



Tango Meeting June 2016

Morpho Project
&
SATIS System



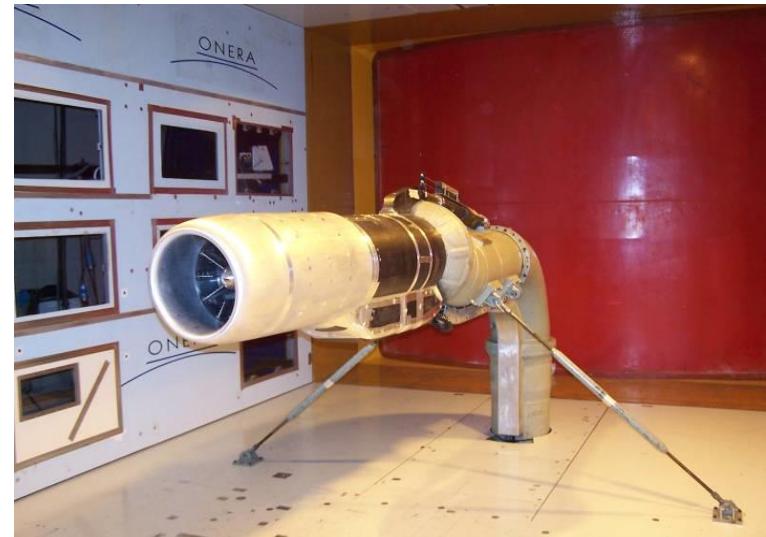
r e t u r n o n i n n o v a t i o n

Our business ...

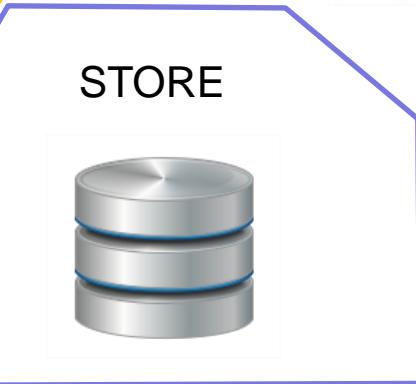
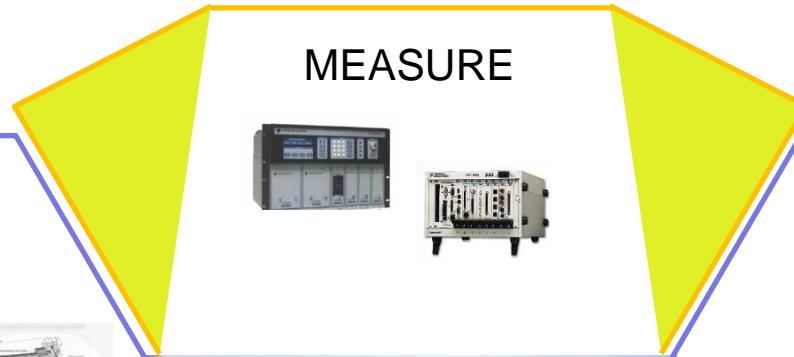
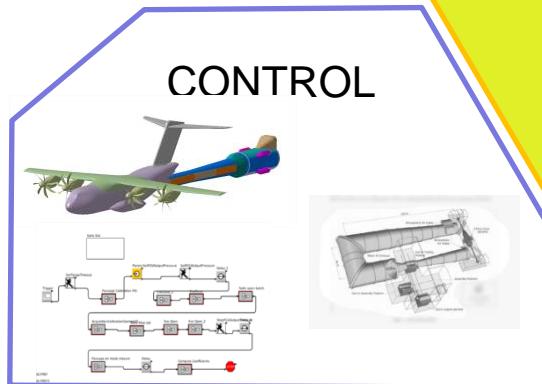
Test aeronautic models...



... from **1 week** to **several months**

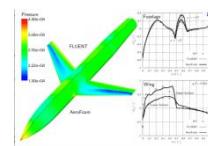


SATIS Functionalities

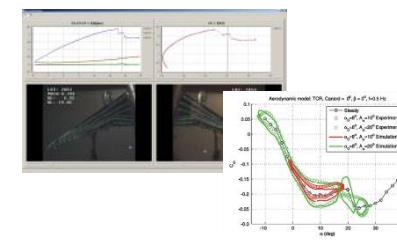


$$\frac{\partial p}{\partial t} + \sum_{i=1}^3 \frac{\partial}{\partial x_i} (\rho v_i) = 0$$
$$\frac{\partial (\rho v_j)}{\partial t} + \sum_{i=1}^3 \frac{\partial}{\partial x_i} (\rho v_i v_j) = - \frac{\partial p}{\partial x_j} + \sum_{i=1}^3 \frac{\partial r_{ij}}{\partial x_i} + \rho f_j$$
$$\frac{\partial (\rho e)}{\partial t} + \sum_{i=1}^3 \frac{\partial}{\partial x_i} [(\rho e + p) v_i] = \sum_{i=1}^3 \sum_{j=1}^3 \frac{\partial}{\partial x_i} (\tau_{ij} v_j) + \sum_{i=1}^3 \rho f_i v_i - \sum_{i=1}^3 \frac{\partial h_i}{\partial x_i} + r$$

COMPUTE



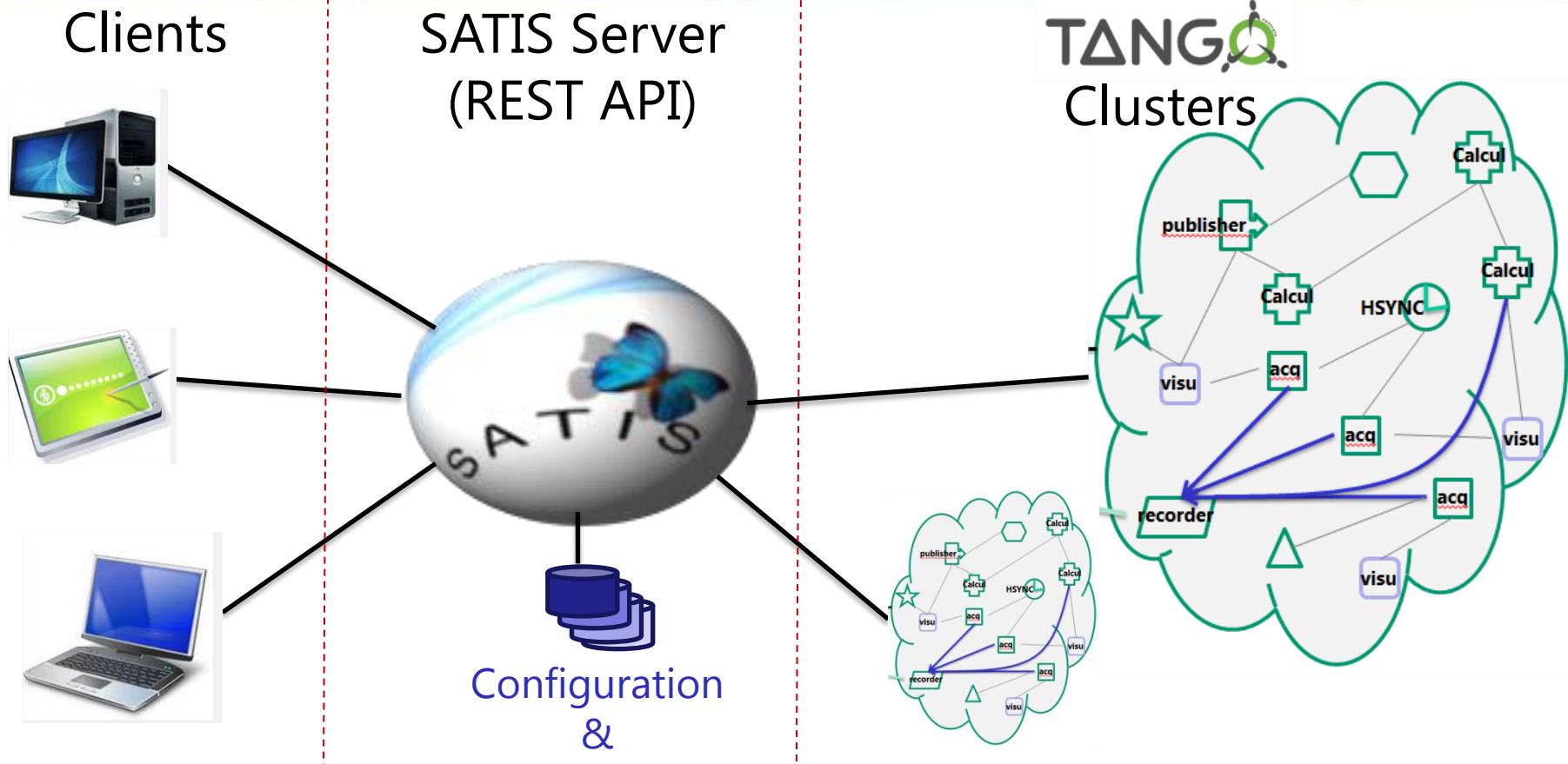
EXPORT DATA



VISUALIZE



SATIS Architecture & Technologies



- Create a new TEST Campain
- Create and configure an acquisition Instrument
- Configure the visualization system and display information
- Define a new computed parameter
- Make an acquisition and visualize the results

F1 OVERVIEW

Test control room



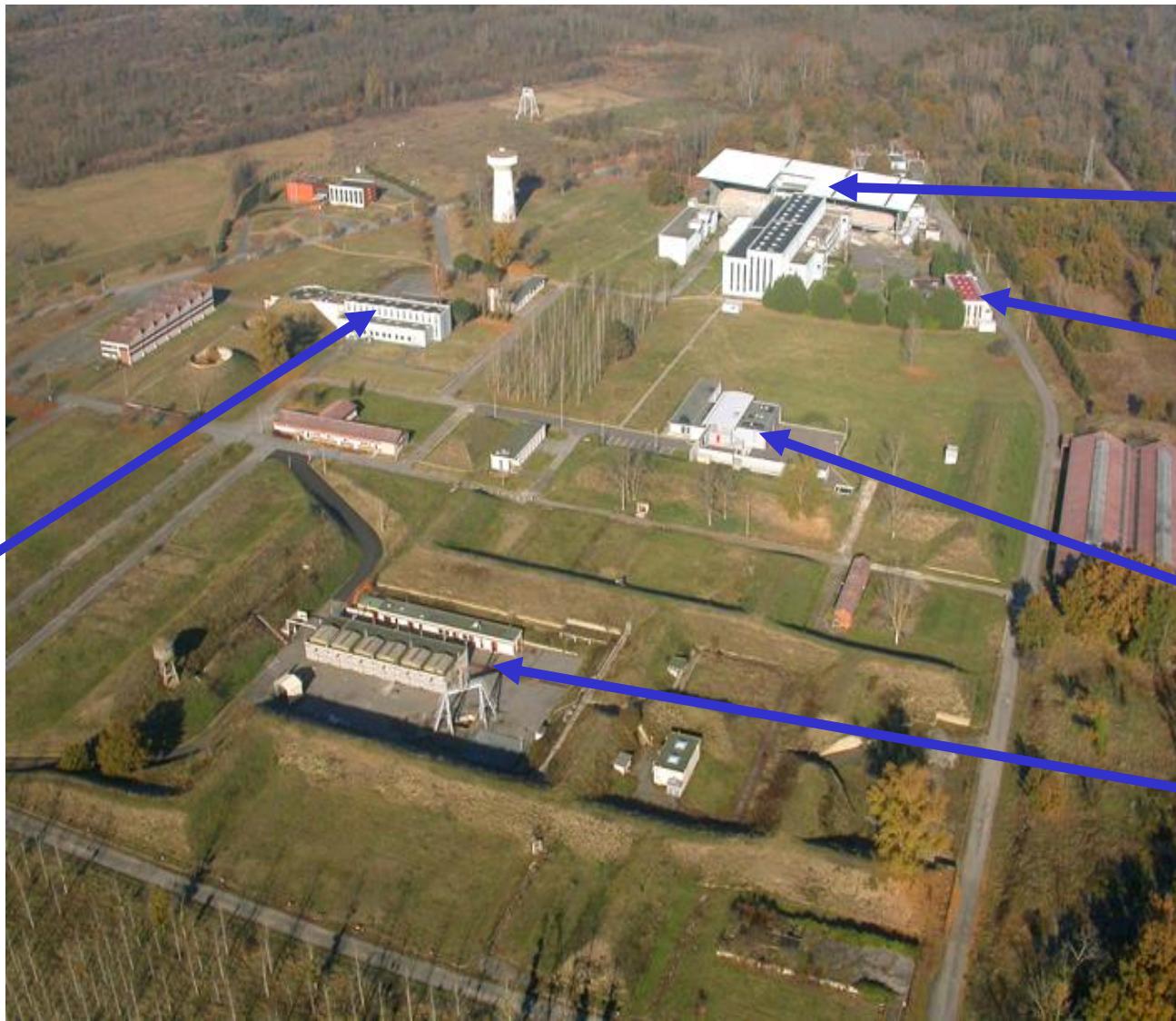
ONERA side

Customer side



- Real time plots.
- Data available at the end of each polar.

Onera CFM Fauga-Mauzac Center



F1

F2

F4

Combustion
test benches

Propulsion
test benches

F1 Pressurized Subsonic Wind Tunnel

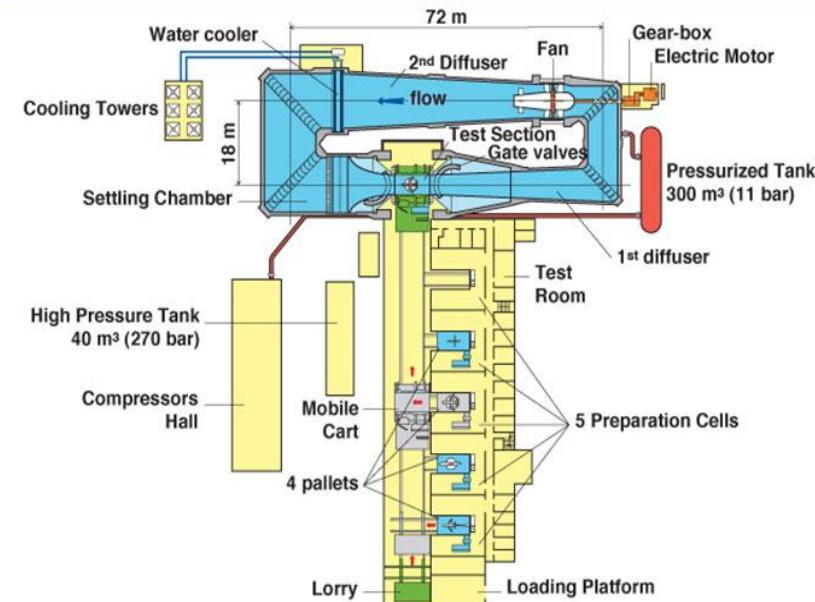




TEST organisation in F1

Execution Area

Preparation Area



TEST-A – 4 weeks

TEST-B – 3 months

...

TEST-C 2w

Continuous data production



DASSAULT
AVIATION


AIRBUS



EMBRAER

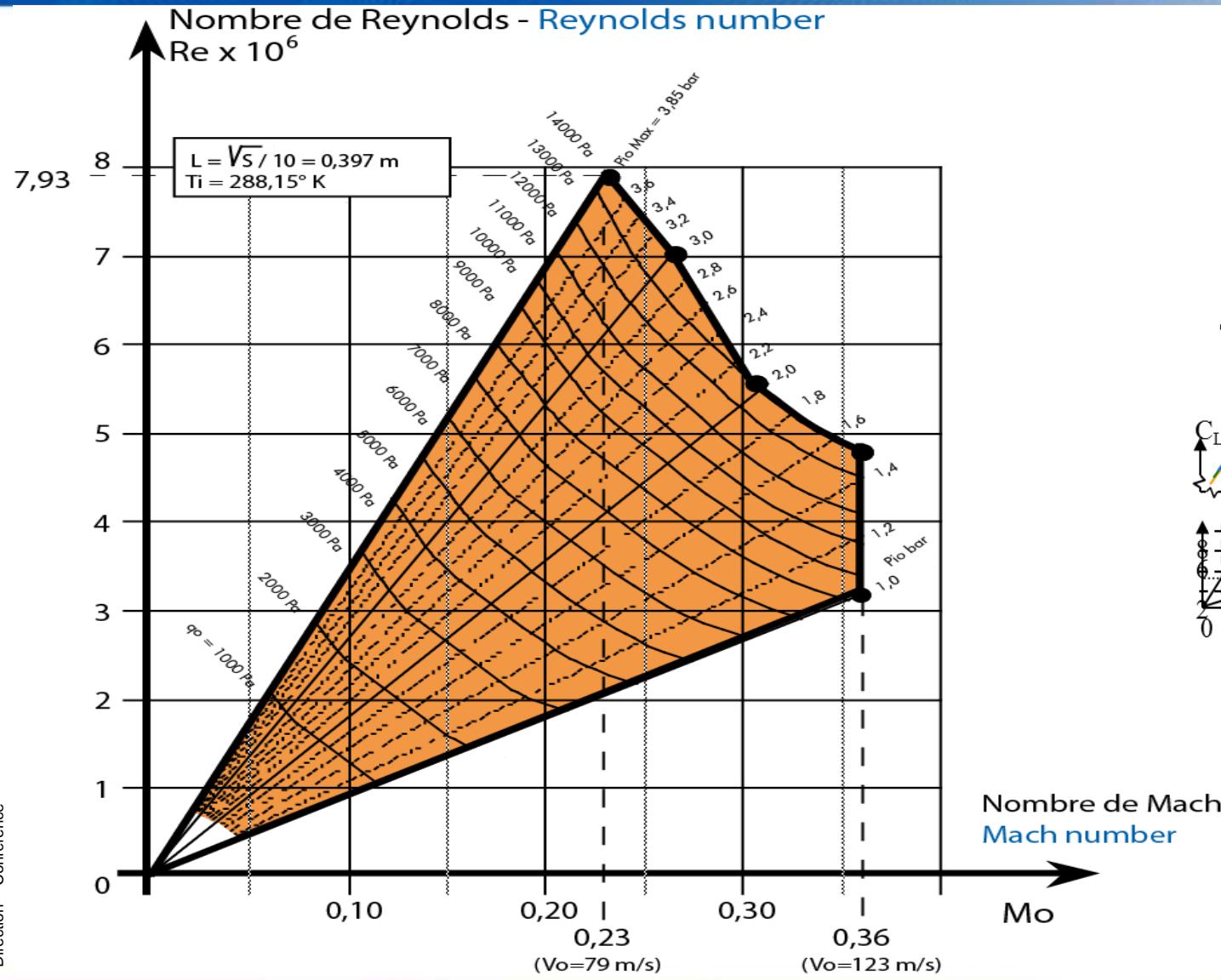
Test section



- Test section :
 - Width : 4.5 m
 - Height : 3.5 m
 - Length : 11 m
- Typical full model span : 3 m

Large optical windows for advanced measurement techniques

Low speed – High Reynolds



Typical Mach and
Reynolds Effects

