

# OTM-055: Obtaining detailed terrain mapping for DEM construction

## Obtaining detailed terrain mapping for DEM construction

### Challenge

|                          |  |   |      |      |       |        |
|--------------------------|--|---|------|------|-------|--------|
|                          | Challenge ID   | OTM:055   |      |      |       |        |
| 1                        | Title  | Obtaining detailed terrain mapping for DEM construction   |      |      |       |        |
| 2                        | Theme ID   | ON 2.4: Surface Geology Mapping - Terrain evaluation and Geo-morphology characterization  |      |      |       |        |
| 3                        | Originator of Challenge  | Onshore: OTM  |      |      |       |        |
| 4                        | Challenge Reviewer / initiator   | Ramani, Statoil, BP, Shell, Exxon, Tullow, Petronas, Chevron  |      |      |       |        |
| General description      |  | Overview of Challenge   |      |      |       |        |
| 5                        | What is the nature of the challenge? (What is not adequately addressed at present?)                                      | Having an accurate and reliable way to map terrain would lessen the need to deploy ground staff and allow their time on the ground to be more focussed. It would also allow us to evaluate multiple sites with consideration to logistical issues.<br><br>Digital elevation models (DEMs) are currently constructed by overlapping imagery with e.g. LiDAR , terrain and geological information. It would be advantageous if we could do this more efficiently (cost/ time). They can be used to develop a risk assessment map. |      |      |       |        |
| 6                        | Thematic information requirements  | 1. Obtain detailed topographic information, 2. Obtain detailed terrain characterisation, 14. Obtain detailed imagery of the surface,  |      |      |       |        |
| 7                        | Nature of the challenge - What effect does this challenge have on operations?  | Deploying ground staff is costly and carries an associated safety risk to operatives. The requirement to deploy ground staff will not and should never be completely removed but if we could deploy them with a thorough and accurate understanding of the are  |      |      |       |        |
| 8                        | What do you currently do to address this challenge?/ How is this challenge conventionally addressed?                     | Deploy ground staff   |      |      |       |        |
| 9                        | What kind of solution do you envisage could address this challenge?  | High resolution DEM that is affordable would be very valuable   |      |      |       |        |
| 10                       | What is your view on the capability of technology to meet this need? – are you currently using EO tech? If not, why not? |   |      |      |       |        |
| Challenge classification |  |   |      |      |       |        |
| 11                       | Lifecycle stage  | Pre license   | Exp. | Dev. | Prod. | Decom. |
|                          | Score from impact quantification [1]   | 3   | 4    | 3    | 1     | 3      |
| 12                       | Climate classification   | NOT CLIMATE SPECIFIC  |      |      |       |        |
| 13                       | Geographic context/restrictions  | Generic onshore (Unspecified)   |      |      |       |        |
| 14                       | Topographic classification / Offshore classification   | Generic onshore (Unspecified)   |      |      |       |        |
| 15                       | Seasonal variations  | Any season  |      |      |       |        |
| 16                       | Impact Area  | Operational cost reduction, environment, strategic decision enabler   |      |      |       |        |
| 17                       | Technology Urgency<br>(How quickly does the user need the solution)  | Immediately (0-2 years)   |      |      |       |        |
| Information requirements |  |   |      |      |       |        |
| 18                       | Update frequency   | Snap shot requirement   |      |      |       |        |
| 19                       | Data Currently used  |   |      |      |       |        |
| 20                       | Spatial resolution   |   |      |      |       |        |
| 21                       | Thematic accuracy  | Vertical DEM accuracy is critical - down to a few cm<br>Horizontal accuracy <1m   |      |      |       |        |
| 22                       | Example formats  |   |      |      |       |        |
| 23                       | Timeliness   | Reference data - timeliness not important   |      |      |       |        |
| 24                       | Geographic Extent  | reservoir footprint   |      |      |       |        |
| 25                       | Existing standards   |   |      |      |       |        |

[1] Impact quantification scores: 4 – Critical/ enabling; 3 – Significant/ competitive advantage; 2 – Important but non-essential; 1 – Nice to have; 0 – No impact, need satisfied with existing technology

# Relevant products

**Content by label**

There is no content with the specified labels