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## **TECHLAUNCHER 2018 S1**

# **Personnel/Asset Tracking on an Offshore Oil Rig and/or Mining Operation**

# Project Brief

## Background

With recent advancements in technology many mining operations and offshore oil platforms are trending towards more automation and less reliance on personnel. Whilst this provides a number of benefits in terms of efficiency and cost reduction, it does present new challenges such as how to effectively track and manage the equipment (or assets) being used on site. Furthermore, personnel safety is still a major concern for these businesses, especially in relation to managing personnel flows in the event of an emergency (i.e. how to effectively notify people of the emergency, how to quickly determine the most effective evacuation route/method, etc...).

In the mining operation example, teams are often on a particular mining site on a short stay basis and need to have the ability to quickly redeploy to other sites with large variations in layouts. Another major issue specific to mining operations is how to effectively track personnel and assets as they move between above ground and below ground positions. Depending on the architecture of a system, this could present a number of data flow challenges.

Comparatively offshore oil rig platforms are usually longer stay ventures. This makes for a more stable environment in terms of site layout and hardware availability. A large issue in this scenario is the safety of personnel working in isolation in different sections of the facility with little to no monitoring. For example, if an issue occurs and a worker is injured they may not be able to signal for help, which could have flow on effects on the rest of the site if the dangerous situation remains unresolved. Given the strenuous working environment monitoring workers fatigue is paramount, how many hours are at work and how many hours are spent in sleeping quarters. Furthermore, given oil rigs are often on a platform in the ocean notification is someone has fallen into the sea is of critical importance.

## Task

For this project the team may choose to address both scenarios (mining operation **and** offshore oil rig) or they may choose to focus on a particular scenario (mining operation **or** offshore oil rig). This decision is to be made by the project team in consultation with Thales at the commencement of the project.

The project team will design and prototype a tracking system that can be used for both personnel and equipment (assets). This tracking system must be implemented so that it can be viewed holistically by site management and will have three key purposes:

- Ensuring safety of staff both in normal work operations and in emergency situations
- Improving the efficiency of the work site through timely asset location management
- Improving the efficiency of the work site by providing a means to holistically analyse the allocation of personnel and resources

For the mining operation scenario the system must be able to rapidly adjust to different unknown layouts and transfer data from underground.

For an oil rig the system must record when workers are on duty, be able to notify others in the event of an emergency, track fatigue and send an alert if someone falls into the ocean.

**(NB: If you have an idea that we have not stated or requested above then let us know. It's an important part of the innovation process that we grow the solution together).**

## Expected Deliverables

Thales expects the following deliverables as part of the Techlauncher project in Semester 1 2018. These deliverables and their content can be negotiated on an ongoing basis as the project progresses.

- Market analysis
  - What technologies are currently available that may address this problem?
  - Is it possible to develop a solution utilising COTS components?
  - Are there other organisations working in this area?
  
- High level architectural design of the solution including but limited to
  - Requirements generation/analysis
  - Functional flow/functional breakdown
  - System/Subsystem interfaces
  
- Rapid prototyping to test ideas (evolve and iterate)