# Proposal writing workshop
# Presentation 2: Understanding of SoW

# Disclaimer

This presentation material does not contain sufficient information to respond to ESA ITTs.

This presentation is intended to help understand, in a simplified manner, some of the Rules and Procedures associated with ESA procurements.

Please ensure that your Proposal is compliant with the requirements contained in the individual ITT for each activity.

**Warning! This is a boring presentation – but stick with it, it does have important and useful information**

# Summary of the presentation

- Purpose and Scope
- The Statement of Work (SoW)
  - Introduction
  - Work
  - Management
  - Schedule
  - Annexes

# Purpose and scope

# Purpose and scope

This Presentation will go through each of the sections of an example SoW and explain the reason of each section and how to interpret it.

A second presentation on the proposal template will explain how to reply to a SoW.

These presentations provide a short introduction only.

# The Statement of Work (SoW)

# The SoW

The SoW contains a full description of the objectives to be fulfilled, the work to be performed and the resultant deliverables of the activity.

The SoW is written by the Technical Officer who will be running the activity and is reviewed and approved by the members of the TEB who will assess the proposals.

It is still possible for a SoW to contain mistakes or omissions! The bidder should read carefully and critically.

# The SoW – Section 1: Introduction

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1 INTRODUCTION

1.1 Scope of the Document

1.2 Applicable and Reference Documents

1.2.1 Applicable Documents (ADs)

1.3 Acronyms and Abbreviations

1.4 Background and Objective(s)

1.4.1 Background

1.4.2 Objective(s) of the Activity

➢ **See page 3-4 of example SOW**

# The SoW – Section 1: Introduction

The introduction is not to just be ‘glossed over’ it contains some important information, especially the Applicable Documents, the Background and – key – the Objectives.

***1 INTRODUCTION***

***1.1 Scope of the Document***

This section simply formally states the name of the activity and it place in the legal structure.

***1.2 Applicable and Reference Documents***

***1.2.1 Applicable Documents (ADs)***

You need to pay close attention and to read the ADs. Adding an AD implies that you are expected to be compliant with any requirements listed therein. They are a quick and short way to avoid re-writing requirements in the Technical Requirements. In your proposal, you should be sure to also address the requirements in the ADs.

***1.2.2 Reference Documents (RDs)***

These are optional for you to read. They are included because the author of the SoW thinks they may have useful or interesting information for you or give you more background on some of the statements made or requirements set in the SoW.

➢ **See page 3 of example SOW**

# The SoW – Section 1: Introduction

## *1.3 Acronyms and Abbreviations*

This is simply an explanation of the acronyms and abbreviations used in the document. ESA uses a LOT (Loads Of Them) of acronyms – it can sometimes feel like another language.

## *1.4 Background and Objective(s)*

### *1.4.1 Background*

This gives a summary of the reasoning for the activity and any previous work performed leading to it. It sets the context and can give hints as to where the focus should be for the work to be done.

### *1.4.2 Objective(s) of the Activity*

This is the most important few sentences of the SoW. It tells you what has to be achieved by the activity. Study it carefully and pull out all the key points. The objectives should guide your trade-offs, they 'outrank' everything else in the SoW.

➢ **See page 3-4 of example SOW**

# The SoW – Section 1: Introduction

## 1.4 Background and Objective(s)

### *1.4.1 Background*

The prevelance of coffee shop big name chains (e.g. Star Clucks), with their custom hot beverage machines have made it difficult for independent and private companies to compete. This is largely due to the unavailability of high end, high efficiency, reliable and flexible hot beverage production units on the market. There exists therefore a clear market opportunity which needs to be filled. There is a perceived opportunity to spin out space experience in high pressure systems, high reliability systems and autonomous systems into this market. From a preliminary assessment of RD1, it is clear that such technologies could lead to a revolutionary breakthrough in HBM technology that, if available on the open market, would revolutionise the coffee shop industry, see a resurgence in privately owned coffee shops and bring a large socio-economic benefit. The installation of such machines in ESA premises is expected to also boost productivity and efficiency of workers in the space industry.

### *1.4.2 Objective(s) of the Activity*

The objective of this activity is to develop, to the point of being able to be supplied as an off the shelf product, a new generation of hot beverage maker fulfilling the requirements given in Annex B and thereby bringing efficiency improvements to Coffee Shops worldwide. In order to capture the market, the Hot Beverage Maker shall be available for commercial sale in less than 18 months.

➢ See page 3-4 of example SOW

# The SoW – Section 2: Work to be performed

# The SoW – Section 2: Work to be performed

2 WORK TO BE PERFORMED

2.1 Work Logic

2.2 Tasks

2.2.1 Task 1

- Input
- Task description
- Output

….

# The SoW – Section 2: Work to be performed

## *2 WORK TO BE PERFORMED*

### *2.1 Work Logic*

This section provides an overview of the work to be performed, the flow of the work and the key events and reviews to be incorporated. If you are lucky, the TO will even have put in a flow chart for you. This tells you how they have pictured the work flow such that you can better understand the Task Descriptions and how they fit together.

It is not mandatory to follow the prescribed work logic, but any deviation should be justified and explained.

**2.1 Work Logic**

The work is organised as follows:

- Task 1: Requirement detailed assessment and refinement
- Requirement Review (RR)
- Task 2: Preliminary design and breadboard demonstration
- Preliminary Design Review (PDR)
- Task 3: Final Design and validation
- Critical Design Review (CDR)

➢ See page 5 of example SOW

# The SoW – Section 2: Work to be performed

For each task in the work logic, there will be a description given. This will have varying amounts of detail but should highlight the key trade offs, key analyses, key reviews and main blocks of work that the Technical Officer considers should be included. The bidder will have to fill in the rest of the details and to critically review and assess this. Any deviation from the description should be highlighted and justified.

## *2.2 Tasks*

### *2.2.1 Task 1*

#### *Input*

This simply gives the documentation and information sources that are considered needed before being able to start the work.

#### *Task description*

Textual description of the key blocks of work. This should be understood as the **minimum** to be covered.

#### *Output*

This is usually a list of the hardware, software and documentation to be produced and delivered as part of this task. It should match the table given later in the SoW.

➢ **See page 5-6 of example SOW**

# The SoW – Section 2: Work to be performed

### *2.2.1 Task 1: Requirement detailed assessment and refinement*

- Input

Statement of Work
Proposal

- Task description

Starting from the information given in RD1, the Contractor shall perform the following tasks:

- survey the capabilities of current HBMs and shall also survey the popularity, demand and appeal for different hot beverages throughout Europe.
- Based on the lessons learnt from these investigations and the Contractors knowledge of the design, manufacture and test of commercial machinery, the Contractor shall expand and complete the requirements presented in Annex B to a full, and justified, requirement specification. This shall be discussed and agreed at the Requirements Review.
- The Contractor shall also develop a conceptual high level design of the new HBM capable of meeting those requirements. The conceptual design shall identify all key aspects and sub-systems of the HBM and the requirements driving them. It shall be presented at block diagram level for each subsystem and be sufficient to show how the driving requirements can be met.
- Additionally, the Contractor shall produce and submit for approval a proposed Test Plan for the Breadboard to be produced in Task 2. This shall cover all key requirements, trade offs and risks that should be validated or supported by early testing.

- Output

D1 – Requirements Specification
D2 – Conceptual Design Document
D3 – Breadboard Test Plan

➢ See page 5-6 of example SOW

# The SoW – Section 3: Management

# The SoW – Section 3: Management

3 REQUIREMENTS FOR MANAGEMENT, REPORTING, MEETINGS AND DELIVERABLES

- 3.1 Management
  - 3.1.1 General
  - 3.1.2 Communications
- 3.2 Access
- 3.3 Reporting
  - 3.3.1 Minutes of Meeting
  - 3.3.2 Bar-chart Schedule
  - 3.3.3 Progress Reports
  - 3.3.4 Problem Notification
- 3.4 Meetings
- 3.5 Deliverable Items

➢ **See page 8-16 of example SOW**

# The SoW – Section 3: Management

## *3 REQUIREMENTS FOR MANAGEMENT, REPORTING, MEETINGS AND DELIVERABLES*

This section remains quite constant for most Expro ITTs, so understanding what we ask and what it means in practice is a good idea.

### *3.1 Management*

#### *3.1.1 General*

Very high level – the key point is that there is *one single person* empowered to make all the decisions and responsible for ensuring the success of the activity.

#### *3.1.2 Communications*

Simply says talk to the right people during the execution of the activity

### *3.2 Access*

What this means is we can ask to see anything related to or used in the execution of the work for the activity – irrespective of whether it is a formal deliverable or not.

➢ **See page 8 of example SOW**

# The SoW – Section 3: Management

## *3.3 Reporting*

### *3.3.1 Minutes of Meeting*

Essentially that all meetings should have minutes and you should write them (and quickly).

### *3.3.2 Bar-chart Schedule*

That you keep the planning up to date and represent it with a GANTT chart.

### *3.3.3 Progress Reports*

That you provide a monthly progress report and details minimum contents. Often this is also agreed with the TO just after negotiation to contain more items.

### *3.3.4 Problem Notification*

Any big issues you tell us immediately.

### *3.3.5 Technical Documentation*

Deliver what you promised, minimum 2 weeks prior to a meeting (unless agreed with TO). Delivery does not mean it is approved, approval (hence payment) only comes after review and acceptance.

➢ **See page 8-9 of example SOW**

# The SoW – Section 3: Management

### *3.4 Meetings*

Essentially that all meetings should have minutes and you should write them (and quickly).

➢ **See page 9 of example SOW**

### *3.5 Deliverable Items*

This gives the full details of all the deliverable documents, software and hardware that is mandated under the contract. It should also include details on the minimum contents expected or minimum scope of the hardware/ software and the delivery means.

Note that the contents of the deliverables sometimes helps to actually scope the work expected under the Task description.

➢ **See page 10-16 of example SOW**

# The SoW – Section 3: Management

| | | | | |
|---|---|---|---|---|
| D9 | Prototype Test Report | CDR | Electronic - pdf and original (WORD) file to be delivered to the ESA Technical Officer | No |
| D10 | Verification Control Document | CDR | Electronic - pdf and original (WORD) file to be delivered to the ESA Technical Officer | No |
| D11 | Proposed Design Changes Document | CDR | Electronic - pdf and original (WORD) file to be delivered to the ESA Technical Officer | No |
| TDP | Technical Data Package | Final Review | 1 paper copy / 2 CDs to ESA Technical Officer | yes |
| FR | Final Report | Final Review | 1 paper copy / 2 CDs to be delivered to the ESA Technical Officer,<br>1 electronic copy to be delivered to the ESA Contracts Officer.<br>In addition to the above, 1 paper copy and 1 copy on CD-ROM shall be sent to the ESA Information and Documentation Centre – ESTEC Library, Postbus 299, 2200 AG Noordwijk, The Netherlands | yes |
| FP | Final Presentation | Final Review | 1 electronic copy to be delivered to the ESA Technical Officer | No |
| CCD | Contract Closure Documentation | Contract Closure | Signed electronic copy to be delivered to the ESA Technical Officer with copy to the ESA Contracts Officer | yes |

➢ See page 12 of example SOW

# The SoW – Section 3: Management

(**) Definitions of Deliverable Documents

- D1 – Requirements Specification

The Requirements Specification shall contain the full set of high level technical requirements to be met by the HBM. Each requirement shall be numbered and shall include the validation method and a justification/ reasoning for the requirement.

- D2 – Conceptual Design Document

The Conceptual Design Document shall outline the conceptual design of the HBM including all key features and a provisional layout, provisional MMIF and concept of operation. The key design drivers shall be highlighted and the key trade offs identified and discussed.

- D3 – Breadboard Test Plan

The Breadboard Test Plan shall include the test flow and a description of each test. Each test description shall include the test set up, the purpose/ goal of the test and the pass/fail criteria. The Breadboard Test Plan shall contain all of the key tests needed to validate the concept and de-risk the further design work.

- D4 – Preliminary Design Report

The Preliminary Design Report shall detail the design and design justification of the HBM and each of its sub-systems. In particular the Mechanical Design, the Electrical Design, the Software Design, the Man-Machine Interface and operational concept and the water and pressure system design shall be covered.

➢ See page 13 of example SOW

# The SoW – Section 4: Schedule

# The SoW – Section 4: Schedule

4 SCHEDULE AND MILESTONES

4.1 Duration

4.2 Milestones

4.2.1 Reviews

- Time:
- Location:
- Description:
- Output:

4.2.2 ...

...

➢ See page 17 of example SOW

# The SoW – Section 4: Schedule

## 4 SCHEDULE AND MILESTONES

### 4.1 Duration

Pretty straightforward – gives the duration expected. Note this is the MAXIMUM duration.

### 4.2 Milestones

Gives the key points at which we expect to make payments/ have key events. You should take these to form the Milestone payment plan.

### 4.3 Reviews

This gives a description of each of the reviews, what is expected, what is to be decided, success criteria, inputs needed and location.

**4.3.1 Requirements Review**

- Time: KO + 2 Months
- Location: Contractor premises
- Description: The purpose of the RR shall be to review and agree the Contractors proposed changes and additions to the baseline requirements presented in Annex B and to agree a baseline conceptual design as the input to Task 2.
- Output: Requirements Specification, Breadboard Test Plan

➢ See page 17 of example SOW

# The SoW – Annexes

# The SoW – Annexes

ANNEX A: Layout for Contract Closure Documentation

➢ See page 19-24 of example SOW

ANNEX B: Preliminary Requirements

➢ See page 25 of example SOW

**Don’t forget the Annexes!!! Especially Annex B contains critical information to the proposal.**

# The SoW – Annexes

***ANNEX A: Layout for Contract Closure Documentation***

This is not needed for the proposal but is the form you will need to complete at the end of the contract in order to get your final payment.

So – actually you **can** forget this one – at least for now.

➢ **See page 19-24 of example SOW**

# The SoW – Annexes

## *ANNEX B: Preliminary Requirements*

The second most important part of the SoW is either hidden away in an Annex – like here – or in an Applicable document.

- The technical requirements describe what has to be designed/ produced in order to meet the objectives.
- They are generally not fully complete/ comprehensive – it is often the contractors task to do that.
- They are generally not prioritised or ranked – but not all requirements are equal – some will be vital to achieve the objective, others will be 'nice to have'.
- Some may be contradictory!
- The validation method (as a minimum the key validation method) will also be proposed – this drives the BB/ EQM/ Prototype scope. Note, this is only the main method, it is expected that lower level methods are used to demonstrate confidence before getting to building something.
- The bidder should assess and intelligently comment of the requirements in the proposal
- A compliance matrix is essential in the proposal. Giving predicted values is even better.

➢ **See page 25 of example SOW**

# The SoW – Annexes

## ANNEX B. PRELIMINARY REQUIREMENTS

| Req Num | Requirement | Notes | Validation Method |
|---|---|---|---|
| RCM1 | The HBM shall be capable to produce at least 15 beverages per minute with one operator. | The time to produce any one beverage shall be no longer than 6 seconds. | Test |
| RCM2 | The HBM shall be capable to produce at least 10 different beverage types including variations of:<br>Coffee<br>Tea<br>Hot Chocolate | The variants will be agreed at the Requirements review but should include at least the most popular variations (e.g. cappuccino, latte). Significantly more than 10 variants would be highly beneficial if not affecting RCM3,6 or 7<br>Each beverage should be able to be offered in multiple sizes. | Analysis and Test |
| RCM3 | The HBM shall be capable of producing at least 5,000 beverages between refills. | Minimum of 2000 for any one variant | Analysis and Test |
| RCM4 | The HBM shall be more reliable than the current market leading machines. | See RD1 for assessment of current market leading machines | Analysis |
| RCM5 | The HBM shall be able to be carried and installed by 2 people without special lifting equipment or tools. | | Analysis |
| RCM6 | The HBM shall have a recurring cost of less than 2,000 Euros | | Analysis |
| RCM7 | The running costs of the HBM (excluding the salary of the operator) shall be less than 0.2 Euro per beverage. | This shall assume re-useable cups | Analysis |
| RCM8 | The HBM shall be compatible with a standard 240v power supply. | | Analysis and Test |
| RCM9 | The HBM shall be finished in Blue and Chrome and have the Brand Name 'Coffee Master 2000' prominently displayed on the front side. | | Inspection |
| RCM10 | The HBM shall produce tastier beverages than the competitors. | | Test |
| RCM11 | The HBM shall be compliant with the pressure test and safety requirements of AD1 | | Test |

➢ See page 25 of example SOW

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