

Research & Development

SONATRACH

ALGERIA ENERGY DAY
HOUSTON , May 4, 2016

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- ❑ Research and Technology Development in SONATRACH, new organisation
 - ❑ Existing Technology platform
 - ❑ Current Research projects
 - ❑ Areas of Cooperation with the US
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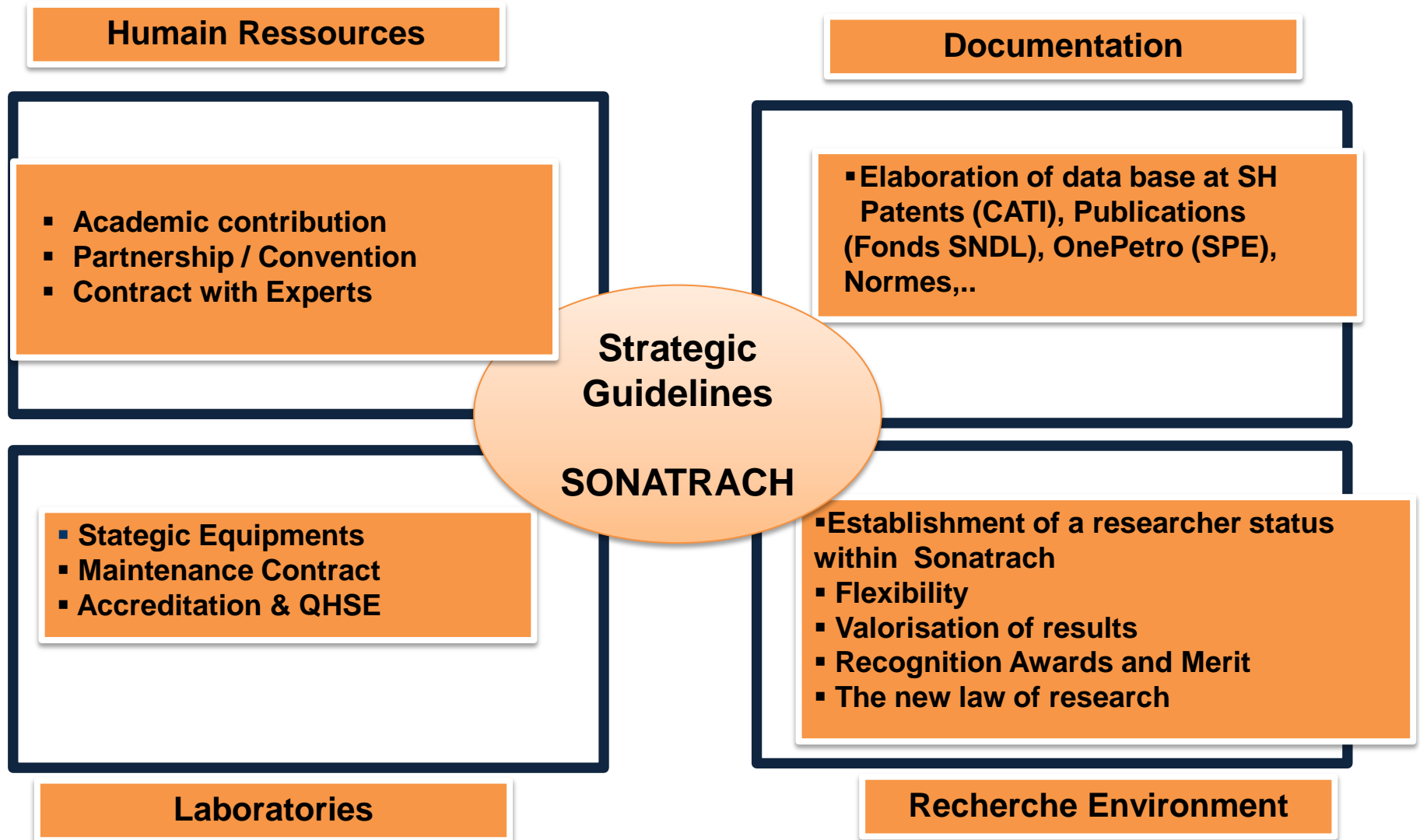
❑ The Central Management Research and Development is dedicated to promote and implement applied research and to develop new technologies for SONATRACH;

❑ Attract and retain the best experts, scientists and students;

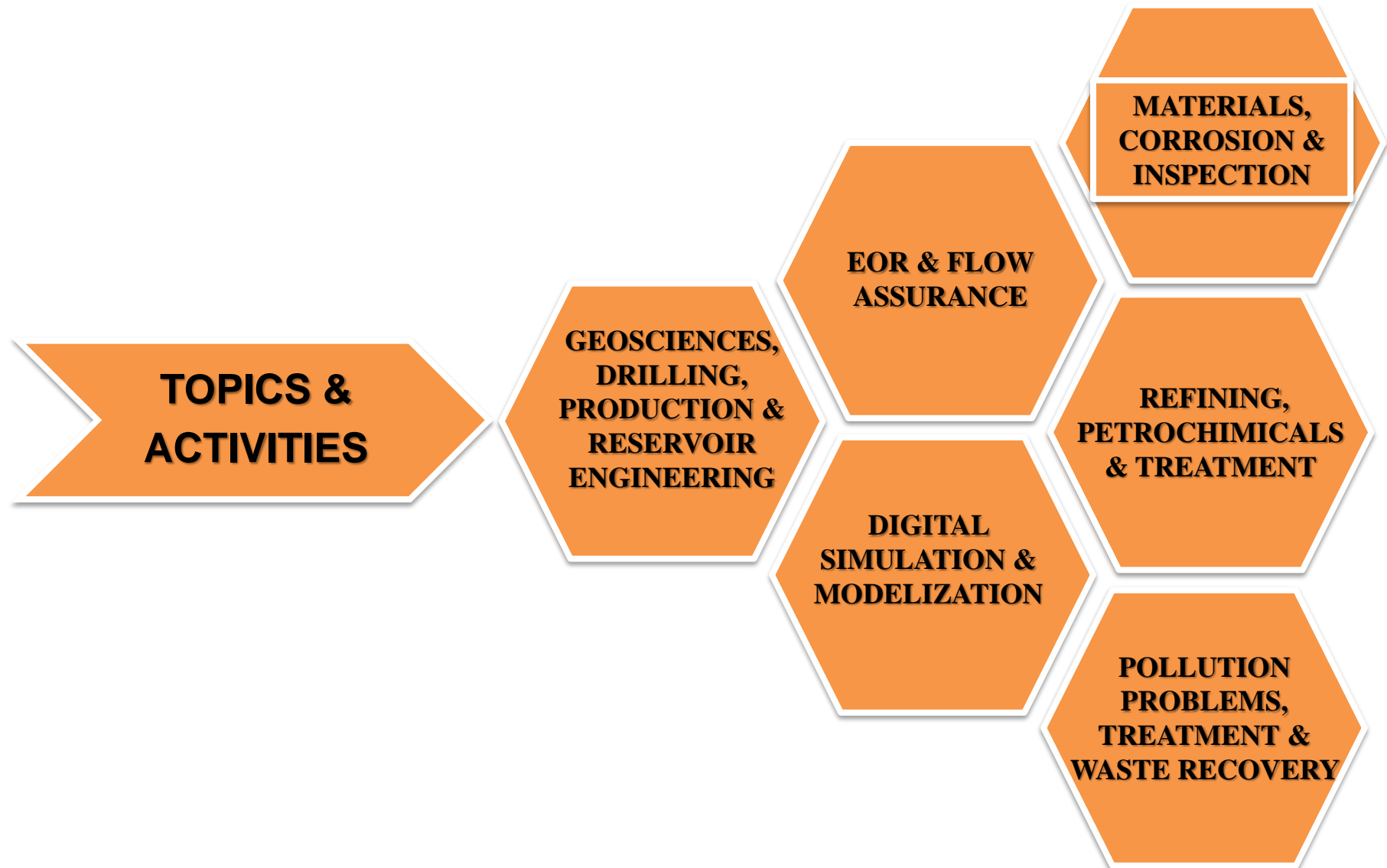
❑ Increase our potential, effectiveness, and creativity as a research organization by offering the broadest possible range of approaches to problem solving;

❑ To be one of the best Research Centers in term of Innovation and Quality.

Research & Development basics



Main recongnized topics for SONATRACH upstream and downstream problems



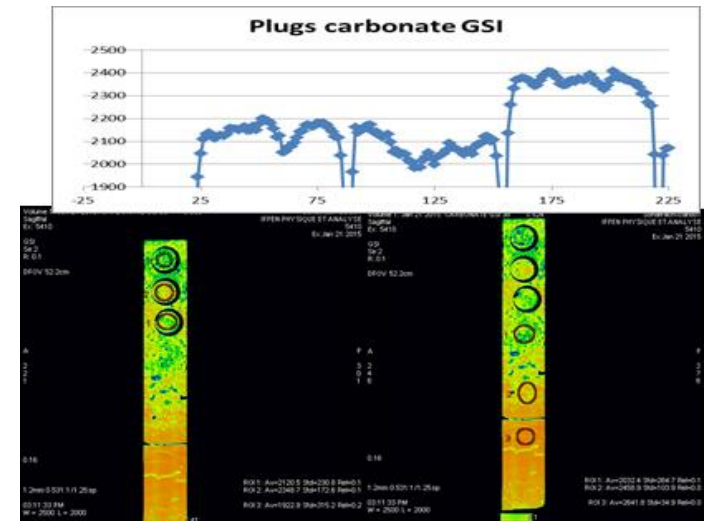
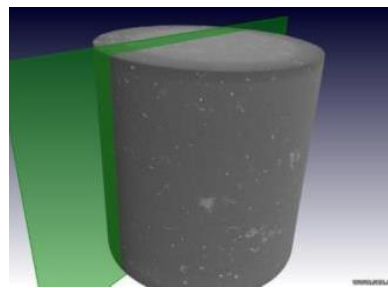
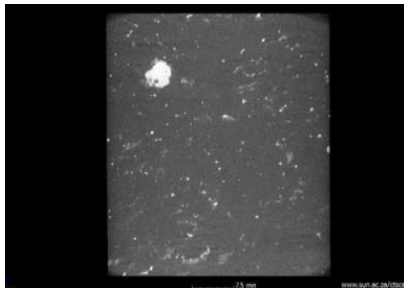
Existing Technology Platform

The SONATRACH Group has technological platforms within activities as;

- The Technology & Development Division gathering more than 50 high technology laboratories and infrastructures in Boumerdes and Hassi Messaoud.
 - The downstream activity also has structure dealing with downstream problems and many projects are carried out for gas liquefaction and refining.
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Technological capabilities : Core scanning and tomography

- To identify any type of reservoir;
- To characterize a reservoir more finely;
- To have a better workflow;
- To have a quick, easy and accurate interpretation.

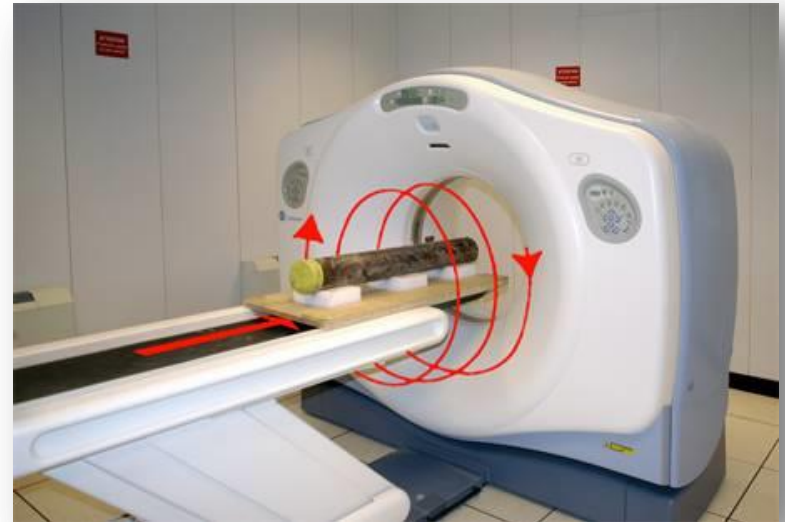


Technological capabilities : Core scanning and tomography

X-Ray CT SCAN

An imaging technique which allows to get a tomography density logging with a high resolution:

- Image radiography ;
- Transversal slice (cut, resolution of 0,4 mm) ;
- virtual;
- Segmentation (Matrix / porous space)
- 3D reconstruction;



Perspective of use:

- Analysis of the core state and homogeneity (even core are consolidated or not);
- Virtual 3D reconstitution of the core;
- Homogenisation of the sample extraction from the core (scan Cut) ;
- Sedimentary and structural characterization of the consolidated or unconsolidated cores;
- Scanner imaging and diagraphy interpretation and correlation;
- Porous media flooding simulation (including enhanced oil recovery and well treatment techniques operations, etc) ;
- Rock mechanics (related with drilling and completion).

Technological capabilities : *SCAL HP - HT System*



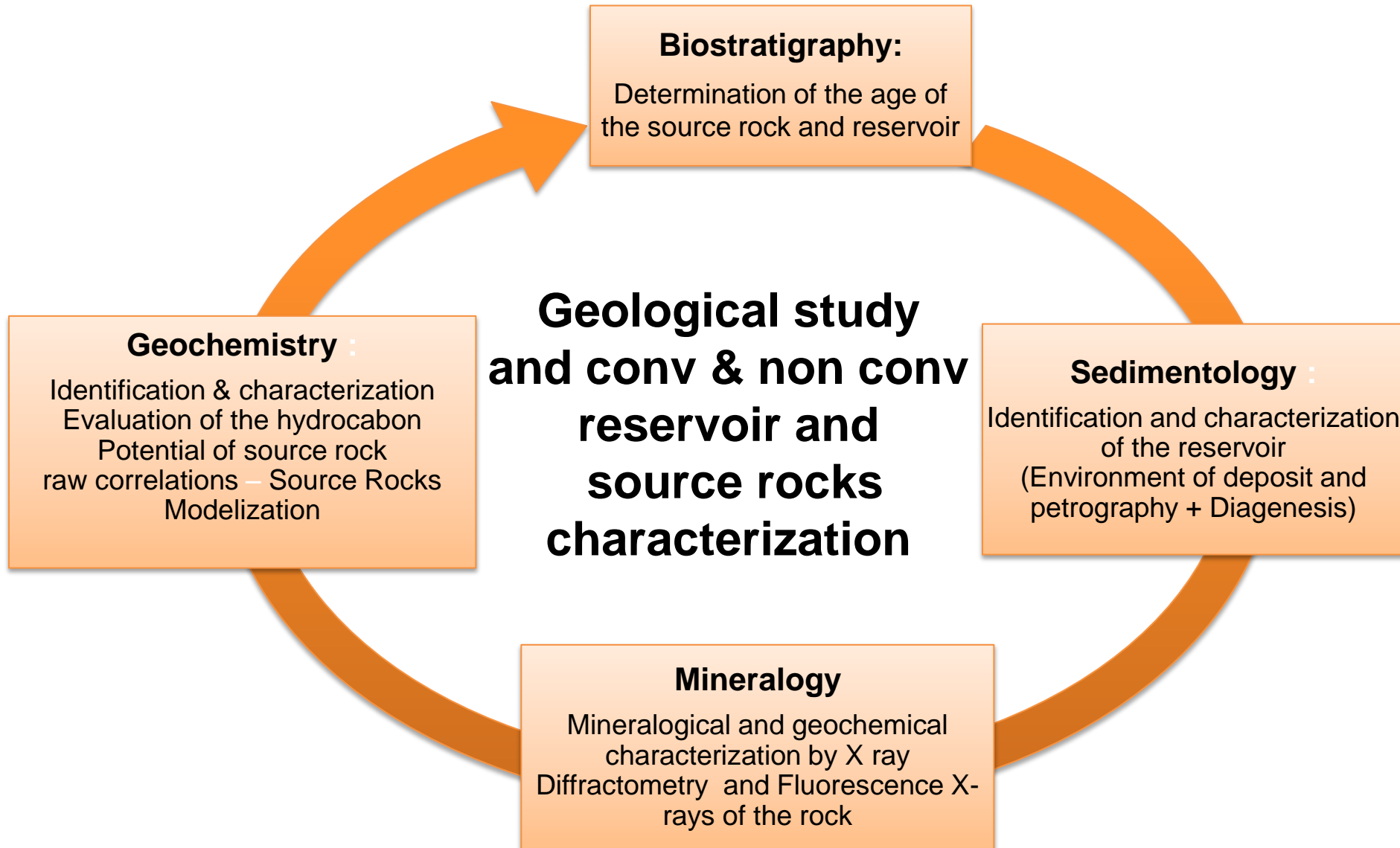
PLS-100: Capillary pressure and electrical parameters reservoir measurement system under confining conditions

Technological capabilities *SCAL HP HT System*

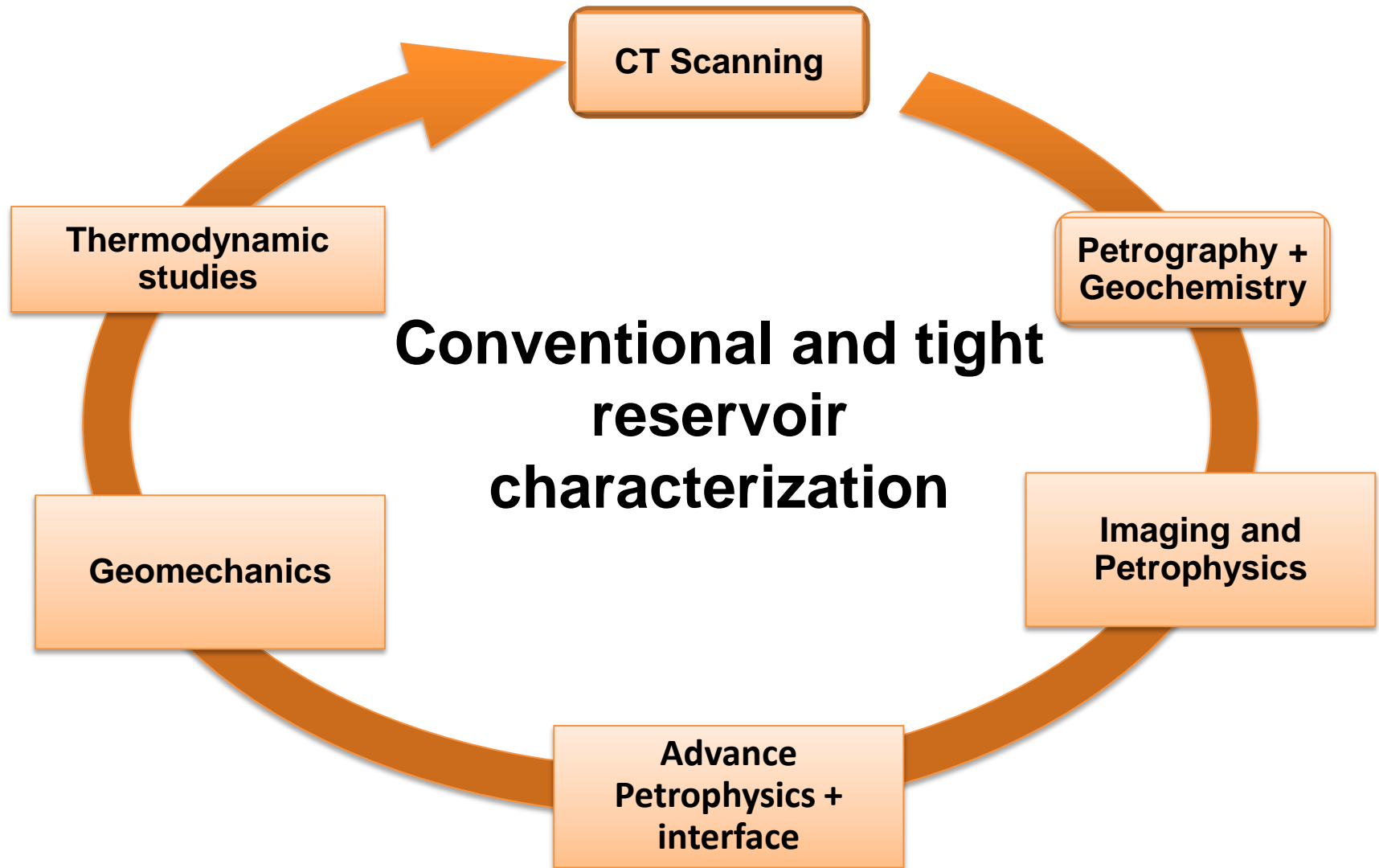


Relative Permeability & Capillary Pressure in dynamique flowing under reservoir Conditions (followed by Tomographie X system)

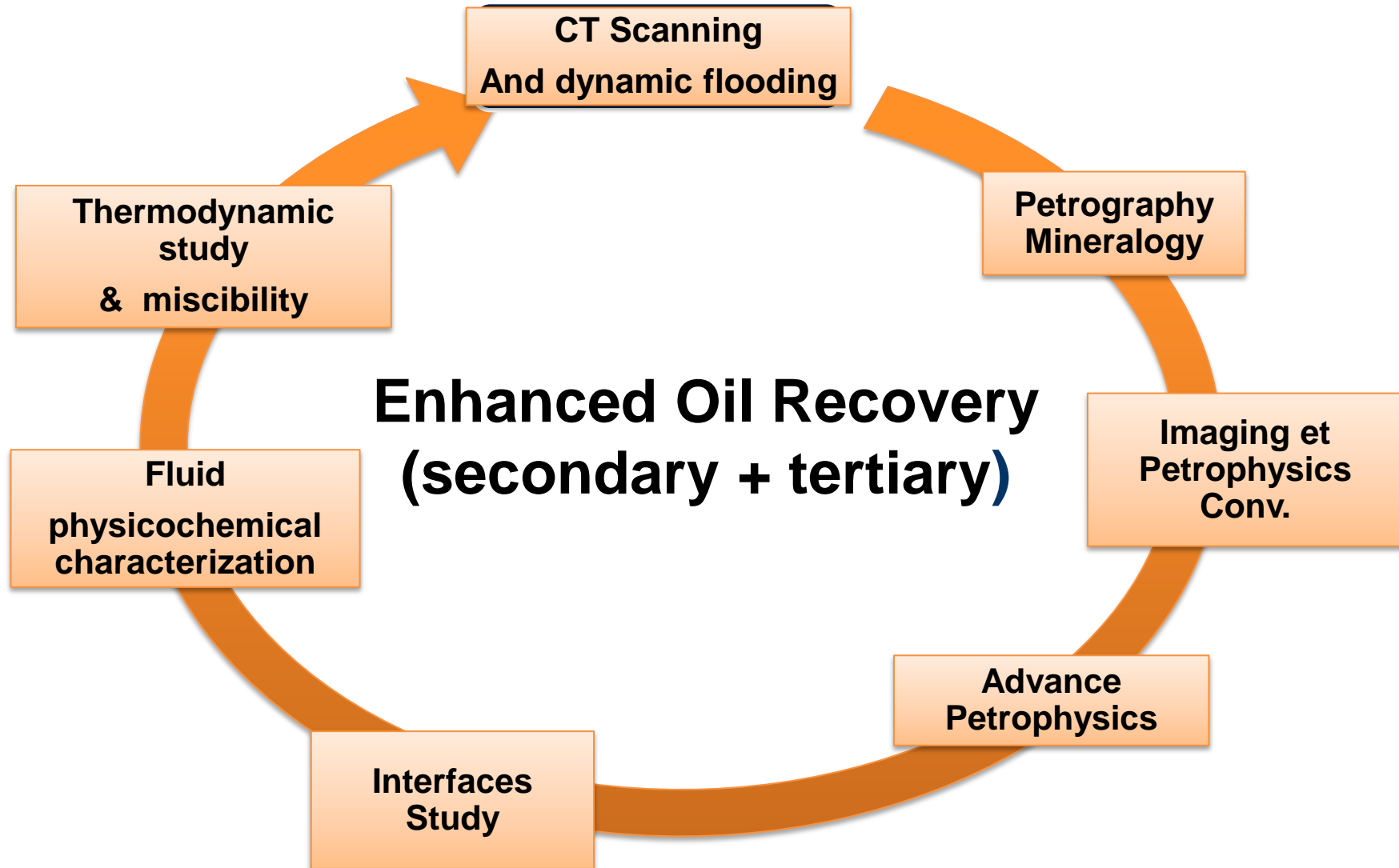
Reservoir characterization workflow



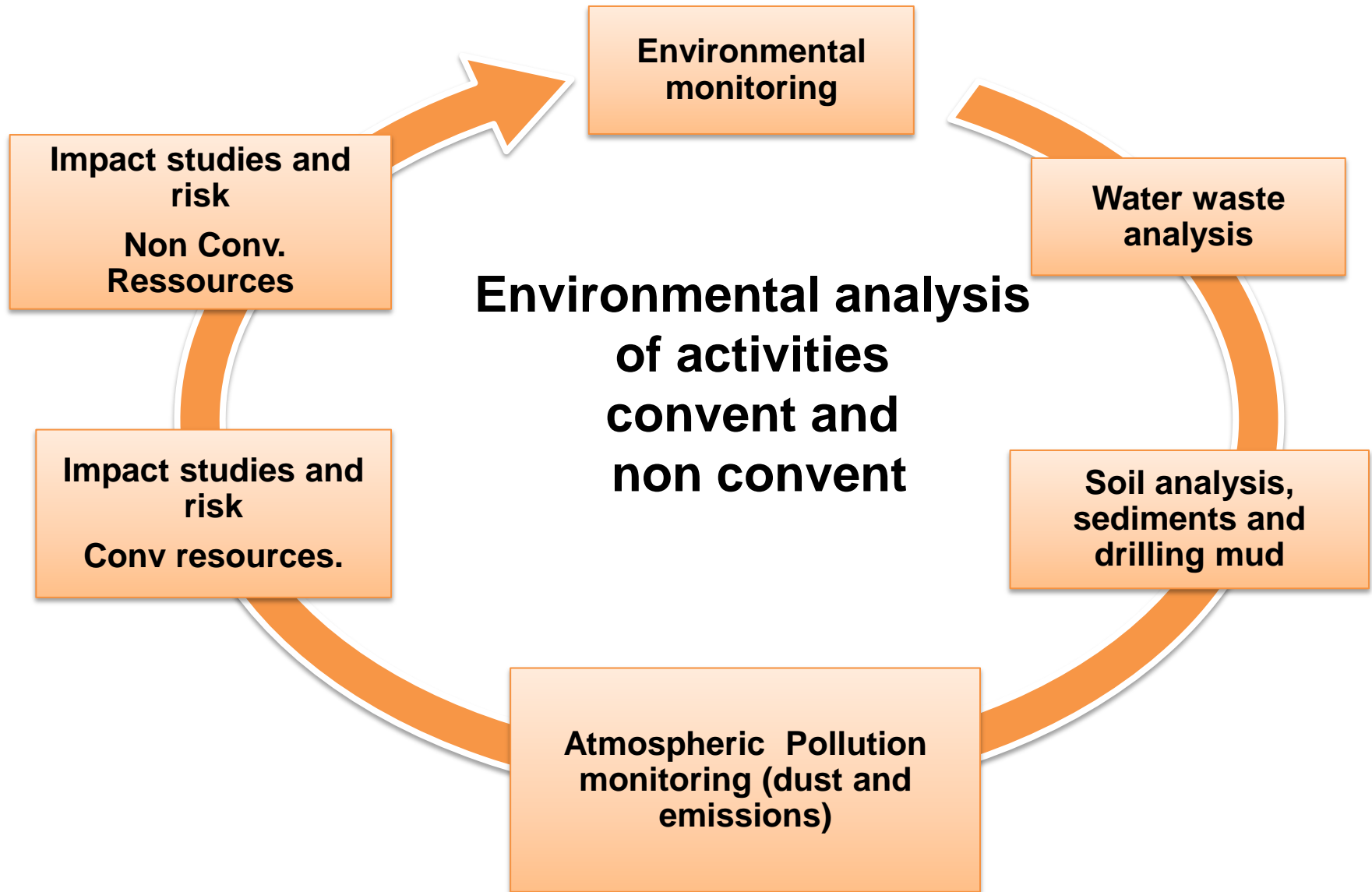
Reservoir simulation framework workflow



EOR simulation workflow



Environmental integrated workflow



Program Projects

Asphaltenes project

Team 1

Performance study
and characterization of
commercial inhibitors

Team 2

Synthesis and
laboratory application
of inhibitors

Team 3

Digital simulation
& modelization

EOR project

Collaboration with
three (3) international
companies

Corrosion project

Materials
Corrosion
Inspection

DOWNSTREAM R&D ACTIVITIES

CATALYSTS

(catalyst regeneration,, precious metal recovery, ..)

SIMULATION & PROCESS OPTIMISATION

(Cost reduction, modelisation & simulation, ..)

MAIN TOPICS AND PRIORITIES

CORROSION MANAGEMENT

(corrosion inhibitors, Corrosion Management system..)

ENERGY EFFICIENCY & RENEWABLE ENERGY

(Biofuels, biodiesels, Energy Management..)

Human Resources

(Central Management : Research & Development)



**Researchers
Sonatrach**



Consultants



**Researchers
Universities**



**Postgraduate
Students**

The SONATRACH expertise

- ✓ Petrophysics and reservoir characterization using the CCAL and SCAL standard protocols
 - ✓ Advanced core Imaging using high resolution imaging and x ray tomography
 - ✓ Conducted integrated geological studies using both Sedimentology, stratigraphy and geochemistry disciplines
 - ✓ Rock mechanics
 - ✓ Conduction of environmental impact studies for petroleum upstream and downstream studies
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The US helpful howknowing

- Advanced Seismic data processing and interpretation (marine campaigns)
 - Evaluation and characterization of unconventional reservoirs , shale gas systems
 - Advanced petrophysics in complex porous medias
 - The offshore technologies (drilling, reservoir evaluation and production)
 - Chemical EOR
 - Reservoir integrated modelization and simulation
 - Flow assurance (asphaltene and paraffine depositionnal system)
 - Oil and gas Transportation network optimization
 - Mercury and sulfure elimination system from gas
 - Risk assesment and modelization
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2016 – 2020

Upstream R & D Center

Downstream R & D Center

■ Thank you
