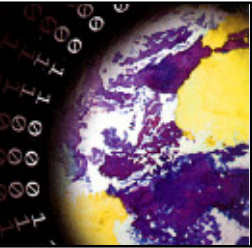


Symbios

Communications

Global consulting network

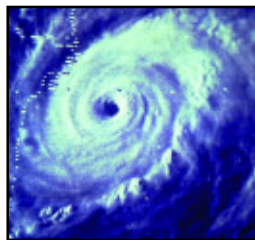
The Symbios Concept



The *Symbios Concept* is for the provision of technical consultancy services in the most professional, flexible, and cost-effective manner, achieved through our “*virtual global consulting network*”. This network, developed during a period of over 12 years professional consultancy activities, provides clients access to senior experts in a range of disciplines spanning space, defence, telecommunications, IT, and environment. The client is thereby assured the most focused solutions based on a foundation of relevant, expert knowledge.

Symbios Project Teams are truly global, comprising consultants and technical experts from the USA, Europe, Japan, South East Asia and Australia as required. In response to specific project requirements our consulting network, can access the very best expertise in industry, academic departments, government agencies, military bodies, and defence research organisations. Our approach ensures levels of relevant expertise and flexibility which can deliver maximum cost-effectiveness for the client.

Symbios is capable, dependable, and impartial, and our consultants have a distinguished record of success in major projects.



Disciplines



Our business is research, consulting, and programme support. Our consultants have experience in a broad range of disciplines, in particular:

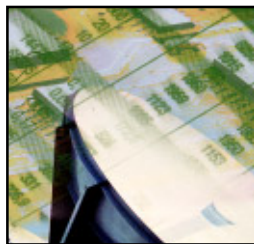
Space Systems: spanning a multitude of studies conducted in the fields of Earth observation satellites, telecommunication satellites, and navigation systems, as well as combinations thereof – such as for vessel tracking systems and fleet management. Earth observation is a particular strength, both in the public and private sectors, and across a diversity of applications.

Telecommunications and Internet: including market and technology trends, and regulatory issues.

Geographic Information Systems: in particular their applications for use of remotely-sensed and environmental data for both commercial, military, and governmental use.

Global Environment: our experience includes technical analysis in support of policy development – for example considering data requirements for treaty verification, PR support for high profile publications and materials, and conference planning and assistance.

Defence: much of our work has been conducted for, or in association with, military organisations and is related to defence applications, such as ocean surveillance or high resolution imagery collection for intelligence purposes.



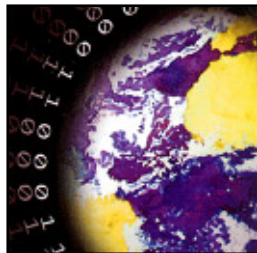
Approach



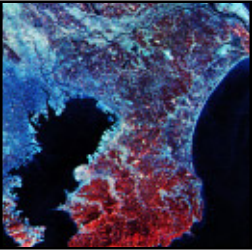
The nature of the support offered by *Symbios* is as varied as our clients' needs. Much of our work follows a traditional consultancy assignment model: we submit a proposal, agree a statement of work, undertake research, and deliver a study report and presentation. If necessary, the entire process can be conducted remotely by e-mail to ensure a fast response and to minimise client costs.

Where client needs are less well defined or are dynamically changing, *Symbios* consultants are accustomed to working as a trusted member of the in-house team, supporting the development of programme ideas and strategy, contributing to internal meetings, and representing the client in external fora.

Symbios is also experienced in researching and supporting fact-finding tours, providing a complete service for the client by identifying key collaborators or suppliers, arranging appointments, defining itineraries, and organising logistics. We have provided such packages for numerous corporate and government bodies – in particular for Japanese organisations investigating developments in Europe or USA.



Project experience

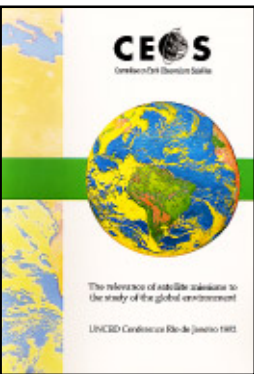


Symbios clients are typically major public and private sector organisations involved in the development and operation of large and complex programmes – such as satellite missions, data systems, or communication networks, or in the definition of policy and procedures in support of such programmes. The demands of these programmes have required our support at every stage of the project cycle, including:

- strategy and policy support
- financial and market analysis
- technology trend surveys
- regulatory reviews
- programme planning and support
- technical studies
- “state of the art” reviews for specific countries or regions
- applications development
- international liaison, collaboration building, and promotion
- promotional and educational material development, such as WWW sites, brochures, and CD-ROMs – including for use at the highest political levels



Promotional and educational materials



Symbios has extensive experience in the preparation of promotional materials, designed to report key technical analyses or political messages to a wide audience. These might be to convey the conclusions of a technical conference or meeting, to raise organisational profile at a political event, or as PR to the tax-paying public. Examples include:

- The Committee on Earth Observation Satellites brochure for the 1992 Rio UNCED Conference (for British National Space Centre, BNSC)
- Resources in Earth Observation – an educational CD-ROM for schools and developing countries (for CSRIO Office of Space Science and Applications, Australia - 1996)
- A publication on Satellite Remote Sensing in APEC Countries (for RESTEC, Japan - 1997)
- A brochure promoting the concept of an Integrated Global Observing Strategy (for National Space Development Agency of Japan, NASDA - 1999)

Financial and market analyses

Much of our work in this area relates to Earth observation (EO) programmes. Government EO projects are coming under increasing budget pressure and are often required to consider commercialisation opportunities. The new wave of commercial operators competing in the high resolution imagery market must also understand how best to position themselves for maximum profit. *Symbios* has helped both sides research the key issues and identify important strategy decisions.

- Ground segment costs and models review for ALOS (NASDA)
- A review of the financial impact of collaboration in satellite programme developments (European Space Agency, ESA)
- Research into potential for commercial exploitation of ENVISAT in the UK (BNSC)
- Pricing strategy for Ikonos data (Space Imaging Europe)
- Promotion of the EO markets in the insurance and civil Engineering sectors in Europe (Centre for Earth Observation)



Programme support

Over the course of several years and a range of different contracts, *Symbios* consultants assisted NASDA, Japan in the development of data policy and in promoting overseas collaboration for the ADEOS programme - including developing demand for the mission products and exploring practical frameworks for user involvement.

Again in Japan, we assisted Mitsubishi Research Institute in their work on the Gigabit Satellite project for NASDA to look at the complex issues surrounding government and industry collaboration and whether lessons from overseas practices might be applied.

Applications development

With many years experience in both government-funded and commercial applications development, *Symbios* is well placed to assist in identifying new applications and in developing practical institutional and project frameworks for their implementation. For BNSC, *Symbios* consultants managed the delivery of new concepts for AIDMAP (Application of Integrated GIS for Disaster Response Mapping) and COAST (for coastal zone management). Building on a separate development (Flightwatch) which uses GIS and fleet tracking technology for a global aircraft management system for British Airways, *Symbios* consultants proposed and prototyped an Ocean Data and Fleet Operations Management System (ODFOMS), an international project to integrate satellite data with fleet management functions for optimal fishing operations and conservation management.

Symbios consultants have also undertaken several further reviews of ship tracking and detection technology for commercial clients.

Policy support

As the radio spectrum comes increasingly under pressure from the explosion in different types of mobile devices and the number of operators trying to market them, efficient spectrum management by government becomes more and more vital. Based upon pioneering work undertaken for the UK Radiocommunications Agency, *Symbios* consultants assisted in a review of application of economic techniques to the management of the radio spectrum in Japan.

This work, which attempted to estimate the equivalent economic value of different components of the spectrum, was undertaken for the Ministry of Posts and Telecommunications, Japan in order to support development of future licensing strategy and is a typical example of our policy support experience of government agencies.



History & Contact

Symbios Communications was founded by Stephen Ward. Having worked for 10 years in the UK and 2 years in Japan as a technical and management consultant, he recognised the needs of many clients for more responsive, flexible, and cost-effective consulting solutions.

Given the opportunity to work around the globe with a broad range of senior experts in industry, government, and military, he observed that the diverse needs of clients can rarely be best satisfied by static teams which require considerable learning time to tackle each new topic. He undertook to establish a “virtual global consulting network” – *The Symbios Concept* – which would provide clients access to the very best expertise available, based on a history of focused and relevant experience, and in a flexible and cost-effective manner.

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Client list

Symbios consultants have been engaged on assignments for:

- British National Space Centre, UK
- Central Computer and Telecommunications Agency, UK
- Centre for Earth Observation, European Commission
- CSIRO Office of Space Science and Applications, Australia
- CSP Japan
- Defence Evaluation and Research Agency, UK
- Department of Commerce (NOAA), USA
- European Commission, DGXII
- European Space Agency
- Japan Manned Space Systems Corporation
- MCC Corp, Japan
- Ministry of Posts and Telecommunications, Japan
- Mitsubishi Corporation, Japan
- Mitsubishi Heavy Industries, Japan
- Mitsubishi Research Institute, Japan
- Mitsubishi Space Software, Japan
- National Space Development Agency of Japan
- Remote Sensing Technology Centre, Japan
- Science and Technology Agency, Japan
- Society of Japanese Aerospace Companies
- Space Imaging Europe, Greece

