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|  | Challenge ID | OTM:034 |
| 1 | Title | Monitoring hydrocarbon leaks |
| 2 | Theme ID | ON 4.2: Environmental monitoring - Continuous monitoring of changes throughout the lifecycle |
| 3 | Originator of Challenge | Onshore: OTM |
| 4 | Challenge Reviewer / initiator  | PEMEX, PetroSA, Shell, Eni, Exxon, Chevron |
|  | General description | Overview of Challenge |
| 5 | What is the nature of the challenge? (What is not adequately addressed at present?) | In the event of a hydrocarbon leak we are required to restore the environment to the pre-leak standard. Depending on the scale of the leak, impacts can be short- or long-term and the consequences can be varied (e.g. leak into a river or lake vs. leak in a desert). |
| 6 | Thematic information requirements | 2. Obtain detailed terrain characterisation, 6. Identify inland water bodies and determine water quality, 7. Determine air quality, 10. Fauna and presence and patterns, 11. Determine lithology, mineralogy and structural properties of the near surf |
| 7 | Nature of the challenge - What effect does this challenge have on operations? | Leakages can have direct and indirect impacts on the ecosystem and society. Depending on the size of the leakage an if it is local or moving (e.g. oil leakage into a river) the cost of monitoring can be high. Especially long-term monitoring which can be a |
| 8 | What do you currently do to address this challenge?/ How is this challenge conventionally addressed? | Use of existing base maps (which are often inaccurate), |
| 9 | What kind of solution do you envisage could address this challenge? | Hydrocarbons seeping from micro fractures typically result in surface anomalies manifested as changes in soil brightness and vegetation health. Certain portions of electro magnetic spectrum in the visible and infrared regions can be used to effectively id |
| 10 | What is your view on the capability of technology to meet this need? – are you currently using EO tech? If not, why not? | EO could be a useful complimentary technology |
|  | Challenge classification |  |
| 11 | Lifecycle stage | Pre license  | Exp. | Dev. | Prod. | Decom. |
| Score from impact quantification [[1]](#footnote-1) | 0 | 0 | 0 | 4 | 0 |
| 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 | Environmental |
| 17 | Technology Urgency(How quickly does the user need the solution) | Immediately (0-2 years) |
|  | Information requirements |  |
| 18 | Update frequency | depending on sensor and application |
| 19 | Data Currently used  |  |
| 20 | Spatial resolution |  |
| 21 | Thematic accuracy | 80-90% |
| 22 | Example formats | Standardized geo-spatial formats (e.g. shapefile, geotiff or KML) |
| 23 | Timeliness | within a day |
| 24 | Geographic Extent |  |
| 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* [↑](#footnote-ref-1)