

Revision Control

Date	Version	Notes
20/4/2017	1.0	Initial document generation following internal review at Beecham Research.
25/4/2017	1.1	Following internal review at IMC. Section 2.0 and 4.0 - Addition of satellite to 'connectivity types'. Addition of Low Latency to 'application requirements'. Footnote on vertical specific market forecasts in 2.4. Header 4.1.1 replaces PaaS with 'Platforms'. 4.3 Added reference to integration of major backbone software systems.
16/5/2017	1.2	Following initial feedback from IMC vendor community. Device connectivity details updated and widened to include more options (2.6). Added 'Environmental requirements' as a distinct section (2.6.1). In 4.1 Updated connectivity options, Integration with 3 rd party order/management systems. Standards compliance question added. In 4.2 Additions made to industry specific protocols. In 4.4. Changed title to read 'Enablement & Development'. Additional questions on Partner Management, Standards Compliance and Microservices. In 4.5 Added question on Joint Go-to-Market capabilities.
18/5/17	1.3	Ongoing feedback from IMC vendor community In 4.2 addition of 'Connectivity Support' In 3.1 elaborated on 'History and Market Experience' Added 3.4 'Professional Services support' (<i>In the context of re-engineering of business processes resulting from IoT platform implementation</i>) In 4.1.2 updated 'Cloud Storage' question (response prompt) In 4.2 Added 'Device Estate Management' response prompt and '3 rd party IoT gateway support'. In 4.4 Amended 'Application Management' to 'Application Development and Modelling' with related response prompts added In 4.4 Added 'Augmented Reality/Visioning' with related response prompts.

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Confidentiality Notice

In Sections 1.0 and 2.0 an adopter/potential adopter (The Company) is describing their business. Although much of the information offered is in the public domain, some concerns strategy and specific plans relating to the RFP. With this in mind, a statement along the lines of the following should precede the RFP...

This document is confidential to *The Company* and may be used only by organisations responding to this Request for Proposal

Information provided in this document, its annexes and/or enclosed are the proprietary of The Company and must not, at any time and/or under any circumstances, be disclosed, imbedded, transmitted, used in any shape or form without written permission from The Company or its designated authority and only for the purpose it is intended for.

This document (which is designated as an RFP – Request for Proposal) illustrates the business and technical requirement for the supply, delivery, installation and commissioning of goods and/or services required for the purpose described below, and it DOES NOT in any shape or form replace The Company purchasing contract which the bidder must comply to at all the times.

1.0 Executive Summary

1.1 Company Background

Who are we? What business are we in? How are we doing?

Description of business operations

- Products and services offered
- Markets served.
- Financial profile:
 - o Reference published reports for last FY
 - o Trend financials over past 5 years
 - o Number of employees
- Geographic reach
- Company vision/Mission Statement

1.2 Summary of Requirements

Why are we looking for an IoT Platform capability?

- Outline of Short and Long term strategy
- How strategy fits with this project and issuing of RFP
 - o Develop new revenue streams
 - o Control and reduce costs (Operational, manufacturing, development)
 - o Asset management
 - o Part of an existing product or service development
 - o Enhancement to existing product/service

What is the nature of our project?

- Description of project referencing 'Why?'
- Expected outcomes from implementation of this project
- Expected timescales

1.3 Expectations from this RFP

How will we go about this project? (Information needed from suppliers, evaluation criteria, award of contract criteria)

We are inviting potential suppliers to respond to this RFP, proposing an IoT Platform solution. The evaluation of suppliers will be based on:

- The IMC validation process
- Case studies of relevant applications
- Geographic reach of the service
- Demonstrable track record of integrating customer specific software and working with 3rd party OEMs
- Pricing options for different levels of service

1.4 RFP Criteria and Timescales

Award of Contract criteria:

- As detailed in 6.0 'Selection Criteria'
- Compliance with timescales
- Post implementation flexibility to respond to changes in requirements
- Total contract price

When? Selection process timescales and deadlines.

List of Key contacts:

Name	Job Title	Contact Details

2.0 Statement of Purpose

2.1 Objective of the RFP

- Expected outcomes resulting from the response to the RFP
- How these relate to strategic objectives

2.2 Business Case Supporting this RFP

- Level of support for this project (Board, C-Level, Result of M&A activity, External Investor etc.)
- Operational support
- Cost and Schedule confidence levels (Budget Approval)
- KPIs of supporting Business Case
 - o ROI, NPV of investment
 - o Market share targets
 - o Revenue per customer/revenue per unit sale

2.3 Schedule of Service Rollout

- By Geography
- By Country
- By Product/Service type

2.4 Forecasts

- Markets to be served
- Market forecasts underpinning the business case.¹
- Effect of variations in market forecasts on business case.

2.5 Technical Requirements

- Type of project; e.g. Monitoring, Command & Control, Data Acquisition, Asset Tracking etc.
- Expectations of connectivity type; e.g. Wifi, Cellular, fixed, LPWA, Satellite.
- Application requirements, e.g. Low Latency.
- Market specific hardware interface requirements
- Market specific software interface requirements

¹ Vertical market forecasts to be added in future market specific RFPs

- Market specific network protocol requirements

2.6 Device Connectivity details

Description of how the end-point device will connect to the IoT platform. This could be any one of the following or use more than one method depending on project requirements.

- Standard SIM or eSIM for cellular connectivity
- Stand-alone cellular communications device
- Non-cellular network, e.g. LPWA.
- Satellite
- Multi-network gateway e.g. MESH to cellular gateway, Cellular to LPWA
- Fixed telephone connection e.g. broadband.

2.6.1 Environmental requirements

What kind of environment does the end-point device operate in? e.g. temperature, humidity, dust, vibration.

3.0 Supplier (Bidder) Profile

Who are you?

3.1 History and Market experience

- Overview of the bidder, including location of headquarters, scale of operations and locations.
- History of the bidder and experience in the relevant business.
 - o Case studies (anonymous)
 - o Relevant industry events attended
 - o Awards, achievements and recognition in the industry

Is your business financially sound?

3.2 Financial Stability

- Supplier will provide past 3 years financial reports.
- Revenues relative to the provision of these services.
- Percentage of revenues dependent on top 10 customers.

In the context of a long- term supplier relationship

3.3 Supplier Five Year Roadmap to 20xx (year)

- Supplier to share expected developments of their business and relevant services.
- Supplier will provide a credible Business Continuity Plan (BCP) to ensure service delivery for a period of xx years.

In the context of re-engineering of business processes resulting from IoT platform implementation.

3.4 Professional Services Support

- What services are provided to help/guide the IoT implementation?
- What pre and post sales training and support are available for our staff?
 - o On the platform
 - o On IoT in general
- What experience, with case studies, can you bring to our organisation on how the implementation of an IoT solution affects other aspects of our business, strategy, go to market and revenue models?

4.0 Supplier Service Offering

Tell us what you are offering and how you will meet our requirements

IoT Platform Capabilities required:

- Connectivity Management
- Device Management
- Data Management (Storage, Modelling, Analytics)
- Application Enablement & Development

Section 4.5 covers Generic Capabilities, e.g. pricing models and ecosystems.

4.1 Connectivity Management Capabilities

4.1.1 Platform Functional Areas

Provide detailed descriptions on the functionality of the platform, these to include the following as guidance but the responder is invited to include additional information on their connectivity management services.

<u>Functionality</u>	<u>Response Prompts</u>
Connectivity Options	Is the platform technology agnostic when it comes to connecting devices? What types of network connectivity does the platform enable (e.g. Wifi, Cellular, LPWA, Satellite etc.)?
Order Provisioning	How are orders placed, processed and provisioned on the platform? What is the typical time between placing the order and the asset being connected? Can the platform support integration with 3 rd Party Order/Management systems?
Customer Portal	Can the connected estate be managed via a portal? What hardware and software are required for access to the platform? How are additional connections ordered? Existing subscriptions changed? SIM activated/deactivated?
Scalability	How scalable is the platform? Is there an upper limit on the number of subscriptions supported on one account?
Subscriptions Management	How are subscriptions managed, new connections added, data plans changed?
SIM Card Profiles	Profiles supported - eSIM, multi IMSI SIM?
IP Addressing mechanisms	Are both static and dynamic IP addressing offered? Can contiguous static IP addresses be provided within a private APN?
VPN Integration	Describe the VPN integration options offered

Security of connection	Describe the systems and processes in place to ensure security of connection
Security of data transmission	Describe the systems and processes in place to ensure security of transmission
Access Point Name - APN (private and public) provisioning	Are both public and private APN provisioning offered? Describe how naming is implemented for new connections or changed for existing connections
Network Circuit Connections	Description of public (Internet) and private connection options, e.g. MPLS for added security
Troubleshooting/Fault Finding	Describe the reporting procedure for loss of one or more connections. Describe the rectification of faults and notification processes relating to loss of connection or loss of services. 24x7 help desk?
Service Level Agreements (SLAs)	Are SLAs on the performance of the service offered? How are SLAs measured and reported? What are the criteria for SLAs met/not met?
Quality of Service (QOS)	What QOS metrics are used to monitor SLAs? How are these reported?
Billing options/flexibility	How is billing data collected? How is rating and charging managed? How is the bill presented? What options are available on the billing system
Tariffs	What tariff options/bands are available? Is data pooling of SIMs and option? Describe volume discounting policy.
Usage Monitoring	Are both manual and automatic usage monitoring options available?
Standards Compliance	Does your platform comply with leading industry standards such as 3GPP, GSMA, oneM2M etc.?

4.1.2 Additional Services

<u>Functionality</u>	<u>Response Prompts</u>
Location based services	How are these provided? GPS, triangulation, signal strength etc?
Application Program interfaces (APIs)	What API libraries are provided on the platform?
Connectivity Analytics	Are connectivity analytics provided? If so do they provide: <ul style="list-style-type: none"> - Descriptive? - Diagnostic? - Predictive? - Prescriptive?
Cloud Storage	Is routing to cloud storage services an option? What specific cloud storage organisations have you worked with or integrated/supported with your platform?
Administration	Please outline the platform's administrative capabilities. E.g. Tasked based capabilities – Service Desk, Datacentre Management, Disaster Recovery Management.

4.2 Device Management Capabilities

Provide detailed descriptions on the functionality of the platform, these to include the following as guidance but the responder is invited to include additional information on their Device Management services.

<u>Functionality</u>	<u>Response Prompts</u>
Connectivity Support	With reference to 4.1, describe the capabilities of the platform to support devices using connectivity technologies listed there and combinations of these technologies e.g. Cellular + Mesh.
Device Monitoring & Management	Does the platform support automatic device discovery and registration?
Device Estate Management	Is there a portal interface to view and manage the entire connected estate of devices? Please describe its function and capabilities.
Command & Control Interaction	Does the platform provide remote reconfiguration and setting control of devices?
Remote Diagnosis	Does the platform enable the remote health monitoring of the device/asset? Are failures detected and relevant analytics (e.g. descriptive analytics) performed?
OTA firmware & Software updates	Can device firmware & software be updated OTA? Singly or in batch mode?
Deployment Configuration	How are newly connected devices configured? Are templates available for batch deployment?
Application Lifecycle management	Can the edge application running in the device be activated, suspended, updated directly OTA and/or using APIs?
Lifecycle/Versioning Capabilities	What are the platform's device lifecycle management capabilities? What is the strategy for releases, versioning, and categories (major, minor, patches)?
Usability Metrics	Can device parameters be monitored? Are notifications/alarms supported when device goes outside of normal parameters?
Industry specific protocols	What industry specific protocols are supported? This gives some indication of the range of devices the platform can support. Examples would be CANBUS for the transport industry, CIP (common industrial protocol), OSGP (Smart Grids.), OMA-DM (cellular based devices) LWM2M.
Scalability, Performance & High Availability	Please outline the Platform's technical capabilities regarding Scalability, Performance, High Availability?
Third Party Gateways	Are 3 rd party IoT gateways supported on the platform? If so which ones?
Security	Please outline the end to end security capabilities of the service (e.g. access control, authentication, encryption, threat protection, audit trails, data integrity and secure transmission standards).

4.3 Data Management Capabilities (Storage, Modelling, Analytics)

Provide detailed descriptions on the functionality of the platform, these to include the following as guidance but the responder is invited to include additional information on their Data Management services.

<u>Functionality</u>	<u>Response Prompts</u>
Data Management	Does the platform provide data storage? What are the data storage options that the platform provides (e.g.Hadoop, MySQL for relational databases, AWS with DynamoDB, etc.)? What kind of data sources can be used (e.g. M2M or network gateways, databases, etc.) and what kind of protocols are supported (structured and/or unstructured, time-series, binary data, data logs, etc.)? Are other types of data management provided, such as data orchestration, data permissions, integration with business systems data, etc.?
Data Analysis and Presentation	Are Big Data volume management services provided? Are reporting and visualisation tools provided?
Data Services	Which data services are offered with the Platform? E.g. Service enablement via portals, and/or mobile devices
Device Communications & Protocol Support	What end-point device protocols are supported? E.g. LWM2M, MQTT, HTTP(S).
Alert Rules & notifications	Does the platform enable the remote monitoring of devices and does it provide alerts and notifications?
Aggregated Data Sets Generation	Which is (approximately) the number of data rows that can be aggregated for each application?
Integrated Enterprise software capability	Capability to integrate major backbone IT systems e.g. SAP, Oracle, Salesforce for CRM, Billing OS, ERP etc.
Analytics	Please outline the platform's analytics components and functionalities. (e.g. detection of patterns and anomalies, predictive analysis, learning algorithms, etc.). Does the platform enable data analytics on the edge of the device (Edge Analytics)?
Process Handling	Please outline how the Platform manages process workflow or handling. E.g. Measurement and trending of alerts from remotely connected devices, visibility of metrics, workflow dashboards

4.4 Application Enablement & Development Capabilities

Provide detailed descriptions on the functionality of the platform, these to include the following as guidance but the responder is invited to include additional information on their Application Development services.

<u>Functionality</u>	<u>Response Prompts</u>
Application Development & Modelling	Do you provide an easy and usable way to create IoT applications? Is this a 'drag and drop' process? Are there pre-made widgets that can accept test data for visualisation purposes.
Application Integration	Please outline the Platform's application integration/management capabilities. E.g. API services library, creation of device specific APIs, Enterprise interfaces.
Location Based Services	Please outline location based services enabled by the platform and relevant application tools (e.g. derived from GPS device, computed from IP address, map overlays).
Developer Portal	Can you describe Platform development tools to build new Apps and Services? Are these included in a Developer portal? Does the platform provide SDKs for building applications on top? Does the platform provide interaction tools that assist the developer through dashboards?
Intelligent Environments/AI	Can you describe what intelligent environment capabilities (e.g. Machine Learning, other learning algorithms, predictive analytics, artificial intelligence elements, etc.) the platform offers? To what extent - if any - is this available for free?
Augmented Reality/Visualisation capability	Does the platform support AR/VR/modelling capabilities? Can a 'digital twin' of the device be created for visualisation purposes?
Testing Capabilities	What testing capabilities are in place? Is there an agreement on new unit testing, overall system regression testing and performance testing? E.g. Performed at unit, component, function level? Test automation tools available?
Documentation (Technical, Functional, Operational)	What technical, functional, operations, and development guidelines documentation are available?
Deployment Models	Can Platform be deployed on Cloud and On-Premise? (AWS/Azure etc). Is automatic deployment possible on the cloud?
Availability: - SLA Compliance Monitoring -Cluster Architecture - Planned Downtime	Does the platform provide the ability to determine whether invocations and responses are operating within predefined SLAs and to send alerts and and/or provide reports on compliance and violations as needed? Does the platform support full failover and load balanced only on-off failover? Where is data is stored? Is data synchronization needed? Does the platform have planned and agreed maintenance windows for product upgrades?

Security	Please outline the end to end security capabilities of the platform. This to include User Authentication, Device authentication and Data Security.
Partner Management	Does the platform provide Partner Management capabilities, for example to enable trading of Data or use of 3 rd party services in the enablement of an application.?
Standards Compliance	Does the platform comply with Industry standards such as oneM2M etc.?
Microservices	Does the platform support the creation and use of Microservices

4.5 Generic Capabilities

Business Service Offerings	Are monetized services provided? For specific verticals?
Pricing Models	Please describe the pricing model and options available
Partnering/Ecosystem	Please describe your partner ecosystem and how you see that enhancing your services
IoT Vertical/Industry Strategy	Do you provide a selection of vertical industry templates to accelerate implementation of specific vertical industry solutions? If so, which industries? Examples would be Connected Spaces (Home/Buidling/City), Connected Transport (Fleet, Transit systems, Insurance)
Joint Go-to-market models	Are there existing GTM examples you can reference or describe possible GTM propositions achievable within the service offerings of your platform and/or in conjunction with your ecosystem partners.?
Differentiators	Are there any specific differentiators, business-related or of a technical nature, not covered above, that strongly differentiate your platform?

5.0 Proposal Submission Guidelines

5.1 General Instructions.

- Expected responses to this RFP: One document OR more than one, e.g. Technical & Commercial.
- A non-disclosure agreement to be signed in relation to the contents of this RFP and the responses to it.
- References made to the “project” in this RFP refer to the deployment, testing and acceptance of the services provided, all related project management, training, and pre-launch activities
- When a reference is made to the “supplier” or “bidder” in this RFP, this refers to the vendor who is participating in this procedure through the submission of an offer for this project

5.2 Presentation of Responses

5.2.1 Technical Responses

- Service capabilities
- Service metrics

5.2.2 Commercial Responses

5.2.3 Project Plan to Implementation

6.0 Selection Criteria

6.1 Evaluation Process

6.1.1 Technical

<u>Criteria</u>	<u>Details</u>	<u>Assigned Weight</u>
Standard Features	Existing platform capabilities	xx %
Project Specific Features	Customised platform capability	xx%
QOS Offered	Commitments to service metrics e.g. platform availability, response times to LOS.	xx%
Compliances	IIC Test bed compliances IMC Validation	xx%

6.1.2 Financial

<u>Criteria</u>	<u>Details</u>	<u>Assigned Weight</u>
Basic Pricing – Platform Usage Pricing Options -	To be given in \$/€/£ etc	xx %
Provision of BOMs – Breakdown of costs to develop and test	For Development For Testing For Project Management Activities	xx%
	.	xx%
		xx%

7.0 General Terms and Conditions

7.1 Payments, Incentives and Penalties

7.2 Contractual Terms and Conditions

- Confidentiality
- Non-disclosure
- Right of rejection
- Cost of responses
- Public Statements
- Cancellation
- Law and Regulation
- Ownership

7.3 Process Schedule

- Decision date on responses
- Awarding of contracts
- Commencement of work
- Completion of development work
- Completion of compliance testing
- Completion of alpha testing (live)
- Completion of beta testing (controlled rollout)
- Full Service Launch

Addendum

Points of Contact for Future Correspondence.

IMC Validation process

Format guidelines for RFP responses