



# Uthmaniyah CO<sub>2</sub>-EOR demonstration project



KHALED AL BURAIK  
SAUDI ARAMCO

where energy is opportunity™



Because we care

# Saudi Aramco environmental stewardship

Energy efficiency



Reduce gas flaring



Zero discharge mandate



Renewables



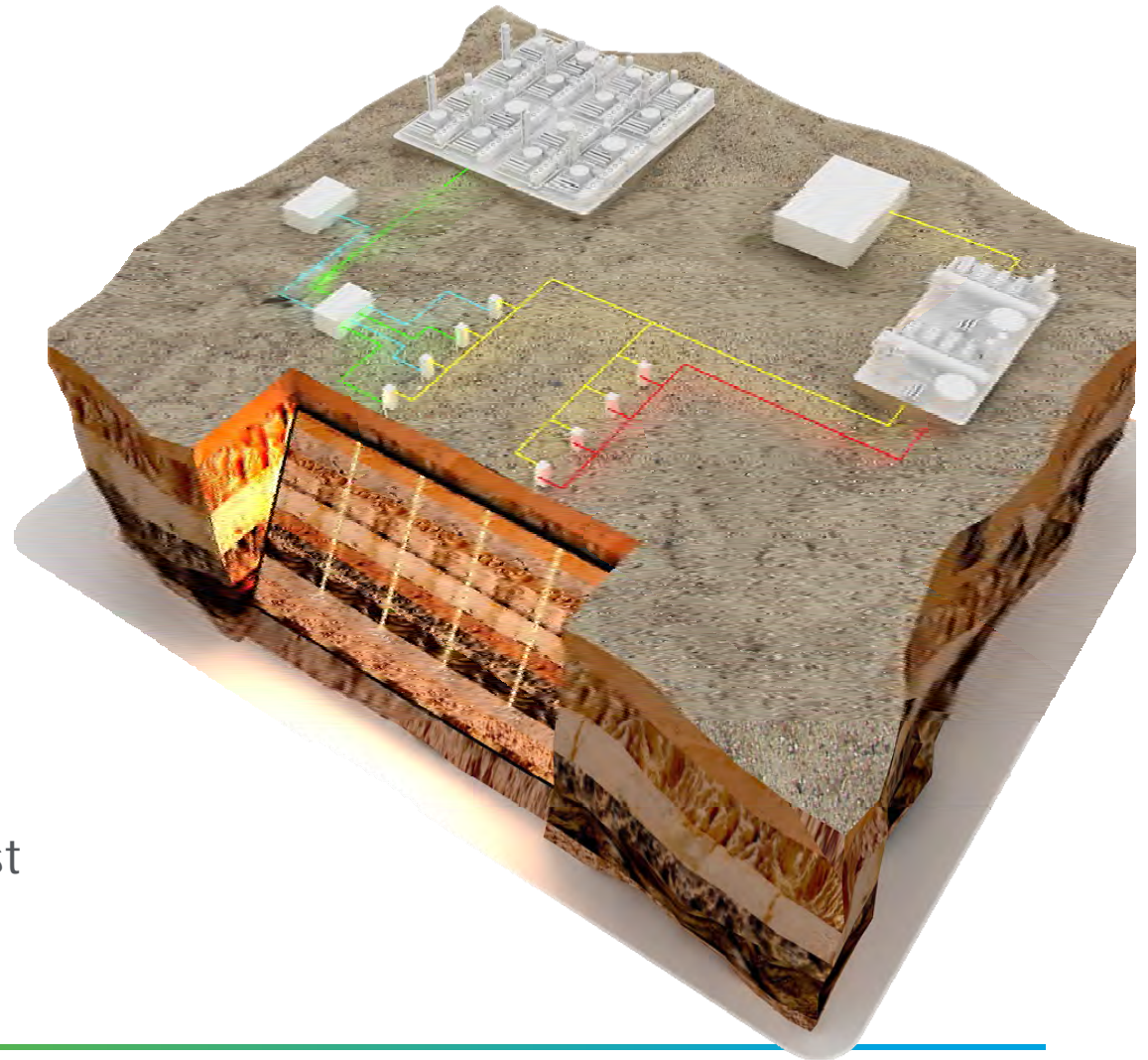
Carbon management



# Carbon management

## Uthmaniyah CO2-EOR demonstration project

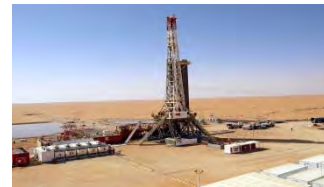
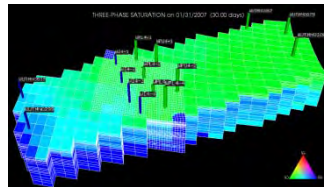
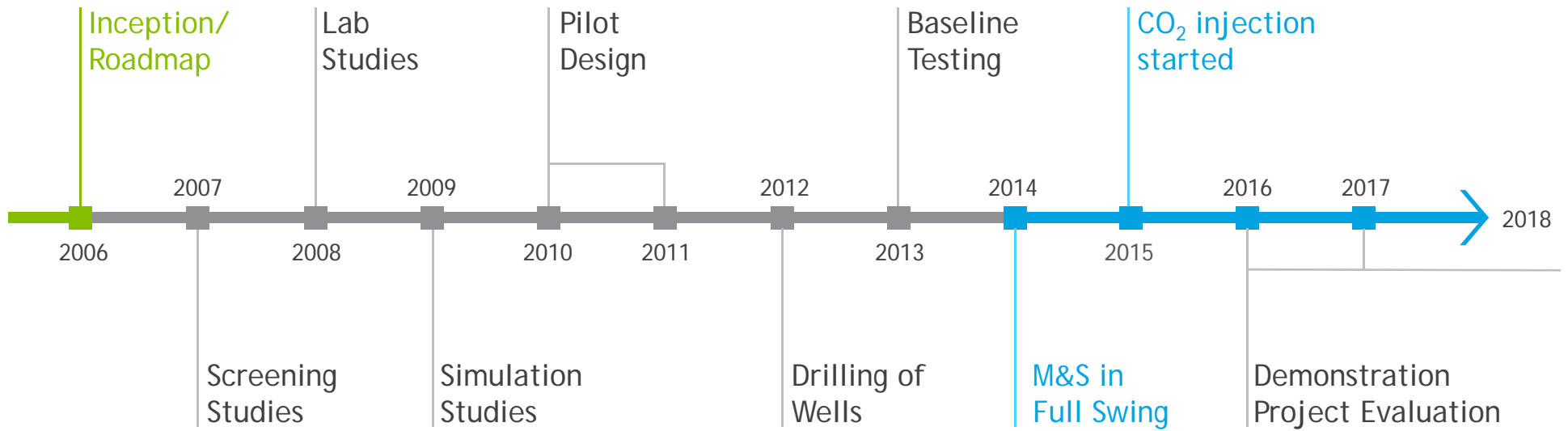
- The 1<sup>st</sup> in the Kingdom
- Largest of its kind in the Middle East
- Capture ~800,000 tonnes of CO2 per year
- CSLF recognized project
- Awarded “EOR Project of the Year” by Oil & Gas Middle East





Hawiyah NGL Plant  
(CO<sub>2</sub> Capture Plant)

# Milestones



# Our unique approach

## Monitoring & Surveillance



Seismic monitoring

Electromagnetic surveys

Borehole and surface gravity

Inter-well tracer tests

# Monitoring & Surveillance

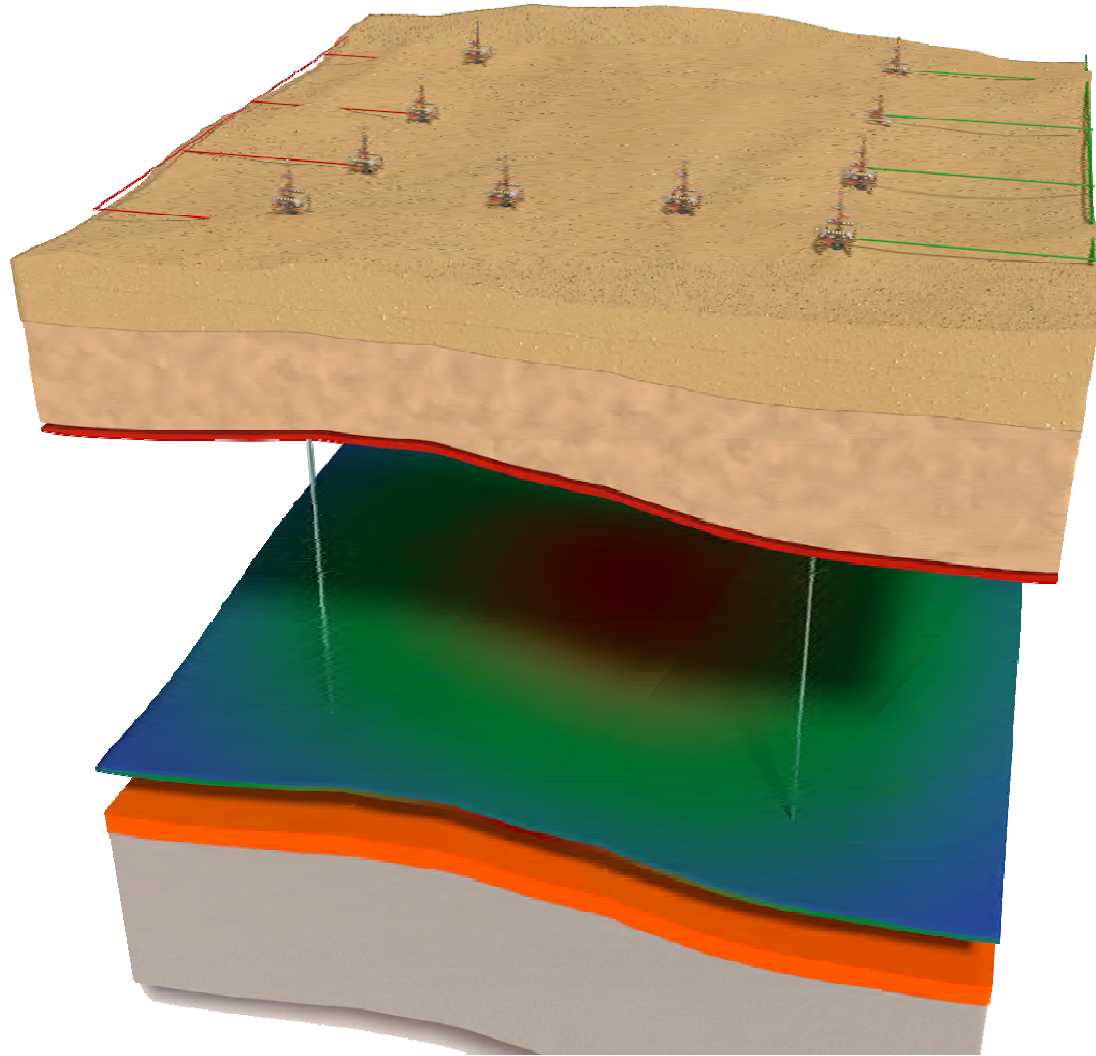
Monitoring Parameters:

Sequestered CO2

Plume evolution

CO2 Migration

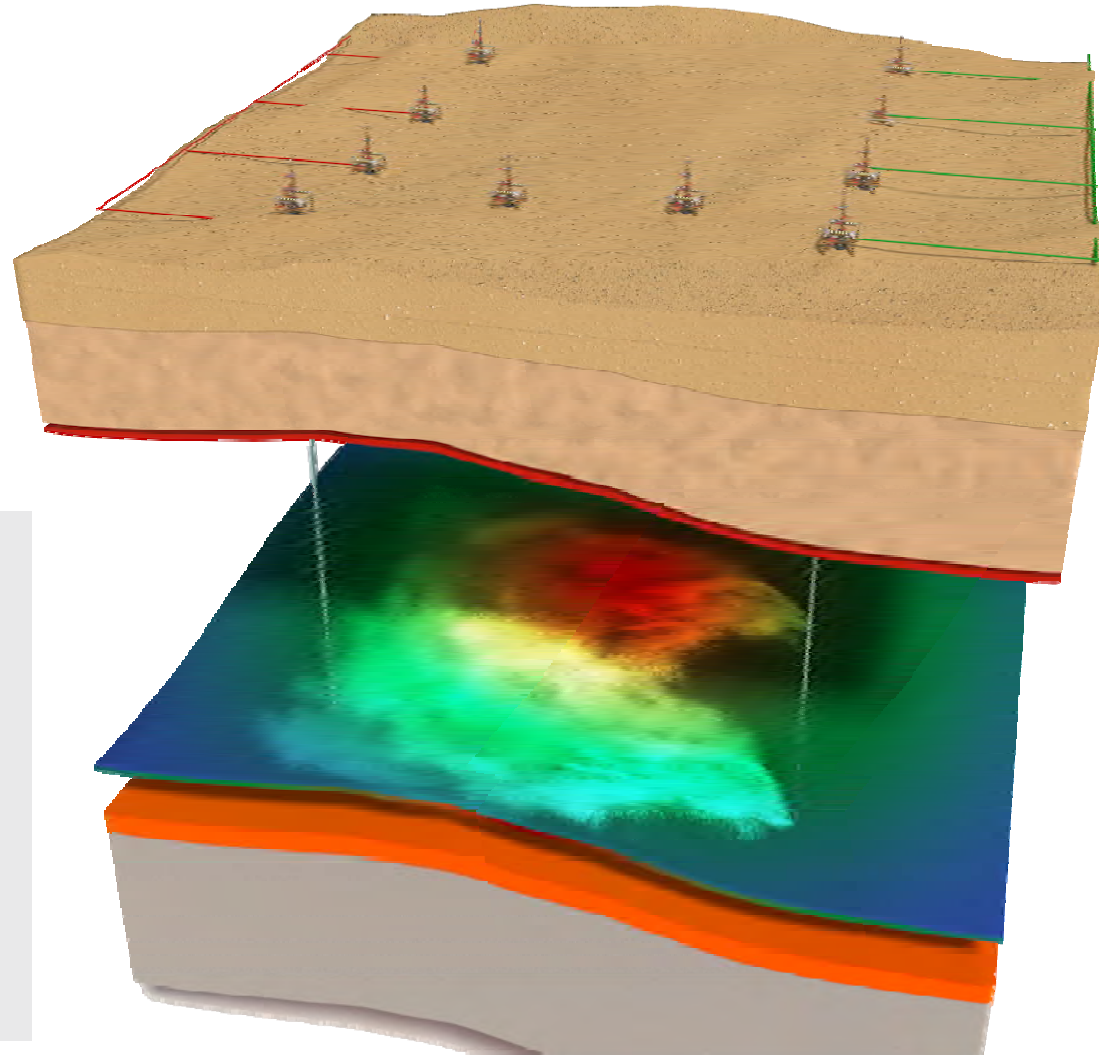
Oil saturation monitoring





# Monitoring & Surveillance

- Seismic sensors



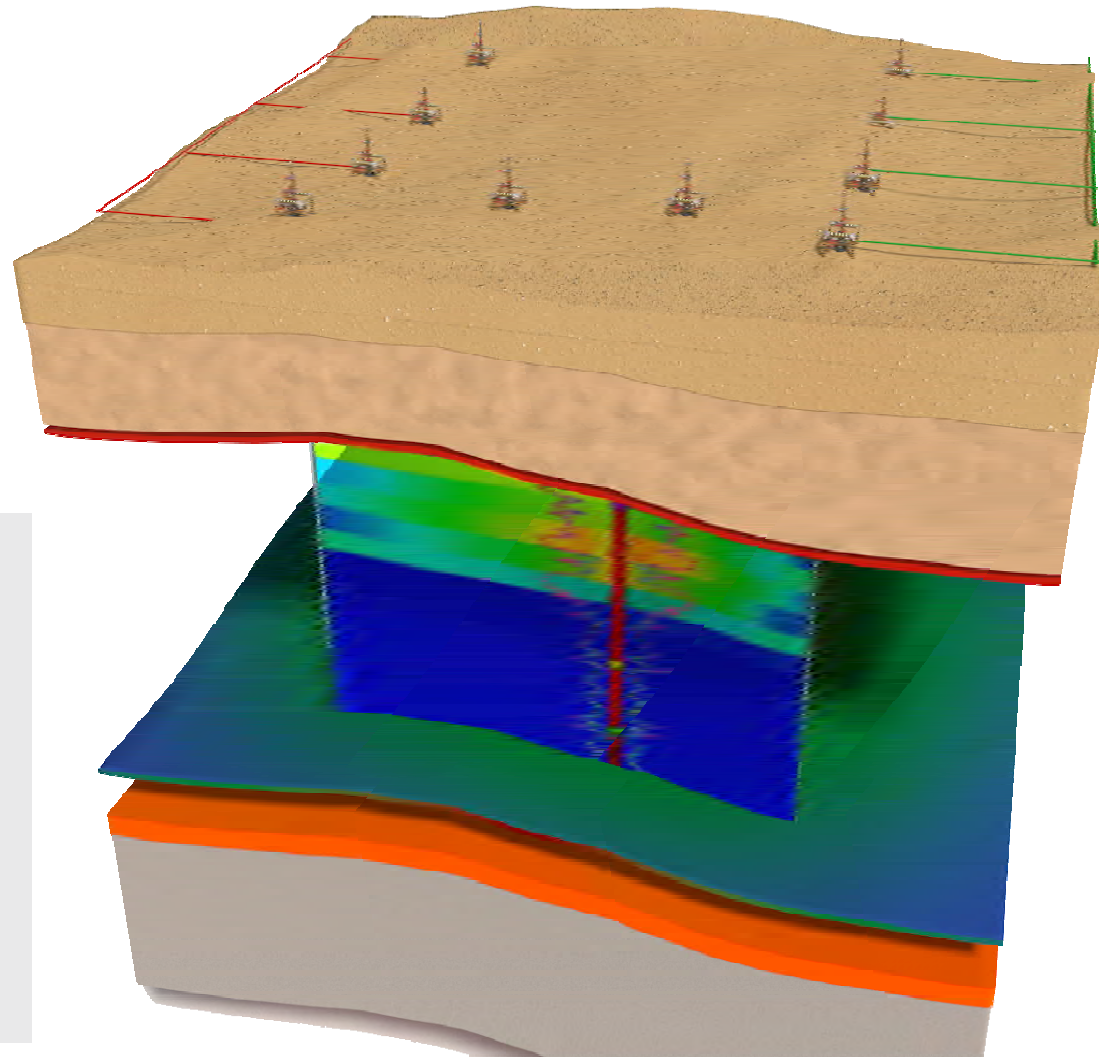
1<sup>st</sup> continuous seismic monitoring

1000 seismic sensors

Tracks plume propagation

# Monitoring & Surveillance

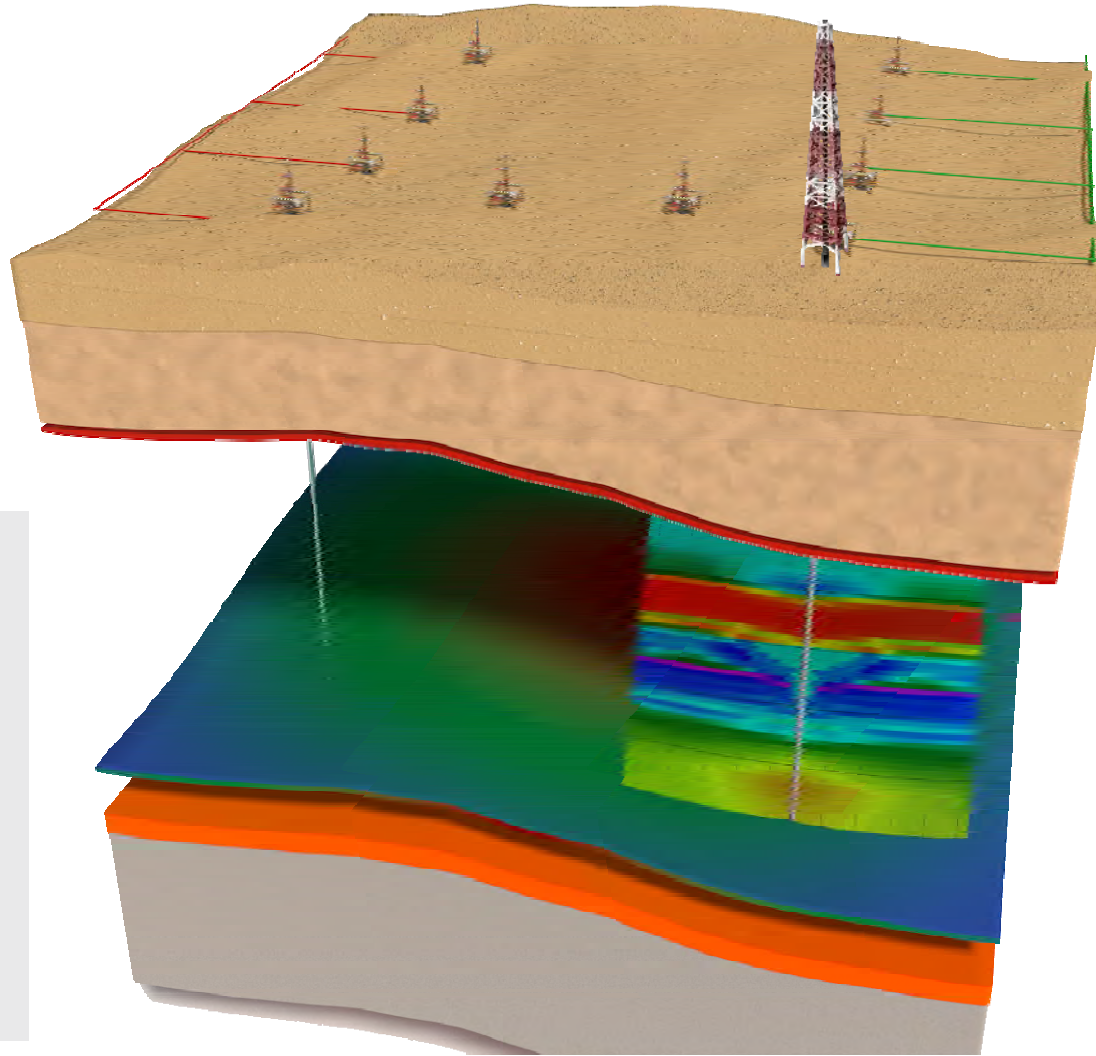
- Seismic sensors
- Cross-well  
Electromagnetic



CO2 plume between  
two wells

# Monitoring & Surveillance

- Seismic sensors
- Cross-well  
Electromagnetic
- Borehole and surface  
gravity

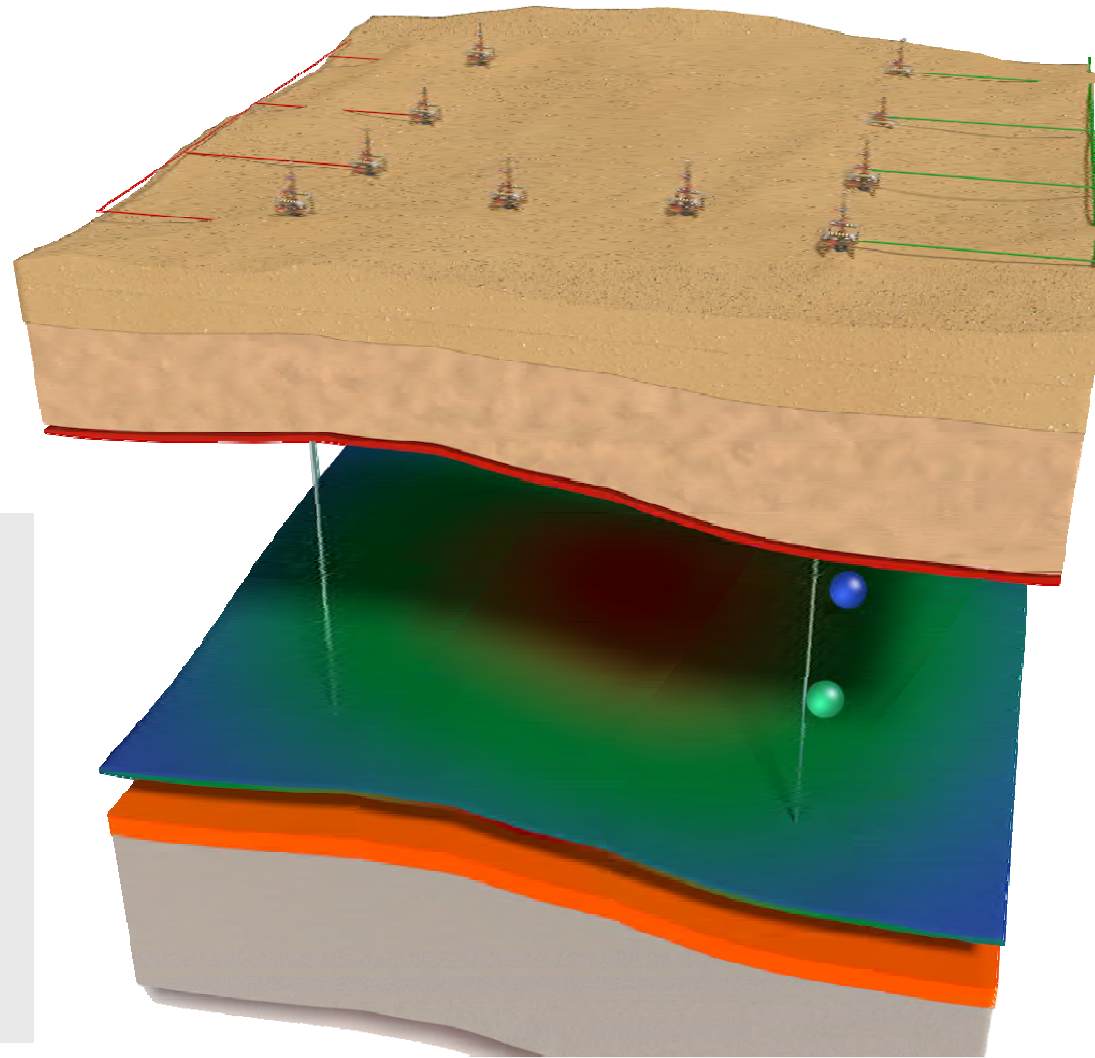


track CO<sub>2</sub> plume in the  
reservoir

detect inadvertent CO<sub>2</sub>  
leakage into shallow  
aquifers

# Monitoring & Surveillance

- Seismic sensors
- Cross-well  
Electromagnetic
- Borehole and surface  
gravity
- Tracers



CO<sub>2</sub> flow path and  
breakthrough speed

# Intelligent Project



Carbon management  
Uthmaniyah CO<sub>2</sub>-EOR demonstration project

Out of the box  
innovation  
Disruptive Technology





“I believe there is enough technology to sequester CO<sub>2</sub> and to take CO<sub>2</sub> out of the atmosphere.”

H.E. Ali Al-Naimi