STORENGY – ENGIE
The PI system at Storengy

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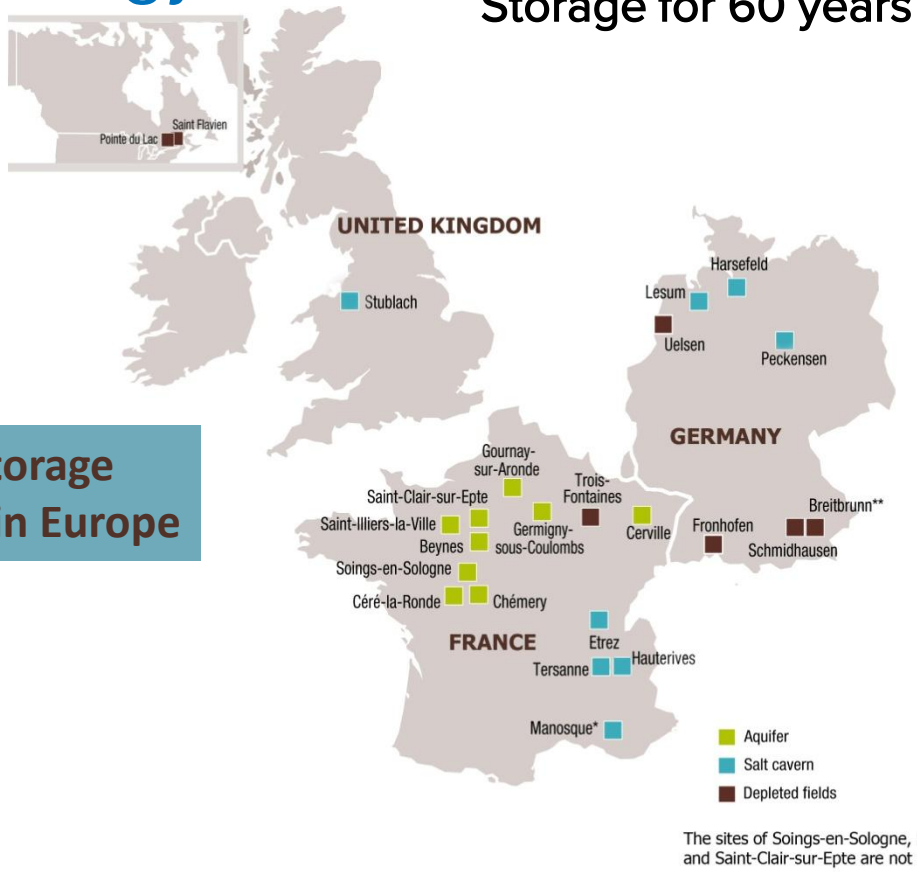
Agenda

- About Storengy
- Background
- Solution
- Emerging needs
- Next steps

About Storengy

A world leader in Underground natural Gas Storage for 60 years



The sites of Soings-en-Sologne, Hauterives, Trois-Fontaines and Saint-Clair-sur-Epte are not in activity

1000 employees

21 storage sites

≈ 40 clients

N°1 Storage Operator in Europe

Storage capacities **12 bcm**

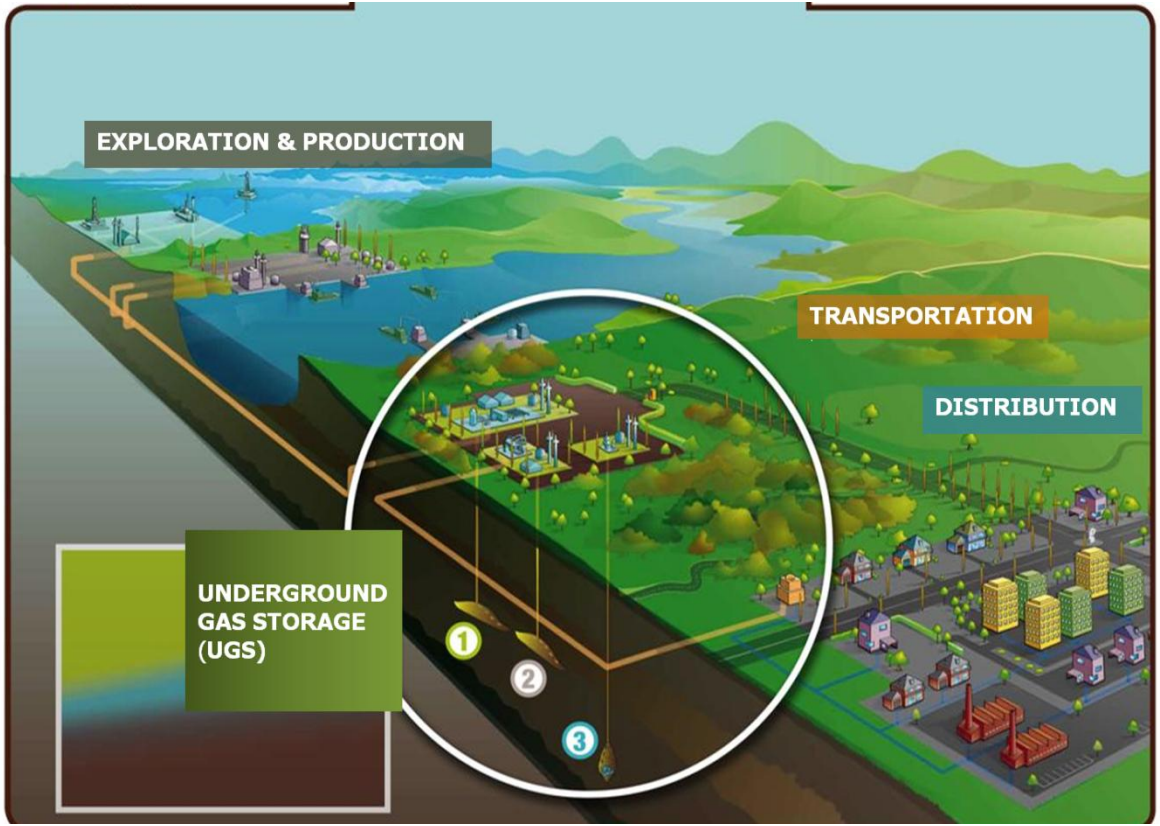
About Storengy

A leader in all the activities of storage

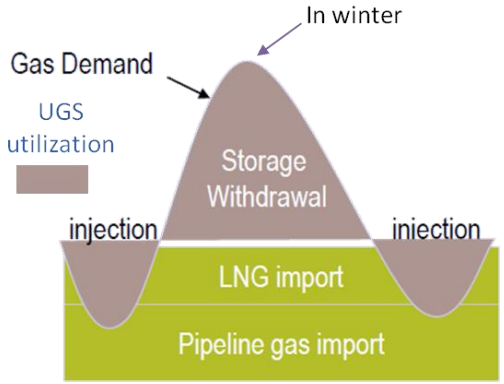
- Recognized expertise in the conception, construction and operation of underground storages (aquifer, salt cavern, depleted fields)
- One of the most competitive offers in Europe for the marketing of storage capacities
- An industrial policy which reconcilies safety and environment by
  - ensuring the safety of persons and goods
  - minimizing the facilities' impact on the environment

About Storengy

Gas storage: an essential link in the gas chain



Traditional storage needs



New needs

- Offering more flexibility
- Optimizing the management of gas power plants
- Developing arbitrage
- Seizing price opportunities / attenuating risks

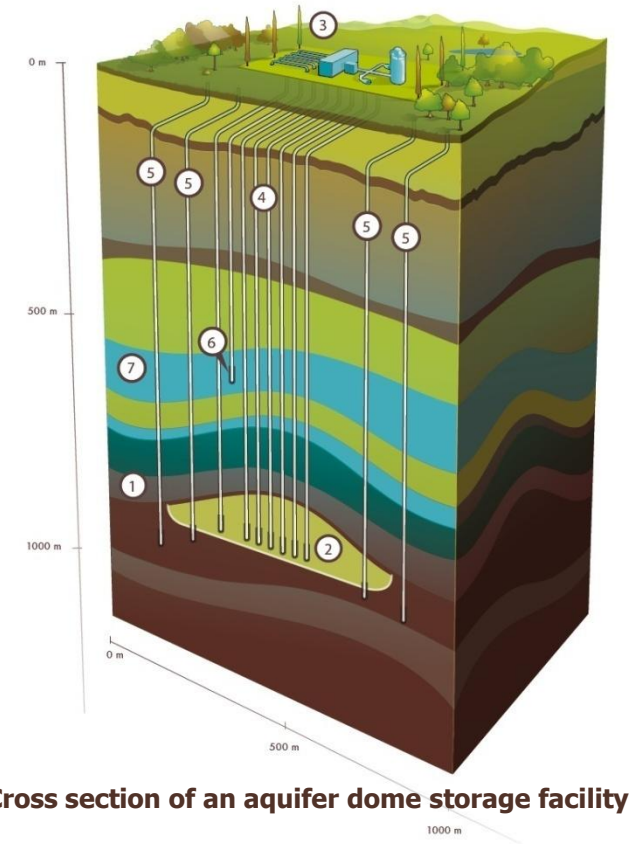
About Storengy

Storage in Natural Aquifers

- Large working gas capacity
- Deliverability depending on rock porosity and permeability

1) **Caprock**
2) **Reservoir**
3) **Gas station**
4) **Storage well**
5) **Observation well**
6) **Upper aquifer observation well**
7) **upper aquifer**

Gas storage: two techniques used



Cross section of an aquifer dome storage facility

About Storengy

Storage in Salt Caverns

- smaller working gas capacity
- high deliverability

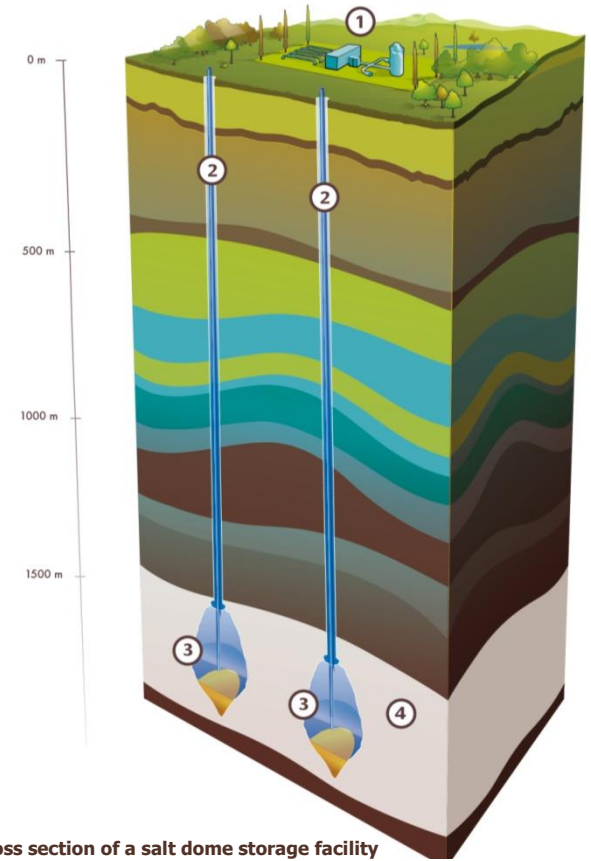
1) gas plant

2) storage well

3) salt cavern

4) salt dome formation

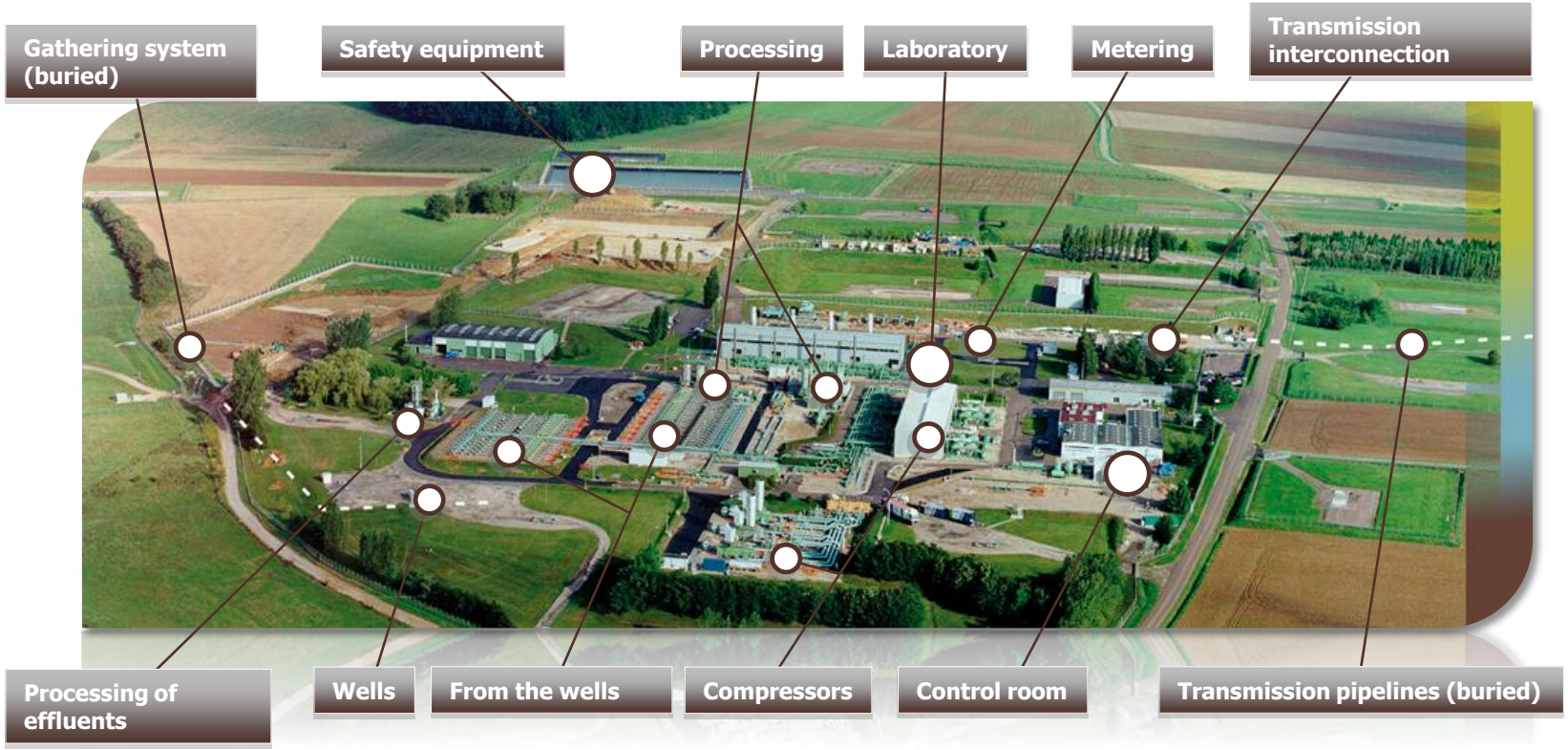
Gas storage: two techniques used



Cross section of a salt dome storage facility

About Storengy

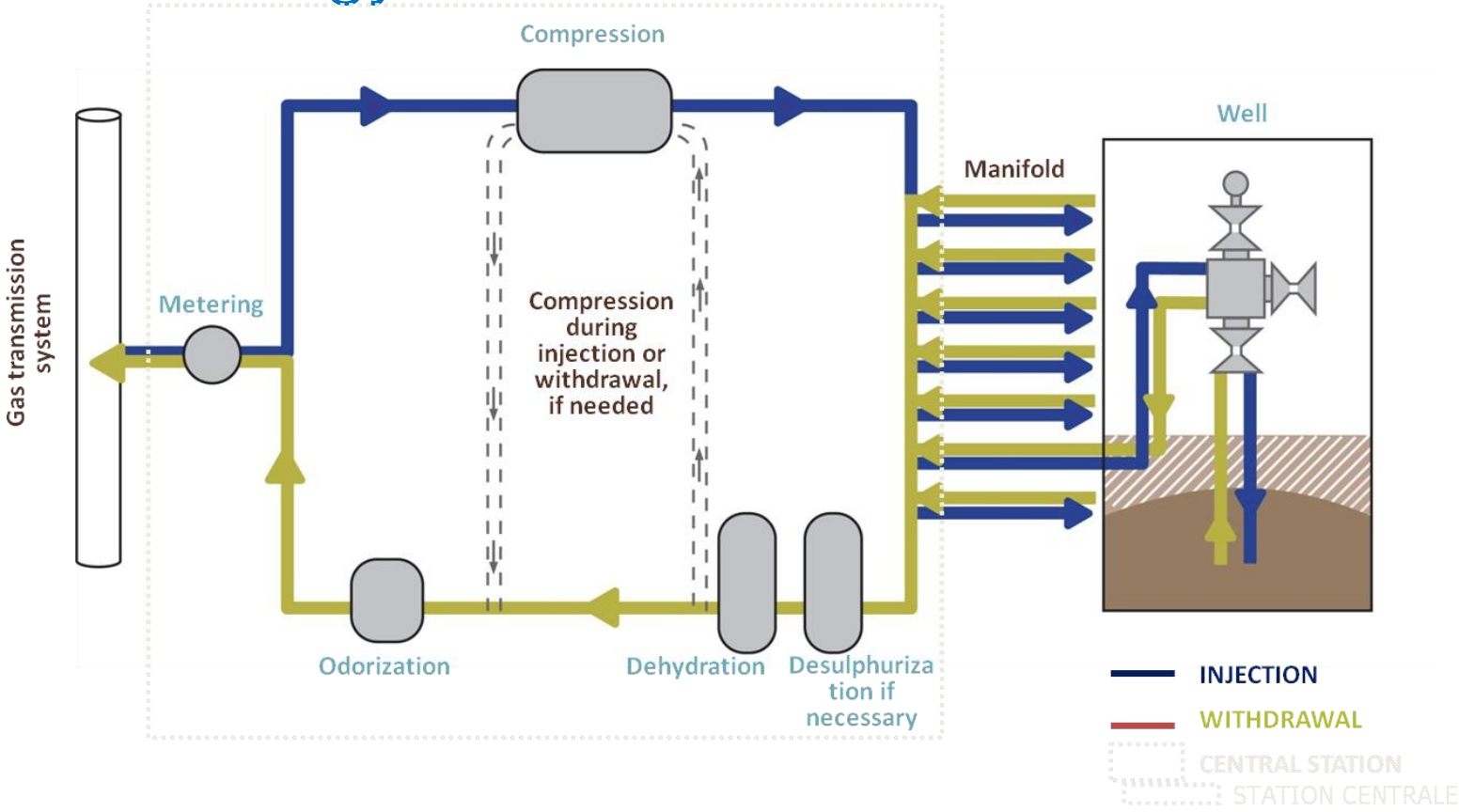
An underground natural gas storage in operation



Main activities: Maintenance of surface facilities, wells and control of process

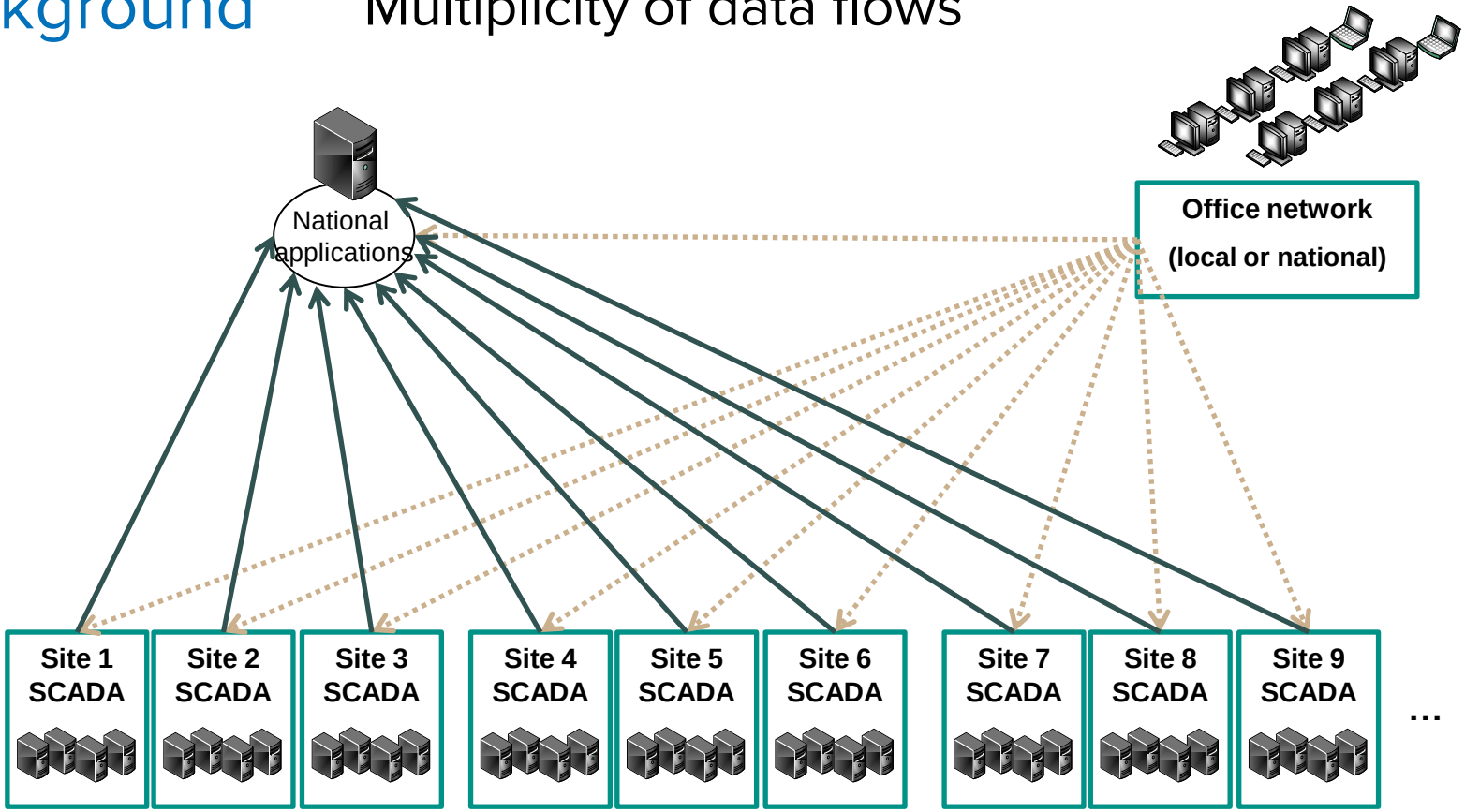
About Storengy

Operation of surface facilities



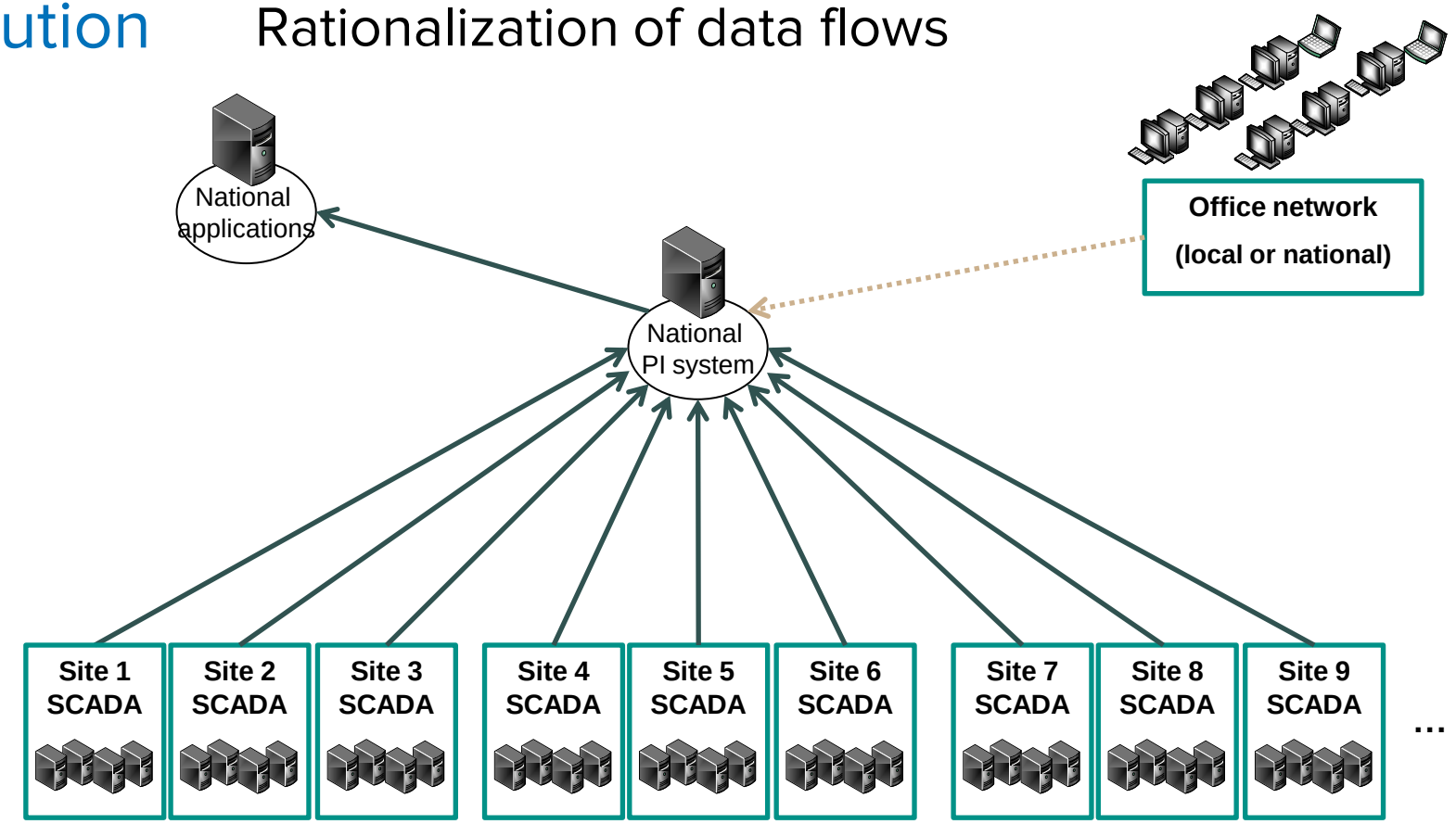
Background

Multiplicity of data flows



Solution

Rationalization of data flows



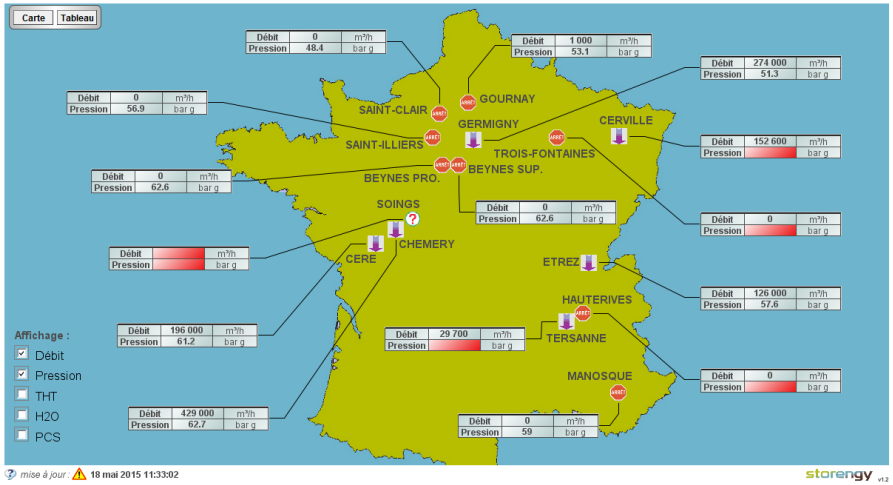
Solution : Storengy PI Server ID Card

- PI Server installed in 2011
  - License : 20 000 tags (about 14 000 in use)
  - 13 storage sites connected (with PI UFL)
  - 80 users

- PI Modules used at Storengy :
  - PI Server
  - PI Visualization Suite (PI ProcessBook, PI DataLink)
  - PI SMT
  - PI SDK
  - PI UFL
  - PI AF

Emerging Needs @ Storengy

- Use of PI to enhance the existing gas storage pool visualization tool



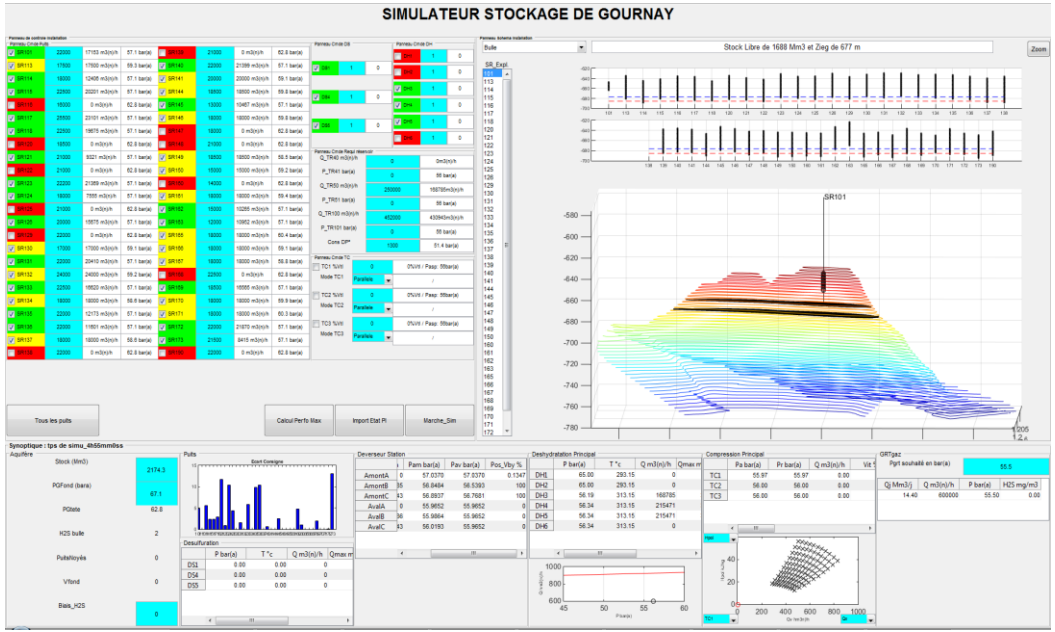
- Better data organization using PI AF

Emerging Needs @ Storengy

- PI linked to new performance models to assess the storage real-time performance and the related operational costs
- More flexibility offered to our clients
- Enhanced gas storage monitoring/dispatching
- Production OPEX optimization

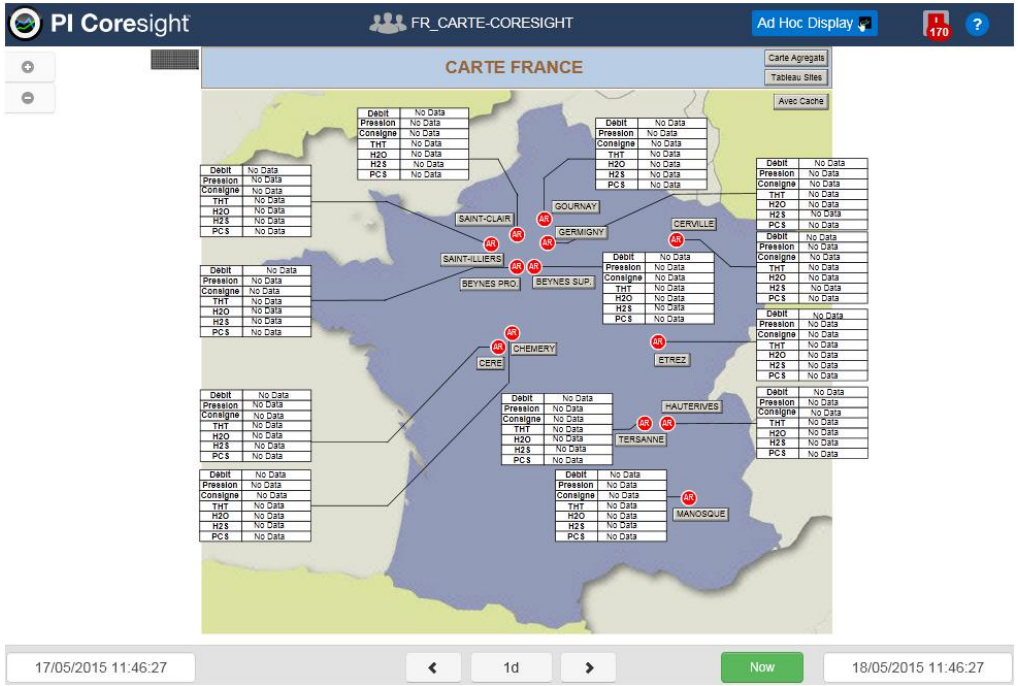
ULTIM

Outil de simulation fond/surface du fonctionnement global d'un stockage et de sa performance temps réel



Next steps

- Tests of PI web clients
  - PI ActiveView
  - PI Manual Logger
  - PI WebPart
- Rationalization of existing data models
- ULTIM performances models linked to PI for all of our ugs
- Data Science approaches : predictive analysis



Thank you for your attention.

Speakers

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Questions

Please wait for the microphone
before asking your questions

State your
name & company

THANK YOU