



**OceanMotion Executive Summary
Volume 1, Final Proposal
for Central Case Project**

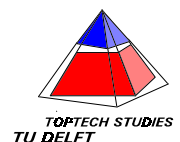
Data Item 6

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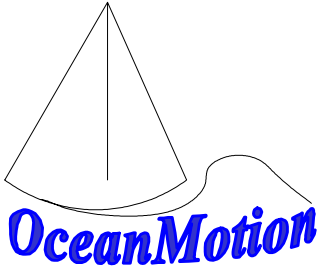
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EXECUTIVE SUMMARY



OceanMotion provides marine weather forecasts and optimal routing information for the leisure boater market and maritime industry. The service provides this information to the sailor's telephone or computer via the public telephone network and the Internet allowing the sailor to access the information from land or sea. The sailor has access to a range of forecast detail from alarms and standard weather bulletins to detailed maps with user-selectable overlays of information like winds, waves, currents and way-points.

The OceanMotion infrastructure employs existing weather satellites via the modelling and forecasting done by the national meteorological services in Europe and North America. OceanMotion *improves* regional sea-state forecasts and packages this with additional information from the meteorological services. This improvement comes from wave modelling which is performed in our data forecasting center. Data from Earth observation satellites is used to improve and validate the models as well as to verify the outputs periodically. OceanMotion provides optimal routing via software onboard the ship that uses the forecast information and specific ship parameters to greatly improve performance over existing products.

Our end-to-end system solution is the result of a rigorous analysis of promising Earth observation opportunities and system designs. It is flexible and designed to incorporate data from future Earth observation satellites as they are fielded. Our cost-constrained approach was the solution that best matched lower risk market revenues with system costs for an attractive return on investment as shown in our business plan.

The OceanMotion concept was created and designed by a team of fifteen international professionals from several different organisations in Europe and the United States: Astrium, Boeing, CNES, DLR, ESA, OHB-System and Telespazio.

OceanMotion Executive Summary Contents

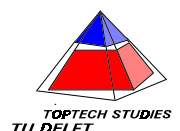
The Executive Summary addresses:

- OceanMotion Overview (Section 1)
- Market (Section 2)
- Our Services (Section 3)
- System Architecture and Design (Section 4)
- OceanMotion the Company (Section 5)

The OceanMotion Proposal Contents

The OceanMotion Proposal implements our vision and is structured in four volumes as follows:

Volume 1	Executive Summary
Volume 2	Technical Proposal
Volume 3	Business Plan
Volume 4	Appendices: Marketing and System Engineering A: Marketing Survey and Analyses B: Technical Systems Engineering Package



OceanMotion Overview

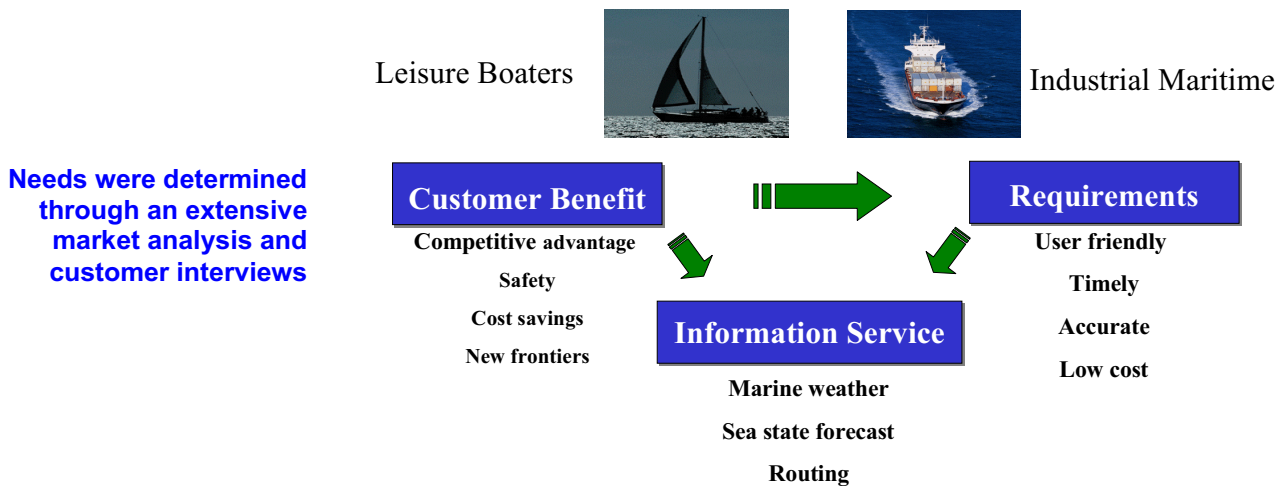
Our Vision

“Marine weather and routing when you need it, where you need it”

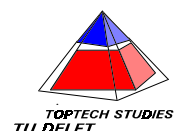
Our vision is to become a leader in providing timely, accurate information to the maritime market. We will specialise in the weather forecast and optimal routing needs of leisure boaters and industrial maritime customers in shipping and fishing. We will expand into other market segments that allow us to employ our core competencies of end-to-end system engineering and use of data from space assets to provide information services to the entire maritime market. We will apply our detailed knowledge of existing space system data products to become profitable in the fourth year of operation.

We feel an obligation to provide the highest accuracy, most timely forecast information to our customers. They may depend on our service for their profit, well being, even their very lives. We will apply our talents to this end and will be exceptional world citizens. If our information can assist the public needs, we will make it available to governments at low cost.

The Need






Leisure boaters and industrial maritime customers need more accurate and timely marine weather forecasts, especially sea-state information (winds, waves, currents and tides) to maximise their enjoyment, efficiency and safety. Optimal routing information is required to reduce time, save fuel and thereby reduce costs. Customers need to have increasingly detailed information in their specific region to plan their recreation and business operations. Information that is easily accessible and precisely tailored adds tremendous value by allowing enterprises and individuals to safely do more in less time.



The Solution: Our Service, “OceanMotion”

OceanMotion meets our customers' needs with three service levels

<i>Services</i>	<i>Marine Weather</i>	<i>Routing</i>	<i>Customer</i>	<i>User Interface</i>	<i>Cost</i>
<i>Light</i>	✓			Mobile Phone	1€ / minute on phone bill
<i>Basic</i>	✓	✓		Personal Computer	120 € / year
<i>Premium</i>	✓	✓		Personal Computer on ship	7200 € / year

OceanMotion’s end-to-end system design has integrated all the key elements of customer interfaces, forecast development, and supplier inputs. Our Data Forecasting Centre obtains forecast and in-situ data from a variety of sources such as European and US government forecast centres and radar satellites. Our sea-state and atmospheric computer models operate on more dense regional grids than the government centres, and can develop much more precise forecast information than the government centers need to provide. Our highly flexible user interfaces, both website and telephone, provide our customers with a variety of information tailoring attuned to their specific needs. Our in-house meteorological specialists and customer service personnel further assist users obtain the specific information they need.

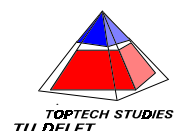
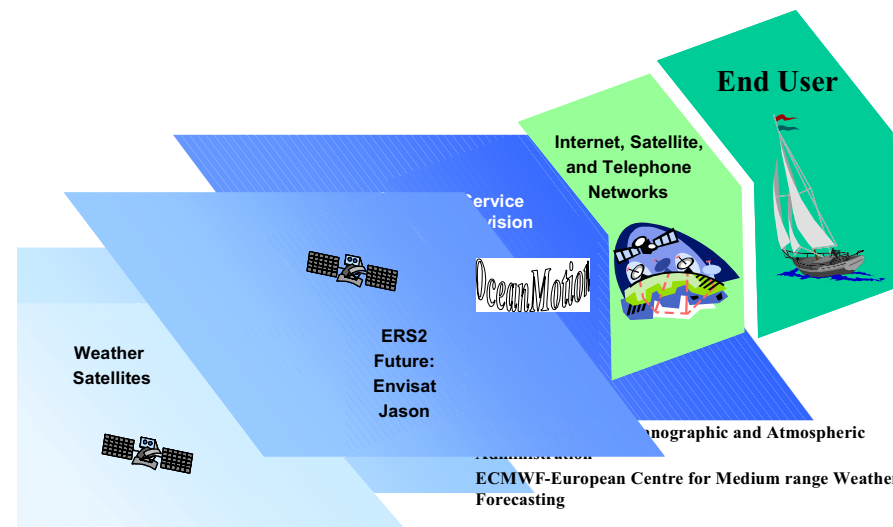
Our Unique Selling Proposition

Our system design and technology allows us to offer our customers three key benefits:

- The highest resolution sea-state forecasting for the coastal regions we serve
- The highest value route optimization
- A global service that allows access from any where at any time

Added Value

OceanMotion is a key link in the marine information services value chain



The Opportunity

Our marine weather and routing information service targets an underserved but lucrative market segment by tapping existing data, processing that data with proprietary models and providing superior customer interfaces. For 18M€ to start this company we achieve a return on investment of 39%. OceanMotion becomes profitable in our fourth year and achieves breakeven in the following year.

This opportunity features:

Get onboard!

- Moderate investment
- Superior return
- Appropriate risk / reward ration
- Intense use of space assets
- Leading – edge wave modeling
- Access to new markets and business



Market

OceanMotion began with a basic premise: to identify a fully commercial business opportunity in remote sensing from space. Our founders are passionate about the commercial possibilities available with remote sensing. A very extensive market survey (Volume 4, Appendix A) identified several addressable markets in the maritime environment that are currently under-served, and will experience significant growth in remote sensing data with the new spacecraft systems coming on line.

Maritime Industry

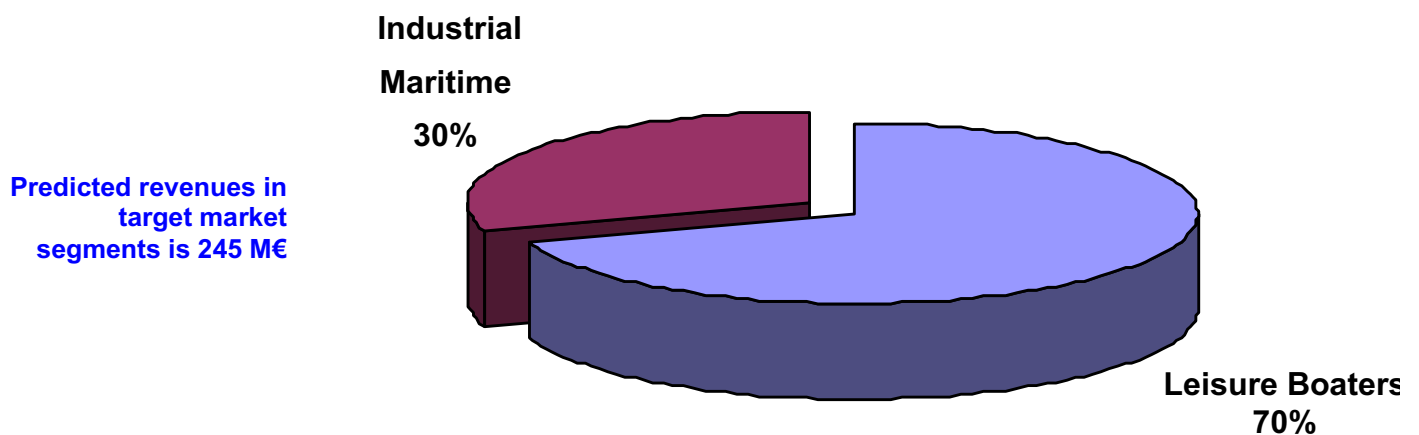
The maritime industry comprises all business activities related to sea and water transportation, off-shore operation, civil engineering for dredging and engineering consultants, environmental protection of water resources, coastline monitoring, sea bed charting and recreational activities on water. The market is concentrated along the coasts, major shipping routes and around the foremost harbours.

The maritime market can be categorised into the following segments:

- Industry: shipping and fishery, off-shore operations, dredging and engineering consultants, maritime insurance
- Governmental: environmental monitoring, civil protection, coastline monitoring, charting
- Service providers: navigation equipment and software, specialised consultants
- Public: leisure or recreational boats

Market Size and Definition

The maritime market addressed by OceanMotion will concentrate on providing weather and sea-state information to the leisure boater and industrial maritime segments of the maritime market. The public segment consists of the leisure boating community situated around the coastal areas where 50% of the world population is concentrated. For the industry segment, the shipping and fishing sector will be targeted. Over the planned 10 year operational period, the expected revenues generated amounts to 245 M€



The core market segment is the leisure boaters in the public segment. This covers 70% of the total revenues projected. The addressable market of leisure boats is estimated at 8 Million with a growth rate of 5% per annum. The leisure boat market



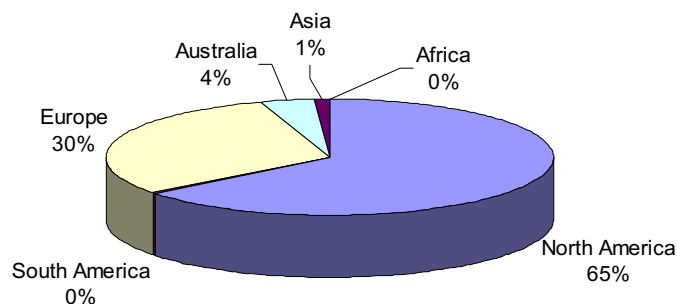
is a consumer orientated market and therefore the market penetration has to be low. We used a conservative market penetration of 0.2% in the first year and ending with 3% after year 10.

The total addressable market for the shipping industries is estimated at 15000 ships. The revenues forecasted are based on a market penetration of 1% in the first year and 20% after year 10.

Leisure Boaters

The typical leisure boat owners have medium to high income, are computer literate, gadget oriented, and are not too sensitive to price. Most boat owners are registered members of a club or association. The boating activity is associated with leisure, free time, entertainment, sports and competition. Products and services that will increase safety and competitive advantages out at sea are desired.

We targeted europe and North America for our service since they have 95% of the leisure boater market



A number of weather and sea-state forecasting services are available on the Internet. These services however, do not offer the leisure boaters current sea-state and short-term forecasts. The information offered is typically not in the format wanted and further interpretation of the data needs to be performed by the users. It is during this interpretation that unnecessary errors can and do occur. The spatial and temporal resolution of the information provided is usually at too coarse a level for the majority of the leisure boaters. Typically three days of forecast are enough, with an update every 6 hours.

It is in this area that OceanMotion has identified key benefits for our customers by supplying a graphical user interface to the leisure boat community which displays all of this information in the correct format and desired temporal and spatial resolution.

Shipping Companies

In the commercial shipping segment, the customer is the owner of the vessel or fleet of vessels. Here, the owner is not typically the user of OceanMotion's planned services. The ship's captain is responsible for monitoring safety of the vessel, integrity of the cargo and maintenance of the planned vessel route and port-to-port schedule in all weather situations. The customer is very sensitive to price and wants to ensure efficient operations. The customer wants cost savings with respect to fuel, shipping time and damage prevention.

Improved weather and sea-state predictions are beneficial to the shipping industry for two reasons:

1. The shipping industry is forced into using modern technological means that prevent the loss of cargo, the damages to the vessels and the loss of lives.
2. As mentioned previously, the shipping business is very cost sensitive. Weather and sea-state information is more than a tool to prepare the vessel for bad



weather conditions. This information in combination with routing and vessel information enables the captain to save fuel and time, therefore saving money.

Best routing provides our customers savings of 5% on fuel. Savings also occur on time in route. By having accurate information on the sea state conditions, the captain can decide when it will be safe and efficient to increase or reduce the vessel's speed.

Fishing Industry

According to a UN report (the UN Food and Agricultural Organization, published in Italy), fishing at sea is one of the most dangerous occupations in the world. On average 70 fishermen out at sea lose their lives every day. Approximately 97% of all fishermen work on small boats less than 24m in length.

The demand for fish is growing, but supplies are diminishing. Therefore, fishermen move further away from shore since inshore waters are over-fished.

The customer, the boat owner, is very sensitive to price and cost-effective operations. A large interest exists in the identification of best fishing locations and in damage prevention. The targeted user of OceanMotion's services, the ship captain, is responsible for proper operation and safety of the vessel and crew out at sea. Providing products and services that will increase safety and damage prevention as well as information concerning best fishing areas and best routing to these areas are welcome and needed.

Major Competitors

The services for sea-state delivery are available from only a few providers for dedicated users with different services and different service levels. The major identified competitors are Oceanroutes and DWD (Deutscher WetterDienst – German Meteorological Service). Oceanroutes is historically focused on ship routing services. There are a number of small companies like Nowcasting International, Applied Weather Technology, SeaSpace, SOS and ARGOSS. Oceanroutes is the most successful and the biggest player in the market with a staff of approximately 700 people. Oceanroutes focuses on the shipping industry and has sales offices world-wide. Applied Weather comes from the traditional weather routing where a customer describes a special route and the weather information will be provided for this route. SOS is a small service provider with 4 employees in the United Kingdom. Argoss focuses on information services for seabed topography and research and development. The DWD is subdivided into eight business units. The business unit's Marine Shipping provides a service under the brand SEEWIS. Nowcasting International is a small company located in Ireland. A complete list of their products, services and capabilities can be found in the Appendix of the business plan.

<i>Company</i>	<i>Employees</i>	<i>Sales/ Revenues per Year [€]</i>	<i>Annual price for basic service [€]</i>
<i>Ocean Routes</i>	700	multimillion	200
<i>Deutscher Wetterdienst</i>	2921	71 Million revenue in year 1999	150
<i>DWD</i>			
<i>Applied Weather Technologies</i>	5	200 000 (sales in year 2000)	150
<i>Nowcasting International</i>	8	500 000 (projected revenue in year 2001)	360

Competitors are small and target other market segments



Our Services

Our products are the weather and sea-state forecast and mapping software we produce. Our services are the forecasts of ocean weather and sea-state we provide consumers via website, through downloaded map overlay (to marine computers, for example), through faxed maps and SMS (Short Message Service) or computer-generated voice bulletins over telephone links. Table 2 gives the projected range of services and methods of delivery of the information.

Our services cover the range of customer needs and communications capabilities

<i>Service</i>	<i>Characteristics</i>		<i>Target Customer</i>
	Product Format	Customer Interface	
<i>Premium</i>	Marine Weather Layers	OceanMotion™ Routing Software	Maritime Industry
<i>Basic*</i>	Marine Weather Layers	OceanMotion™ Routing Software	Leisure Boaters
	Marine Weather Maps	Web Browser	
<i>Light</i>	Marine Weather Maps or messages	Existing phones, fax machines	Leisure Boaters

The Light Service

The light service allows the customer to receive low cost, weather and sea-state information. This is mainly a complementary product and has been designed to address an emerging request of marine weather information. This information can even be at low resolution but the cost of this service needs to be low. Today there are many service providers that are providing this kind of services.

The formats in which the light service is delivered are:

- **Voice Bulletins:** Weather forecast Voice Bulletin in different languages. This "pay-per-call" service is available 24 hours a day calling a dedicated number for each country in which the service is available. The subscriber needs to know the area code for the world location he or she is interested in. Through voice driven menus the subscriber can then address the desired location of interest.
- **Text Messages:** for GSM mobiles. Here the weather and sea-state information is in the form of a text description. This format has been chosen to address the large community of GSM mobile users. The format will be similar to the current NAVTEX messages presently available on the market.
- **Fax Maps:** Low Resolution weather and sea-state maps sent via fax. A Dedicated phone number, similar to that being used for voice bulletins will be used. This service will be menu driven and available in different languages. Once the subscriber has entered the needed information, the subscriber simply presses the "#" button and the fax transmission is started. The low resolution map can be integrated, on-request, with textual information as well.

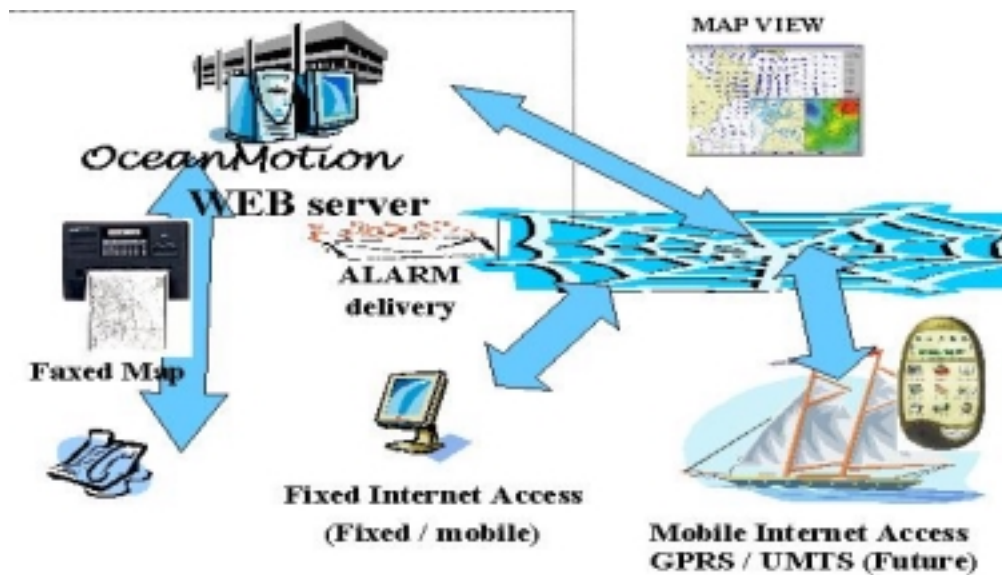
Basic Service

The basic service allows the leisure boater to access the weather and sea-state information directly from OceanMotion's home page web site. To use this service an internet connection and a web browser is needed. The user Interface with which the subscriber has access to the supplied information will be exactly the same as



that used by the OceanMotion Routing Software (OMRS) needed for the premium service

OceanMotion provides customers a variety of easy to use interfaces



The Premium Service

The premium service allows the customer/subscriber to download weather and sea-state overlays using OMRS. This software interfaces with the vessel's navigation system thereby allowing the captain to define the best route to his or her destination keeping into account the weather and sea-state constraints.

The OMRS software is designed to:

- minimise the Satellite Terminal connection time. Phone calls through satellite terminals still have high costs, the objective is to minimise the connection time therefore, we download only overlays and not graphical maps
- integrate the downloaded weather and sea-state overlays with the maps of the vessel navigation system. Since the navigation systems already integrate cartography software, OMNAS has to be compliant with the current vessel navigation systems and relevant cartography software

OMRS can be automatically configured to download the weather and sea-state information of the vicinity in which the vessel is currently moving in with a given wanted frequency (e.g. daily, every 2 h, etc.) The following additional capabilities are included in the premium service:

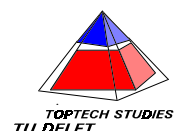
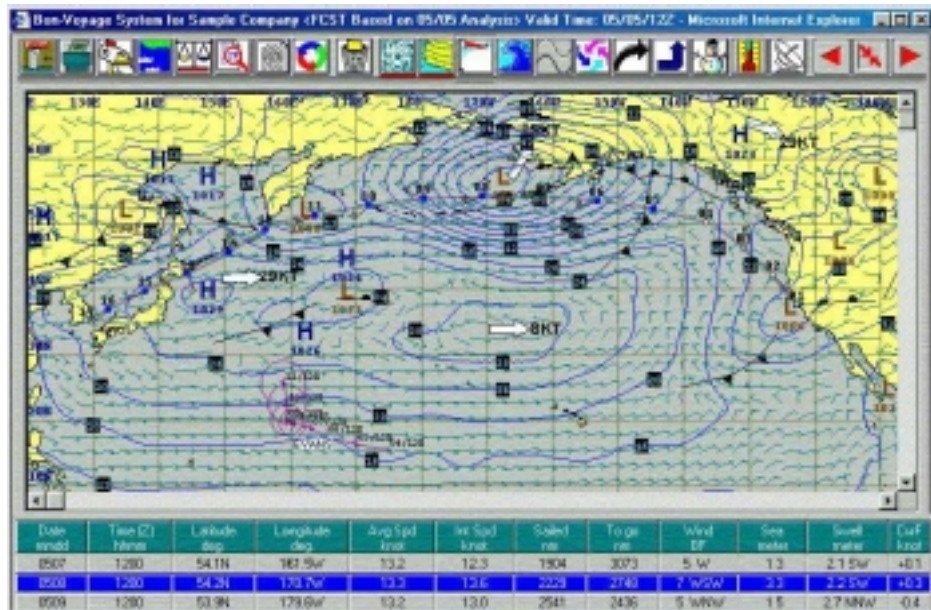
- *Best Ship Routing*. The evaluation of the best route to the final destination, keeping into account the present and future marine weather information. This feature brings with it many advantages such as crew safety, fuel saving, damage reduction and time saving for the ship captains.
- *Animation*. The animation forecast of the weather and sea-state in relationship to time. The animation can be executed using single or combined overlays.
- *Sea State Alarm Delivery*. An alarm set-up can be configured which will notify the user if in the current navigation zone or a defined zone of interest, the wind speed and/or wave height current values are above the threshold alarm set. The *Sea State Alarm* can be delivered to the user in two different ways:

- *Free of Charge.* OceanMotion delivers this by either an E-mail or via a short message service (SMS).
- *Charged* with the cost of the call in addition to the premium service charges. The following delivery methods are available: FAX, Voice message through a phone call (fixed, mobile or satellite terminal). All the user needs to do is register the number to be called at through the OceanMotion service centres.

Web-Based Interface

A typical web page is shown in Figure E with a very high zoom level. Across the top of the figure is seen the various icons that allow a user to specify the measurement of interest. A user could view wave height, swell direction, ocean current speed and direction, or wind speed and direction. Zoom commands would take the map down to local levels to show 5 kilometer resolution.

Our webpage provides a flexible, data intense and user friendly interface



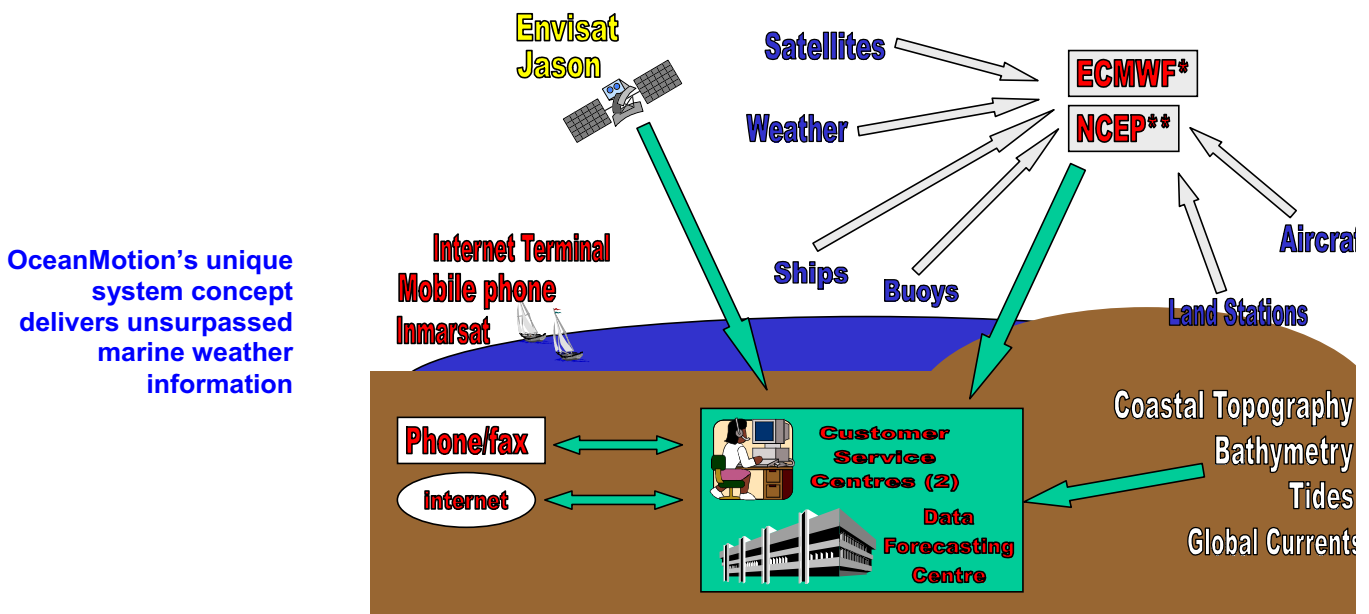
System Architecture and Design

Through its end-to-end systems engineering expertise, OceanMotion proposes a unique system concept to meet the specific needs of the marine user community. OceanMotion has been able to craft this innovative concept from its understanding of all the elements of such a system, starting with the personal needs of the ocean user, the marine community, and ending with the science of the subject itself, the ocean.

OceanMotion recognises the need for comprehensive marine weather information from a single source, and in addition, has identified both the desire for improved spatial resolution in certain marine weather parameters, and the means of meeting this desire.

OceanMotion has applied its system engineering skills, which include oceanography, remote sensing, communications and software engineering as well as business systems engineering, to provide the most up to date and comprehensive marine weather information to the user. Moreover, OceanMotion will improve this information by increasing the spatial resolution of certain marine weather parameters in the regions where the user needs it the most. The systems engineering approach guarantees that the system design is tailored to the needs of the user by continuous iteration with the user needs, the system characteristics, and the scientific characteristics of the subject.

The system concept is given below, and shows the flow of information in the system. The system starts with the high quality, up to date forecast information currently available.



Comprehensive marine weather information

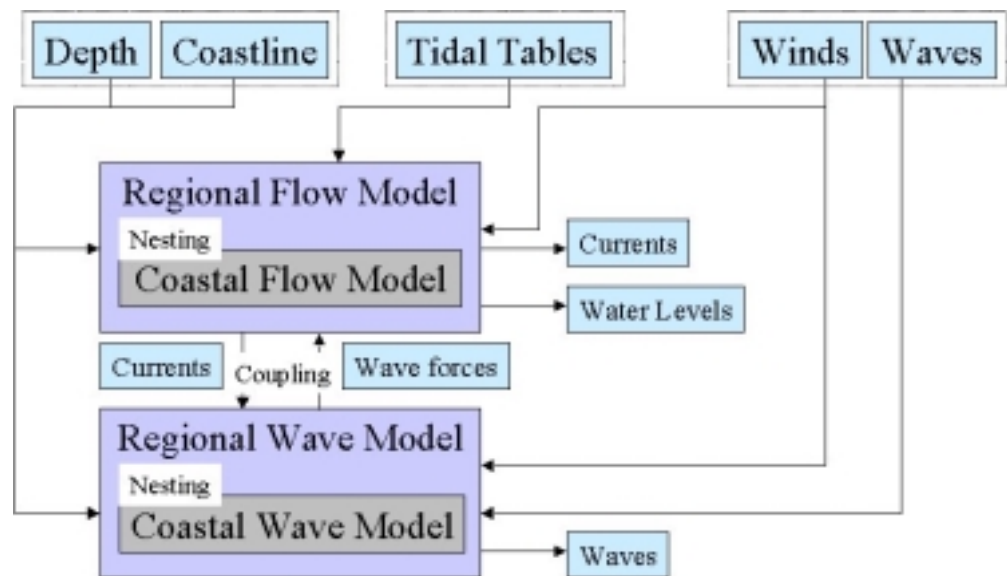
OceanMotion will use the high quality data from the European Centre for Medium-range Weather Forecasting (ECMWF) and from the National Centre for Environmental Prediction (NCEP) as a starting point for the derivation of its service. This data offers the most accurate and best resolution global information on winds, waves and atmospheric conditions. From this initial data set, which is currently the best available to the user, OceanMotion will begin a process of data overlay and fusion to improve the final information provided. Firstly, OceanMotion will augment this initial data set with deep-sea current information from Mercator, a French initiative using, among others, Topex Poseidon observations. This service is available now, and will gradually be enhanced to provide a high-resolution capability over the most commercially interesting areas by 2004.

Ocean Motion will fuse the various inputs in its Data Forecasting Centre, located in Oberpfaffenhofen, in Germany. A forecast window of 5 days has been selected to meet the user needs, and through an understanding of the ocean systems in the areas of interest, a granularity of 6 hours is used.

Improved spatial resolution

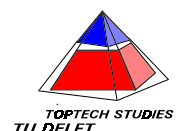
Following the data fusion from the sources identified, Ocean Motion will further enhance the information by increasing the spatial resolution in the areas identified by the marine community. Ocean Motion's advanced concept is to run operationally hydrodynamic and wave models for the coastal regions to achieve the required spatial resolution of 5 km. The baseline is to use the FLOW and SWAN¹ model configured for each of the 165 coastal areas identified by the market analysis. Configuring each model entails the use of coastline information and seabed topography, referred to as *bathymetry*. With appropriate winds and boundary condition wave inputs, along with tidal information, the models will propagate these initial conditions to generate coastal currents and wave forecasts down to a resolution of 5 km, thus offering an improvement on the current information of up to 1000%.

OceanMotion's data fusion and modelling provides high resolution information where the user needs it the most



This high-resolution forecast will extend to 30 hours, thus offering the user a very detailed picture of the local conditions for more than one day of sailing.

¹ SWAN (Simulating Waves Near-Shore) is a coastal wave model developed by the Technical University of Delft (The Netherlands)



The results of this detailed modelling are combined with the fused global information in order to provide a unique and comprehensive marine weather forecast, augmented by high-resolution coastal short-term forecasts, to the maritime user community.

Verification of the forecasts and validation of the configuration of the models

Not satisfied that all of the user community needs are being met, Ocean Motion takes a further step to improve the information content of the service being provided. Current providers of marine weather forecasts have no systematic means of measuring forecast quality, with the result that the user has no means of judging whether the quality of the forecast available is high or low. Ocean Motion proposes to provide the user with a quality indicator for all the forecast regions.

Wind and wave measurements will be periodically acquired from existing *remote sensing* satellites in order to verify the products and validate the model configurations. In addition to quality measurement, the results of this process will be used to optimise the model configurations for 165 regions of interest. Hence in addition to providing a quality measure, the feed back of this validation process improves the quality of the information being provided.

The understanding of current and future spaced-based remote sensing systems has allowed OceanMotion to identify and use the appropriate data for the verification and feed back process. The data used is as follows:

- *Significant Wave Height²* (SWH): Low spatial resolution information of wave heights obtained from altimeters
- *Wave-spectra*: 2-dimensional high spatial resolution information of wave energy per wave number (wavelength) and direction over areas of typically 5×10 km, obtained from *Synthetic Aperture Radars*.
- *Cross-spectra* winds: Magnitude and direction of the wind extracted from the same Synthetic aperture data as above.

Product verification and validation of the configuration of the model will be achieved by detailed comparative techniques as detailed below:

- Altimeter SWH information is directly comparable at low resolution level after integration of forecasted data
- Current SAR wave-spectra must be pre-processed before comparison but the new *2DWave-spectra³* product available with ENVISAT⁴ will generate 2-level products compatible with the SWAN format
- *Cross-spectra* wind information will be used to check the accuracy of the input wind field in critical areas

The configuration of the models will be optimised by correlation of the historic validation data with the verification results for each of the 165 regions of interest.

Multiple data distribution systems

Two dedicated Customer Service Centres (CSC), located in representative nautical centres in Europe and North America, will provide the distribution channels for the service, and will be the first point of contact for the customer.

² *Significant Wave Height (SWH) is the average of the highest third of the waves of a given area*

³ *2Dwave-spectra is a level-2 product from ENVISAT wave mode based on the Cross-spectra algorithm*

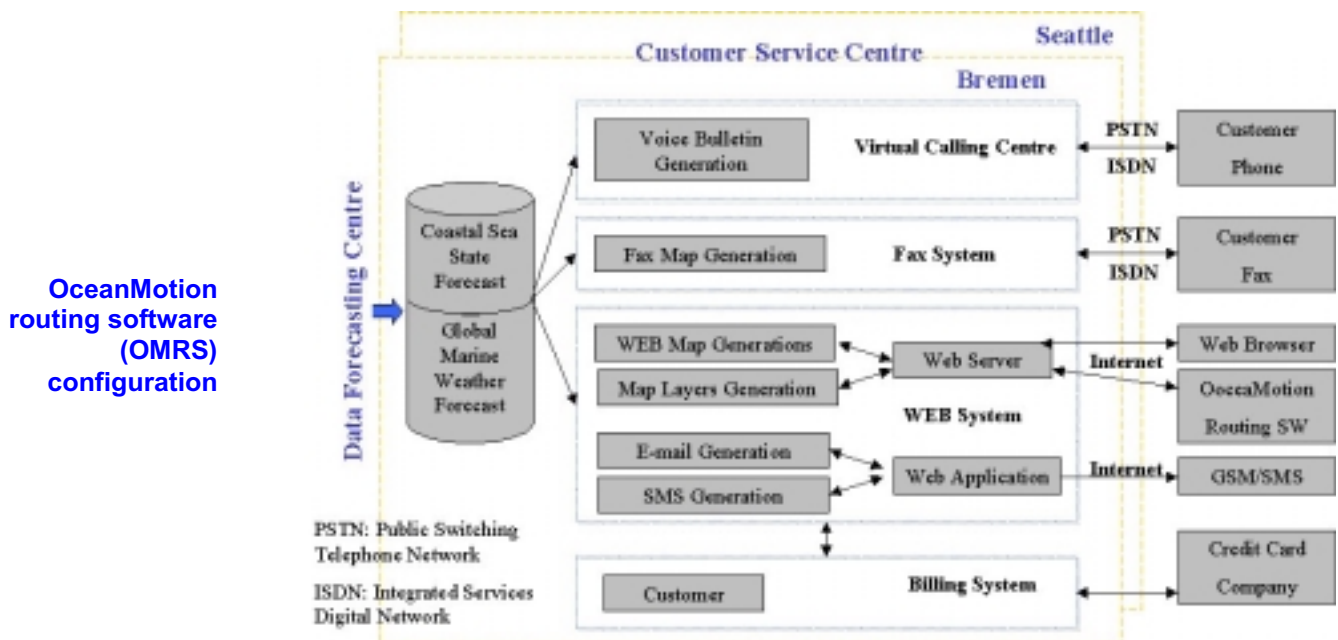
⁴ *The European Space Agency's ENVISAT will be launched in the fourth quarter of 2001*



Distribution to the users will be via existing fixed or mobile communication channels. Through systems engineering and analysis, OceanMotion has concluded that in order to address the inherent mobility of the marine community, the system concept must take advantage of the current and emerging global mobile communications systems. Specifically, the current carriers are Inmarsat and GSM (GPRS). Emerging carriers include UMTS and XM-radio.

All the tools to facilitate access to the OceanMotion forecasts will be functionally grouped into a software module, hosted in the two Customer Service Centres (CSC). These User Access Tools consist of:

- User request management functions, to channel the user to the right service
- Visualisation and browsing features to serve internet requests to the OceanMotion web site and to prepare faxes
- Messaging features to summarise forecasts and prepare voice or text messages to be sent respectively via a virtual calling system or via electronic mail
- File transfer features in push or pull mode to download weather forecast files to the user's terminal, typically a personal computer



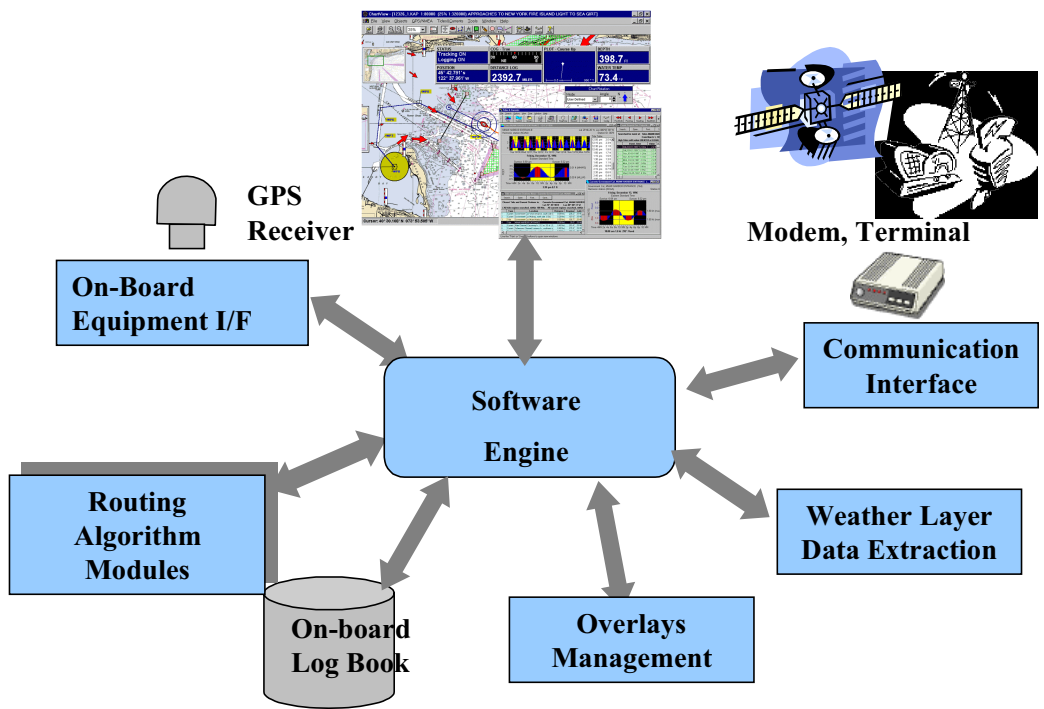
State of the art routing software

OceanMotion's Routing Software (OMRS) provides all the functionalities required to derive the optimum route for the user, fully integrating the effects of the marine weather on the ship's behaviour by increasing the number of parameters used.

The main elements of the routing software are shown below.

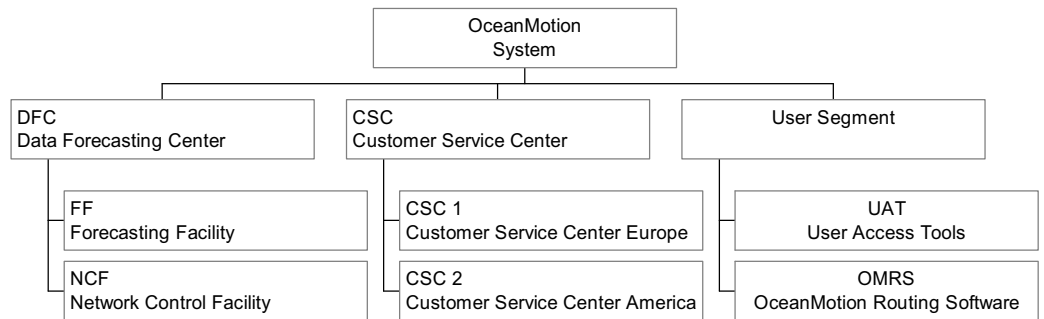
Graphical User Interface

OceanMotion routing software (OMRS) configuration



In summary, the OceanMotion system concept relies on the main elements pictured below. These elements form a robust infrastructure to support the light, basic and premium forecasting services. The nature the service categories depends on the support media of the forecast and the frequency of access.

Main elements of the OceanMotion system

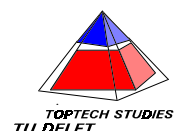
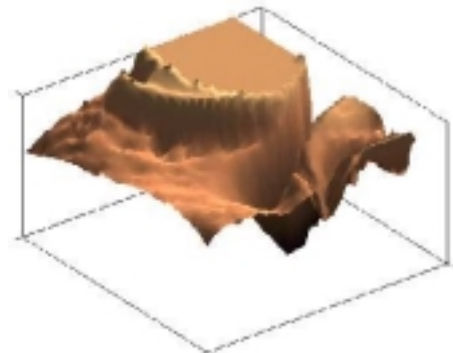


Use of space assets

With its expertise in end-to-end systems engineering, in particular remote sensing from space, OceanMotion is able to make the maximum use of remote sensing data in this advanced forecasting system.

Detailed bathymetry and coastline information

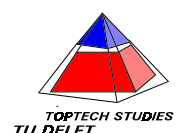
An example of this is the set up of the coastal models using bathymetry and coastline information.



These are obtained from maps and from existing or soon to be launched space assets, as shown in table 2 below. Bathymetry information is up to 4 times cheaper when using spaced based measurements compared to using a combination of planes and ships.

OceanMotion will regularly verify the output of the coastal models by comparison with measured sea-state using processed images available from Synthetic Aperture Radar satellites, as shown in the table below.

<p>Optimum use of space assets through systems knowledge and expertise</p>	Purpose	Modelling	Modelling	Verification
	Input data	Bathymetry	Coastline	SWH and wave spectra
	Space asset	ERS2, ENVISAT, Radarsat	SRTM	ERS2, ENVISAT
	Data source	ARGOSS	DLR/DFD	Eurimage, Radarsat Interactive, ESA/ESRIN
Data required	30 surveys/year 25 m depth 30x100 km scenes Height accuracy 1 m Spatial resolution < 20m	1 time Digital elevation model Resolution < 100x100 m	2000 scenes/year SWH 0.5-15 m Accuracy +/-0.5 m Swell wavelength 20-300 m Accuracy +/- 10 m Direction +/-10°	

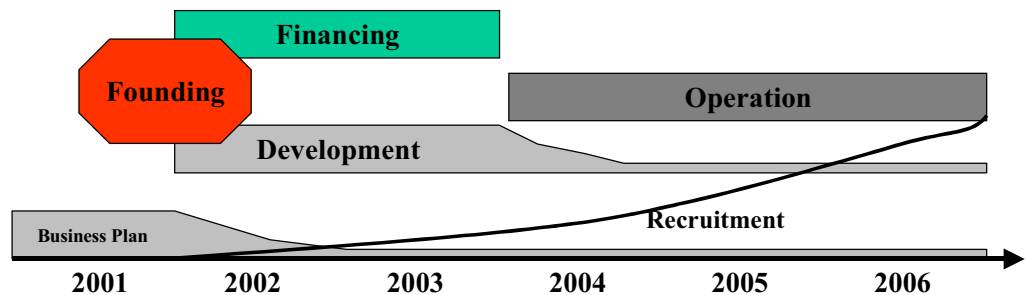


OceanMotion the Company

Schedule and Milestones

The OceanMotion overall schedule shows the major stages from completion of business plan implementation through stable recurring operations. After our founding in January, 2002, there will be two years of development and verification before beginning revenue operations in January 2004. We have planned rounds of equity financing offerings in each of our first three years. Marketing and sales begins immediately following our founding, and continues to build throughout our life cycle.

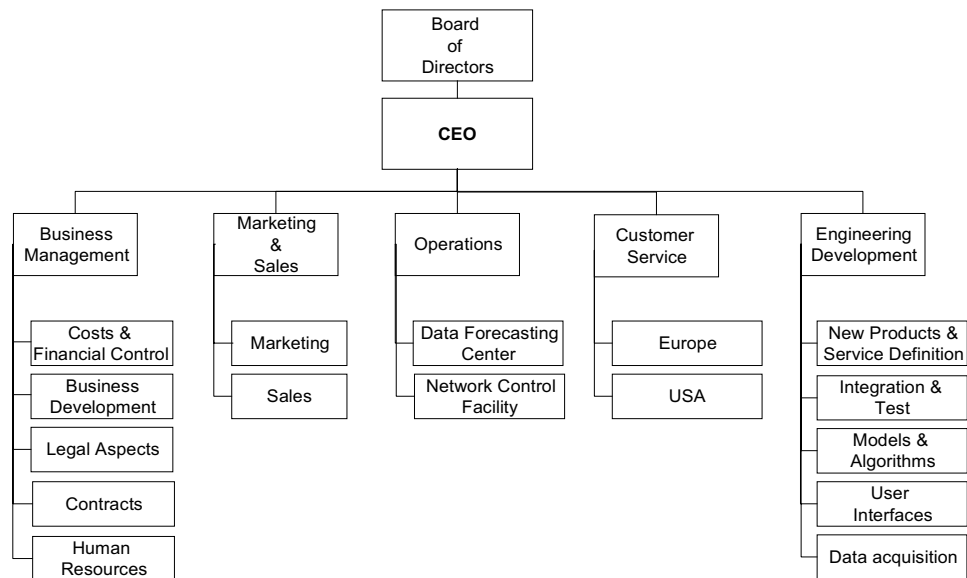
OceanMotion obtains initial funding and begins System Development in January, 2002. We launch revenue operations in January, 2004



Organisational Structure

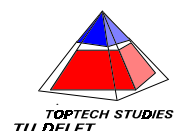
The organisation of OceanMotion depicted below provides focus and visibility to our key company emphasis areas. We are organised to develop the high technology forecasting products, to provide excellent customer service and highly reliable operations.

The structure of our organisation is aligned with our value statement – emphasising building and supporting a large customer base and improving our product



Our Team

OceanMotion's management team has a strong background in information technology and global customer service. They have a balance of early stage development skills as well as ongoing retail operations. The board of directors will work as an advisory board to the CEO of OceanMotion. The board members will draw on their backgrounds from key strategic industries, such as service industries, maritime equipment, shipping and software development.



There is a steady state of approximately 20 engineers, scientists and engineering leaders that focus on developing and operating the forecast models and data systems needed by our customers. Because the majority of our revenue focus is individual retail customers, there is a strong need for a large sales and marketing team. One of our core values is strong customer satisfaction, so we maintain an increasing customer service effort to support our rapidly growing customer base. Our staff doubles as our customer base grows from 20 to nearly 400 thousand customers over the first 8 years of operations.

Investments and Costs

The development period will last 2 years, and the development costs will be 13.5 M€. Of this figure, over 2 M€ is invested in computer and communications equipment, as well as special software models purchased to develop the forecast products. Over the 10 year period the total cost is approximately 111 M€, and is shown distributed in the table below.

Our costs are based on a detailed 'bottoms-up' estimate. Cost risk is lowered by significant vendor quotes

Work Breakdown Structure	Development		Operational								Total	
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011		
1.0 OceanMotion Program Management	0.63	0.71	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	8.78	
2.0 Business Management	0.47	0.87	1.19	1.25	1.34	1.26	1.46	1.56	1.68	1.80	12.87	
3.0 Marketing & Sales	0.47	2.48	2.99	3.98	4.88	5.62	6.12	6.12	6.12	6.12	44.91	
4.0 Operations	0.67	1.32	2.25	2.05	2.05	2.05	2.05	2.05	2.05	2.05	18.56	
5.0 Customer Service	0.16	0.28	0.51	0.57	0.64	0.78	0.93	1.06	1.28	1.49	7.70	
6.0 Engineering Development	1.53	1.75	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	8.28	
	5.00 8.54										total	110.74

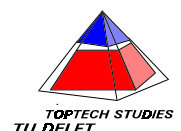
The costs are based on "bottoms-up" estimates – with the Work Breakdown Structure (WBS) developed down to level 3 and level 4. Costs are based on published software prices, hardware configuration prices, known labour rates for software support and vendor estimates. For example, quotes have been obtained from vendors for the automated telephone billing systems, for data and model purchases and for computing equipment leasing and maintenance. We are confident our cost estimates will provide sufficient margin for development and operations.

Financial Results

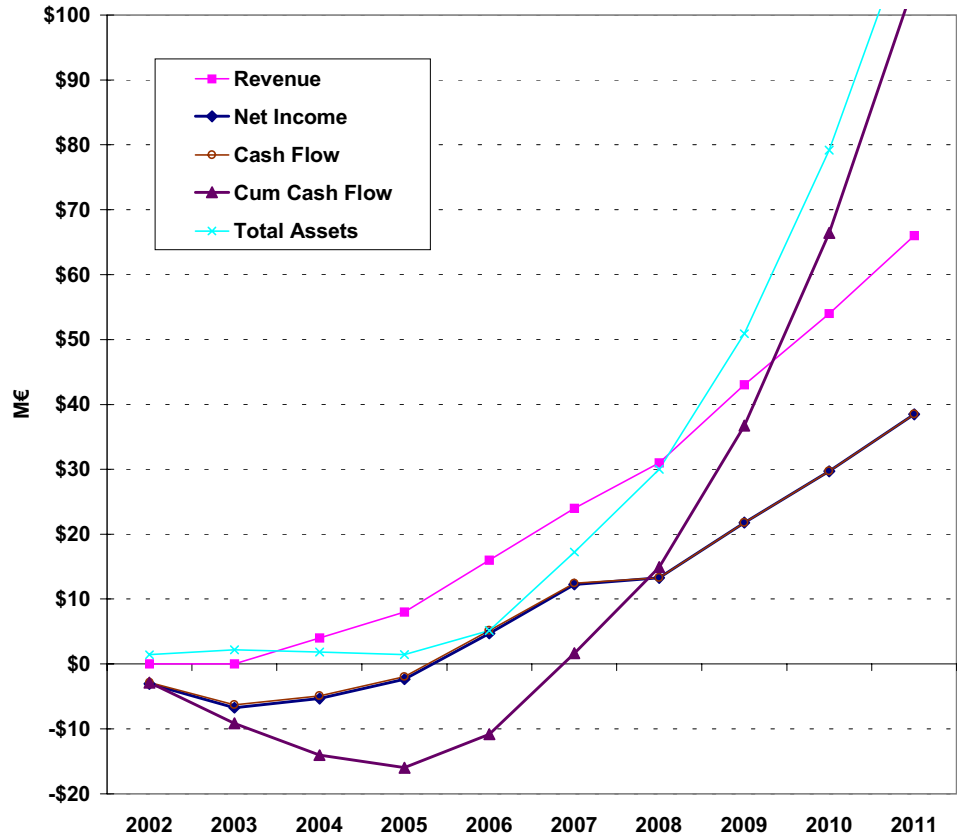
Our Pro Forma financial statements reflect the strong performance of OceanMotion, and can be viewed in detail in Volume 3 – Business Plan. The figure below illustrates the key measures from the Income and Cash Flow Statements and the Balance Sheet. Note in the figure the net income and cash flow turn positive (annual income>outflow) in 2005 – 3 years after beginning the company, and after little more than a year of revenue operations. The cumulative cash flow moves positive and 'breaks-even' 2 years later in 2007. A year after this Total Equity exceeds the value of Share Capital (see Balance Sheet) and taxes on profit begin – noted on the chart as a levelling of the income line between 2007 and 2008. OceanMotion ends the period with a very healthy cash flow.

We project a stable and healthy profit margin in the 50% range for the last several years of the reporting period – reasonable for an information services company such as Ocean Motion.

There is relatively low investment during the OceanMotion development phase. The investment of slightly over 2M€ in equipment and specialised forecast models drives relatively low debt – early operations are covered exclusively through equity. In fact, we remain debt-free for all years except for year 4, when a small 1M€ credit line is opened and then repaid the following year.



We are profitable after our 3rd year, and we achieve “Break-even” of our cumulative cash flow 5 years after starting our company

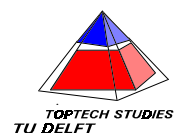


Financing Strategy

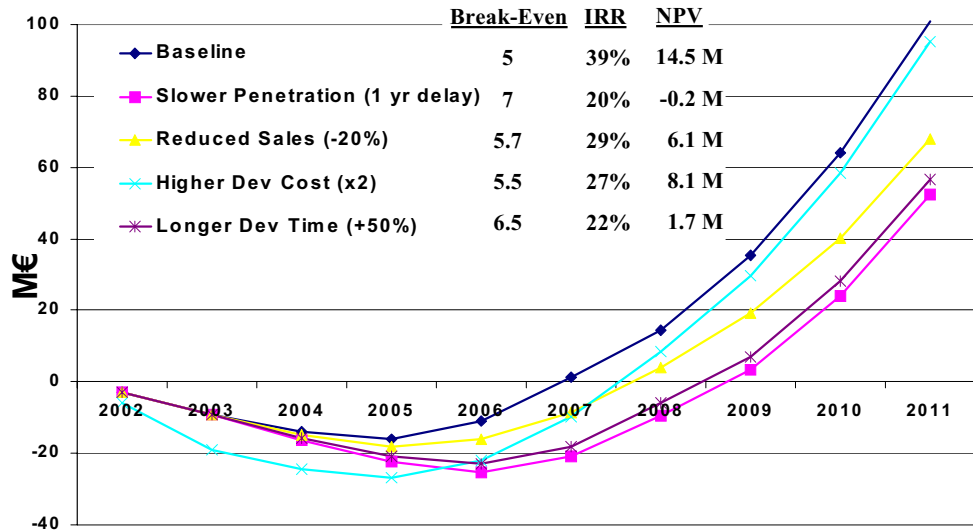
As discussed above, the operating expenses are covered through equity offerings totalling 18 M€ and occurring in the first three years of operations. There are no grants or subsidies assumed, and two years after sales begin there is substantial (5 M€) cash at the end of the year, and the credit line is repaid. The financing approach begins with a 4.5 M€ investment by the founders in 2002 (year 1), followed by a 7.5 M€ investment by a Strategic Investor in the next year. This strategic investor is seen as a company that can bring expertise in related marine equipment, navigation hardware or software – such as Magellan or Garmin. In 2004 a third round of equity financing would be pursued for a total of 6 M€. This investor would be a financial investor who would also potentially bring expertise related to public offerings or other methods of extracting capital for the investors.

Sensitivity

A sensitivity analysis was completed to ensure the calculated returns reflect reasonable outcomes. Several cases relating to reduced expectations on revenue and development cost and schedule performance were developed to test the time to cumulative cash flow break-even, net present value (NPV), and internal rate of return (IRR). As the figure illustrates, even with significantly lower performance assumptions, the returns remain at 20% or higher. This demonstrates the robust nature of the return values identified for our OceanMotion investors.



Our sensitivity analysis proves we have a robust financial definition and assists our risk mitigation efforts.



Risks and Opportunities

Various technical and business risks relevant to the OceanMotion business venture have been identified and analysed. These include risks on reduced revenue and increased development, as shown in the sensitivity analysis. Additional risks are examined in business and technical, and details can be viewed in Volume 3 section 6 and Volume 4, Appendix B, respectively. We have assessed our technical and business risks, included margin and developed mitigation plans to assure success.

Tremendous opportunities exist to balance the manageable risks for this innovative venture. The need for this detailed marine weather data exists, but the key space asset data sources are just emerging – and our engineers understand how to access these data sources. Likewise, the leisure boat market is very large, but the competition has not yet developed to service this market segment. The ubiquitous availability of the personal computers and communications with the Internet – even aboard ship, is a reality that we are poised to take advantage of. The wide range of ways we can transmit our services (fax, telephone, Internet) enables OceanMotion to reach a very large base of potential customers at a low distribution costs. All of these opportunities allows OceanMotion to offer “Marine weather and routing – when you need it, where you need it.”

