

FOCUS

Collaboration is king

Shared passion



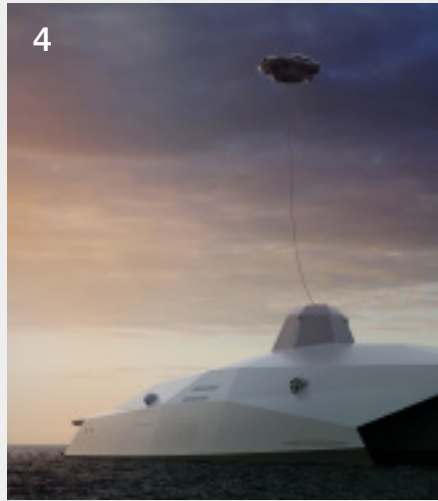
Delivering the future fleet



Optimising offshore wind



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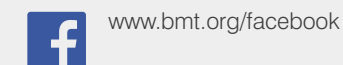
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Editorial

A warm welcome to the latest issue of Focus. Collaboration can mean different things to different people, but the common thread woven into any successful partnership – and those you can explore in this issue - is trust. Of course there needs to be a commercial imperative to partnering, but partnerships only succeed if, beyond the figures, they are built on mutual trust and respect. Only with trust in place are you motivated to give freely of your knowledge, contacts and experience.

As high end specialists, partnerships provide an excellent means by which we can take our expertise and apply it to new areas, achieving outcomes that could not have been achieved by any one partner alone. That for me is the ultimate aim of collaboration; that is what success looks like. As Henry Ford observed, "Coming together is a beginning; keeping together is progress; working together is success."



Peter French
Chief Executive

In this issue

We look at some strong partnerships with leading academic institutions such as Imperial College London, where BMT is supporting the latest research being conducted in the Aeronautics Department. The UK Ministry of Defence (MOD) has also long since collaborated with industry, capitalising on the wealth of naval capabilities available within the UK defence industry. We focus on the Naval Defence Partnering Team which brings together MOD and industry partners, providing the intelligence and necessary expertise to deliver the UK's future fleet. Elsewhere, Dirk de Jong, Director Design & Innovation at Oceanco, believes that the

mutual setting of goals is critical to any successful collaboration – something to which Oceanco, MARIN and BMT Nigel Gee have dedicated time and effort over the last two years.

I hope you enjoy this issue and I would like to thank all our authors who have given their time to provide us with their views and insights. We always welcome your feedback on the magazine. If you have any thoughts on any of the subjects we have covered or would prefer to receive this publication in electronic format, please send your feedback to our editor at jwilliamson@bmtmail.com.



Collaborate to Innovate

Delivering the Future Fleet

As part of its commitment to delivering cutting edge concept and feasibility ship designs for the Royal Navy and Royal Fleet Auxiliary, the UK Ministry of Defence (MOD) initiated Naval Design Partnering for Ships (NDP Ships) which brings together several core industry players, providing a secure environment for industrial and, occasionally, international collaboration and innovation. The first of its kind, NDP Ships leverages the UK's rich design resources and supports the MOD projects through life, as an integral part of the MOD Owner and Integrating Design Authority Team.

Featured NDP projects

Type 26 Global Combat Ship Concept Phase

Startpoint

Type 23 Power Generation and Machinery Controls Upgrade Project (PGMU)

High Speed Craft

In its sixth year of operation, NDP Ships presents a blueprint for successful industry collaboration. So much so that the experience and lessons learned from the NDP Ships framework has spawned the more recent development of NDP Submarines. Working under MOD leadership, the NDP Ships team is made up of core member companies which have been selected for their breadth and depth in warship and combat systems concept design skills. The core members are: Babcock, BAE Systems, BMT Group, Finmeccanica, MBDA Missile Systems, QinetiQ and Thales.

Steve Hyde, Head of Maritime Combat Systems, Defence Equipment and Support at the Ministry of Defence explains: "We recognised that extra skills beyond those available within the MOD were required for the successful integration of concept studies. This led to the construct of NDP which allows us to capitalise on the wealth of naval capabilities available within the UK defence industry and, equally, for the partners to benefit from the breadth of MOD capabilities and expertise. Companies also benefit from more informed plans for possible employment of their resources and the opportunity to enhance skills against a more visible programme of future work.

NDP also helps to improve value for money and efficiency by having an operating model that facilitates rapid creation of projects or tasking of design teams under a collective framework."

With a clear sense of purpose, NDP aims to translate capability requirements into designs for affordable and cost effective naval vessels and to encourage and generate innovation in design through a creative and multi-disciplinary team. It also aims to influence the direction of research and articulate the route to market in order to maximise the exploitation of technology for future naval vessels.



Jeremy Berwick
BMT Group's Managing Director Defence

"It's important to note the significance of this collaboration given that many of the core member companies will, under normal business circumstances, be competing against each other for other projects. Their ability to come together and create a working environment that is built on a huge amount of trust is therefore exemplary. BMT's position as Lead Company, the contracting entity through which industry is engaged, and the leadership function that this demands is a contributory factor to the success of the NDP to date. The trusted relationships that BMT has established in performing this role have led to further business opportunities with other NDP core companies. Within the NDP framework, we are naturally collaborative and completely focused on helping the MOD to make informed decisions. Industry members have certainly got to know each other better as a result of NDP and the relationships built have led to greater partnering on projects elsewhere that most likely would not have been achieved if it wasn't for NDP."

Collaboration underpins success

NDP Ships has facilitated the creation of a multi-company, multi-disciplinary team of people who work together seamlessly on these projects with a shared vision of delivering value into the MOD. With an agreed, collective set of Key Performance Indicators, the team members all take responsibility for how the team is performing and for measuring levels of satisfaction with the MOD project teams. Ensuring the partnering relationship remains effective means that the members have continuously to analyse what is working and what is not working quite so well. It is very much about celebrating successes but it is also about looking at what they can improve upon to ensure NDP Ships remains fit for purpose, providing the intelligence and necessary expertise to deliver the UK's future fleet.

Recent NDP projects

1: High Speed Craft

The NDP Ships core team has undertaken a range of studies related to these craft. One particular success has been in relation to whole body vibration effects on personnel, a regulatory requirement to limit exposure of personnel in transit on small fast craft. A variety of seat and passenger restraint systems were evaluated leading to at-sea tests and the selection of a new seat that will significantly reduce personnel risk on future fast craft.

2: Startpoint

The NDP Ships team created a vision for future maritime mission systems under the Startpoint banner and exhibited this successfully at DSEI in 2015. The collaborative arrangement, which included the MOD, the Royal Navy and all NDP Ships companies, proposed a collective UK

approach to future warship mission systems and provided innovation and insight through a concept frigate that demonstrated the potential for new technologies.

3: Type 23 Power Generation and Machinery Controls Upgrade Project (PGMU)

NDP Ships was used to lead and manage the technical elements of this project on behalf of the MOD project team. NDP engineers assessed options and generated technical specifications for the replacement equipment, ensuring an integrated approach to equipment selection that provided correct system performance. The NDP Ships team assisted MOD in conducting a competitive tendering exercise to select the preferred equipment suppliers.

4: Type 26 Global Combat Ship Concept Phase

This project centred around a concept phase design of the Future Surface Combatant, developing a wide range of design variations to explore the cost capability envelope. Data from the MOD was used to develop algorithms for weight and space and a specially developed concept sizing tool was used to enable balanced designs to be rapidly generated to assess the whole ship implications of capability variations. As part of ongoing investigations into the size and shape of the future surface fleet, the NDP Ships team was tasked with designing and costing a number of frigate solutions to meet a series of revised capability requirements. The aim was to investigate what would be possible for a substantially reduced unit platform cost.



1	2
3	4



Strong Partnership = Shared Passion

Arwel Griffiths



Arwel Griffiths is the Director of the Met Office Business Group, which delivers services to industry, working at the forefront of weather and climate science for protection, prosperity, and well-being. Arwel has worked at the Met Office since 2010. Prior to that he worked in the private sector for 28 years, holding a number of executive positions in international science and engineering companies, including ICI, ABB, National Grid and Germanischer Lloyd.

Arwel Griffiths, Business Group Director at the Met Office, believes that the key to any successful partnership or collaboration is rooted in common goals and harmonious business cultures. For the past four years, BMT and the Met Office have been working together in an effort to provide solutions to the challenges facing the marine industry and allow customers to work more effectively.



Sea Lion Project, the Falkland Islands

Recently, a team of specialists from BMT and the Met Office collaborated to develop a 20-year ocean current model hindcast covering the Falkland Islands and adjacent waters.

The advanced modelling work is in support of Premier Oil's Sea Lion field development, 220km north of the Falkland Islands in 450m

of water depth. The engineering design and operational planning for the proposed FPSO requires high integrity metocean information. The Met Office assimilative NEMO 3d model was used to provide layered regional ocean data. BMT's TUFLOW FV model was nested into the regional model to give fine resolution hydrodynamic simulation in coastal waters.

Arwell Griffiths shares his view on partnerships

In general terms, regardless of the markets in which you operate, it is essential for businesses to partner with other organisations as no one company can be strong in all areas. Given our links with universities, government agencies and other commercial organisations, collaboration is second nature to us. However, it is important to consider the necessary ingredients to ensuring success.

In my experience, you can look at many organisations and, on paper, partnership makes sense because of certain synergies in relation to co-located offices, skills, customer base, etc. but then often you find

that the business cultures are so different that it impacts the organisations' ability to seamlessly work together. It is not to say that the business cultures need to be identical but, on some level, they do have to complement one another. The heritage of the Met Office and BMT is not dissimilar and, with both being strong scientific institutions, we are able to understand each other's thinking more effectively and are more likely to reach similar conclusions. Furthermore, any partnership or collaboration requires vision, foresight and determination from the team to make it happen/work.

Its importance also comes from the organisations having complementary strengths. The Met Office provides the most

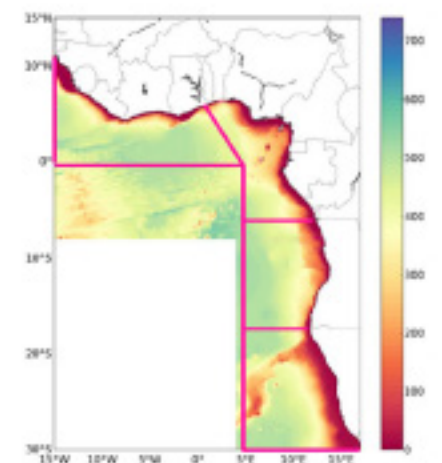
competent national meteorological services and forecasting units globally and BMT has, for many years, demonstrated integrity and a strong track record in growing its business in a number of international markets.

Another key aspect of a successful partnership is having a shared passion to enhance the depth of knowledge and capabilities to deliver mutual benefit not only to the organisations but, more importantly, for those capabilities to be of benefit to our customers and the markets we serve. That's certainly what motivates us to seek out such partnerships and we believe that BMT also has a strong desire to look at developing engineering solutions that address real life challenges.

MACH (Mid-Atlantic Current Hindcast)

One such example of our partnership working effectively with BMT was the launch of our joint Mid-Atlantic Current Hindcast (MACH) data set. Working closely with oil and gas operators, the MACH team - which also included experts from Oceanweather Inc. - used their combined knowledge, experience and computational resources to provide a robust current data set over the West Africa region. Unlike other current data sets available, the MACH data set provides information on the long-term variability of currents over a 20-year period and has been validated against measured data throughout the region. The initial focus has been to provide a 20-year fine resolution data set for the West Africa oil and gas concession region. Both Shell International Petroleum

Company Limited and Total S.A., along with various other international operators, have since benefited from this data set, helping them to better understand the ocean conditions within a potential development site or to gain advanced knowledge of the conditions prior to exploration drilling. The formation of the MACH partnership was a strong starting point and proved to be a powerful initiative that was of great value to many of our customers. This in turn has given us the confidence and the encouragement to continue working with BMT on other possible initiatives - wider opportunities that we're exploring now which will draw on the complementary strengths of the organisations with a continued focus on providing a broader offering which will benefit the customers that we serve.



Jan van Smirren

BMT Group's Managing Director Energy:

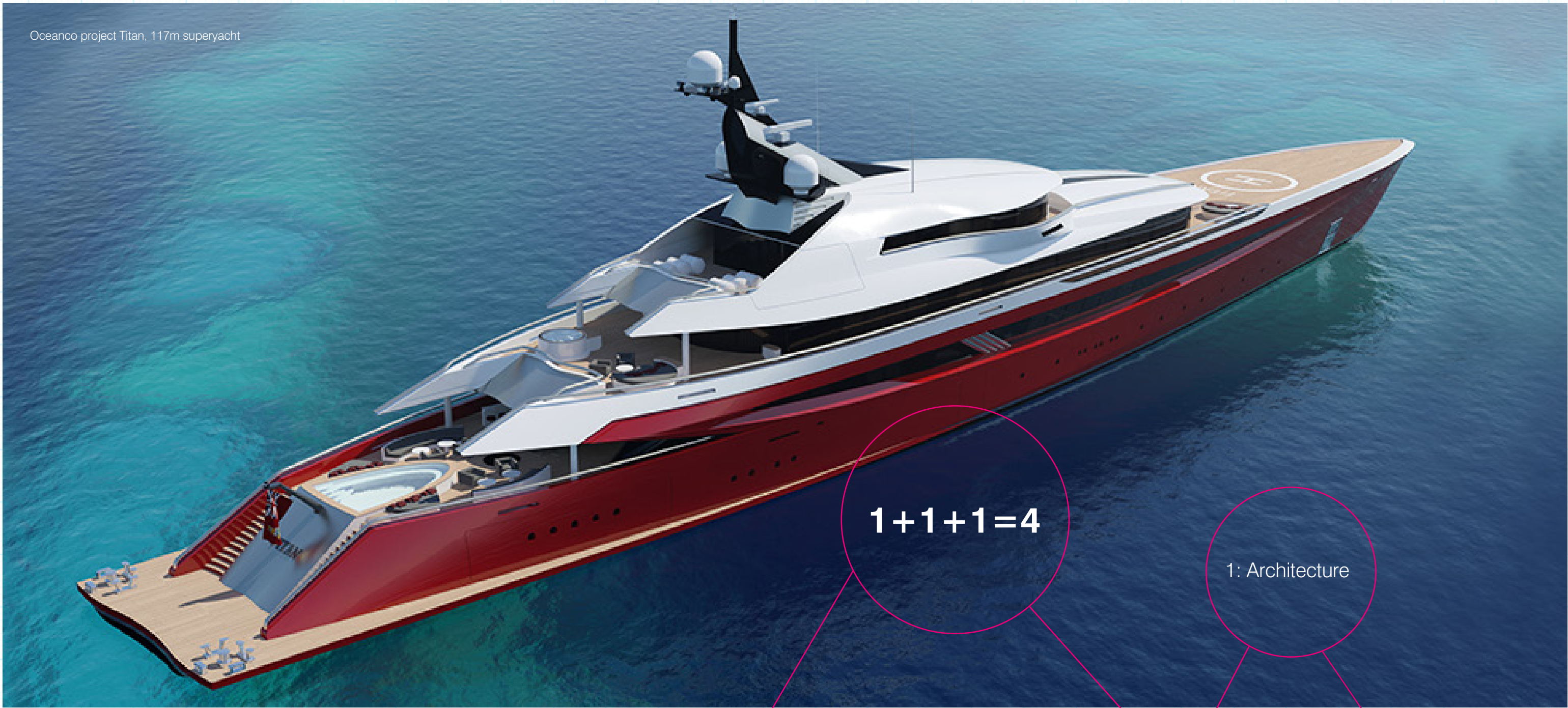
"Working closely with the Met Office allows us to better evaluate and quantify what is likely to happen over the design life of offshore facilities - a great example of where we're drawing on expertise that doesn't exist in many places, leading to this strong partnership. To me, collaboration is about committed parties working together to produce or create something that is of greater value to all and could not be achieved independently. I believe these are the key ingredients in a successful partnership."



Robin Stephens

Metocean Group Manager at BMT ARGOSS

"We are drawing on the technical expertise of climate science within the Met Office to support some of our longer term engineering studies with which we're engaged. An example of this is the Caspian Sea where changes in water level are having a major impact on offshore operations and the viability of servicing some of the offshore installations by ship. At the moment, there's a progressive reduction in sea level which is caused by an imbalance between the riverine discharges into the Caspian Sea from the Volga River and the evaporation water losses in the south of the Caspian. So, there's a very fine balance between the inputs and the losses which have led to significant variations in the sea level and, currently, we're seeing a decline which could have grave consequences on the offshore activities in Kazakhstan and other parts of the Caspian Sea."



$$1+1+1=4$$

1: Architecture

1: Building

1: Engineering

The Benefits of Effective Collaboration

Three leading companies in the fields of naval architecture, engineering and yacht building explore how the benefits of effective collaboration can lead to results that are greater than the sum of their parts.

The modern superyacht is by its very nature a highly complex product featuring sophisticated and greatly integrated systems, all within a platform that has to balance a bias towards design and style with exceptional technical performance. The process of design, engineering, build,

commissioning and support of such vessels involves substantial resources spanning international boundaries, technologies and cultures. Collaboration therefore, is key to the construction of a superyacht as no one person or organisation can be an expert in all fields.

As one of the world's leading builders of large innovative yachts, Oceanco collaborates with key industry partners via a team of in-house domain specialists and experts to deliver the best results from the combined strength of all participants. Two such partners are BMT Nigel Gee and the independent hydrodynamic research institute, MARIN.

Following the mutual development of a number of designs, these companies came together to identify and adopt a best practice collaborative approach to their hull design and optimisation processes. This involved a methodical process that harnessed the right skills at the right time from the participants. With BMT's blend of practical optimisation techniques and MARIN's CFD based approach, as well as decades of practical test results experience, the spectrum of expertise was broadened over a single party approach.

Dirk de Jong, Director Design & Innovation at Oceanco said: "A key part of the partnership was the mutual setting of goals at the start of the design process, answering questions such as; beyond the stated contractual target performance what can be feasibly achieved? What do we want to explore? What can we adapt or explore from other fields of naval architecture and design? How ambitious should we be? These are factors that, amongst others, the partnership explored and debated at the outset, in order to define challenging but realistic and achievable goals that are properly aligned to the needs of the overarching vessel design and the constraints imposed."

This collaborative undertaking has delivered significant benefits with the BMT/Oceanco/MARIN partnership developing a series of industry leading hull-forms for Oceanco projects with two of the designs now under construction in the Netherlands.

Commenting on the results, Enrico Della Valentina at MARIN states that: "This collaboration has set a very high bar in the calm water performances for displacement motor yachts. From our database of 300 comparable model tests, spanning 20 years of development, the BMT/Oceanco/MARIN partnership has delivered a hullform which, at its design speed, is the best performing hull in the current MARIN database."

However, there will always be obstacles and risks to collaborative working which, without the correct ingredients and approach, will lead to an unsuccessful result. Such an outcome tends to reinforce the self-serving bias of those who promote a more inward facing approach, which can be a difficult situation to recover from if a collaboration fails. Some factors to consider include:



Dirk de Jong



Enrico Della Valentina

Key ingredients

- Leadership – take the long-term, big picture, strategic view, communicate vision. Promote and establish a culture of trying new things.
- Clear aim and objective of collaboration.
- Good personal relationships and interpersonal skills amongst team members, trust and friendship are significant advantages.
- Compatible cultures or understanding of cultural differences.
- Planning and methodology of approach / process.
- Transparency surrounding IPR and other commercial matters - form a written agreement.
- Skills for change management.
- Diversity in team – skills, markets, industries etc.
- Commercial innovation – often a technically innovative approach requires a commercially innovative approach as well.
- Persistence.

Benefits

- Improved results, increased competitive advantage.
- Key driver for innovation.
- Increased breadth and depth of knowledge (company and personal).
- Share in risk and better risk mitigation.
- Improved use of existing resources.
- Team and individual morale.

- Personalities.
- Competition between partners.
- Lack of information and experience.
- Lack of resources at decision making stage.
- Cultural mismatch.
- Resistance to change.
- Lack of clarity in roles and responsibilities – weak leadership.

Obstacles

Having a clear plan and methodology to the approach is critical. Everyone should buy into the method, yet it should remain flexible, adaptable and be appropriate for the resources available.

Persistence is a virtue in the face of opposition or failure; if you have the right ingredients keep going, if you have the wrong ingredients stop and re-evaluate.

Risks

- Outcome does not align with investment of time and resources.
- Loss of flexibility.
- Complexity in decision making.
- Diversion of energy and resource away from core activities "mission drift".
- Lack of commercial awareness relating to budget / time / IPR matters etc.



Comment from James Roy
Yacht Design Director at BMT Nigel Gee

"Ultimately, collaborating all comes down to people. Having a room full of clever people does not guarantee a good result regardless of the level of resources at their disposal. If you get the right people, in the right room, at the right time, with the right mindset, then you are 80% of the way to success in changing "me" to "we" and turning people and organisations from contributors to collaborators."



David Bright
BMT Group's Managing Director, Commercial Shipping

The BMT/Oceanco/MARIN collaboration described here is an excellent example of what can be achieved when organisations are brought together with a common goal in mind; the ingredients required to make collaboration a success and what needs to be avoided are clearly described. When I look across the range of projects which have been undertaken in the commercial shipping sector I am struck by the number requiring a collaborative approach and I am encouraged that our staff have the correct balance of personality and commercial awareness to be successful in this environment.

Fundamental to achieving a successful result is that there must be alignment at all levels for collaboration to work. If those at the top want the organisation to collaborate, then those at other levels must have the willingness to do so. The collaboration will not be effective if people think and act only for themselves. Having cultural alignment between collaborating partners is an advantage. If alignment is not absolute, then mutual respect and acknowledgement of each other's capabilities is essential as this builds respect and trust.

A key benefit of collaboration across multiple organisations can be acting as a catalyst for change. Accepting the way things have been done before can often be the path of least resistance for a team which is also working within the pressure of commercial constraints. Resistance to change and doing things in new ways can act as a significant barrier. Collaboration should ultimately drive adaptation, evolution and deliver innovation. None of this can be achieved if things never change.

Influencing the Future of Wind Engineering

Imperial College London is no stranger to collaboration with public/private partnerships fast becoming part of everyday life for the public research university. Spanning 30 years, the College's Department of Aeronautics has worked closely with BMT Fluid Mechanics and believes the partnership to be an integral part of its research efforts. MAXimising wind Farm Aerodynamic Resource via advanced Modelling (MAXFARM) is one such project where a strong partnership approach between industry and academia has the potential to provide huge benefits for the UK offshore wind market.

The UK's commitment to significantly decarbonise in order to meet greenhouse gas emission targets by 2050 means that the country will need to harness a wide range of renewable energy sources - offshore wind being one of the UK's greatest resources.

In an effort to tackle this challenge, the EPSRC (Engineering & Physical Sciences Research Council) announced in November 2015 funding of £1.5 million for MAXFARM, a three-year project to help improve the reliability, lifespan and efficiency of the UK's offshore wind farms and in turn meet the needs of the UK electricity sector. The consortium includes researchers from Imperial College London Department of Aeronautics alongside other academic institutions and a number of commercial partners, including BMT Fluid Mechanics.

The aim of the MAXFARM project is to build an integrated multi-scale approach to the computational modelling of wind farms.

Better computer models will inform future operational decisions to maximise power output and the operational life of these facilities. The ultimate goal of the project is to facilitate cost reductions in generating energy from offshore wind. This requires expertise in many areas to create a holistic view of the challenge. This collaborative project has researchers with expertise in aerodynamics, meteorology, mechanical engineering and electrical engineering.

The group also includes partners from the commercial sector to combine the academic rigour with commercial nous. Other partners include: University of Surrey, Loughborough University, University of Strathclyde, the Science and Technology Facilities Council, DNV GL Energy, Offshore Renewable Energy Catapult, Renewable Energy Systems Ltd, Satellite Applications Catapult, SgurrEnergy Ltd, Zenotech Ltd and ZephIR Lidar.

Volker Buttgerit, Managing Director of BMT Fluid Mechanics, commented: "We have a long standing relationship with Imperial College London's Department of Aeronautics and it's true to say that much of the fundamental research that now lies at the heart of wind engineering was carried out in our wind tunnel facilities. One of the main benefits of this partnership is that for us, we have the opportunity to bring in leading academic expertise within the aeronautics sector which informs a lot of our existing and future technologies, making us more cutting edge. We also look at taking students from the college and supporting them with their final year projects, giving them the opportunity to work on live projects.

Being part of the Industrial Advisory Committee to the post-graduate board, we are able to positively influence the college's lecture courses, structure and the way in which research is arranged and executed within this industry collaboration.



Jonathan Morrison,
Professor of Experimental Fluid Mechanics

"Ultimately, a long lasting partnership comes down to trust and the strong personal interactions you have. Volker and his team understand how our department works and more widely, they recognise how rapidly higher education is changing. With more focus on public/private partnerships, the business model looks very different to what we would have seen 15 years ago. Another important point is that it's not just a user/provider relationship – through its work with the end user, or in other words the civil engineering community, BMT helps us to understand what some of the real problems are, providing us with clear direction on where to apply our research efforts. That intelligence is paramount."

£1.5m

Funding for MAXFARM from the EPSRC

80%

UK's emissions reduction target 2050

BMT news

from around the globe

BMT Wins Nicaragua Canal Project



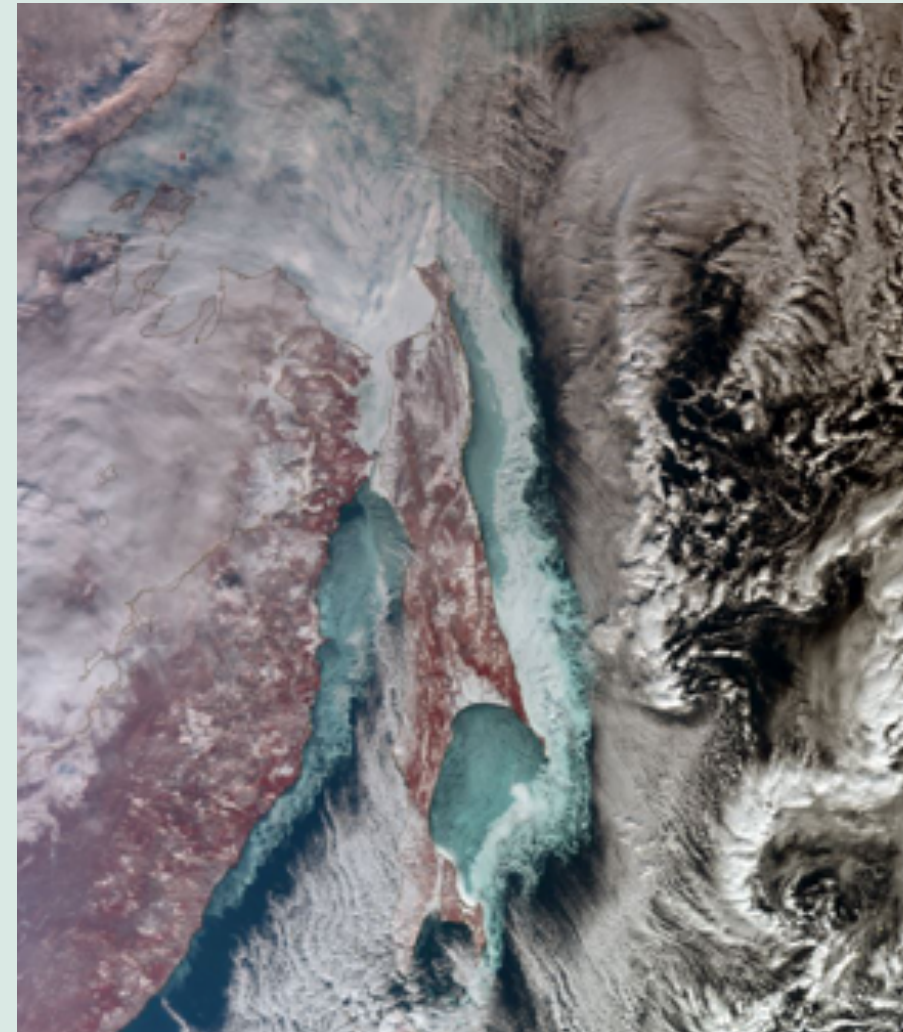
BMT Asia Pacific and BMT ARGOSS have been appointed by Hong Kong Nicaragua Canal Development Group (HKND) to undertake a series of marine and port assessments for the Nicaragua Canal. BMT will assist in the development and validation of the canal's design and operations through a structured framework. Navigation simulators recreate typical scenarios that a ship master would experience and BMT's proprietary simulator, REMBRANDT, is widely recognised by the shipping sector

for its accurate and detailed recreations of the navigation environment. In addition to carrying out operational assessments, BMT will also update the business case for the canal's Pacific and Caribbean ocean ports. Central America is one of the most important corridors of global shipping and BMT, with extensive experience in port master planning and port strategy, will support HKND in identifying the port's potential competitive positioning along this key artery of global trade.



BMT Nigel Gee Designs First UK Flagged HS-OSC Wind Farm Vessel

BMT Nigel Gee is proud to announce the delivery of Sure Diamond, which is the first ever UK flagged vessel to be certified under the Interim Code for High Speed Offshore Service Craft (HS-OSC). The vessel is a 26m StratCAT built by Strategic Marine in Vietnam. Under the new code which was released by the Maritime and Coastguard Agency (MCA) in September, the vessel can carry up to 12 passengers and a further 12 offshore personnel in addition to the ship's crew. The vessel also has a certificate of compliance with the new German Code for Offshore Service Craft which was released in December 2014. A second StratCAT 26 vessel, Sure Dynamic, has completed sea trials in Vietnam and is being shipped to the UK together with a further 24 technician Quad IPS StratCAT 26 for Opielok Offshore Carriers. Both vessels are designed by BMT and built by Strategic Marine.



Sakhalin Energy Appoints BMT ARGOSS for Weather Forecasting

Sakhalin Energy Investment Company Ltd. has appointed BMT ARGOSS to deliver weather forecasting services to support their onshore and offshore operations in the Sakhalin region, off the east coast of Russia. As part of a long-term contract, BMT's 18 strong team will provide weather, wave and current forecasts, as well as tidal information to help support offshore drilling operations. BMT will deliver twice daily updates on weather and wave conditions and once daily update on the current and tides.

Minerva Marine Turns to BMT for Vessel Performance Monitoring

BMT SMART has announced the successful installation of its vessel performance monitoring system on board two of Minerva Marine's chemical tankers, MINERVA LEO and MINERVA TYCHI. For the most accurate performance management, the BMT SMART system combines data collected automatically on-board, from the navigation and automation systems, with data only available on shore, such as accurate hindcast metocean data. Through BMT's web-based SMARTFLEET application

the Minerva Marine team can assess and gain insight into the factors impacting the vessels' performance. The system also allows shore-based personnel to make decisions as to when intervention may be required to help restore performance. Minerva Marine has further strengthened its relationship with BMT with an additional order for shaft power torque meters and vessel performance monitoring systems for two new Suezmax tankers, Minerva Kalypso and Minerva Evropi.



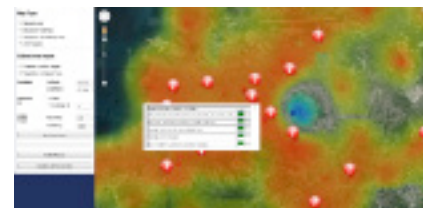
New Name for BMT Isis

BMT Isis has announced a company name change to BMT Cadence. Mike Prince, Managing Director, explains: "Given recent global events, we recognise the sensitivities around any organisation using the name Isis and we hope that the name change will serve as clear affirmation of BMT's support to our clients operating within UK and global defence markets and the front-line forces that we collectively serve. Cadence' was chosen for its strong resonance to the way in which BMT does business.

Dstl Turns to BMT and Partners for Autonomy and Big Data Expertise

BMT Defence Services has secured further funding from the Defence Science and Technology Laboratory's Centre for Defence Enterprise, through a themed competition entitled 'Big Data and Autonomy for Defence'. BMT submitted its proposal in partnership with Oxford University Innovation Ltd (formerly ISIS Innovation Ltd), a wholly owned subsidiary and the technology

transfer company of the University of Oxford and UK charity, Rescue Global. By combining recent developments in Human-Agent-Collectives, machine learning and data provenance, BMT and its partners will exploit the data generated by a crowd of people with varying levels of ability by speeding up situational awareness and in turn enhancing decision making in the field.



On the move

Philip Haines



Dr Philip Haines has been appointed Managing Director of BMT WBM's Water and Environment Group. Over the last ten years, turnover for the Water and Environment Group has grown from A\$8m to A\$20m and it now employs more than 100 staff in Australia and the UK. Recognising that there are challenging times ahead, Phil says: "The

downturn in the resources market in Australia has meant that the domestic engineering consultancy sector has become crowded and competitive. With that comes opportunity to grow further in alternative markets such as China, India, Indonesia and the UK."

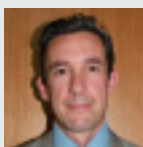
Jeremy Berwick



Jeremy Berwick is leading BMT's Defence division. Previously a Consulting Partner and Sector Leader for Deloitte's UK aerospace and defence business, Jeremy's career spans 30 years working with the MOD, Home Office, Rolls-Royce, Cobham, BAE Systems and QinetiQ.

He offered board level working relationships at many of these organisations and has a strong record of delivering innovative solutions including risk/reward arrangements, joint ventures and cloud based managed services.

Dr. Paul Wilkinson



Dr Paul Wilkinson has over 18 years' experience in water and environmental consultancy across Australia, South East Asia and the United Kingdom, having served in a range of leadership roles with Halcrow, URS and most recently, CH2M. Through his various roles, Paul has demonstrated his ability to lead and grow an organisation

successfully by developing and implementing a clear business strategy, adopting a client-centric approach to business development, empowering managers and staff to reach their potential, and actively promoting intra-organisational collaboration. He is leading BMT's Environment division and is based in Brisbane.

Jan van Smirren



Jan van Smirren, who leads BMT's Energy division and is located in the Houston office, has worked for the past 25 years for Fugro Inc. and Fugro GEOS. He most recently held the position of Metocean Global Business Line Manager and prior to this was Managing Director of

Fugro GEOS in the Americas. Jan is a Director of Alliance for Coastal Technology, an Executive Board Member and Treasurer of the GCOOS Regional Association, a fellow of the Society for Underwater Technology and Honorary Secretary of its Houston branch.

David Bright



David Bright leads the Commercial Shipping division. David joined BMT in 2001 following a successful and varied career in the Royal Navy, including the lecturing of RN and USN officers in project management, engineering design and naval architecture. During his time with BMT, David has played a key role in driving business improvement and supporting the delivery of high value,

complex programmes for the UK MOD. In particular, he has chaired reviews of some of the largest UK defence programmes and was responsible for developing and advising on the partnering approaches used during the second refit period of HMS Illustrious, recognised as being the 'Gold Standard' by the National Audit Office.

Deryck Ethelston



Deryck leads BMT's Ports, Infrastructure & Resources division and is a Chartered Engineer with BSc (Hons) in Civil Engineering and MSc in Maritime Engineering. Deryck has 27 years' experience working in various geographical regions in the world responsible for civil maritime projects from conception, design, evaluating and costing and construction.

Deryck has a record of leadership and delivery in large multi-disciplinary projects and over 18 years' experience as a Director in a variety of business sectors, providing strong governance and ensuring clear strategic direction and appropriate risk management were maintained.