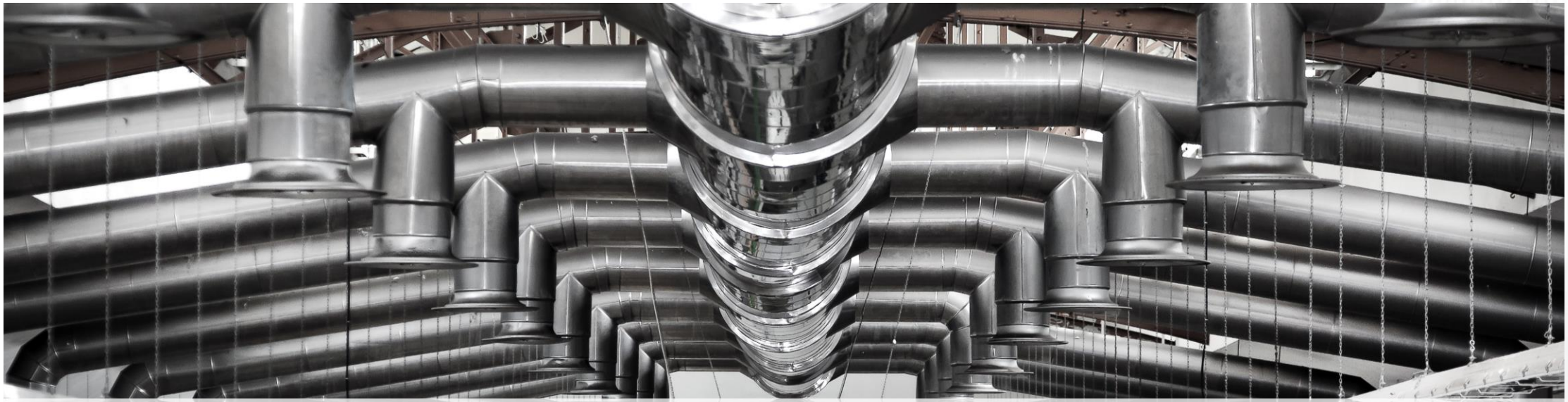
Scilab Cloud

Sanofi Success Story



get it right®

www.esi-group.com

Scilab – Highlights

- Scilab® is an **open-source** software for numerical computing
- Scilab has a **1M+ user** community worldwide
- **Scilab Cloud** enables the deployment of scientific applications
- The Scilab Team is part of **ESI Group**

Scilab – ESI Offering

- **Professional services**
  Development of applications leveraging Scilab, Scilab training, Scilab support

- **Cloud services**
  Scilab Cloud for the deployment of applications (on-premises/private or public cloud)

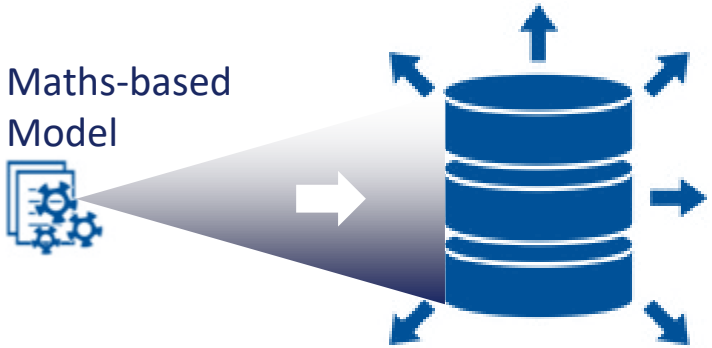
- **Software solutions**
  Offerings which extend the power of existing ESI software with Scilab & Scilab Cloud (Pre/post-processing, coupling with third-party simulation codes, simple apps..)

Scilab functional overview

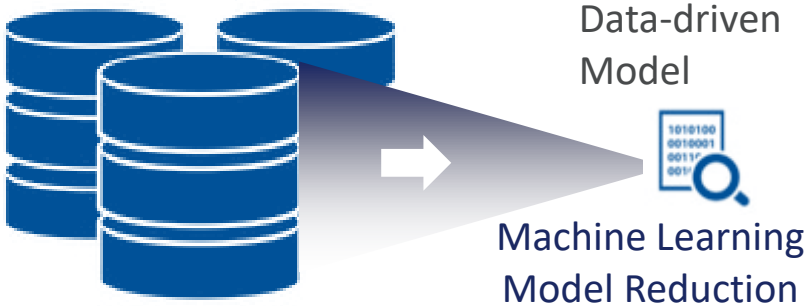
Application Development & Deployment

Packaged Engineering App

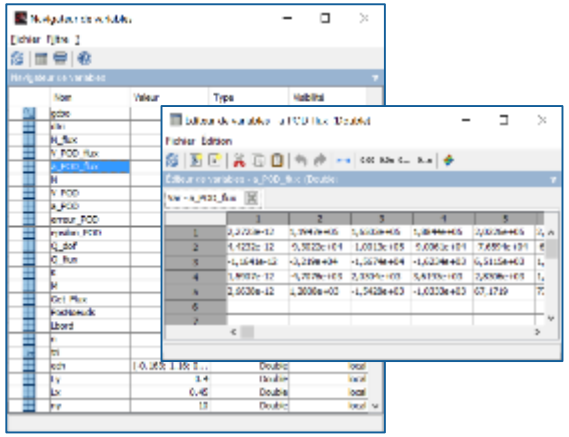
0D/1D Modeling & Simulation

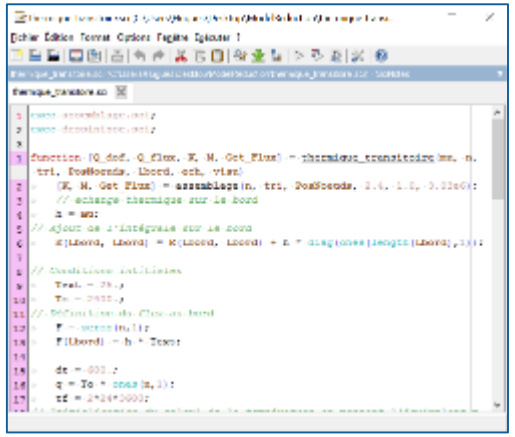


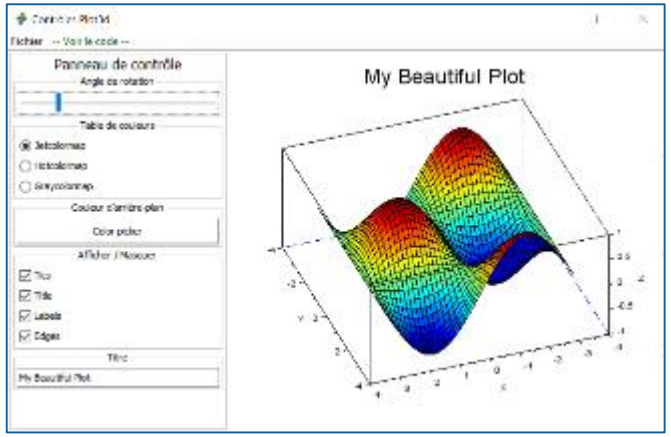
Scientific Data Analytics



Application development



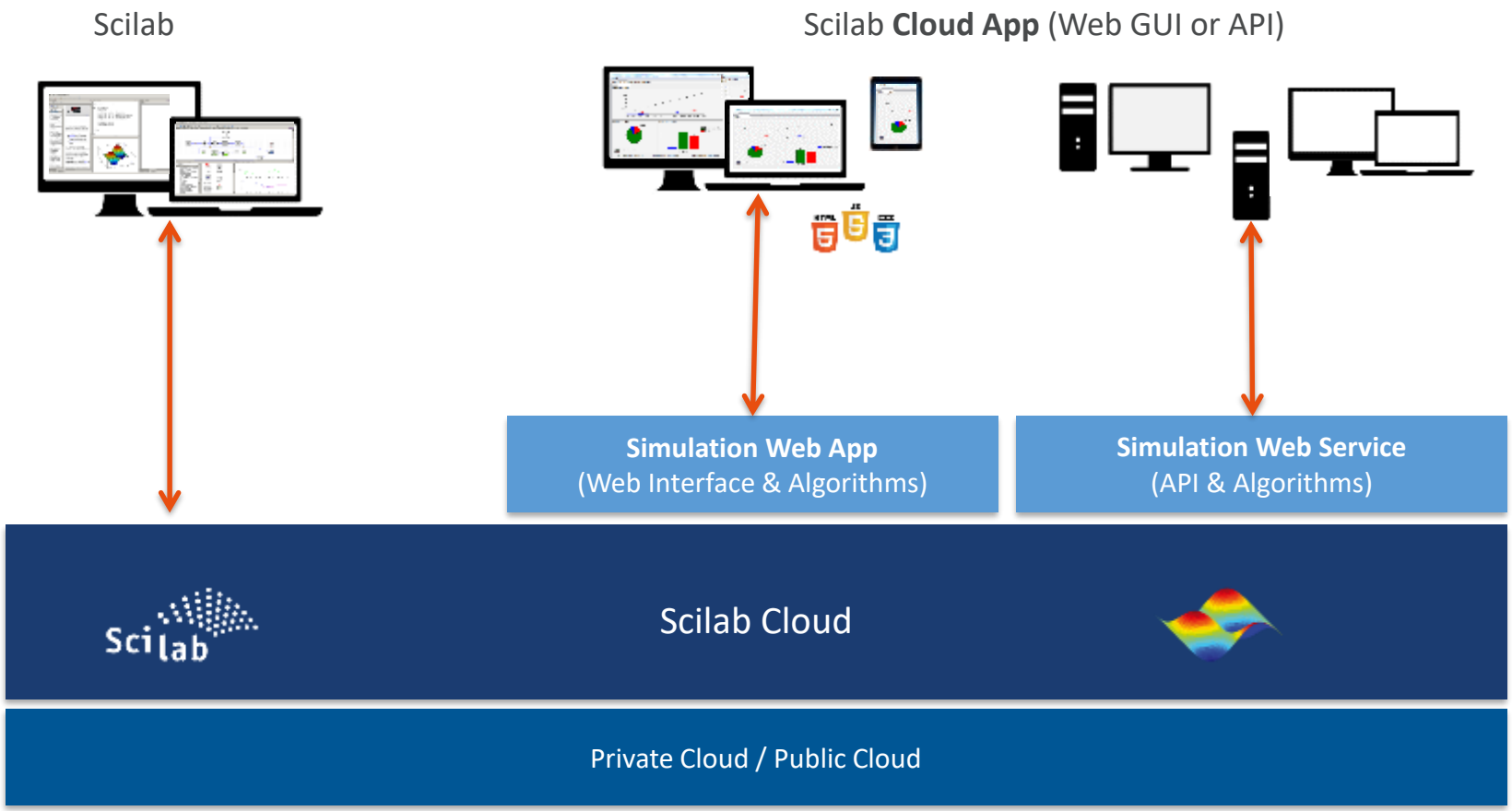




Data *Algorithms/Scripts* *User Interface*

+ Leverage legacy code with API for Java, C and C++

Application deployment



SANOFI using Scilab Cloud ..
… to optimize energy costs through simulation

Problem

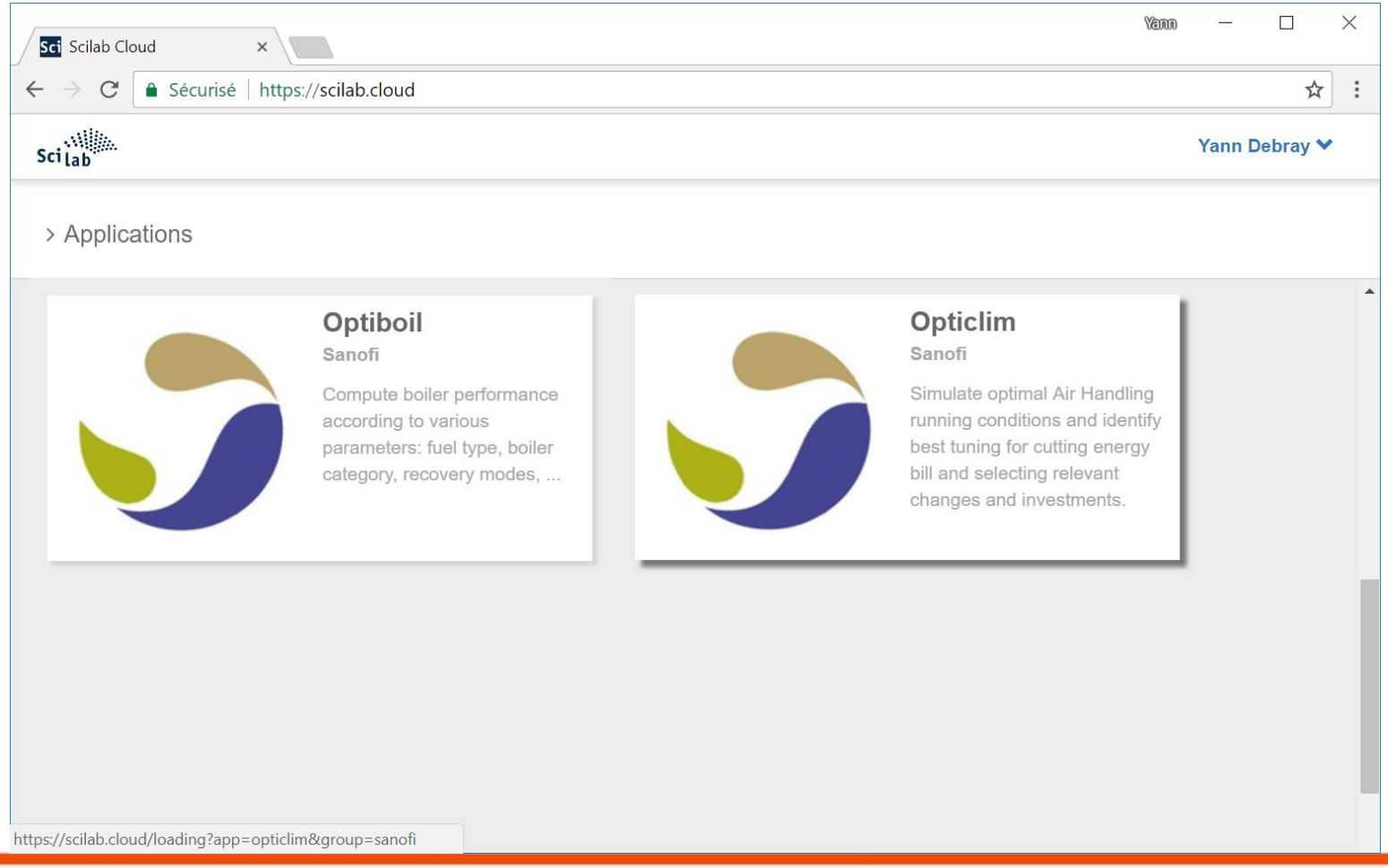
- Inefficient control of HVAC (Heating, Ventilation & Air Conditioning) leads to energy waste
- HVAC = 60 % of energy bill (example: 500k€/year/site)

Objectives

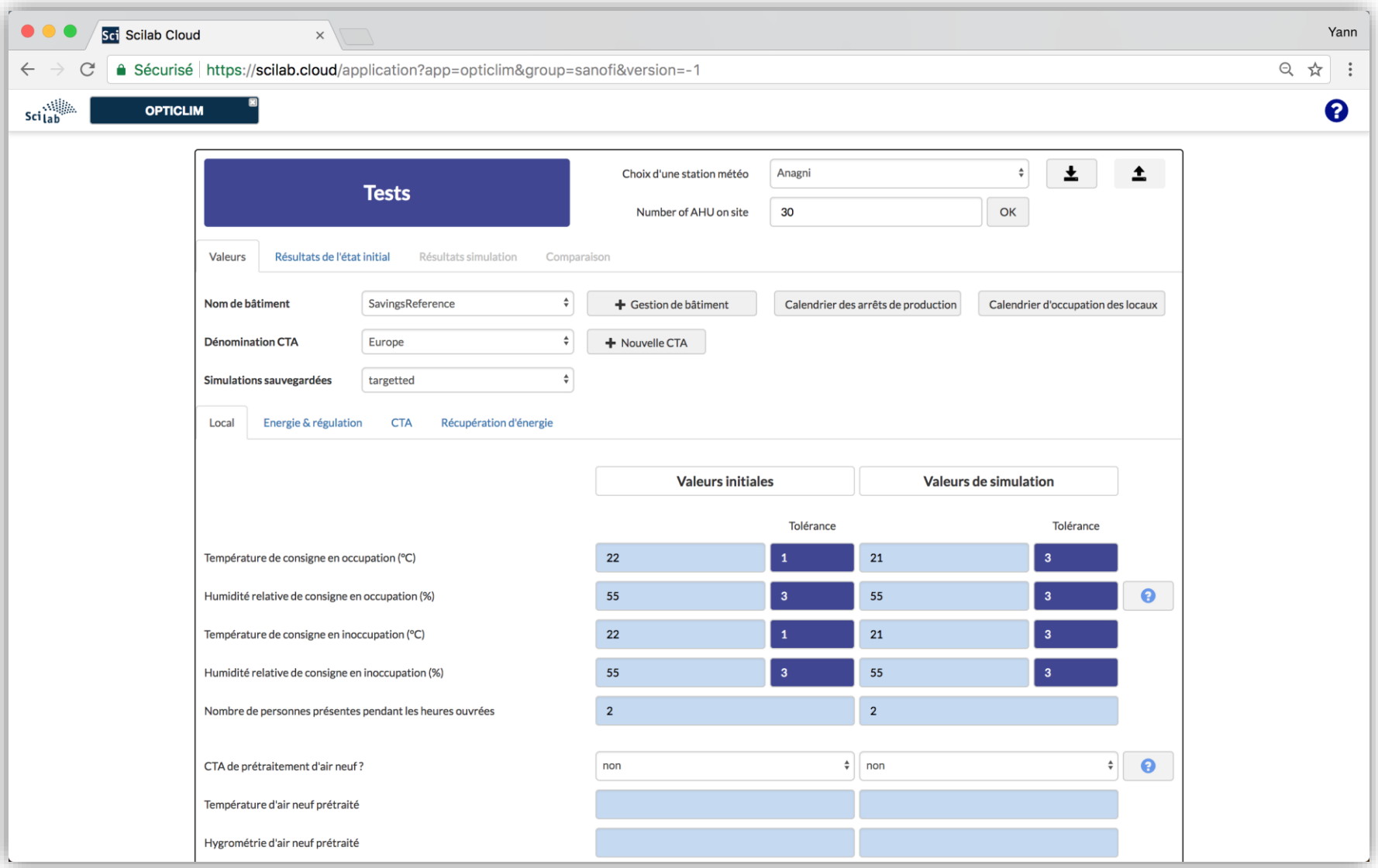
- Save 10M€+ /year in energy bills worldwide
- Energy efficiency at 100+ industrial sites

No installation hassle

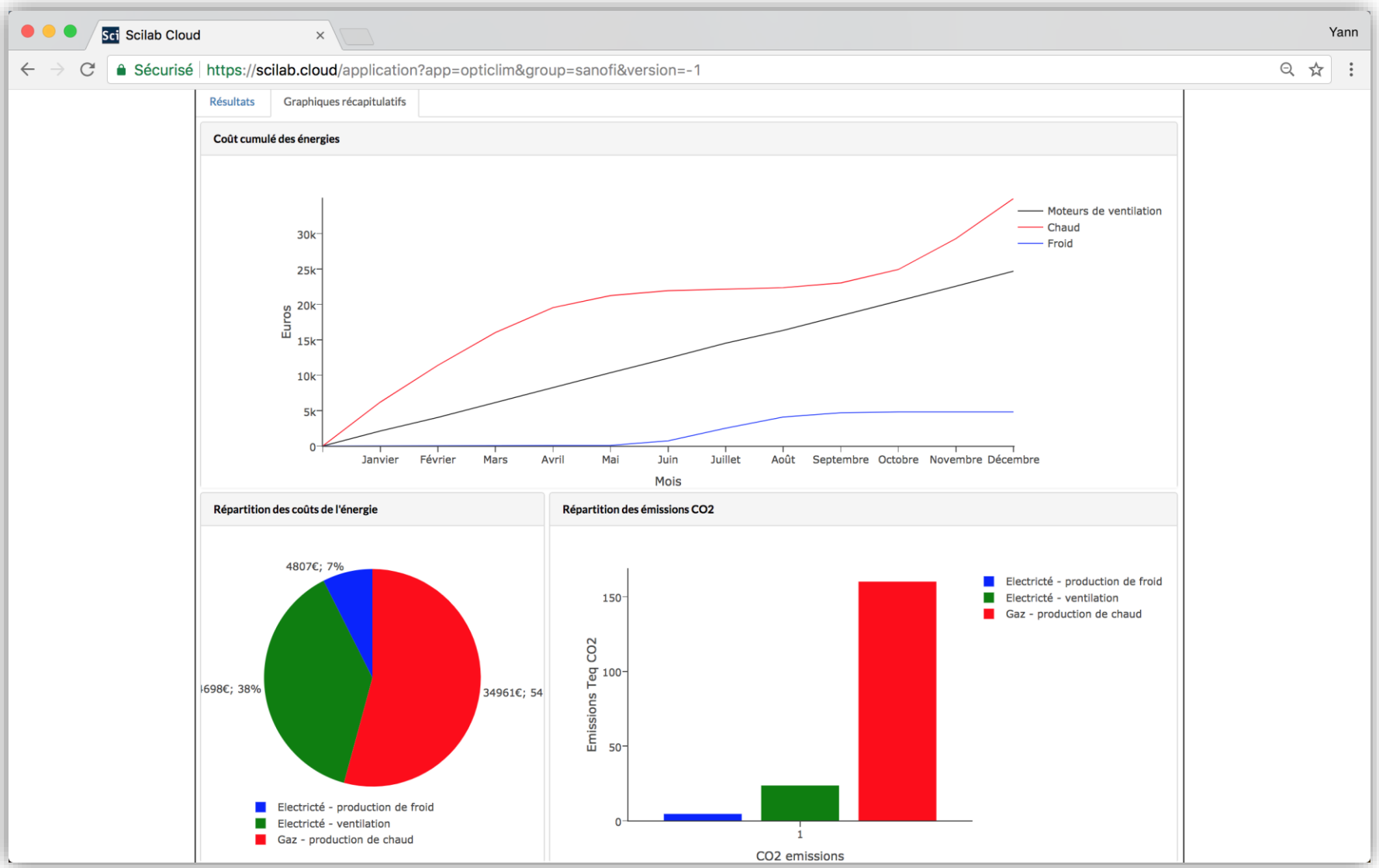
Easy access to the end user



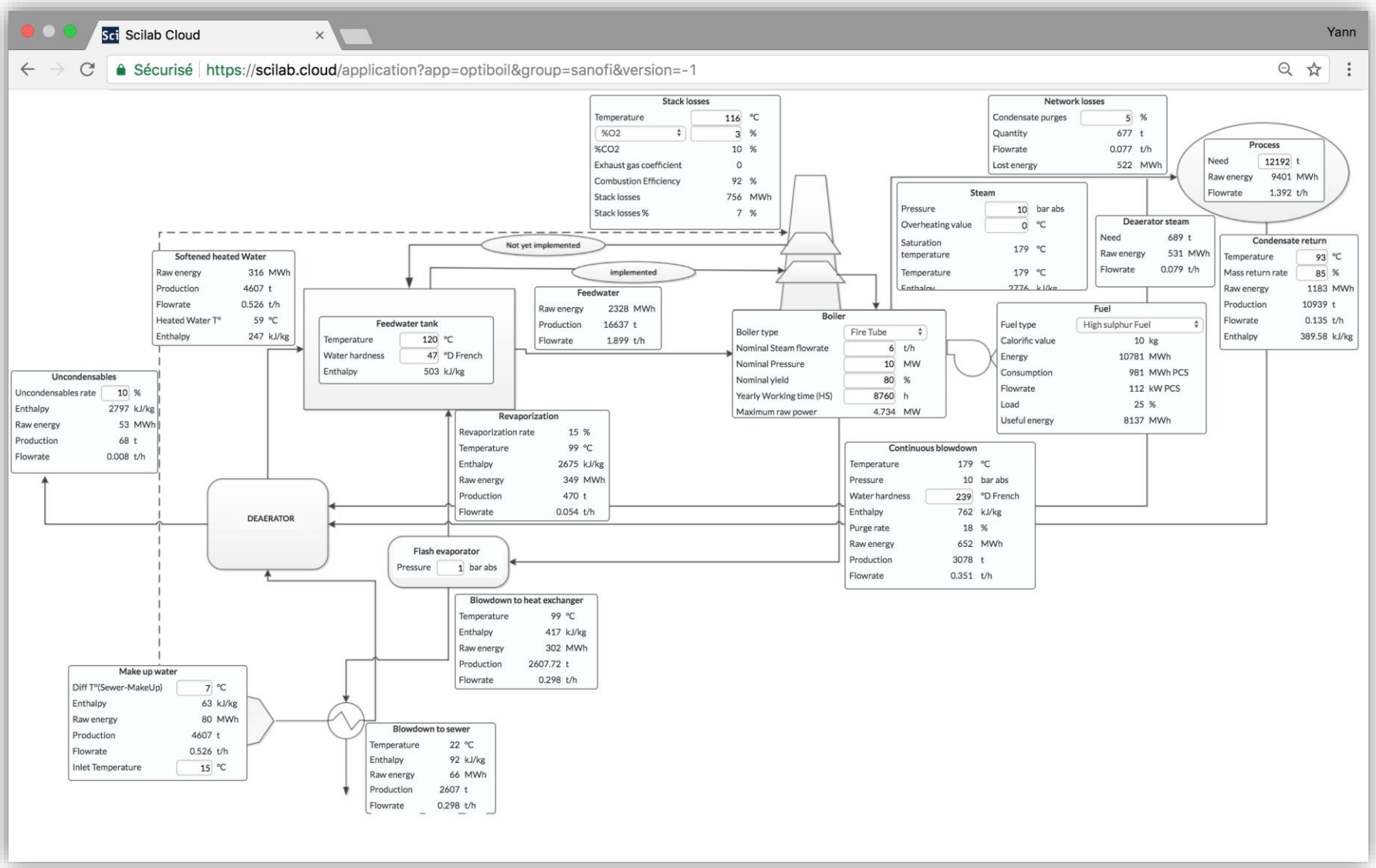
Extended forms with full personalization



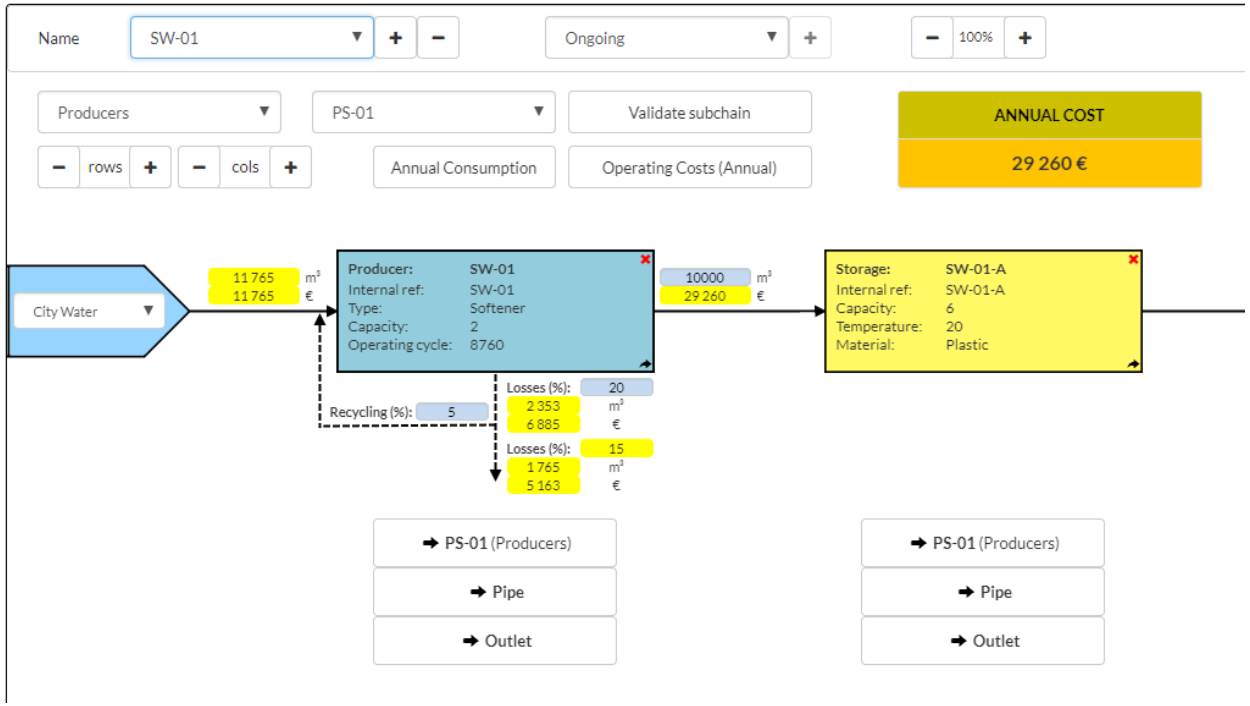
Dynamic graphics with server side computing



System parameters made available in a black box mode

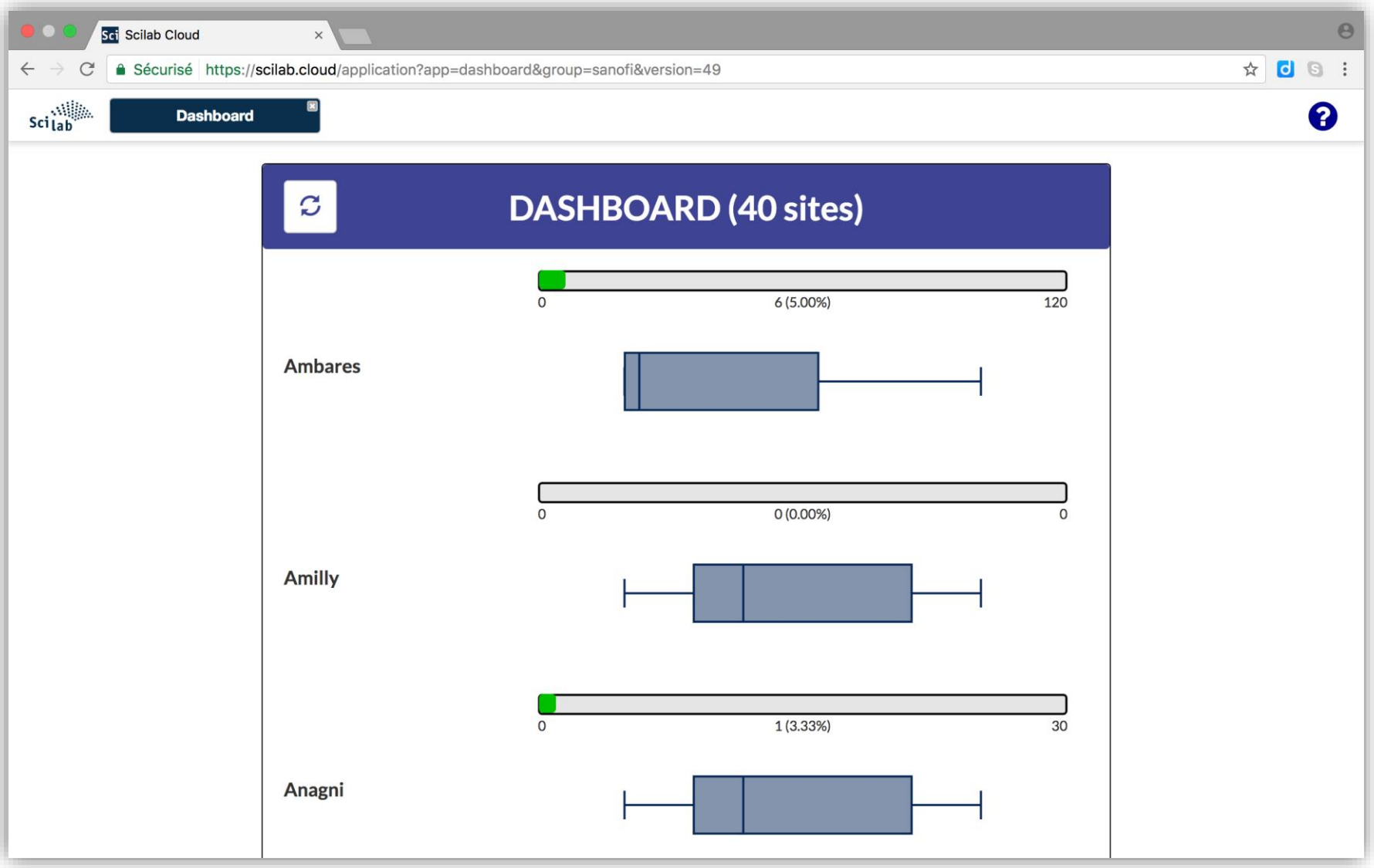


Workflows providing high level KPIs



CSANYIK	SITE LEVEL	PWR-11-13	PURIFIED WATER	PSR-01	PSR-05
24/11/2018					
Energy unit price					
Electricity (€/kWh)	0.078				
Raw Water (€/m³)	2.320				
Black Steam (€/m³)	0.032				
Chilled Water (€/m³)	0.040				
Hot Water (€/m³)	0.000				
Energies Consumptions (annual)					
Consumption of raw water (m³)	89 468	35 083	35 083		
Electricity consumption (kWh)	9 533 004	315 660	315 660	24 480	16 320
Black Steam consumption (kWh)	0	0	0	3 450 048	629 082
Hot water consumption (kWh)		0	0	0	0
Chilled water consumption (kWh)		0	0	0	0
Consumption of purified water (kWh)		29 119	29 119	5 190	800
Costs (annual)					
Raw Water : annual cost (€)	207 566	81 393	81 393	32 383	4 992
Energies : annual cost (€)	743 574	24 621	24 621	112 311	21 404
Operating annual cost (€)	256 610	75 680	75 680	5 659	5 001
Annual production of pharma water (m³)	48 038	29 119	29 119	4 567	736
Purified Water : annual cost (€)	181 694	181 694	181 694		
Clean steam : annual cost (€)	181 749			150 352	31 396
Water For Injectable : annual cost (€)	318 290				
Annual cost for pharma water production (€)	681 732				
KPI's					
PRICE OF PW (€/unit)	6.24	6.24	6.24		
PRICE OF CS (€/unit)	34.27			32.92	42.66
PRICE OF WFI (€/unit)	23.38				
Ratio PHARMA WATER / FEED WATER		0.83	5.18	0.88	0.92
Energy (kWh/m³)		10.84		760.79	876.90
OPERATING COSTS					
Operating costs (€/m³)		2.60	2.60	1.24	6.79
WATER LOSSES					
Water losses (m³)		5 964	5 964	623	64
Water losses (€)		37 215	37 215	20 503	2 730

Consolidated data accross the user base



Find out more

scilab.org/cloud