



The MORPHO Project

TANGO Meeting Grenoble

May 2014

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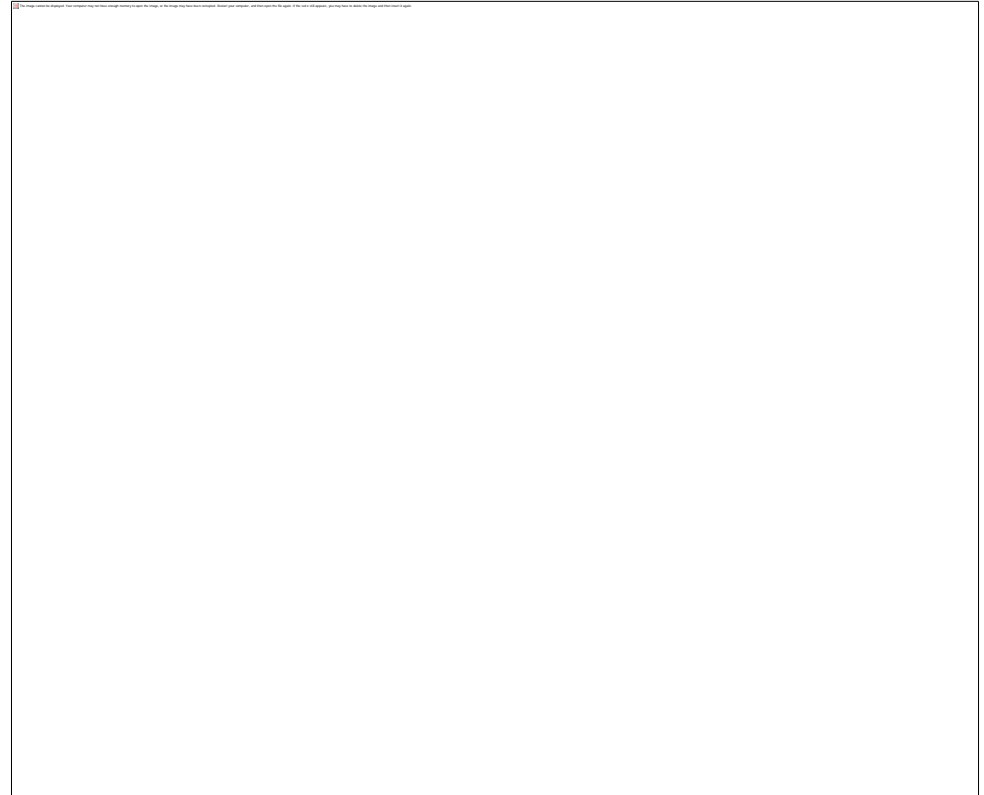
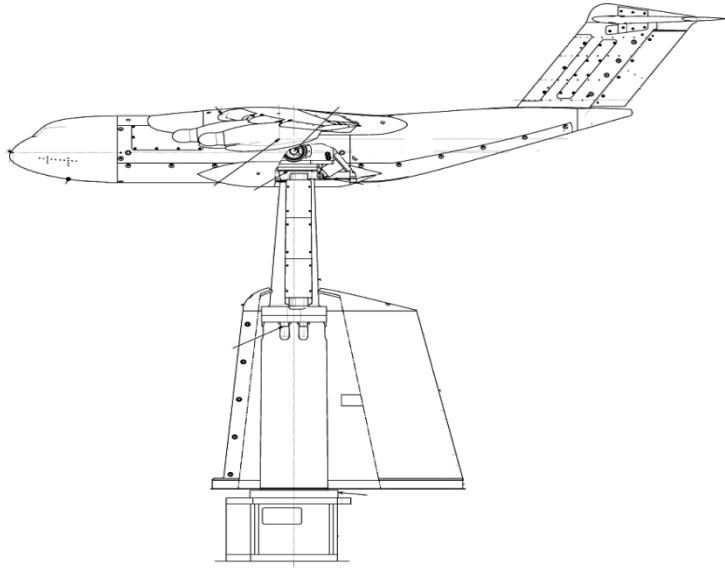


retour sur innovation

ONERA's Windtunnel Facilities

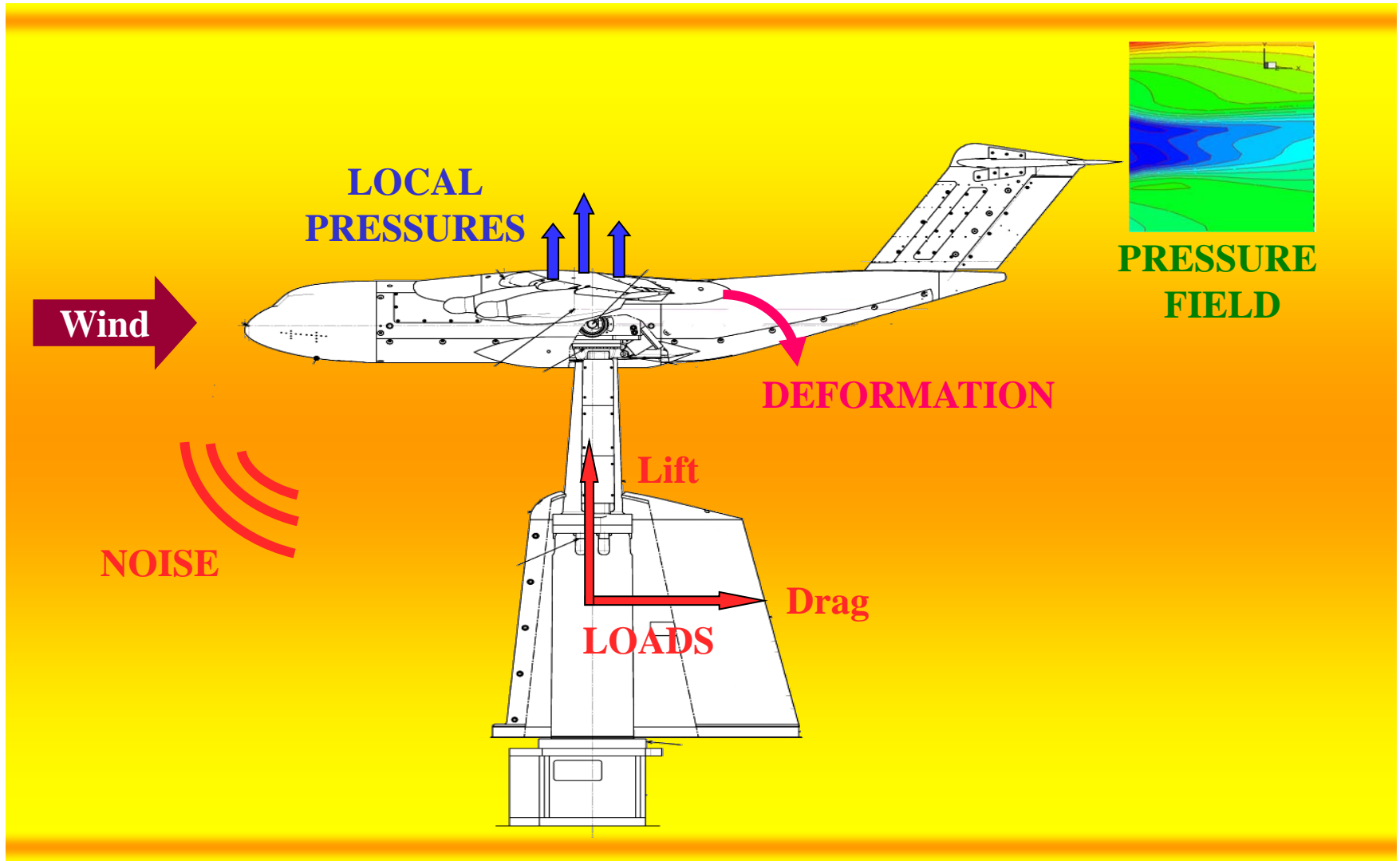


Full-Model



Airbus A380 in F1

Main Measurement Data



- ❑ **Objective:** Build an **open, generic, flexible, extendable**, new software environment for all GMT's Test facilities.

- ❑ **Main features:**
 - Test Preparation
 - Test Execution
 - Test Monitoring
 - Test Data Management

- ❑ **Customer's Benefits:**
 - ❑ Simpler and better integration of « innovative measurement systems » (PIV, PSP, MDM, Acoustic, Wireless, etc.)
 - ❑ Increase productivity: extensive use of « Men Machine Interfaces » allows less « manual operations » and shorter system configuration time.
 - ❑ A greater flexibility: generic device interfaces allow quick reconfiguration and “on the fly” system integration.
 - ❑ A greater reactivity: “on line” access to current and previous test data helps the Test Engineer to take the right decisions.

□ SCHEDULE

- December 2013 : AKKA won the contract



- Project leader
- Software development
- Customer relationship



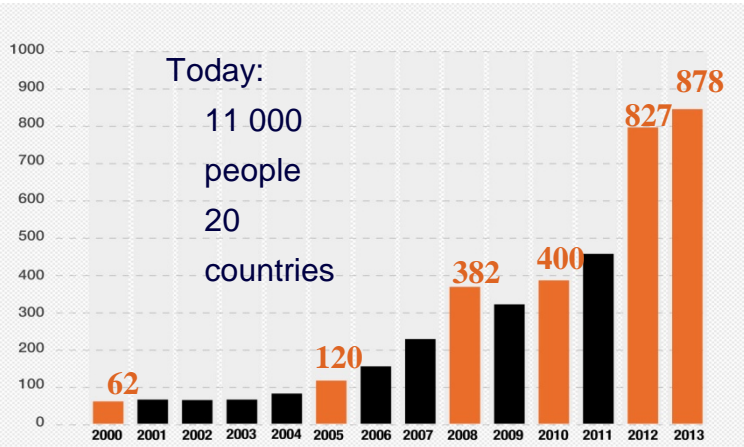
- Tango expertize



- Material & System validation

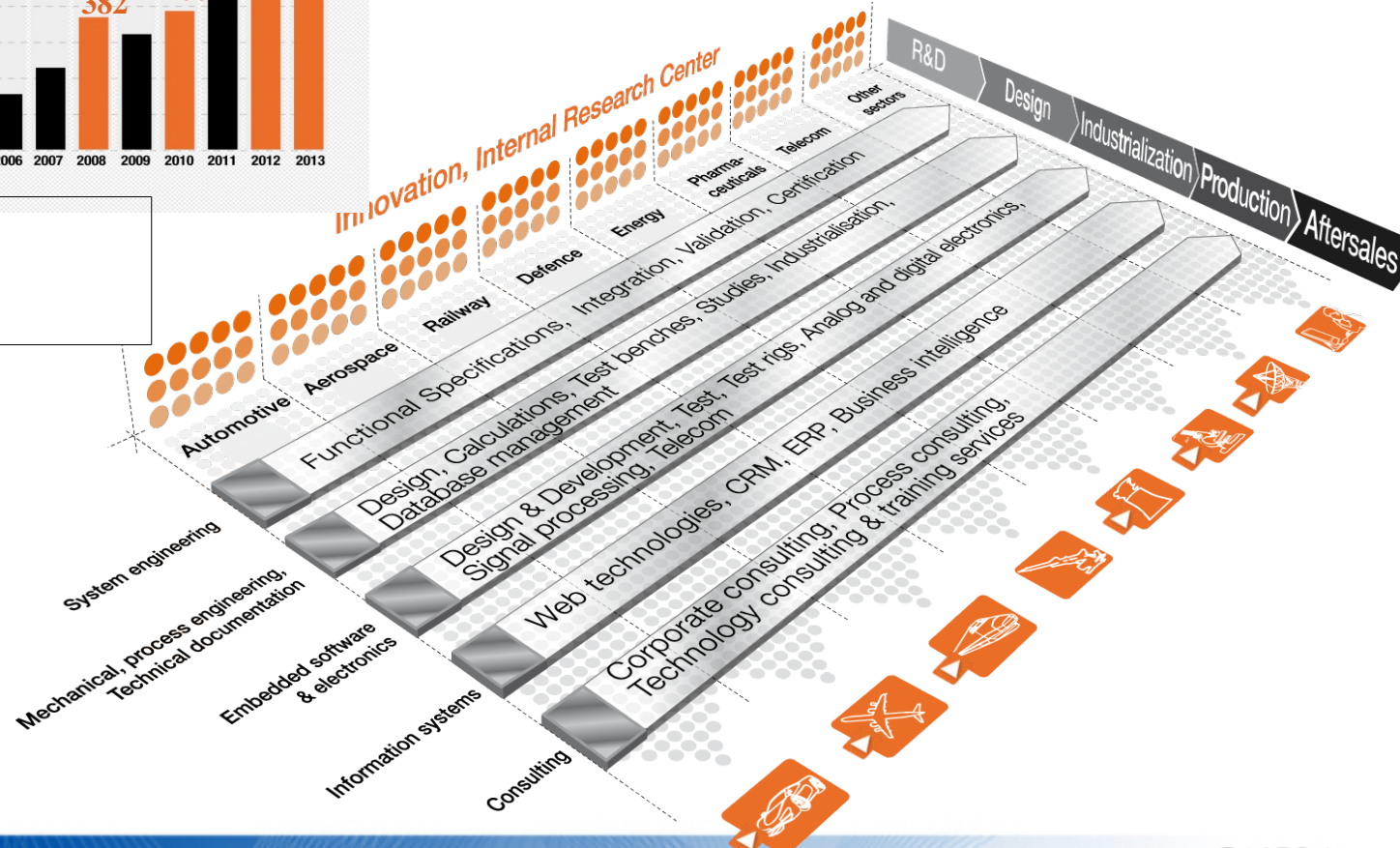
- First development step in F1 WindTunnel based around Tango
- Progressive deployment to GMT from third quarter 2015.

Revenues in M€



2 S/W Design Centers in Toulouse for Morpho

- SDC NTIC
 - Java, Web, Eclipse, Scrum
 - SDC Embedded S/W
 - C++, python, hardware
- 170 people



SATIS : an « Integrated Test Environnement »



- ▶ A380
- ▼ A350
 - ▼ Instruments
 - Safin-static - (F1-SAFIN171)
 - PSI 0 - (---)
 - Balances
 - ▼ Résultats
 - 2
 - ▼ RAW
 - alpha
 - ▶ ENG
 - ▶ 1

Name	Device	PSI	Channel	Clock	Freq (Hz)
PSI-19	F1-PSI247	PSI16	19	FIR	10
PSI-20	F1-PSI247	PSI16	20	FIR	10
PSI-21	F1-PSI247	PSI16	21	FIR	10
PSI-22	F1-PSI247	PSI16	22	FIR	10
PSI-23	F1-PSI247	PSI16	23	FIR	10
PSI-24	F1-PSI247	PSI16	24	MSC LSC FIR	10
PSI-25	F1-PSI247	PSI16	25	FIR	10
PSI-26	F1-PSI247	PSI16	26	FIR	10
PSI-27	F1-PSI247	PSI16	27	FIR	10

T2310-MODEL-1M

▶ Polar 99 – P: Pa M: 0.2

Polar 100 – P: Pa M: 0.2

▶ Polar 101 – P: 3.85 M: 0.2

Polar 102 – P: 3.85 M: 0.2

Polar 103 – P: 3.85 M: 0.4

CHANNEL EDITOR

TEST MANAGER

TEST DATABASE

MODEL DATA

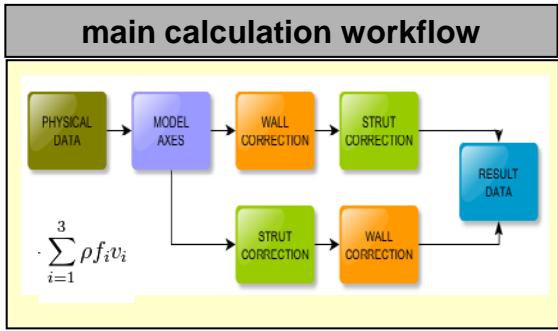
TEST PLAYER

CALCULATION EDITOR

WT DATA

ACQUISITION

EXPORT TOOLS



- WDF
- TARDIS
- Tecplot
- Etc.

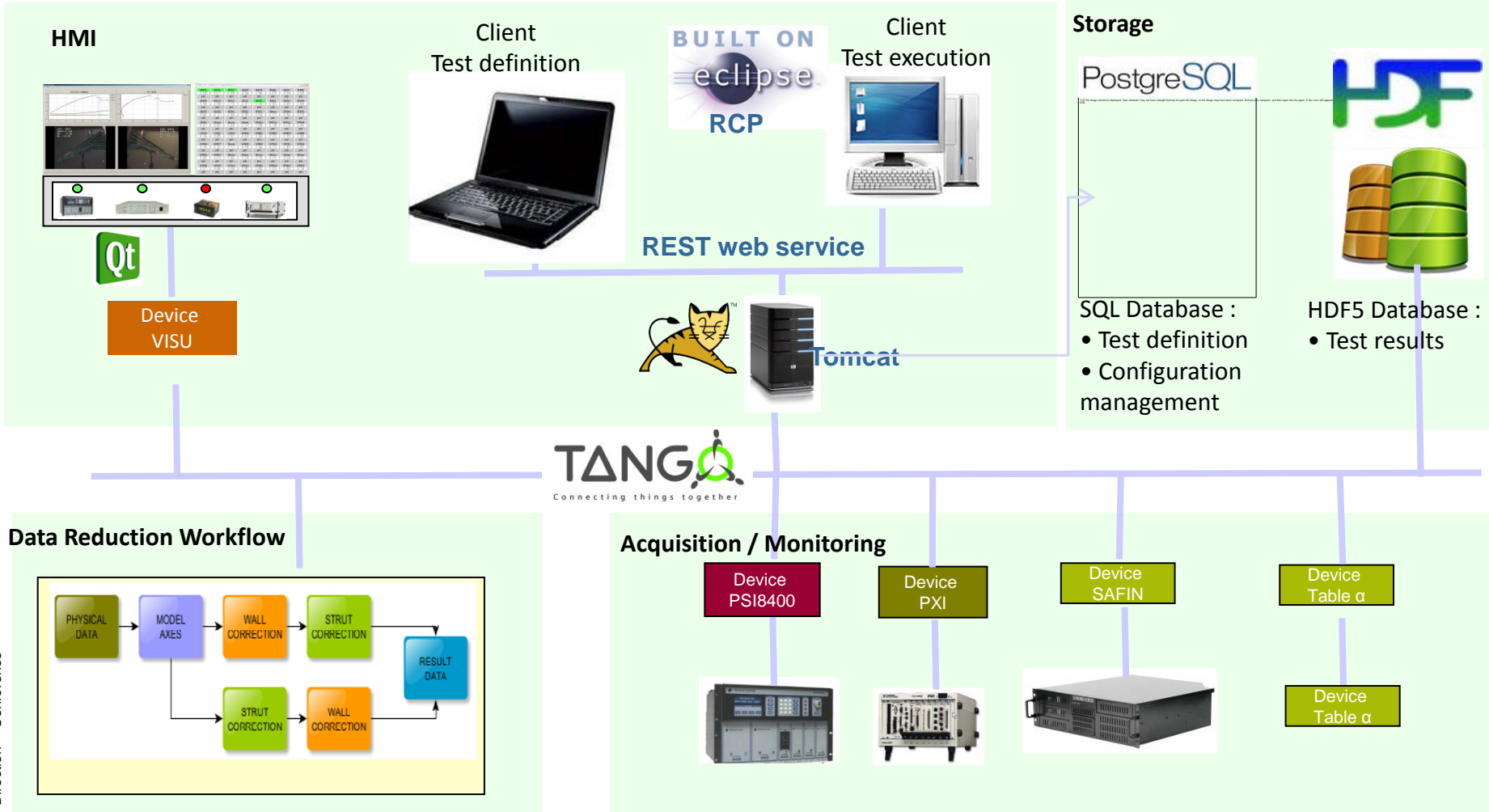
B101	B102	B103	B104	B105	B106	B107	B108
psi	psi	psi	psi	psi	psi	psi	psi
B109	B110	B111	B112	B113	B114	B115	B116
psi	psi	psi	psi	psi	psi	psi	psi
B117	B118	B119	B120	B121	B122	B123	B124
psi	psi	psi	psi	psi	psi	psi	psi
B125	B126	B127	B128	B129	B130	B131	B132
psi	psi	psi	psi	psi	psi	psi	psi
B133	B134	B135	B136	B137	B138	B139	B140
psi	psi	psi	psi	psi	psi	psi	psi
B141	B142	B143	B144	B145	B146	B147	B148
psi	psi	psi	psi	psi	psi	psi	psi
B149	B150	B151	B152	B153	B154	B155	B156
psi	psi	psi	psi	psi	psi	psi	psi
B157	B158	B159	B160	B161	B162	B163	B164
psi	psi	psi	psi	psi	psi	psi	psi
B165	B166	B167	B168	B169	B170	B171	B172
psi	psi	psi	psi	psi	psi	psi	psi
B173	B174	B175	B176	B177	B178	B179	B180
psi	psi	psi	psi	psi	psi	psi	psi
B181	B182	B183	B184	B185	B186	B187	B188
psi	psi	psi	psi	psi	psi	psi	psi

Direction - Conférence

Architecture & Technologies

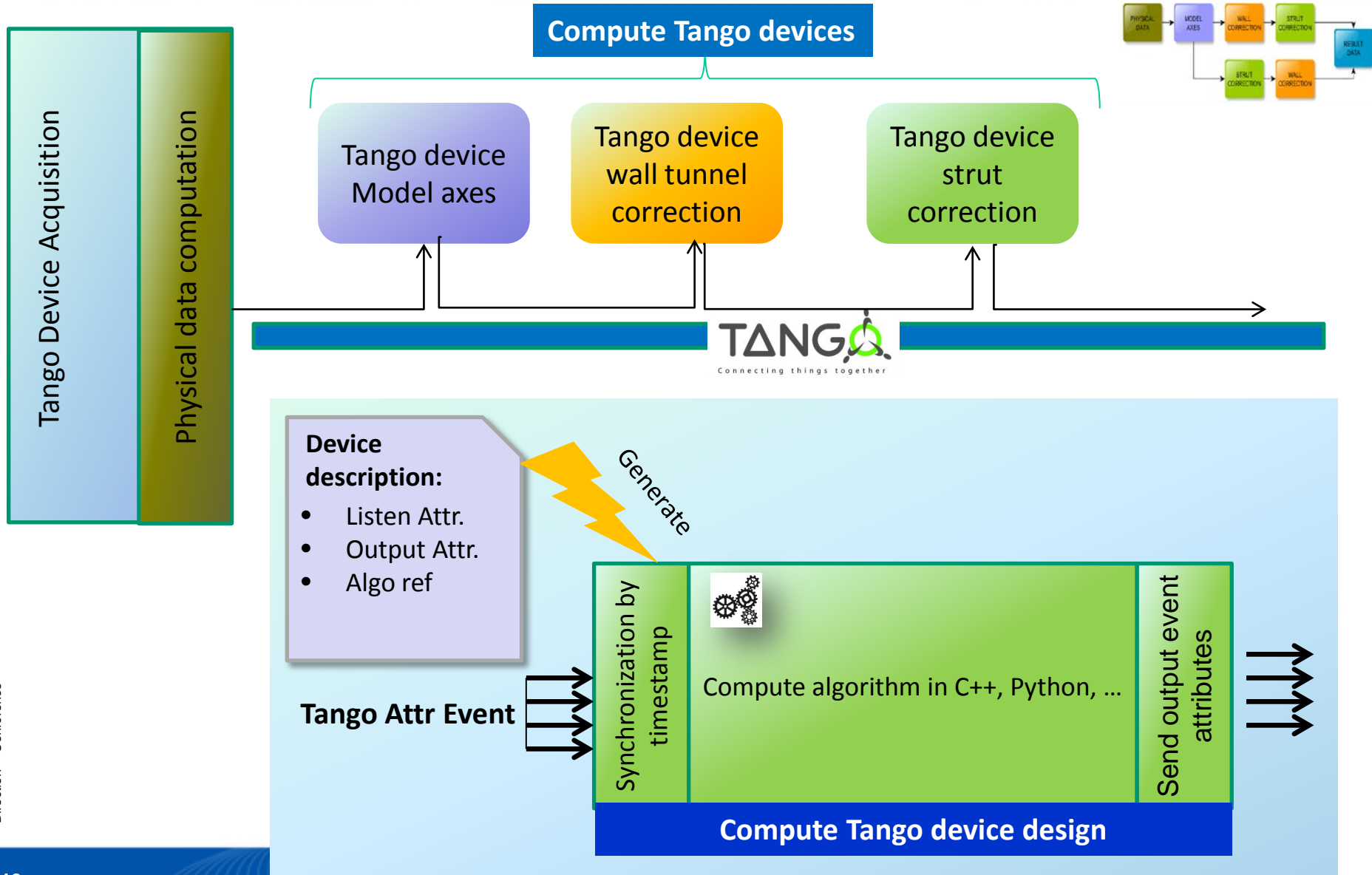


- Key Technologies :**
- **TANGO** : communication bus (CORBA / ZMQ)
 - **Eclipse RCP / Javafx / Qt** : HMI for test definition and execution
 - **PostgreSQL / HDF5** : storage of test results and configurations

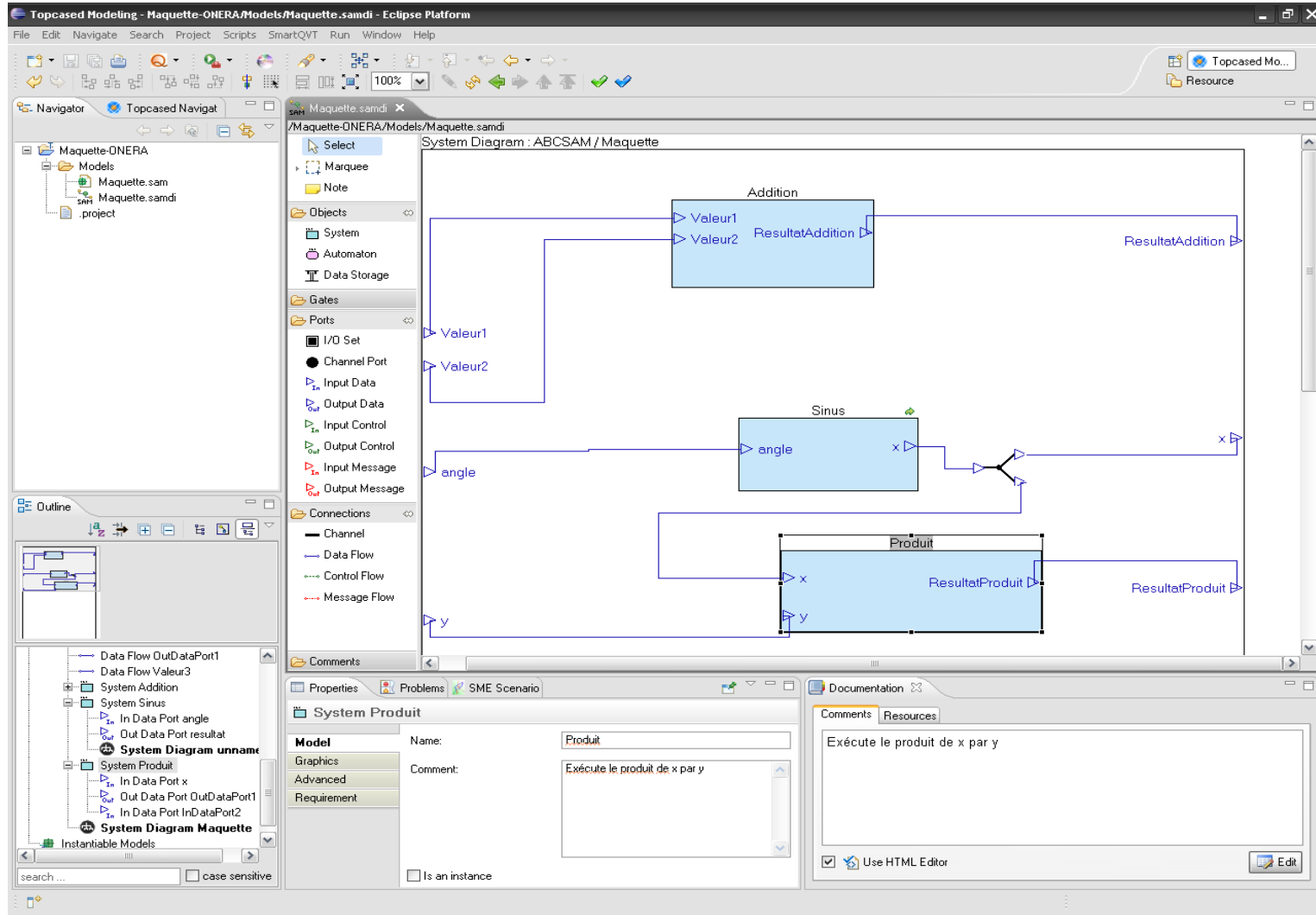


Direction - Conférence

SATIS : Data Reduction Workflow Architecture



SATIS : Data Reduction Workflow Editor



TIME FOR QUESTIONS