

# COMBINE - Business model example

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## 1. Introduction

This document describes the business context for the Survey Booking application that is going to be developed. The aim of this document is to describe how and where this application fits in the business operation for WesternGeco.

The business context of a software system under consideration is described using a formal model, called the business model. This document presents two business models, which have been developed according to the COMET methodology.

The Survey Booking is going to support the **Tender Bid** business context within WesternGeco.

## 2. Scoping Statements

### 2.1. Context Statement

Beginning 2000 it was decided to phase out and replace the suite of business support tools used in the **Tender bidding process** in the Marine Acquisition Business segment. These tools were based on Excel technology and did not support the needs in a distributed 7by24 organization. Also after 10 years of evolution, pushing spreadsheet functionality beyond its limits, these tools were hard to maintain.

The decision was to reengineer this tool-suite based on the Introspection business tool platform, which was based on Web and Java technology.

The first priority was to look at “The Survey Booking Tool” and “The Survey Costing Tool”. The Survey Booking tool will help to administer the utilization of the seismic vessels and will be used to book a survey or tender onto a vessel. It will give an overview over the current workload and also which vessel qualifies for the job. The Survey Costing tool is used to calculate the cost and revenue of a potential survey.

The focus in this document will be on the Survey Booking tool.

Figure 1 shows the stakeholders involved in the Tender Bid process and what they want to get from the Survey Booking Tool.

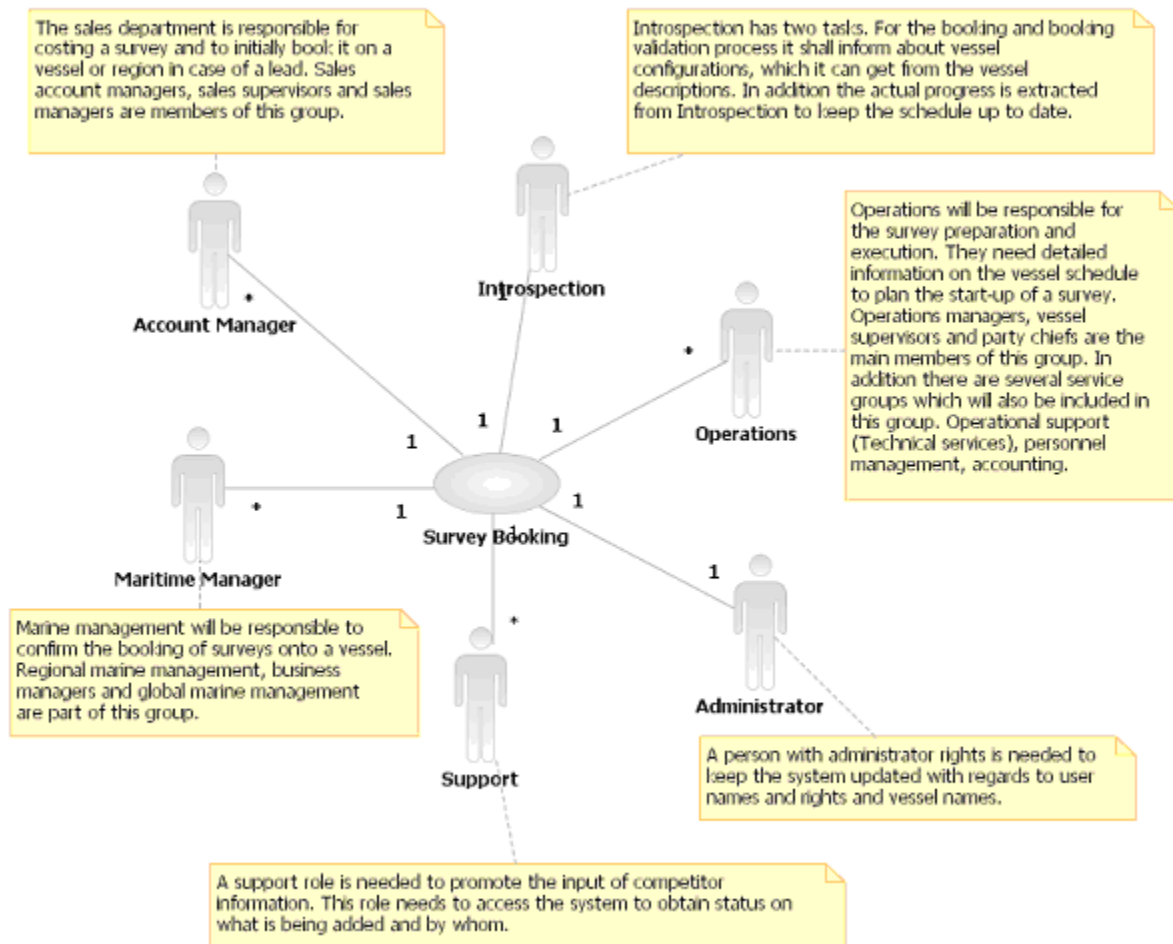


Figure 1: Tender Bid context diagram

The stakeholders in the Tender Bid context are as follows:

Stakeholder	Description
AccountManager	The sales department is responsible for costing a survey and to initially book it on a vessel or region in case of a lead. Sales account managers, sales supervisors and sales managers are members of this group.
Introspection	<ul style="list-style-type: none"> <li>Introspection has two tasks. For the booking and booking validation process it shall inform about vessel configurations, which it can get from the vessel descriptions.</li> <li>In addition the actual progress is extracted from Introspection to keep the schedule up to date.</li> </ul>

Operations	<ul style="list-style-type: none"> <li>• Operations will be responsible for the survey preparation and execution. They need detailed information on the vessel schedule to plan the start-up of a survey.</li> <li>• Operations managers, vessel supervisors and party chiefs are the main members of this group.</li> <li>• In addition there are several service groups which will also be included in this group.</li> <li>• Operational support (Technical services), personnel management, accounting.</li> </ul>
Administrator	A person with administrator rights is needed to keep the system updated with regards to user names and rights and vessel names.
Support	A support role is needed to promote the input of competitor information. This role needs to access the system to obtain status on what is being added and by whom.
Marine Management	<ul style="list-style-type: none"> <li>• Marine management will be responsible to confirm the booking of surveys onto a vessel.</li> <li>• Regional marine management, business managers and global marine management are part of this group.</li> </ul>

The activity diagram below shows how the Tender Bid process fits within the higher order Marine Acquisition process, which consists of five major steps. The first two steps with associated information flow, coloured green, define the scope of the Tender Bid business context.

The steps are as follows:

- PreSales is the business process that aims to sell the WesternGeco resources with the goal of winning profitable bids. If the presales process succeeds, WesternGeco will be better prepared when an Invitation to Tender (ITT) is received.
- Tender Bid is the business process that analyses the ITT. If the ITT seems profitable, an offer is made by WesternGeco to the issuer of the ITT. If the bid is won, a Seismic Work Order is issued to the Operations. If the bid is lost, the information is archived and the process ends.

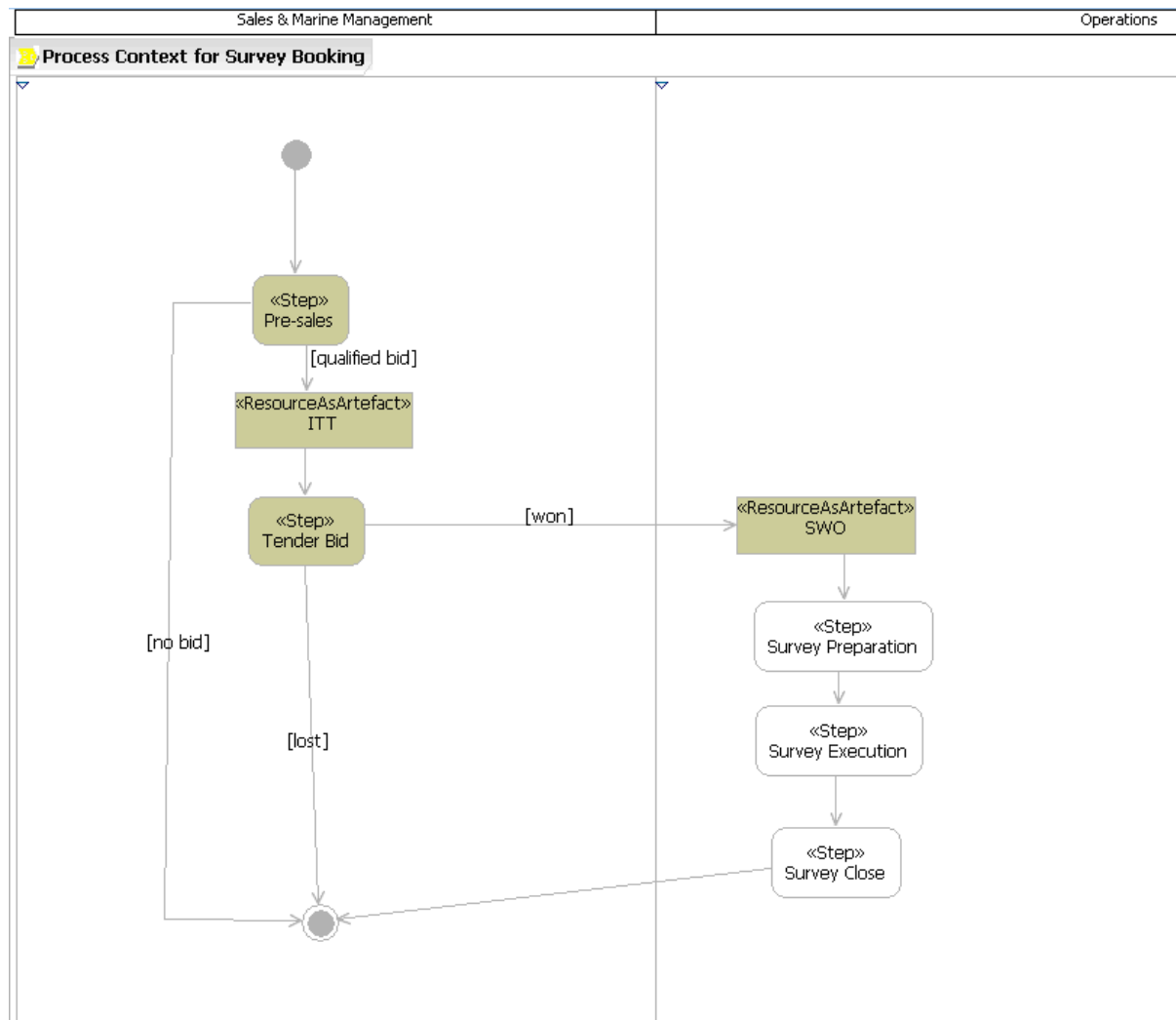


Figure 2: Tender Bid scope in Marine Acquisition process

## 2.2. Vision for Change

The survey-booking tool is a web-based and highly automated tool to support the process around booking of vessel time for potential surveys.

Its main task will be:

- Schedule leads and surveys
- Send automatic warnings on changes and conflicts
- Inform about current resource usage and potential backlog

## 2.3. Description

The survey-booking tool will help to administer the utilization of our vessels. It will mainly benefit three user groups; Sales, operations and marine management.

- Sales will use it to book a survey or tender onto a vessel. The survey-booking tool will give an overview over the current workload and also which vessel qualifies for the job.
- Sales will make booking suggestions to management, which then need to be confirmed by the global marine management.
- For operations the booking tool should work as a planning aid. It will automatically warn about changes and it will have detailed job information available on-line.
- Marine management will be able to use the booking tool to assess the current resource usage, confirm survey bookings and to reschedule jobs.

The survey-booking tool will be web based and automatically updated with the current progress rates from Introspection. A consequence of this approach is that there needs to be one global master schedule. In order to visualize alternative scenarios each user can create private schedules.

## 2.4. Risk Analysis



Figure 3: Risk analysis

The table below describes risks that are identified in the project. There are no major risks involved. This system is strongly wanted by the users/client. The development team is very experienced in this kind of systems, and the relationship between the client/users and the development team is very good.

Issue	Risk statement
Security	The system will contain very business sensitive information and must implement a very strict access-control mechanism
Competition	The sales community is in the process of introducing a CRM system. Need to carefully define the border between these two systems
Technology	The Web and Java based technology from the Introspection base-line has already proven itself

Multi-user & transactions	The system must support multiple users in a distributed organization to work in parallel and synchronize their schedules into one common global schedule
Number of users	There will be approx 50 –100 users accessing the system each day
Uptime	The system should support a 7by24 hour operation.
Development group	The development group from the Introspection team is very experienced in web & java based distributed technology
Performance	The system must support an efficient communication protocol between the clients and the server

### 3. Goal Model

The purpose of the Goal Model is to agree with the Business Stakeholders the business goals that will be met by implementing and then using the Survey Booking System. A goal structure for the Tender Bid business context is shown in the class diagram below.

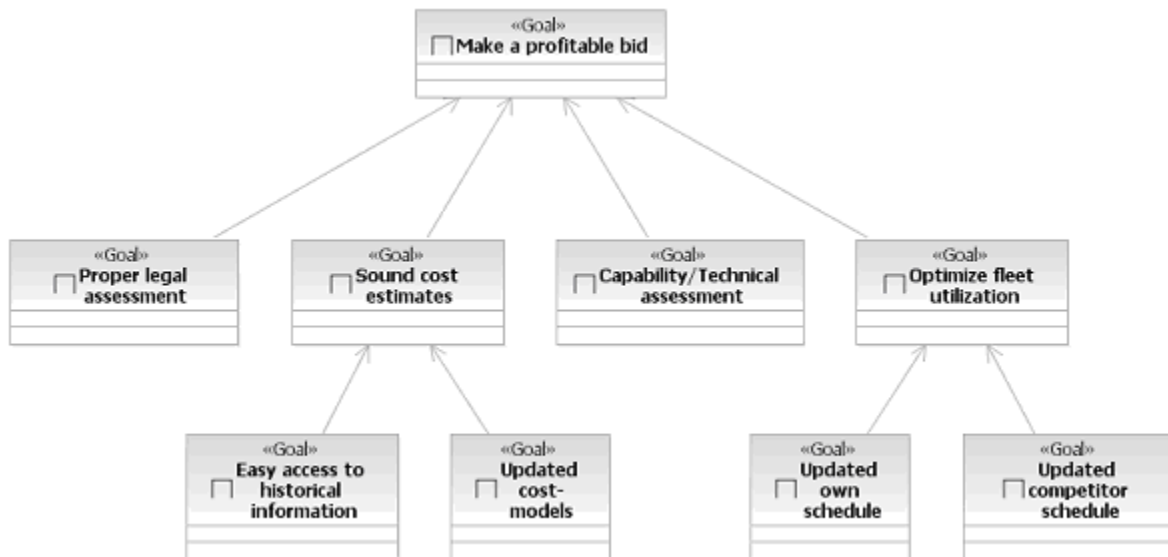


Figure 4: Tender Bid goal structure

Goals are structured in a hierarchy. All leaf goals should be explicitly supported by one or more business processes. We will show these links below when we describe the processes of the business. The goals are as follows:

Goal	Description		
Make a profitable bid	This is the top-level goal. Obviously, one only wants to bid on contracts that will be profitable to WesternGeco.		
	Proper legal assessment	A bid must be assessed for legal issues.	
	Sound cost estimates	In order to see if a bid will be profitable it is important to be able to make sound cost estimates.	
		Easy access to historical information	Historical information is important in order to make viable cost-models.
		Updated cost-models	Updated cost-models must be available for use.
	Capability/Technical assessment	A capability/technical assessment must be done to see if WesternGeco has the capability and technology to handle the contract. For example, in some cases a ship must be technically upgraded to handle the contract and this must be taken into consideration.	
	Optimize fleet utilization		
		Updated own schedule	Effective planning needs an updated schedule
		Updated competitor schedule	It's important to track the competitors in order to price the bid favourable, as well as

			learning about reasons for lost bids.
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#### 4. The Tender Bid Process

The tender bid process is a fairly large process that involves several people and software tools. The process can be broken down into three more manageable sub- processes. The three subprocesses, depicted in Figure 5, are:

1. The Receive ITT & Prepare for bidding subprocess describes how to handle an incoming ITT and the decision to bid.
2. The Make Tender subprocess describes the steps involved in creating a tender.
3. The Submit Tender subprocess describes the steps for submitting a tender to the client.

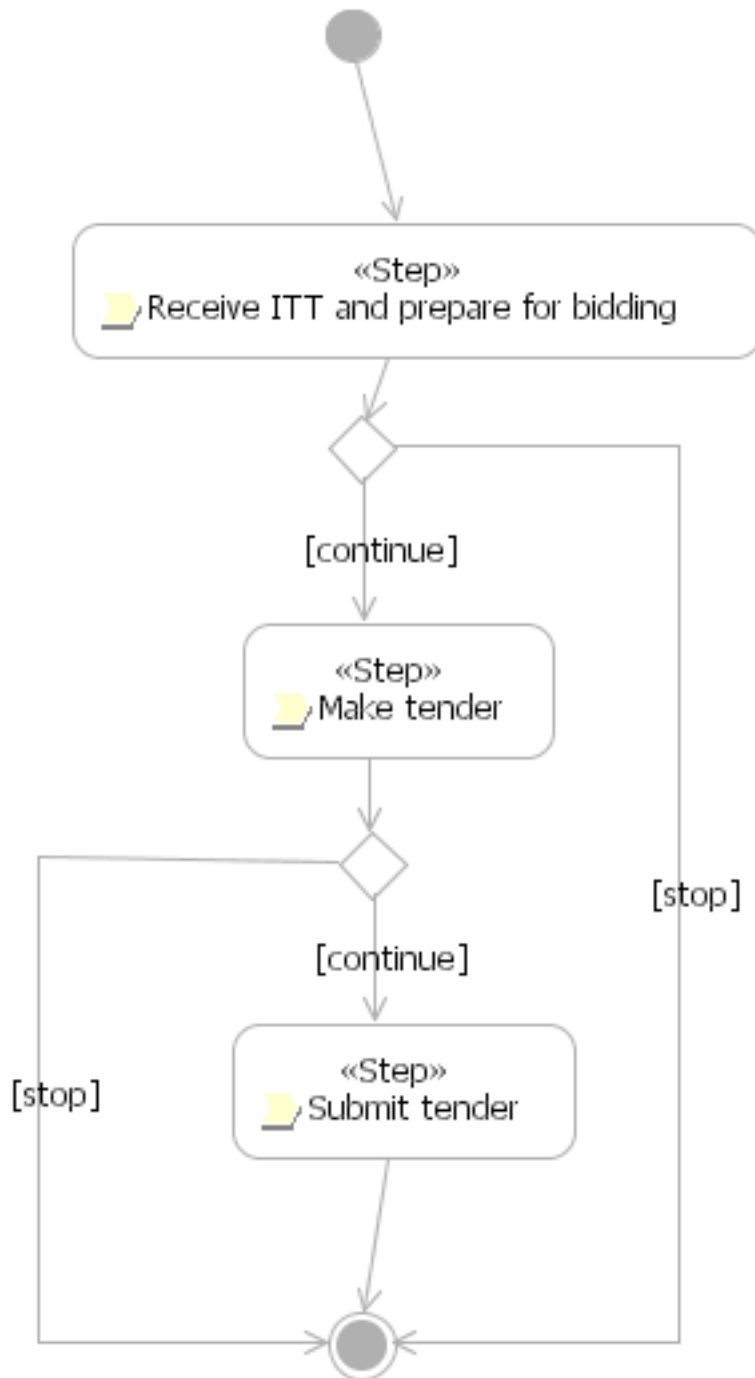


Figure 5: Tender Bid process overview

Each of these three subprocesses will be elaborated below.

### 4.1. Receive ITT & Prepare for bidding

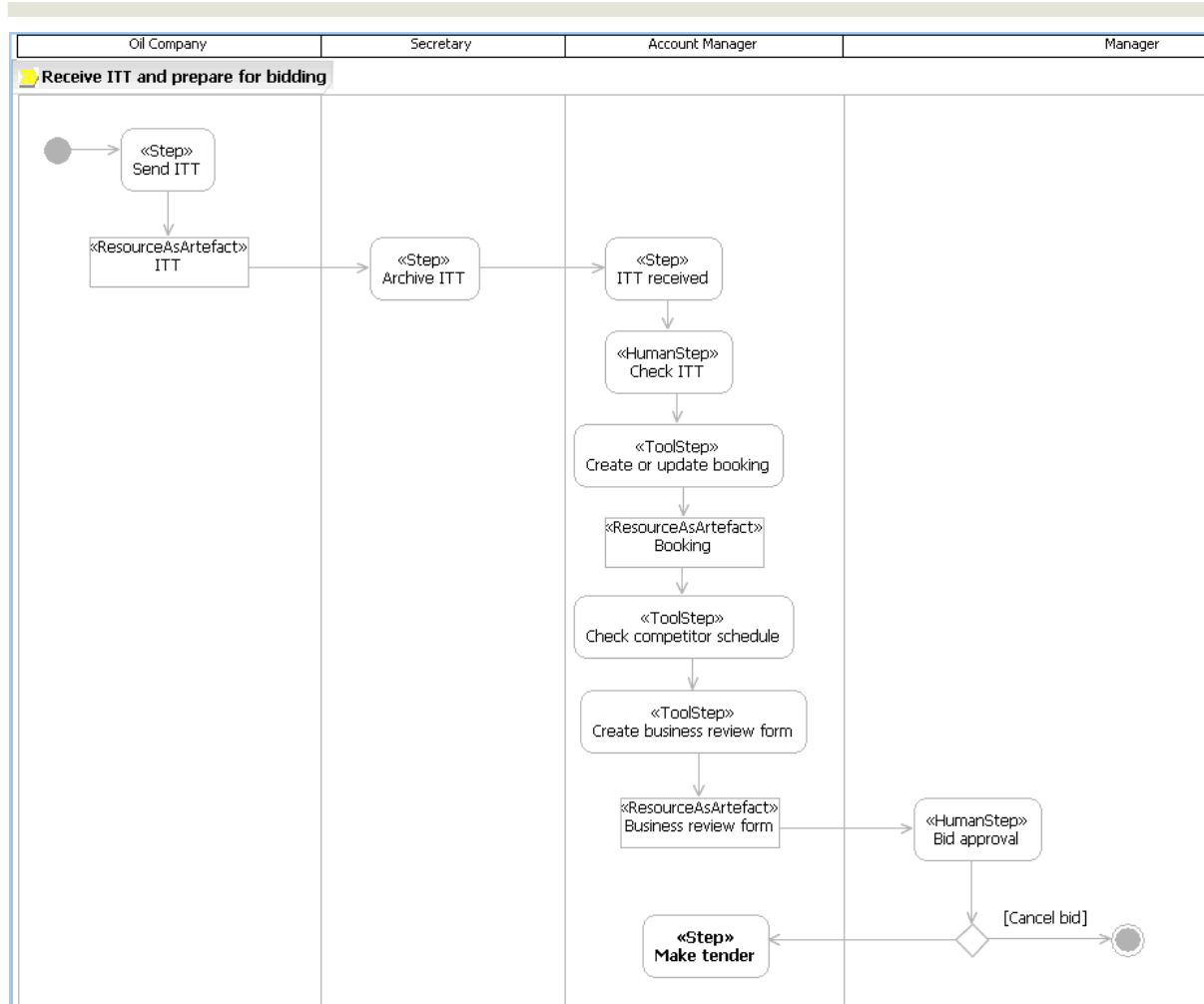


Figure 6: Receive ITT & Prepare for bidding activity diagram

Figure 6 shows an activity diagram that describes the Receive ITT & Prepare for bidding subprocess. Each swim lane in the diagram corresponds with an actor in the business. The activities in each swim lane reflect the work that each actor is responsible for. The Toolstep business steps are annotated with the name of the identified application component.

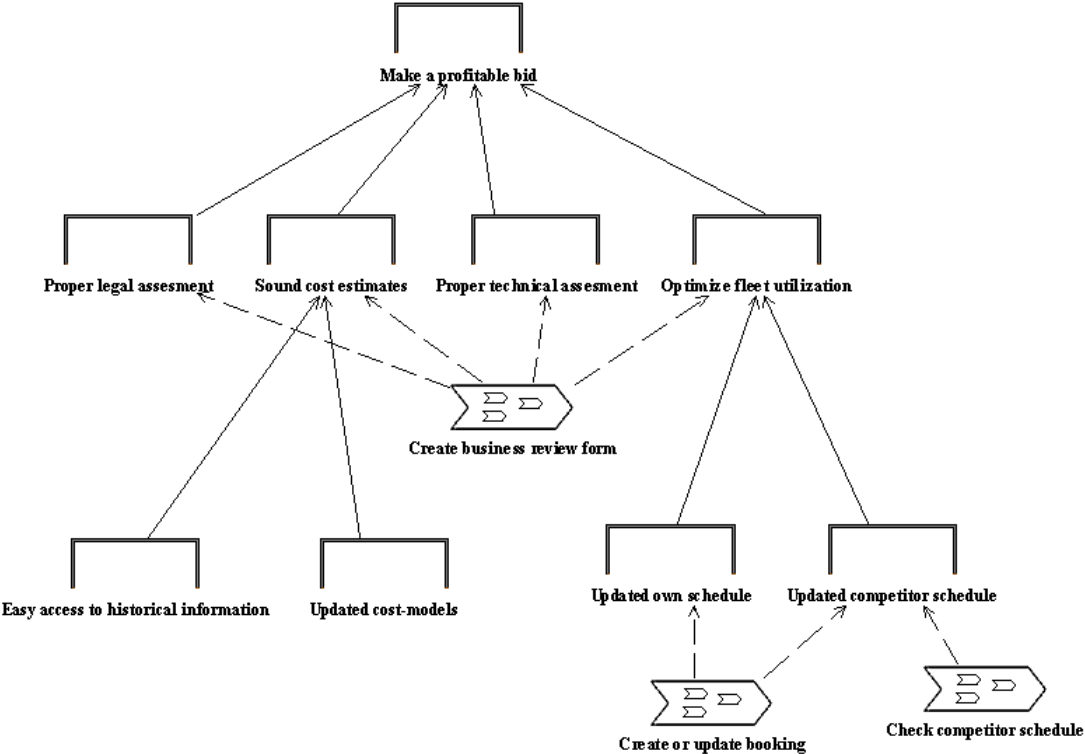


Figure 7: Goals supported by steps in Receive ITT & Prepare for bidding process

Figure 7 shows how the process steps in the Make Tender process supports the goals of the business.

A description of the activities are given in the table below:

Activity	Description
Check ITT	<ul style="list-style-type: none"> <li>• Tender is received.</li> <li>• Check we have full document.</li> <li>• Note deadline for response, how many copies client requires and where to send it.</li> <li>• Send acknowledgement to client requesting extension to deadline if necessary.</li> <li>• Request electronic copy if not already received.</li> <li>• Send internal note to management, operations, technical, exploration services detailing requirements and scope of work.</li> </ul>
Check Competitor Schedule	<ul style="list-style-type: none"> <li>• Check competitor schedule and talk to fellow account managers to see what they know about competitor activity.</li> </ul>
Create Business Review Form	<ul style="list-style-type: none"> <li>• Read tender and note main details on Business</li> </ul>

	Review Form: scope, required configuration, preferred timing, and assess likely competitors.
Bid Approval	<ul style="list-style-type: none"> <li>• Comment tender with Exploration Manager to confirm we should bid, the business review form is the basis of this discussion.</li> <li>• Discuss approximate price levels with exploration manager.</li> <li>• If we decide not to bid then inform client and our own people that we will "no bid".</li> </ul>

## 4.2. Make Tender

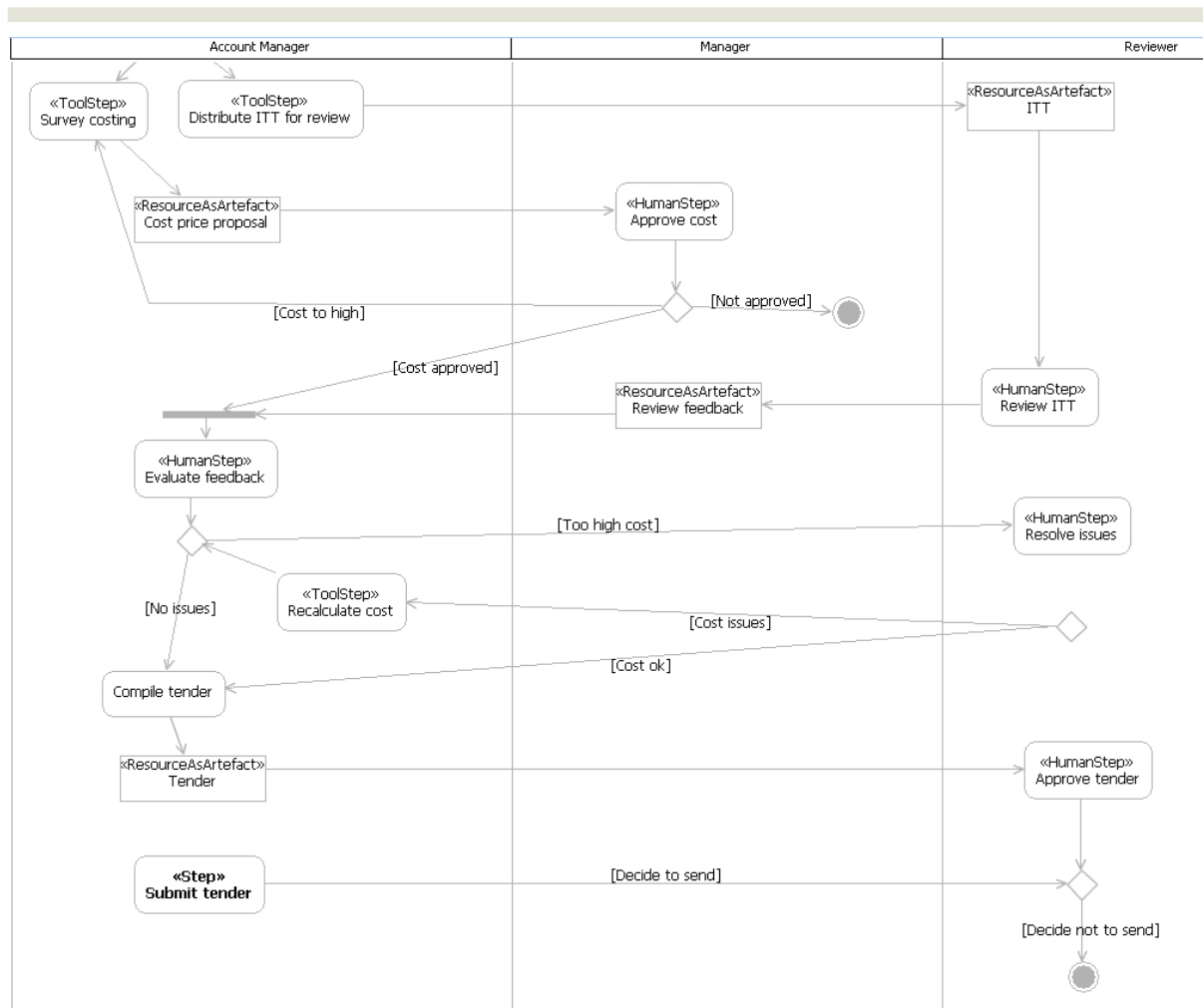


Figure 8: Make Tender activity diagram

Figure 8 shows an activity diagram that describes the **Make Tender** subprocess. Each swim

lane in the diagram corresponds with an actor in the business. The activities in each swim lane reflect the work that each actor is responsible for.

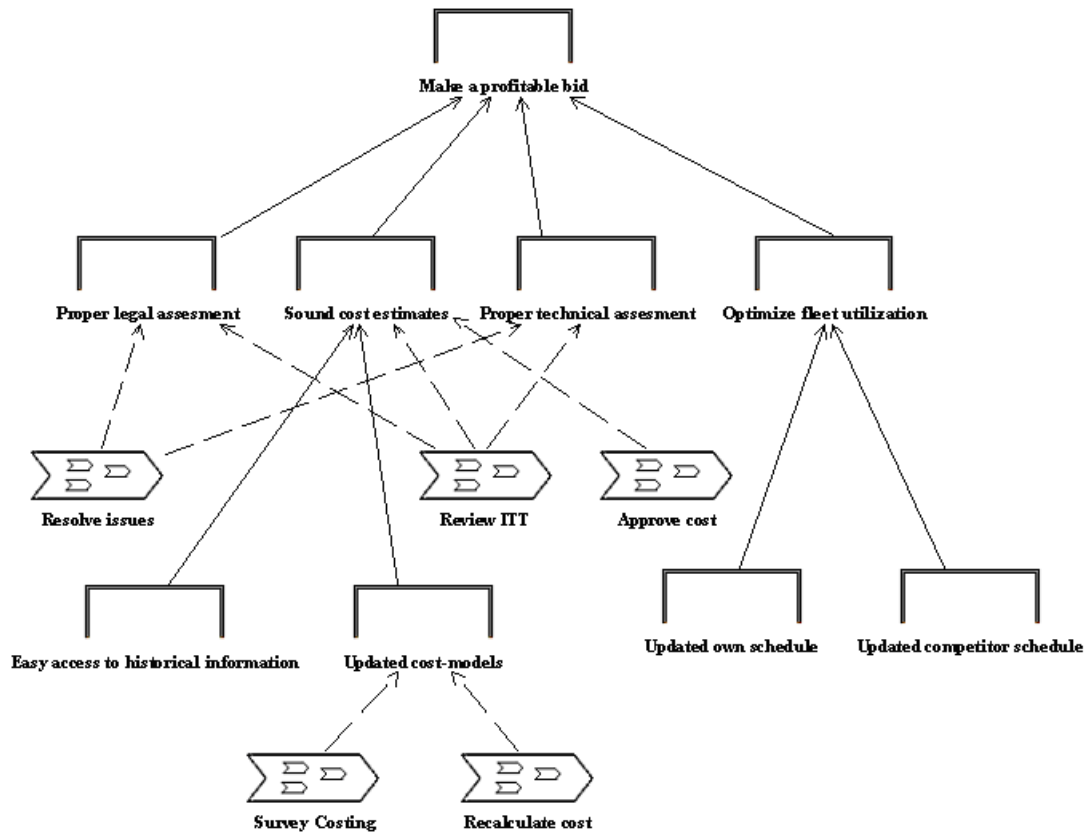


Figure 9: How the process steps in Make Tender supports the goals

Figure 9 shows how the process steps in the **Make Tender** process supports the goals of the business.

A description of the activities are given in the table below:

Activity	Description
Distribute ITT for review	<ul style="list-style-type: none"> <li>• If we bid then prepare to distribute the tender for review.</li> <li>• Tender distribution is much easier if the clients have supplied an electronic document, otherwise it has to be copied and faxed/mailed.</li> <li>• Tender review involves operations manager, legal, tax, source group, instrumentation(now OTC regional technical support in EAM) , navigation, seismic QC and data processing if processing is also requested in the tender (we should bid processing anyway).</li> <li>• Send a brief summary of the work by e-mail to</li> </ul>

	<p>relevant person in each technical department and attach the document to be reviewed, including a date by which they should respond.</p> <ul style="list-style-type: none"> <li>• Legal have their own special requirements and need a lot of information up front about the likely risks (for insurance) and expected revenue.</li> <li>• Tax want to know where the work will be and how much we will earn.</li> <li>• Client may send a seismic section from the survey area with the tender, explain their objectives and ask us to comment on their proposed acquisition parameters, this is a job for geo-support.</li> <li>• Clients will often request that we answer their own QHSE questionnaires.</li> </ul>
<p>Survey Costing</p>	<ul style="list-style-type: none"> <li>• Make price proposal with autobaf using business review summary sheet.</li> <li>• Taking as a starting point our success or otherwise in recent tenders together with the exploration manager we decide a price level at which to aim in terms of monthly revenue or price per square kilometre.</li> <li>• Most of the Autobaf inputs come from the tender invitation.</li> <li>• Autobaf works by first calculating the cost of the survey (duration) including fixed monthly vessel costs and the additional so called 3rd party costs.</li> <li>• For third party costs I may need help from marine operations (chase vessels, helicopters, fuel prices)</li> <li>• Navigation technical support will give me rates for navigation signals together with their tender feedback</li> <li>• Seismic QC will give me a price for the QC required by the tender in their feedback.</li> <li>• Next step is to define the survey definition, again most inputs will be in the tender invitation but I will consult Introspection for historical weather downtime statistics and seismic interference in the survey area.</li> <li>• If the client has forgotten to put some critical parameters in the tender invitation then I will make direct contact to get the necessary information.</li> <li>• If I am uncertain about mobilisation times for a particular configuration or steaming time to a certain survey area then I will either consult introspection to look at previous work, or I will consult marine operations direct, vessel supervisors or the operations managers.</li> <li>• If I am in any doubt about vessel capacity I will consult the operations manager, and similarly if I</li> </ul>

	<p>am unsure about availability of pool equipment such as streamers, then I will contact the pool manager.</p> <ul style="list-style-type: none"> <li>• I may consult a party chief direct if I know someone that can help me or know of a particular boat with experience relevant to the bid I am working on.</li> <li>• Defining the survey definition in Autobaf will establish total costs for the survey.</li> <li>• Next I put a price on the survey paying attention to the expected monthly income for the vessel and the final price per sqkm.</li> <li>• Internally Geco focus on monthly revenue, while our clients focus on the cost per sqkm, so we need to be conscious of both.</li> <li>• During this process I frequently refer back to previous recent bids where I know approximately the rates at which the bid was won or lost.</li> </ul>
<p>Approve Cost</p>	<ul style="list-style-type: none"> <li>• When I am satisfied with the proposal I set up a meeting with the exploration manager to discuss prices and make my proposals to him.</li> <li>• If he agrees he will then seek approval from his own manager who may request a further meeting, if he disagrees then I will repeat the exercise in line with his recommendations.</li> <li>• At this meeting we also agree on which vessel to bid and what timing we will offer.</li> <li>• We will consult our own vessel schedule and competitor information.</li> </ul>
<p>Evaluate Feedback</p>	<ul style="list-style-type: none"> <li>• Within a week of sending the tender for review I will normally receive feedback in the form of an e-mail and attachments from all reviewers.</li> <li>• After reading through the feedback I have to decide whether to incorporate all the feedback in the tender or not.</li> <li>• To make this assessment I will call the individual reviewer and discuss the controversial issues with them directly.</li> <li>• Some feedback may imply additional costs which were not previously allowed for and may require that I go back to Autobaf to recalculate the rates.</li> </ul>
<p>Compile Tender</p>	<p>By this stage I should have all I need to compile the tender. Basic contents of a tender are:</p> <ul style="list-style-type: none"> <li>• Covering letter (legal entity, timing, vessel proposed)</li> <li>• A technical proposal of how we will do the work and summary of acquisition parameters</li> </ul>

	<ul style="list-style-type: none"> <li>• An estimation of how long the work will take subject to configuration (from autobaf)</li> <li>• A summary of previous experience from Introspection</li> <li>• Rates as already computed and an estimate of total survey costs</li> <li>• A description of the vessel offered, maritime and technical details</li> <li>• Proposed source and signatures from technical support</li> <li>• Proposal for a navigation</li> <li>• Proposal for seismic QC</li> <li>• Proposal for data processing if requested</li> <li>• List of technical and legal contractual exceptions</li> <li>• Requested or standard QHSE information</li> <li>• Organisation diagrams for marine sales and marine operations</li> </ul>
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### 4.3. Submit Tender

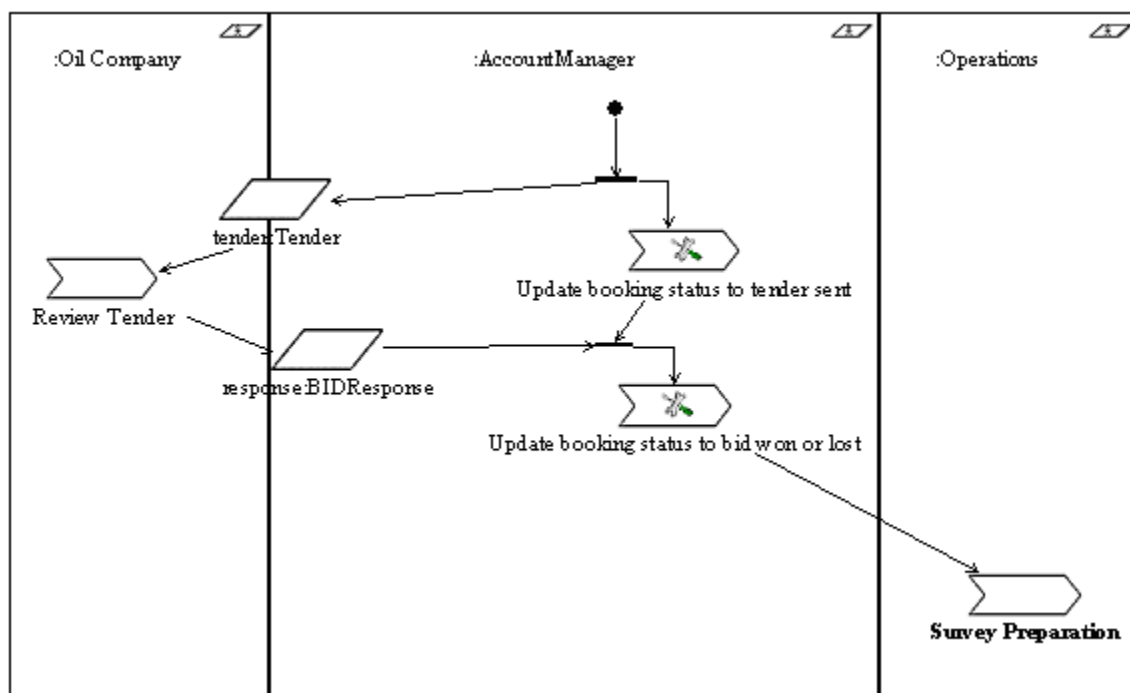


Figure 10: Submit Tender activity diagram

Figure 10 shows an activity diagram that describes the **Submit Tender** subprocess. Each swim lane in the diagram corresponds with an actor in the business. The activities in each swim lane reflect the work that each actor is responsible for.

## 4.4. Survey Booking

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The activity diagrams also show the results of the WARM analysis, annotating activities either as human, immediate or tool supported.

The Survey Booking system is an application component. Each of the tool supported activities that are described in the Tender Bid process activity diagram are linked against a software tool. Within a process several different tool can be used. Activities that are linked against the Survey Booking application form the basis of the business requirements for the Survey Booking system. This is further detailed in a separate Requirements Model.

The previous Tender Bid process activity diagrams shows that the Survey Booking application is used in the following Tool supported business steps.

- Receive ITT & prepare for bidding
- Create or Update booking
- Check competitor schedule
- Submit tender
- Update booking status to tender sent
- Update booking status to bid won or lost

The other activities that are linked against other tools and those that are manually operated should not be completely overlooked when developing a new software system or improving an existing software system. Investigation should conclude:

- If any of the manual steps could be supported by the new or improved tool
- Synergy effect between different tools (can they be combined or replaced)

For instance, improvement of the existing costing tool that is used in the Survey Costing activity is now being planned. This tool should integrate easily with the existing product line.

## 5. Business Resources

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The Business Resource Model identifies and defines the main concepts of the domain that are relevant to the Survey Booking System. Information resources are modelled using classes and class diagrams.

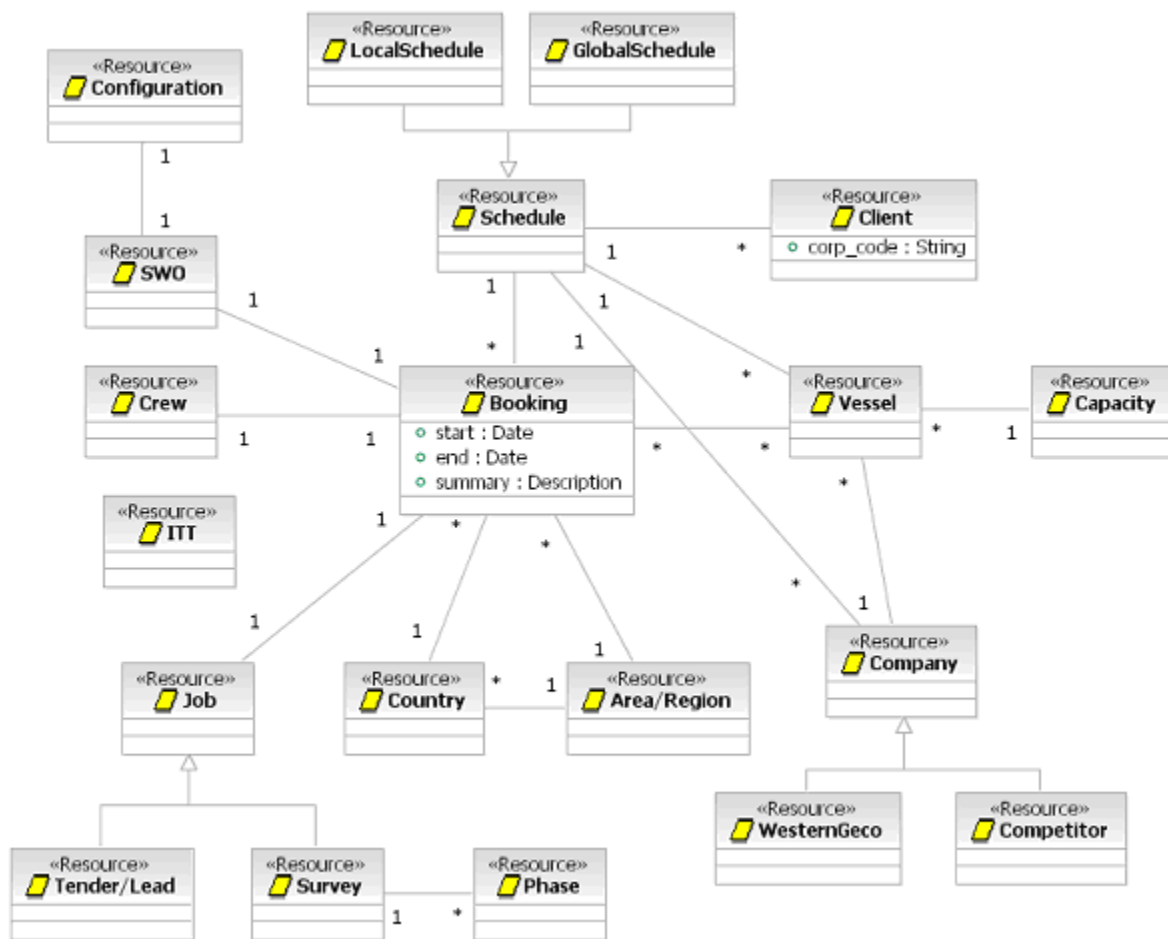


Figure 11: Business information diagram

The most important business resources are described in the table below.

Resource	Description
SWO	A SWO is short for seismic work order, which contains the details of the contracted work to carry out for a client.
Booking	A booking is an allocation of crew and vessel resources within WesternGeco that is to carry out a SWO in a specific country or region.
Job	<ul style="list-style-type: none"> <li>A job represents the current status of a booking.</li> <li>Tender/Lead means that this booking represents a rumour. A booking of vessels and crew in this case is thus only planned, not actual.</li> <li>Survey means that this booking represents an actual contract, a won bid. Resource allocation</li> </ul>

	<p>has to be planned and carried out.</p> <ul style="list-style-type: none"> <li>• In addition, lost and finished are other status flags that are assigned to jobs.</li> </ul>
Schedule	<p>A schedule contains a set of bookings. There exists a global schedule that contains the actual and planned bookings. In addition, every sales person can have their own local schedules that are synchronized at regular intervals with the global schedule.</p>
Vessel	<p>A vessel represents a seismic ship.</p>