Phase 1 Statement Theme	Automation and Productivity
Statement number	1
Launch Date	23 June 2020
Closing Date for submission	03 August 2020

Title:	**V**irtual **I**n**S**pect**I**on which **O**mits Ma**n**ual processes (V.I.S.I.O.N)
Background	As part of estate management and maintenance works, JTC and its outsourced vendor conduct routine inspections across various industrial estates in Singapore. Some examples of the assets within the industrial estates are: • Street furniture (railings, kerbs etc) • Trees (type of tree, health condition of tree, inspection records etc) • Roads (road surface condition, potholes, road markings) Through inspecting these assets or user feedback, defects such as potholes, damaged fences/curbs and sick trees will be picked up and rectification works will be arranged accordingly.
Challenges	Estate inspection or fault identification currently requires manual scanning of assets conditions during drive through. The current inspection process is manual and labourious. When a fault is spotted, the officer has to look for a nearby safe spot to stop and park the vehicle before he/ she is able to conduct a more detailed assessment of the fault. After the drive through, the officer has to manually upload the photos, compile a report and send it to the respective coordinating agency. The process is time consuming and turnaround time to generate the report is rather long.
Desired Outcomes	1. **Viable solution that increases manpower productivity and safety** – A solution that captures images/ shapes/ contours, identify and flag out fault conditions and automatically generating alerts and reports. 2. **Quick and accurate detection of faults and response time** – The system shall reduce the reaction time between fault identification and rectification.
Requirements	1. A cost- and manpower- effective scanning and visualisation system/method. 2. Proposed Method should be able to scan the estate asset condition during a drive through. 3. Proposal includes approach/method to detect estate faults (damaged fence, curbs, potholes), capture conditions of faults with georeference 4. Able to ascertain other maintenance concerns within the estates (such as health status of trees along pathway). 5. Describe means to trigger human intervention for estate faults (damaged fence, curbs, potholes) that require corrective actions.

<table>
<tr><td></td><td>6. Considers interoperability with other government systems/ existing JTC systems</td></tr>
<tr><td>Possible Solutions</td><td>Scanning solutions : LIDAR or video analytics or even both
Back end platform: Stand-alone/ cloud based management system which can allow JTC officers to:
Upload scanned data
Visualise identified fault and “accept identified fault”
Prioritise faults detected
Generate report for corrective action</td></tr>
<tr><td>Development Timeframe</td><td>Applicants are encouraged to propose phases of development and delivery.

A possible timeline is as follows:

To work on data collection and identification of normal conditions of key assets within ring fenced estate and fault identification algorithm.

<table>
<tr><th>Description of Task</th><th>Estimated Duration (Months)</th><th>Target Start Date</th><th>Target End Date</th></tr>
<tr><td>Project kick off</td><td>-</td><td>Start date (N)</td><td></td></tr>
<tr><td>Data Collection/ fault identification algorithm</td><td>6</td><td>N</td><td>N + 6</td></tr>
<tr><td>Demonstration</td><td>6</td><td>N + 6</td><td>N + 12</td></tr>
<tr><td>Final report generation</td><td>3</td><td>N + 9</td><td>N + 12</td></tr>
</table>

As shared in the project agreement, we would like to continue to develop and scale up the solution with successful applicants to support JTC’s operational needs.

Possible future work: Integration with other JTC platforms.</td></tr>
<tr><td>Additional Info</td><td>N/A</td></tr>
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