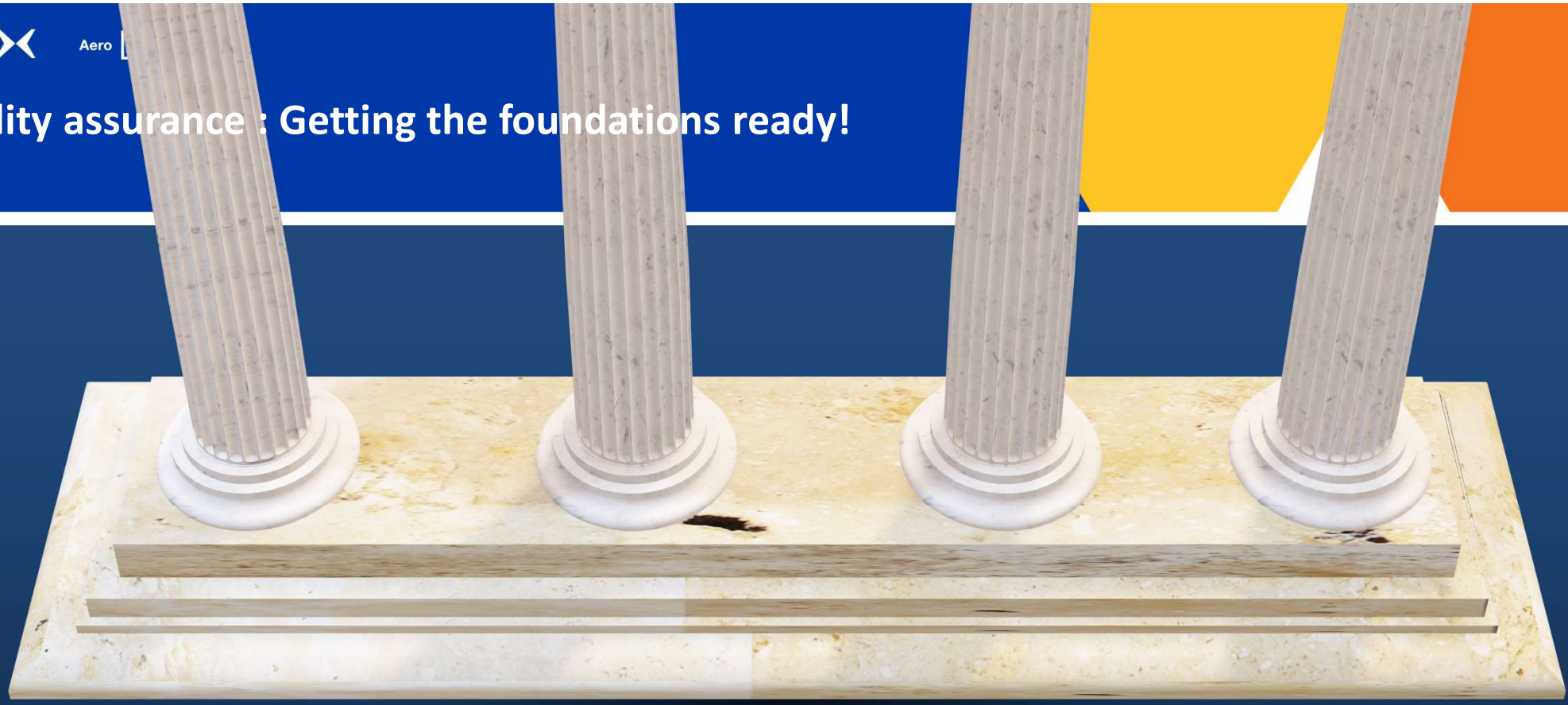
Quality Assurance : Getting the foundations ready!

The foundations are already defined

Quality assurance : Getting the foundations ready!

CGX Aero

Quality assurance : Getting the foundations ready!



The foundations are already defined :

- former ADQ, ANNEX 15, PANS-AIM, DOC8168, DOC9906, ANNEX 19 ...
- AIS-TO AIM Transition
- Work in progress for IFPD digital dataset

Quality assurance : Getting the foundations ready!

The input data

Gettings means to check input data with regards to expectations and needs, analysis, evaluation , assessment

Automation

The right tool at the right place
The maximum automated reporting capability
Cross check means of automated algorithms :

Qualified personnel

Training
Validation and approval independence between :
Designers, Chief designers, Quality and safety officer, the management

Process driven & traceability

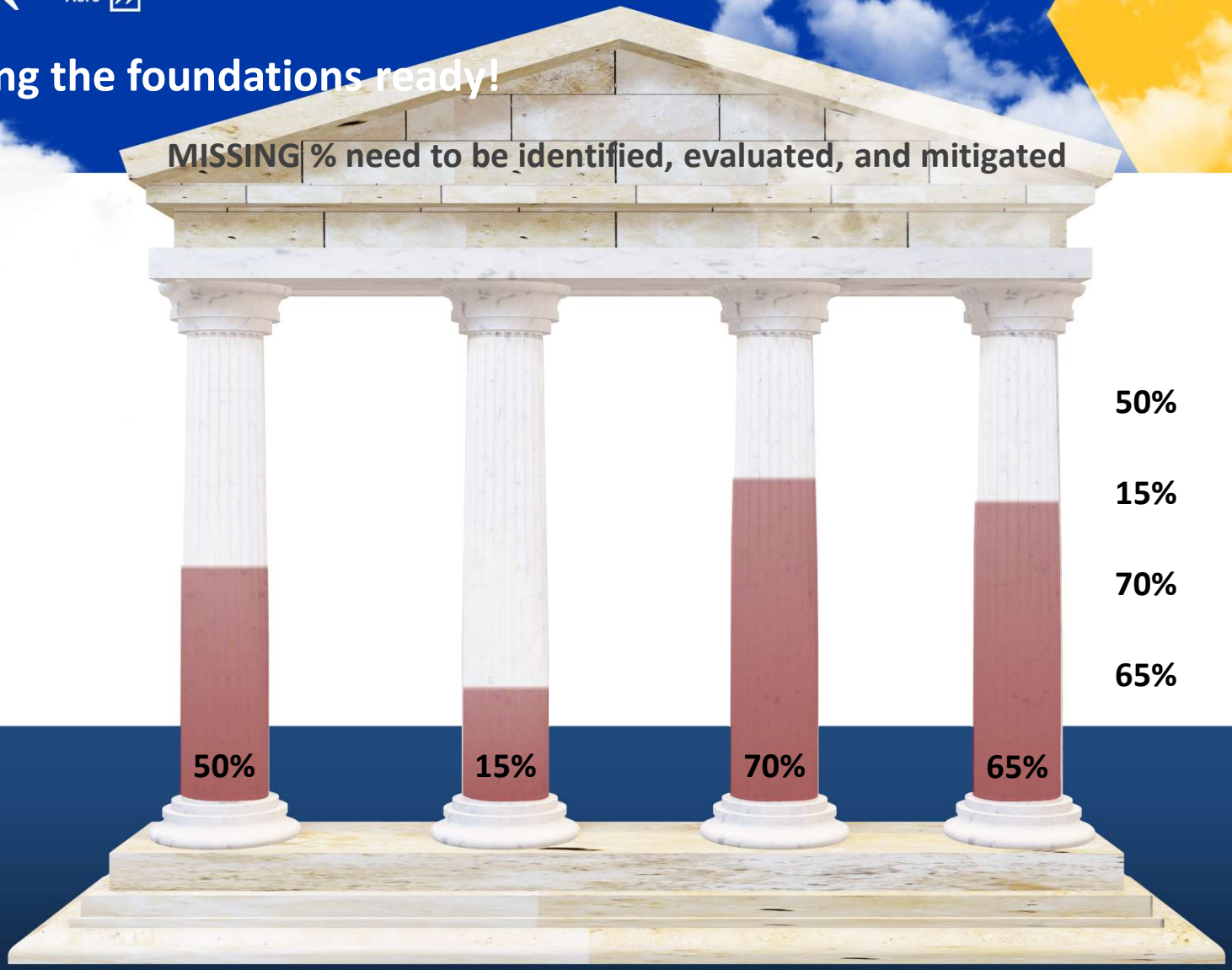
End to end traceability, documentation, evidence building approach
SHOW-ME approach

CGX Aero

Quality assurance : Getting the foundations ready!

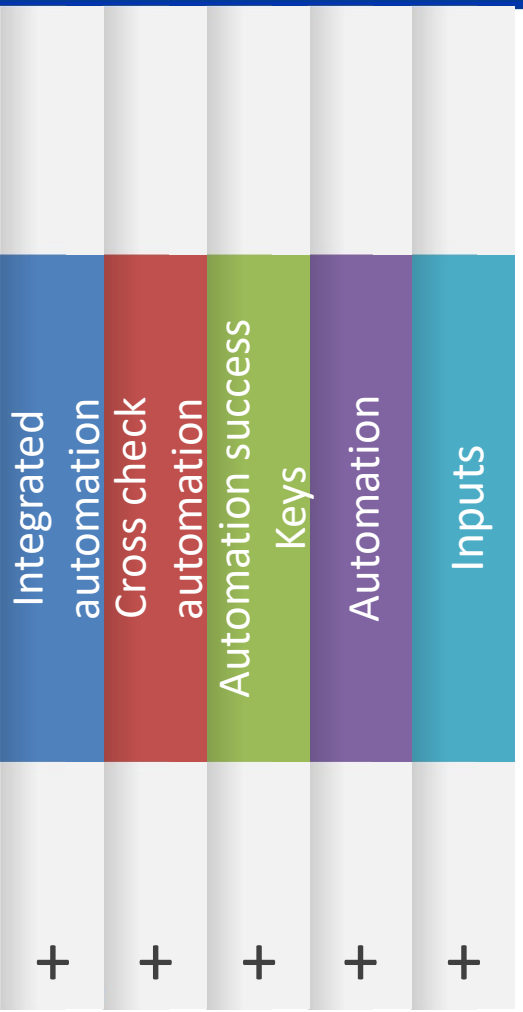
Getting the foundations ready!

MISSING % need to be identified, evaluated, and mitigated



50%	My PILLAR 1
15%	My PILLAR 2
70%	My PILLAR 3
65%	My PILLAR 4

What can we check within the input data ?



Implementation best practices & samples

How it have been done?

ICAO MID

Integrated automation

Cross check automation

Automation success Keys

Automation

+ + + +

Inputs

DPS data product specifications based and formal aggreements

- Data format
- Data content : coverage, layers, attributes
- Data quality requirements : presicion, resolution, integrity
- Metadadata with evidence on previous processing steps : origination, transformation, V&V
- Know automation limits and borders, weaknesses

At CGX GROUP:

- Automated Data transformation layers : agile, easy customizable, approved, adapted to data originator
- Standardized approach
- Centralized collaborative database
- Automated reporting and database audit capability

Inputs

-

ICAO MID

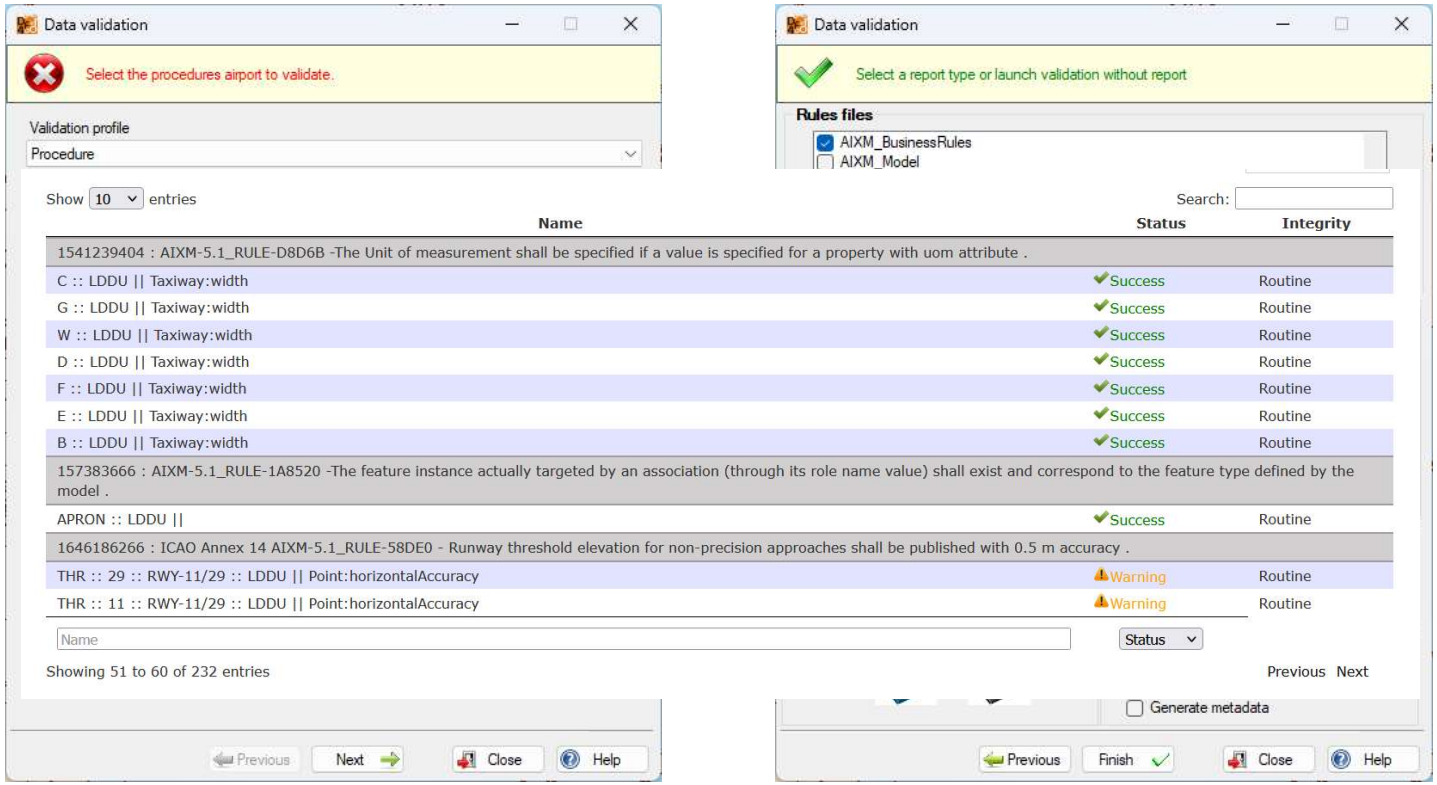
Integrated automation

Cross check automation

Automation success Keys

Automation

Ingest, assess, report



Automation

Inputs

+ + + - +

ICAO

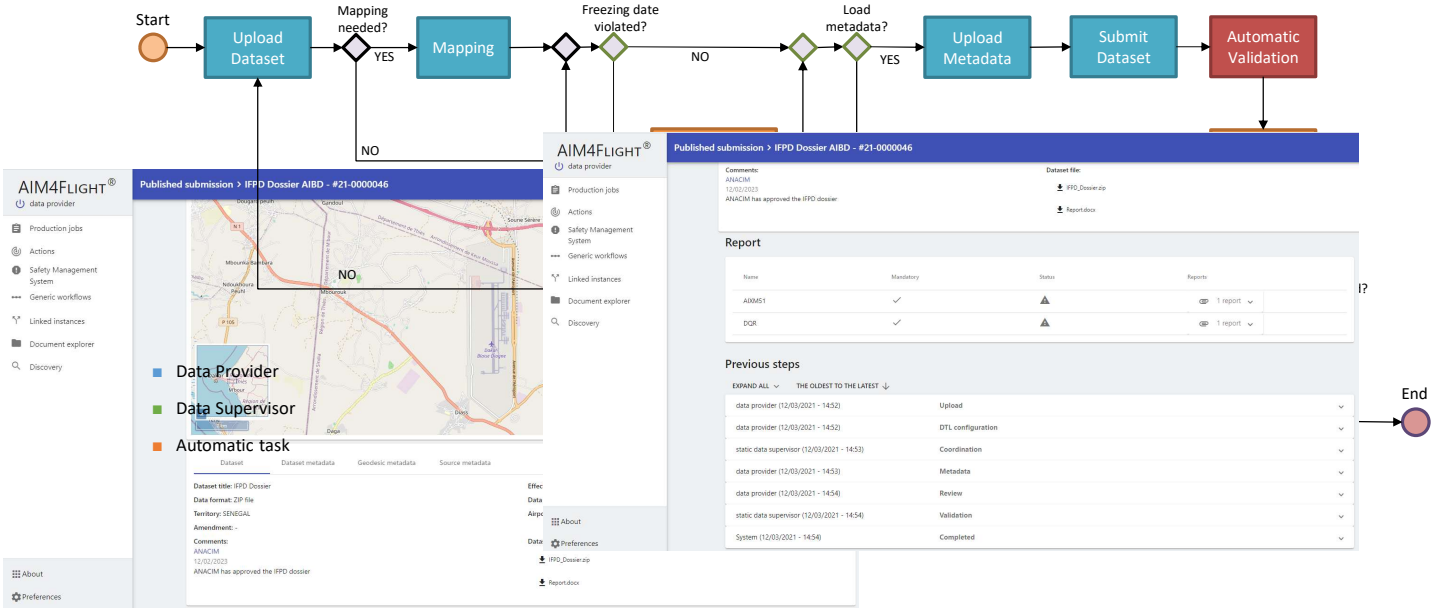
Integrated automation

Cross check automation

Automation success Keys

Agreement driven automation :
DPS, templates for data inputs, templates for reports

Regular GAP analysis of weeknesses and corrective action plan
Integrated to a QMS system



Centralized and traçable Database
Configurable IOP means

A global approach to the Safety and quality assurance :
from the data originator to the approval authority : IFPD is not a seperate activity

Automation success Keys

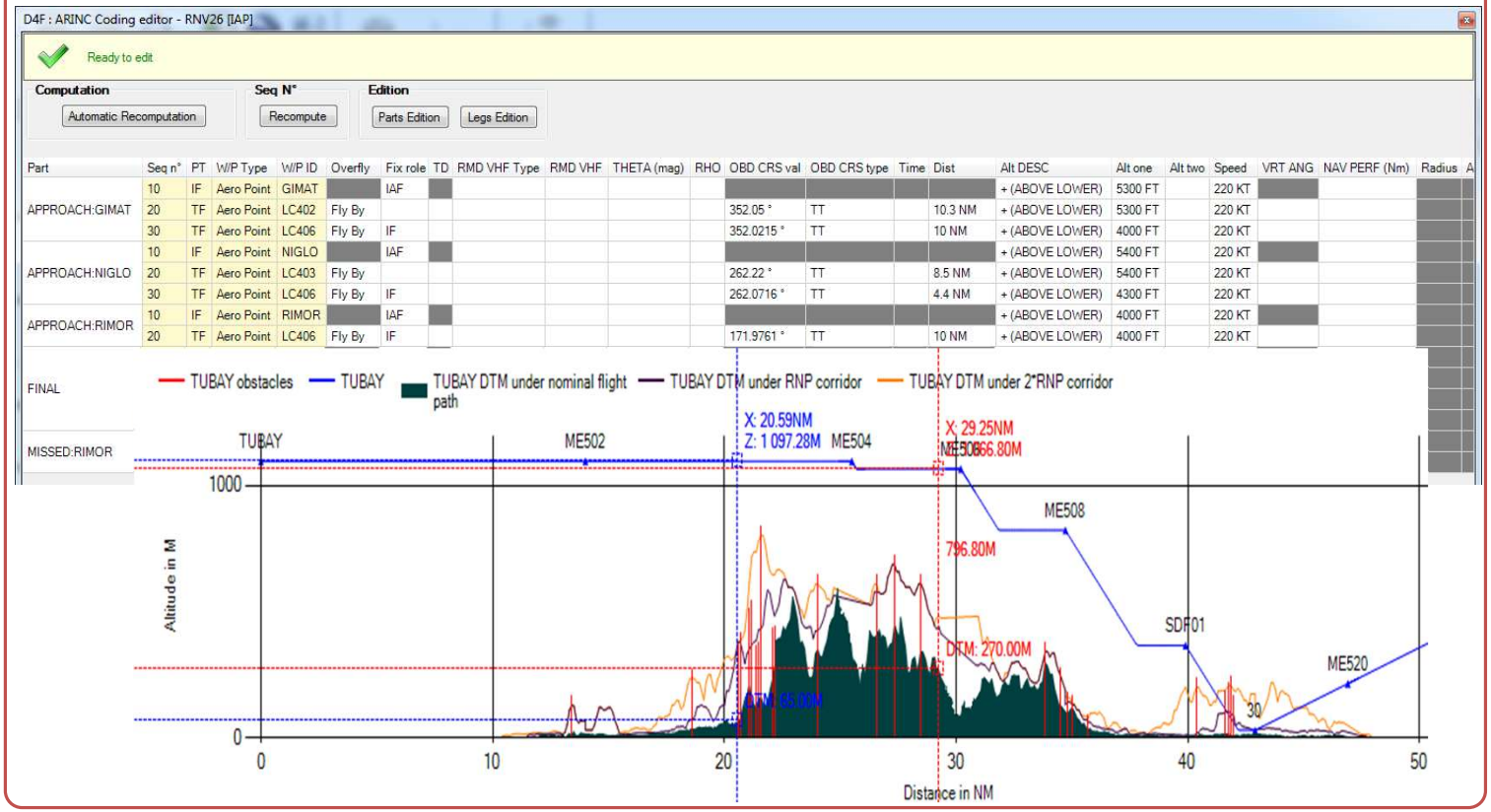
Automation

Inputs

+ + - + +

version 2.0

Cross check automation



Integrated automation

Cross check automation

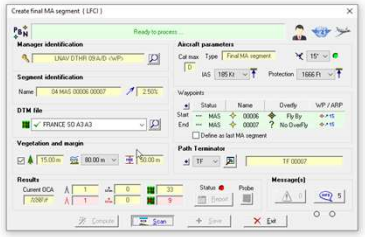
Automation success Keys

Automation

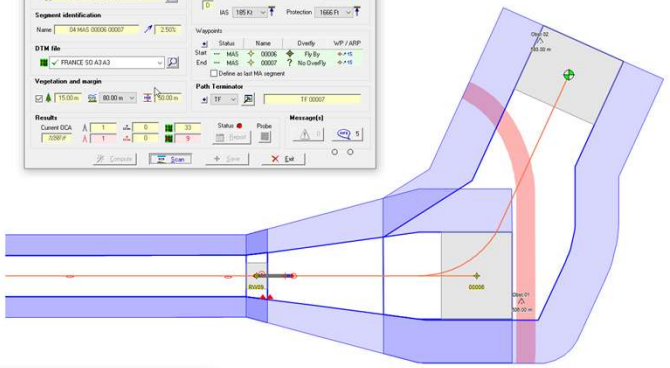
Inputs

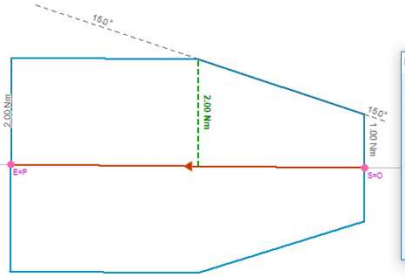
Cross check automation

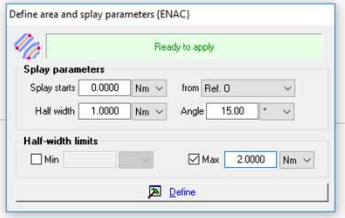
- Automated computation of protection areas, assessments ….

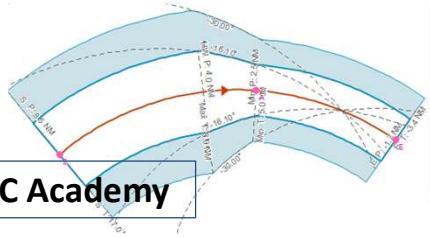


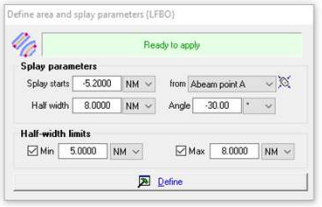
- Semi automated Protection areas modelling based on Flexible Design Tools and templates: Originally customized for Academy











Originally customized for ENAC Academy

What is the MASCARET?

Cross check the automation with semi-automated tools

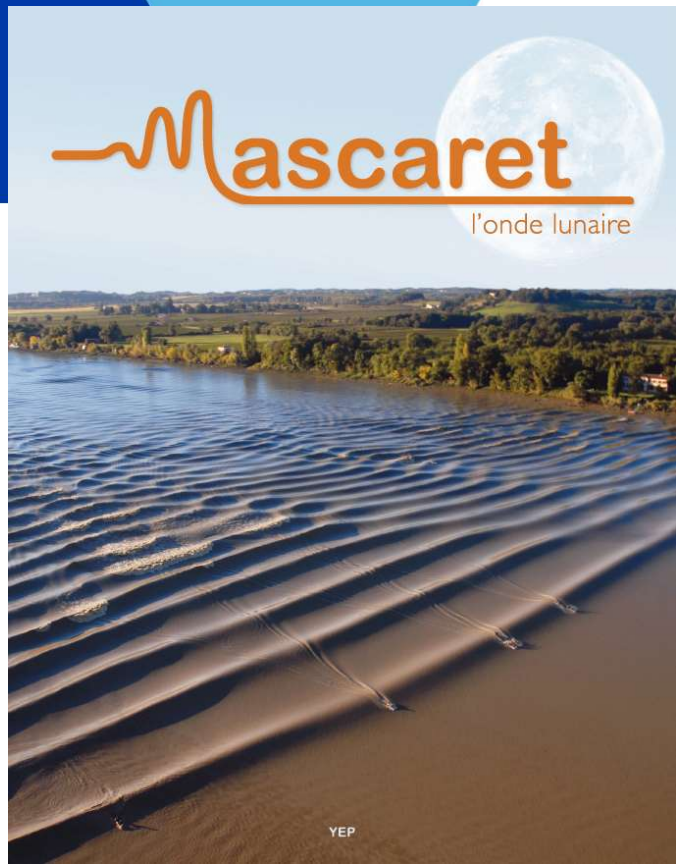
GeoTITAN® MASCARRET

Hydrological phenomenon: The incoming tide collides with the outgoing tide of the river, creating a wave that can travel several kilometers.

Intensity: Its height and power vary, but it can be strong enough to surf, attracting athletes.

Famous locations: Garonne/Dordogne (France), Bay of Mont-Saint-Michel (France), and other estuaries worldwide.

Ideal time: Especially during spring tides, generally in spring (March-April) and autumn (September-October).

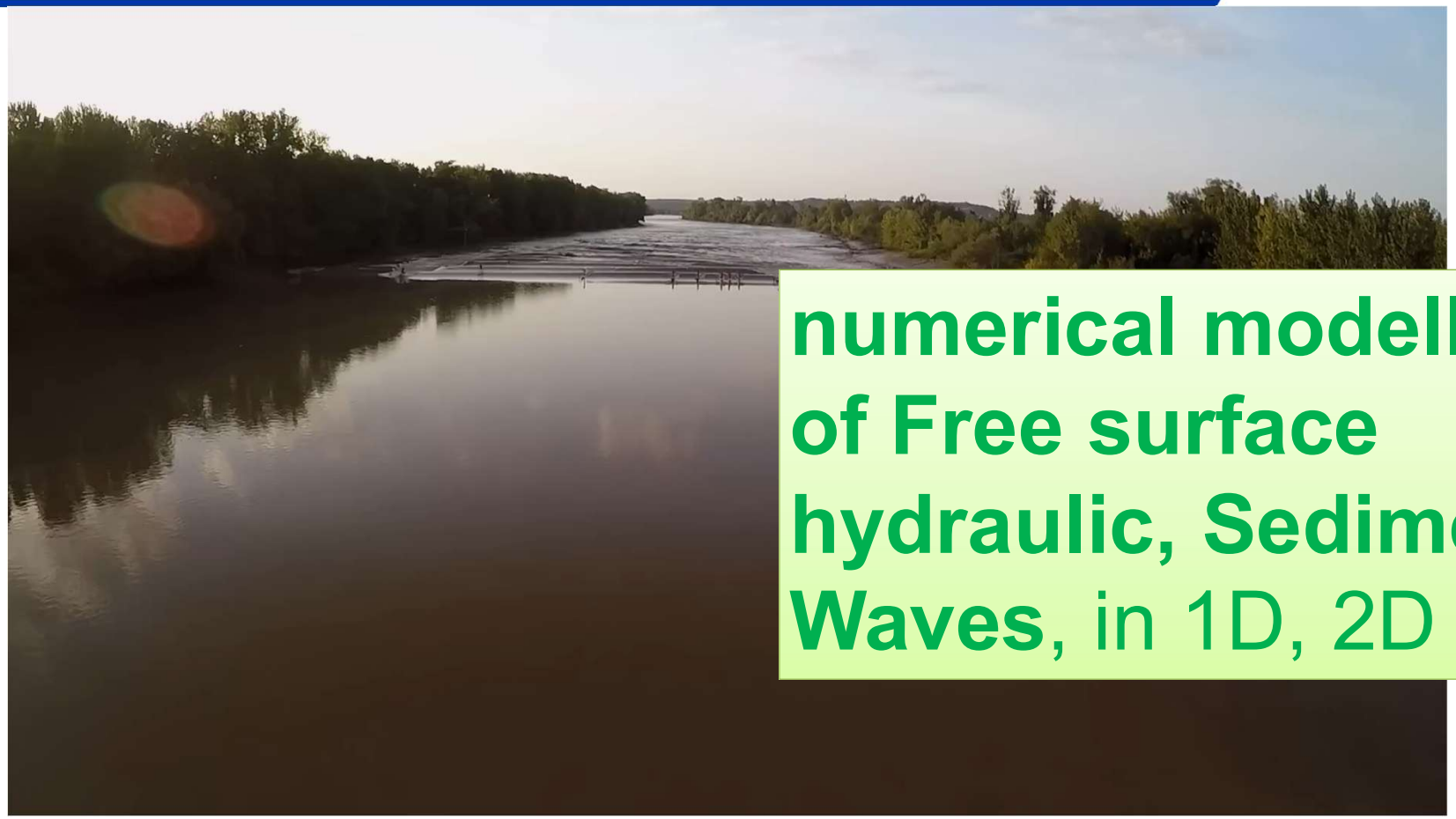


https://www.dailymotion.com/video/x8oh3nr

https://www.youtube.com/watch?v=-AaqLovW7ic

Cross check the automation with semi-automated tools

GeoTITAN® MASCARRET



numerical modelling of Free surface hydraulic, Sediment, Waves, in 1D, 2D or 3D

Cross check the automation with semi-automated tools

GeoTITAN® MASCARRET

- Simulate the aircraft altitude gain on any polygon for climbing phases

2.2.2.Cas N°2

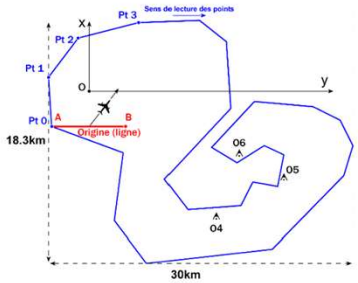


Figure 2-2 Cas N°2

Origine (ligne)		
Points = **2**	X (m)	Y (m)
Point A	-2778,0000000	-2845,9687602
Point B	-2778,0000000	2845,9687602

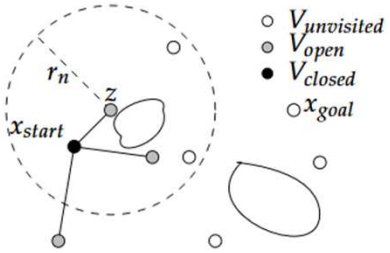
Aire de recherche		
Points = **26**	X (m)	Y (m)

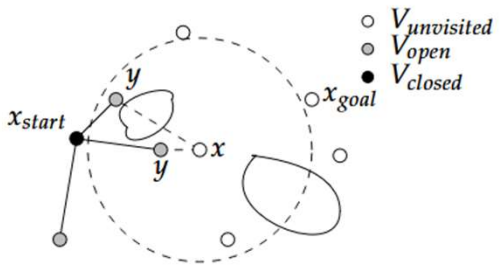
où $\eta > 0$ est un paramètre à définir et γ_{FMT} est le rayon minimal calculé comme suit :

$$\gamma_{FMT} = 2\left(\frac{1}{d}\right)^{\frac{1}{d}}\left(\frac{\mu(\chi_{free})}{\zeta_d}\right)^{\frac{1}{d}}\left(\frac{\log(N)}{N}\right)^{\frac{1}{d}},$$

où d est la dimension de l'espace, $\mu(\chi_{free})$ sa mesure de Lebesgue et ζ_d est le volume d'une boule de rayon 1.

Les quatre dessins suivants représentent la phase d'optimisation locale de l'algorithme FMT*, qui est répétée tant que la destination x_{goal} n'est pas atteinte. L'algorithme commence avec un graphe composé d'un seul nœud, qui est le point de départ x_{start}.



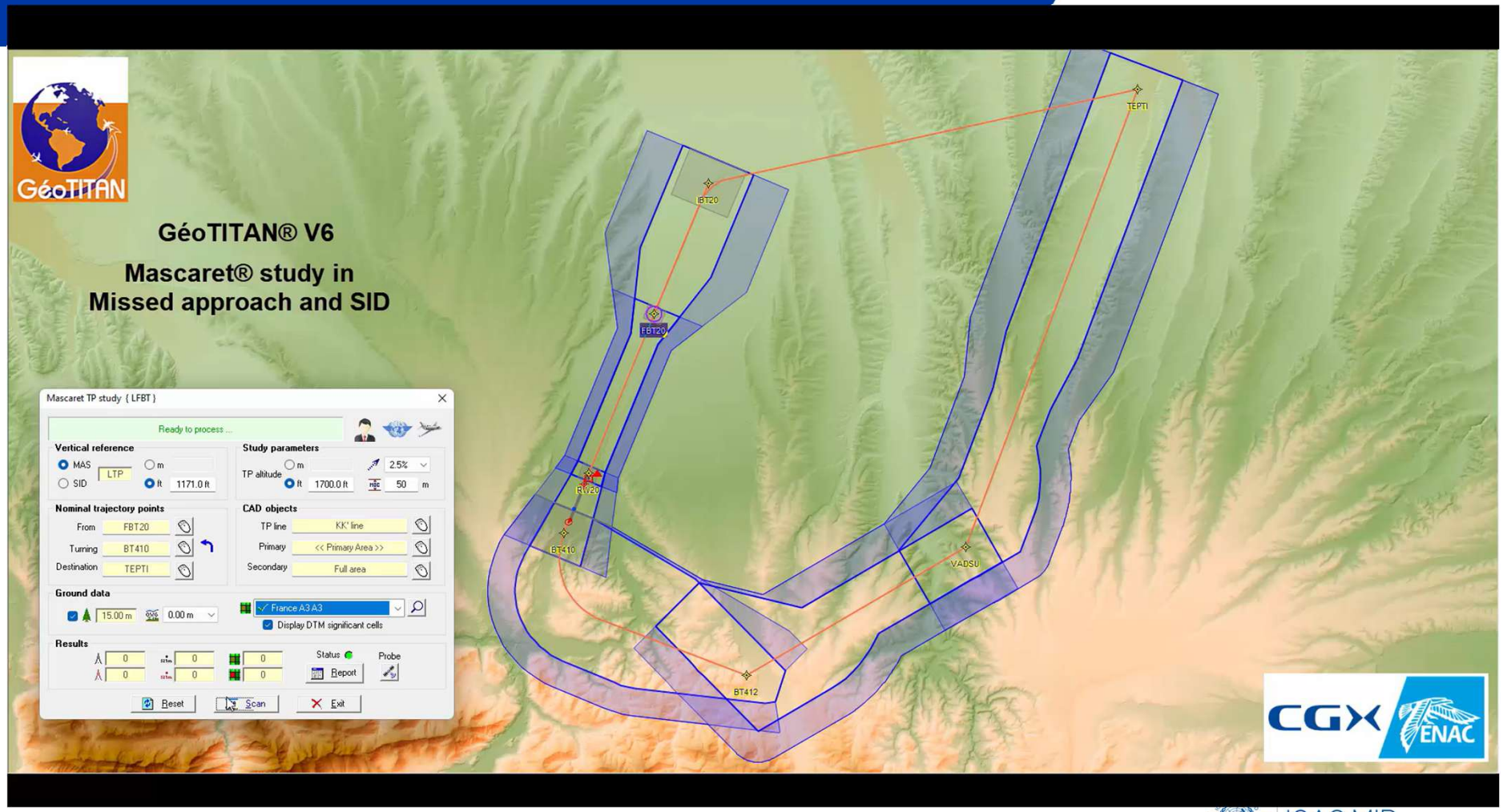


Independently validated by ENAC's APPLIED ADVANCED MATHEMATIC and OPTIMISATION LABORATORY

Fast Marching Tree algorithm

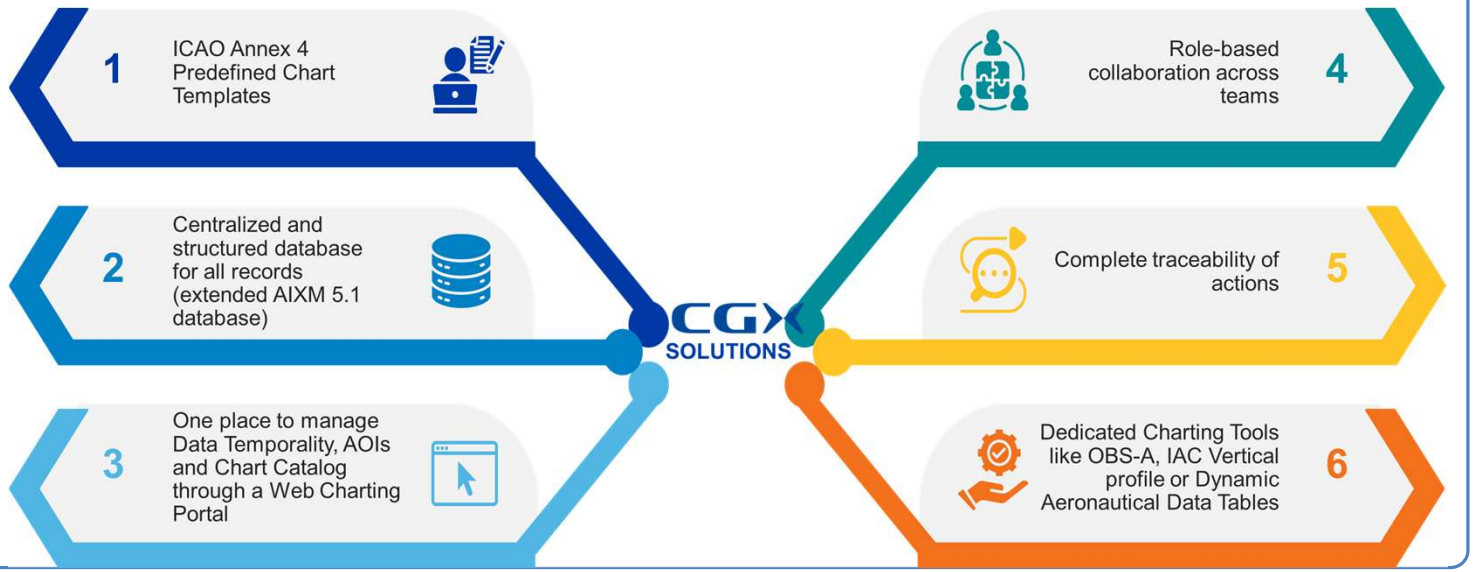
Cross check the automation with semi-automated tools

GeoTITAN® MASCARRET



All process steps → charting

- Experts in the loop during Dev and Spec.
- Based on latest technologies and standards :
  - ARC-GIS PRO,
  - Web based collaborative portal
  - SWIM ready architecture

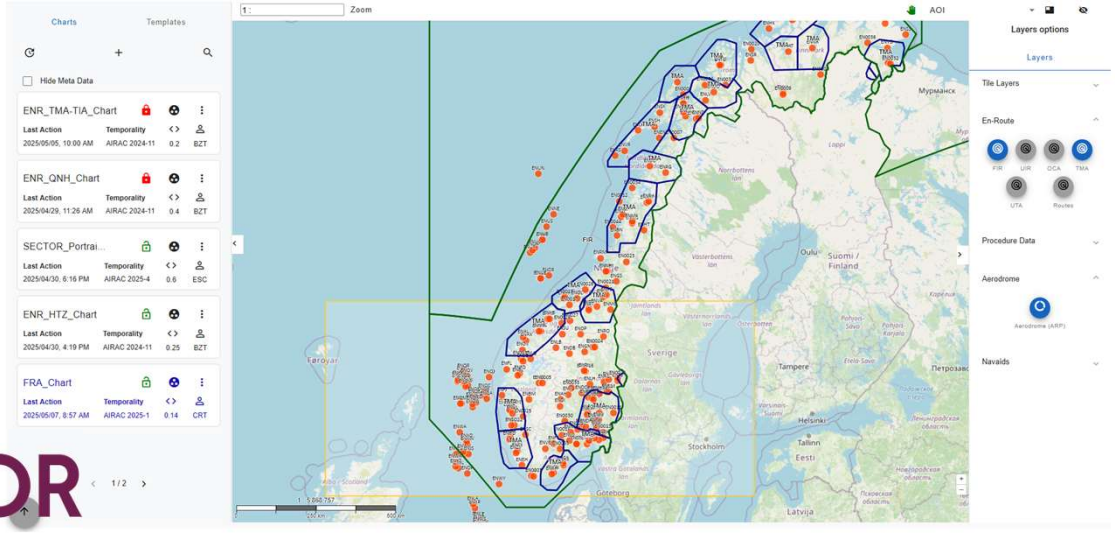


All process steps : charting

New Generation Charting

AIP-GIS CHARTING

- Experts in the loop during Spec. and Dev. And tests
- Based on latest technologies and standards :
  - ARC-GIS PRO,
  - Web based collaborative portal
  - SWIM ready architecture

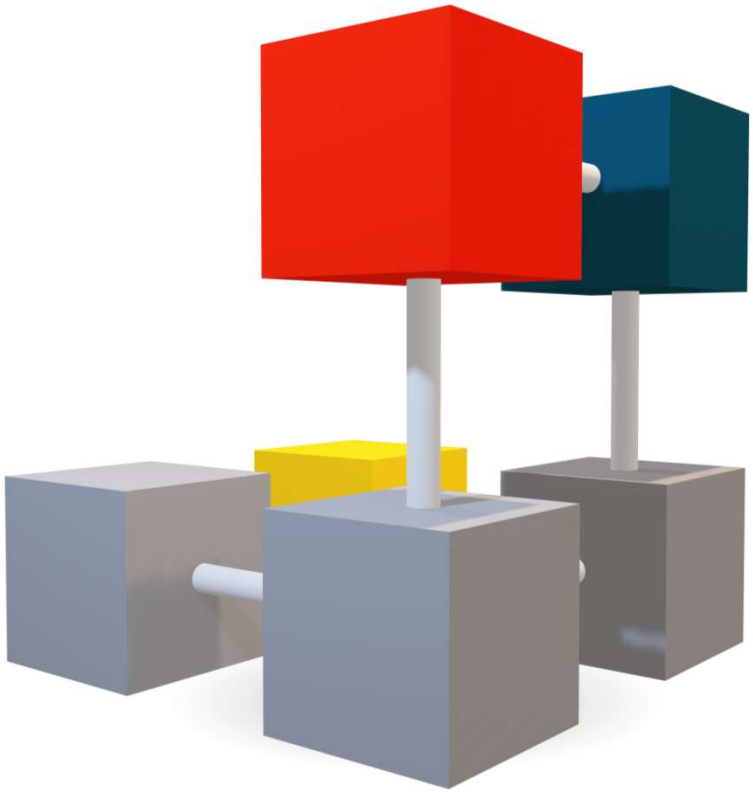


AVINOR

- 6 months of pre-opérational test period! For all versions…

Integrate All process steps	Cross check automation	Automation success Keys	Automation	Inputs
-	+	+	+	+

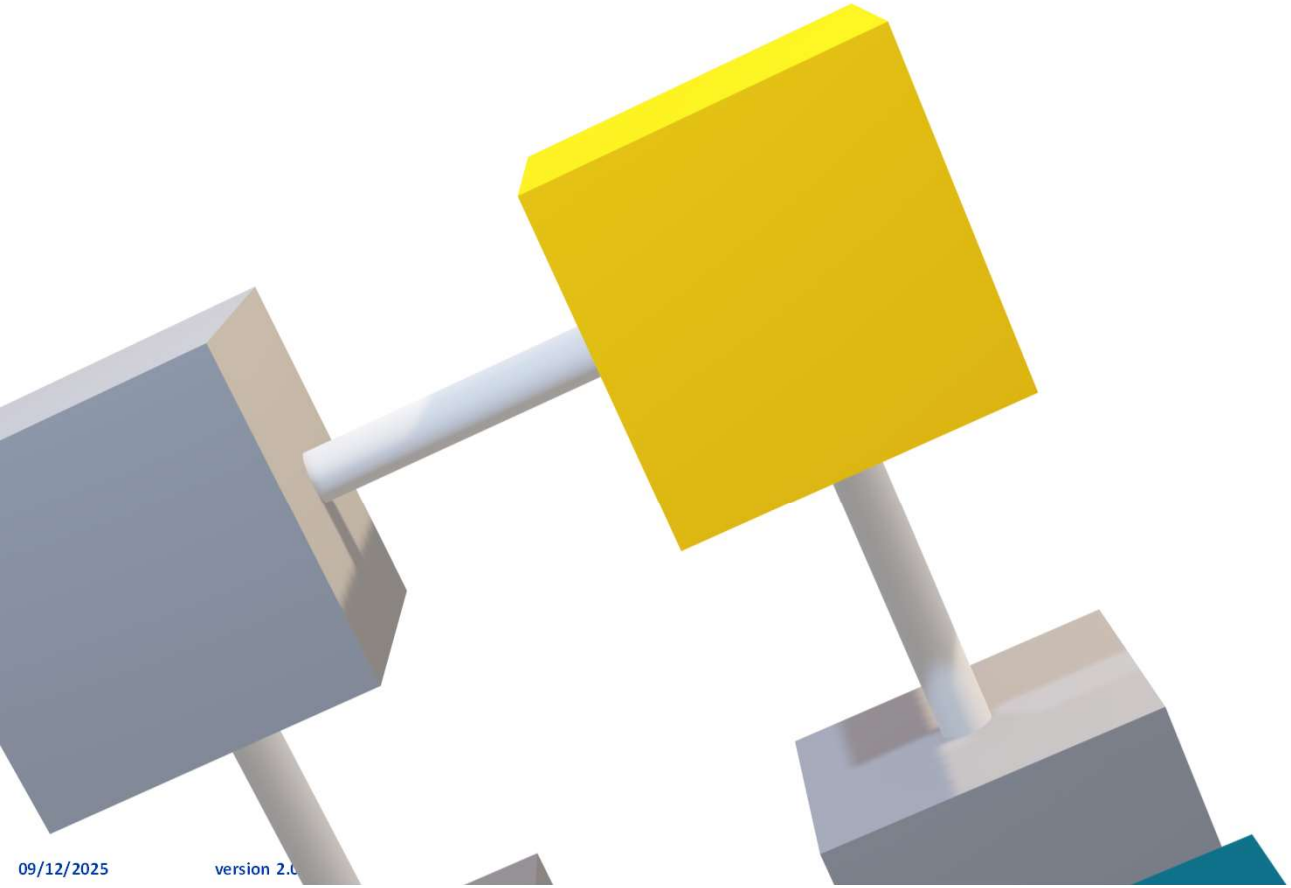
Recommended Pillars for a safe and efficient implementation



Going digital and standard-based

- …

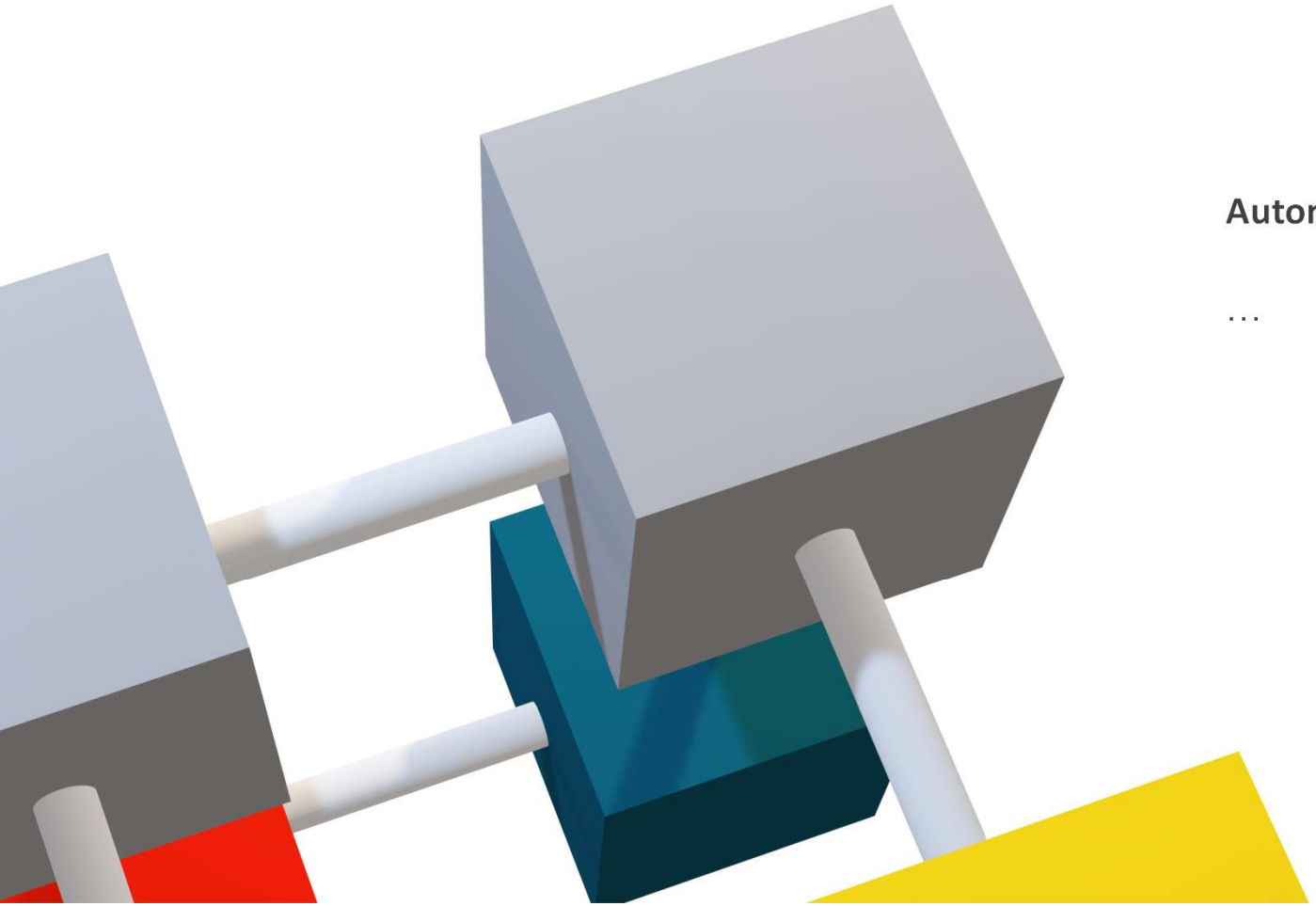
Recommended Pillars for a safe and efficient implementation



Be process-driven and in a show-me approach

…

Recommended Pillars for a safe and efficient implementation

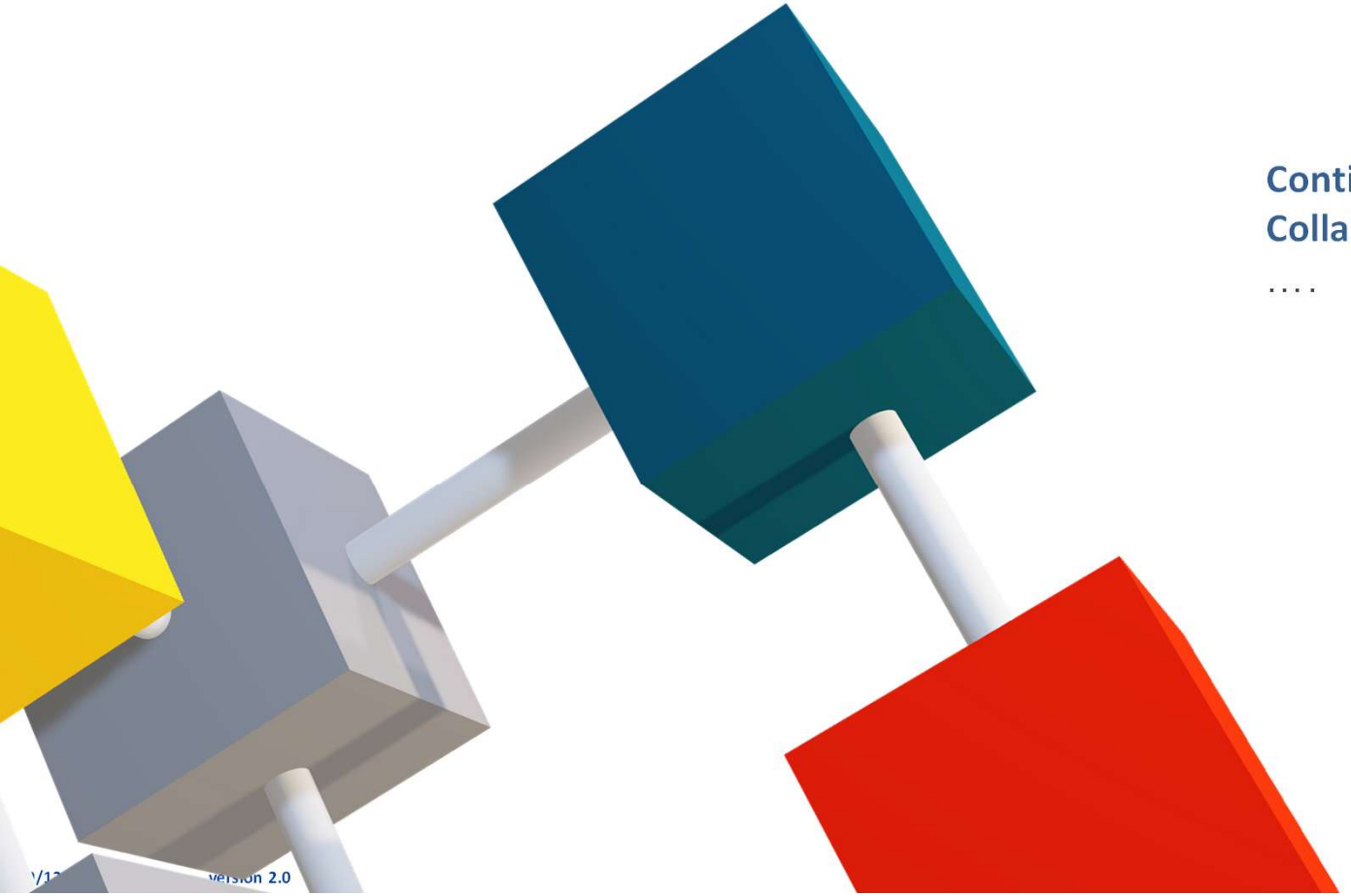


Automate but KEEP YOUR eyes OPEN!

…

CGX Aero

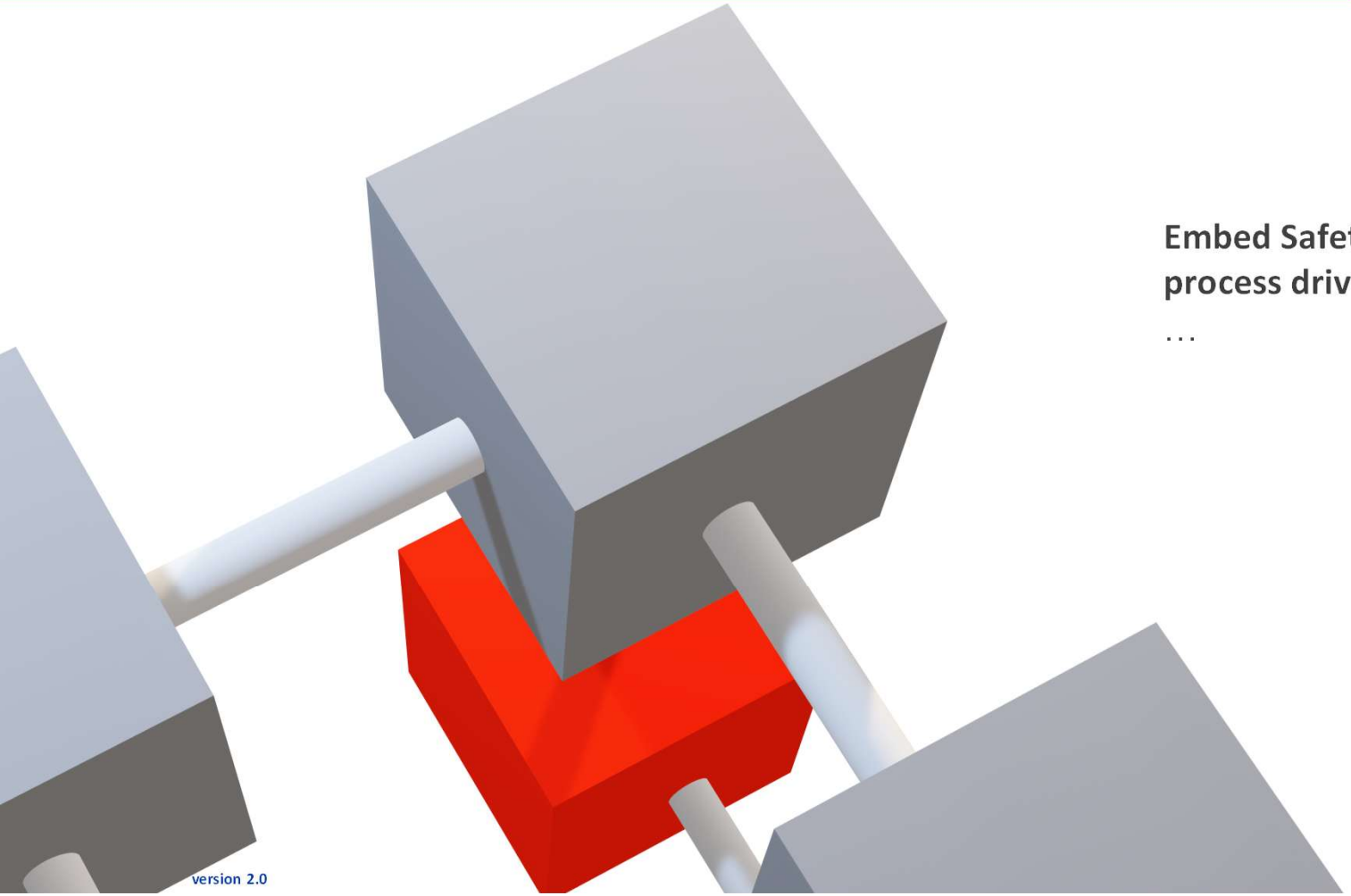
Recommended Pillars for a safe and efficient implementation



Continuous training &
Collaboration & Everyone involved

....

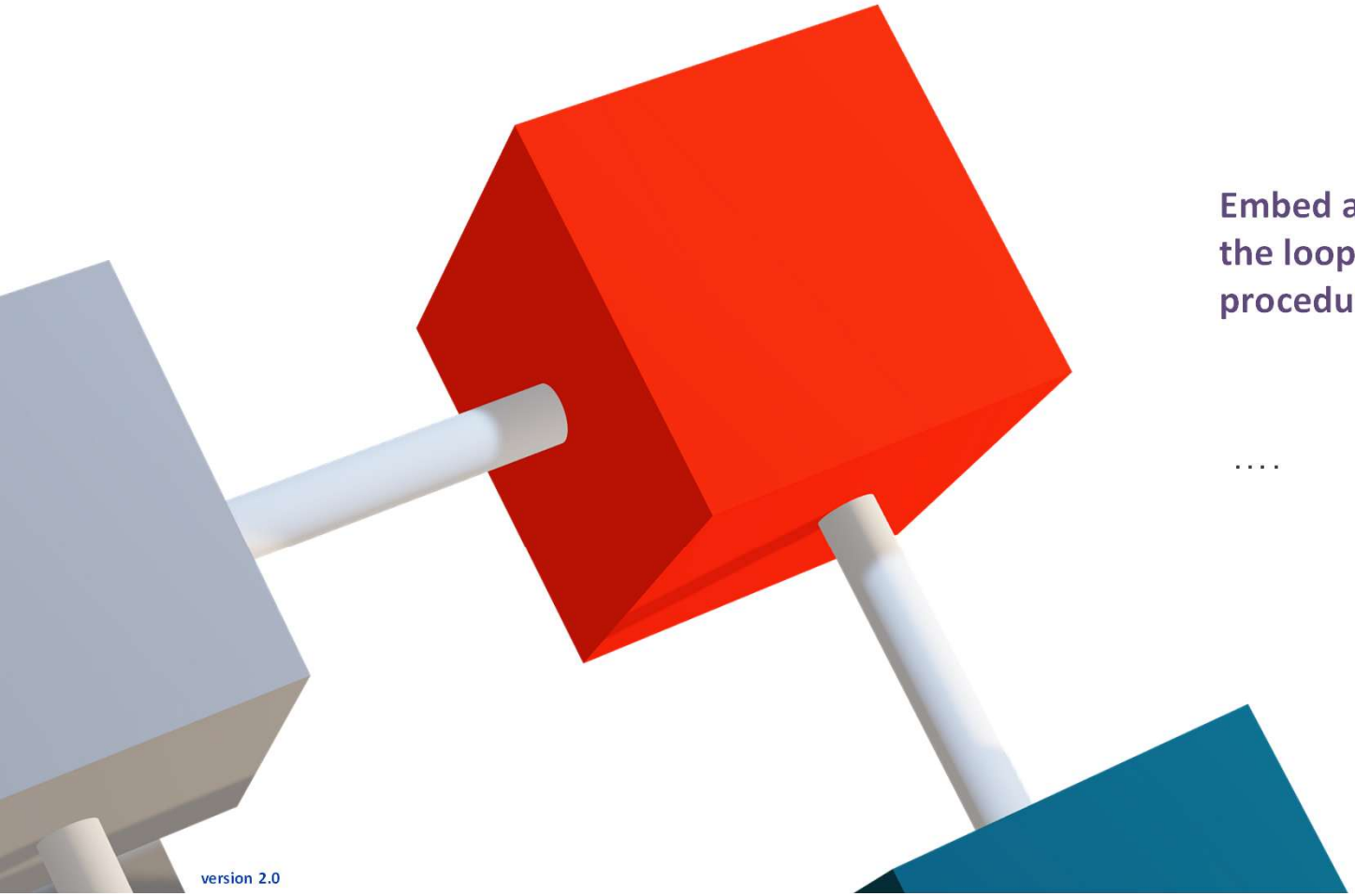
Recommended Pillars for a safe and efficient implementation



Embed Safety events management in the process driven-approach

…

Recommended Pillars for a safe and efficient implementation



Embed a QMS ISO-9001 expert in the loop of your process and procedure building

....

Recommended Pillars for a safe and efficient implementation

Going digital and standard-based

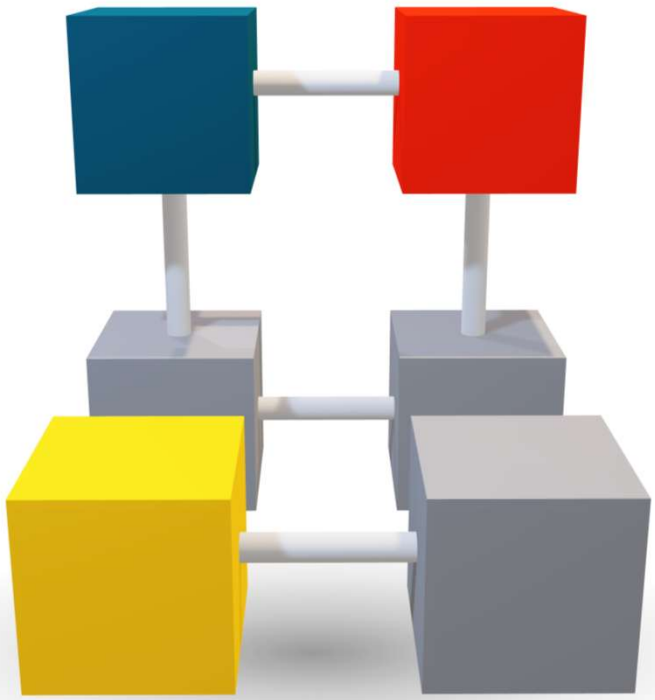
…

Be process-driven and in a show-me approach

…

Automate but KEEP YOUR eyes OPEN!

…



Continuous training & Collaboration & Everyone involved

….

Embed Safety events management in the process driven-approach

…

Embed a QMS ISO-9001 expert in the loop of your process and procedure building

There is no wheel to invent : the road exists but requires lighting and energy

THANK YOU FOR YOUR ATTENTION !

HEADQUARTERS
Le Causse – Espace Entreprises
81100 CASTRES
France

Tel : +33 (0)563 37 8230
Fax : +33 (0)563 37 8287

www.cgx-group.com
contact@cgx-group.com

PRODUCTION SITE
Village d'Entreprises - Bât. 1 - Entrée A
142, rue du Village d'Entreprises
31670 LABEGE
France

Tel : +33 (0)563 37 8250
Fax : +33 (0)563 37 8287