Evolving requirements of Onshore Oil and Gas Exploration

Satellite Earth Observation for the Oil and Gas Sector: New Technologies and Opportunities
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Richard Eyers
Senior Remote Sensing Consultant, Shell
Evolving requirements

- Some definitions
- From an Earth Observation perspective
- From an Explorer’s perspective
- New challenges
- Future successes?
SOME DEFINITIONS
Some definitions

“Earth Observation images show the world through a wide-enough frame so that complete large-scale phenomena can be observed to an accuracy and entirety it would take an army of ground-level observers to match.”

(http://www.esa.int/esaEO)
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  …using terrain and imagery data, acquired from sensors on satellite and aerial platforms, or on the ground.
FROM AN EO PERSPECTIVE
From an EO perspective

- Satellites and sensors
  - 1972 Landsat 1
  - 1978 Seasat
  - 1991 ERS-1
  - 2000 SRTM
  - 2000 Ikonos
  - 2007 COSMO-SkyMed and TerraSAR-X
  - 2009 World-View-2
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- $200/sq km, $20/sq km or ‘free’
From an EO perspective

- Prints and mylar to GIS
From an EO perspective

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- Pocket stereoscopes to virtual reality
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- Mainframes to PCs, PCs to servers
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- Mainframes to PCs, PCs to servers
- Megabytes to gigabytes to terabytes
- Expert in a darkened room to amateur on a smart-phone
From an Explorer’s perspective

- Geological mapping – from continent, to region, to prospect
  - Interpretation and spectral analysis
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- Detecting hydrocarbons
  - Surface alteration and direct detection
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  - From the surface – inference and measurement
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- Logistics and planning
NEW CHALLENGES
New challenges

- Increased scrutiny on offshore activity = more onshore activity?
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- More onshore wells = more focus on environment, terrain and accessibility
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- Pressure on cost, time and quick decisions = less seismic, less drilling
New challenges

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- More onshore wells = more focus on environment, terrain and accessibility
- Exploring increasingly challenging environments = do more from the desk
- Pressure on cost, time and quick decisions = less seismic, less drilling
- Health, safety, security and environment
Future successes?

- Work with Exploration teams
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- Find the right data, with the right licensing
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- Find the right data, with the right licensing
- Work with the right consultants and experts
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- Integration, not just combination – 2D, 3D and 4D
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- Capture real examples, with real value…