



1 September 2020

To: All Applicants

CORRIGENDUM NO. 3**JTC INNOVATION CHALLENGE: PHASE 2 – DIGITALISATION**

Please take note of the following clarifications to the above Innovation Challenge in response to some queries raised by applicants, which shall form part of the original Innovation Challenge document issued.

S/N	Query	Response
General		
1	Is it possible for JTC to provide some pictures and videos of its typical building types and construction environment / construction procedures?	Applicant may refer to JTC website for the building pictures and JTC properties.
Challenge Statement 1: Elements/Objects Identification and Classification from Point Cloud (Scan to Building Information Modelling)		
2	Kindly provide the details of rules. How often is the BIM Model to be remodelled, modified and scrutinised for asset conditioning? What will be the source of data for Modelling?	Currently, BIM models are updated through physical measurements and manual input. Applicants may propose best method and solution to automate this process.
3	How often is it expected to conduct the survey?	Applicants may propose how often shall the model be updated.
4	Please clarify how to identify hidden entities like duct and column. Is previous data to be stored?	Applicants may propose the method to identify hidden elements which can best support their proposed solutions.

S/N	Query	Response
5	What is the level of details required for internal assets/ information of building/ infrastructure?	The BIM model is intended to be used for facilities management purposes after the building construction phase. Applicants may propose the information that can be extracted from the BIM model.
6	Is the 3D Object expected to be - 1. Only a visual Representation? 2. Vector based object / Clickable Entity?	
7	Please let us know if only object identification is required or storing attributes against each object is also required? Please clarify from where will the attribute information be derived?	
Challenge Statement 2: Automated Model Data Checking		
8	Please share with us JTC's Employer's Information Requirement (EIR), Model Content Plan (MCP), Building Design Requirements (BDRs) and Asset Information Requirement (AIR) as referenced in the challenge statements?	i) JTC's Employer's Information Requirement (EIR) [see Annex A] ii) Asset Information Requirement (AIR) [See Annex B] iii) JTC's Model Content Plan (MCP) [please refer to Corrigendum No. 1] iv) Critical BDR [please refer to Corrigendum No. 1] v) Instruction Manual 8 (IM8) Security and Data Handling Requirements [will be shared with sighted awarded when on board]
9	Please help to share the following critical documents for us so that we can understand the possible challenges: <ul style="list-style-type: none"> • JTC's Employer's Information Requirement (EIR) • JTC's Model Content Plan (MCP) Asset Information Requirement (AIR) • Instruction Manual 8 (IM8) Security and Data Handling Requirements 	

S/N	Query	Response
Challenge Statement 4: Quantification of Site situation against BIM model for Project Progress and Payment		
10	Does JTC has a preference for the tablet to be used?	Applicants may feel free to propose any software or hardware which can best support their proposed solutions.
11	Does JTC has a preference for panoramic photo hardware (i.e. Ricoh Theta) and then load those photos into the software? Or preference to take photos using iPad embedded camera?	
12	We assume that point clouds will be created using multiple devices in the field, i.e. Leica BLK 360 and bigger scanners, and then processed in the office to create an open format file, i.e. in e57. Then a user will load the resulting point cloud into the software to be viewed. Will that be the workflow?	Applicants may feel free to propose any workflow which may best demonstrate and address their proposed solutions. The method should provide a clear 360 overview of the site situation.
13	What site progress quantification KPIs are expected?	Applicants may feel free to propose the KPIs which best measure the effectiveness of their proposed solutions.
14	With reference to the Requirement Specifications: 1. Is there a need / use case for "point cloud" given that LIDAR scans are expensive? 2. what is the definition of "virtual tour"? And what are the expectations on being "simple enough" to be operated by site personnel? 3. what type of "discrepancies" (e.g. dimensional, positional, qualitative i.e. cracks) to check against BIM model? 4. what are the expectations on level of automation needed for "automated"	<ol style="list-style-type: none"> 1. Applicants may feel free to propose any hardware or software which can support their proposed solutions. 2. Virtual tour – The platform is able to conduct “walkthrough” in the platform to view the site condition and user friendly. Applicants may propose the method of virtual tour to support their proposed solutions. 3. Applicants may propose the discrepancies that can be extracted from their proposed solutions. 4. Please refer to the Challenge Statement. Applicants may feel free to propose the solution that will meet the objective of this Challenge Statement.

S/N	Query	Response
	<p>site progress quantification?</p> <p>5. Is "QR code" be a possible solution? Is it only used for pre-fab or all elements on-site? Is it used to track status of the entire process (design ready, manufactured, shipped, arrived) or just the end-state (installed)?</p>	<p>5. Applicants can propose the method of tracking the site progress which can support their proposed solutions.</p>
15	<p>What site progress reports JTC is expecting?</p>	<p>Applicants may feel free to propose any format which can best support their proposed solutions.</p>

Yours faithfully,

Ivy Sim
 Senior Contracts Manager
 Contracts & Procurement Division

(This is an electronic document. No signature is required.)