lateral diective

(a)r(a)// adjective involving lateral thinking.

futurology

u:tjə'rolədʒi/ **noun** systematic forecasting of the future, especially from present trends in society. synonyms: futuristics, foresight, forward-looking

Lateral Futurology /'ata;0;0// /fjut;0;oid;dy/ way of thinking ability to conceive innovative superyacht technical platforms which enable design via the application of engineering and technology. Breaking from established thoughts, theories, rules, and procedures; changing the paradigm.



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Visions of the future are often constrained by our familiarity with the present, or over embellished with unrestrained perspectives. When thinking about the future we should consider not only how we can prepare for it, and better advise our clients, but also how can we play a part in shaping it. As part of a wider group of companies Lateral is exposed to a broad spectrum of marine markets, and the technology under development to meet shifting geo-political focus on energy, environment and defence.

It is easy when looking at the future to quickly loose sight of the wood for the trees; the frenetic pace of technology development can quickly lead to over-choice; where the complexity and diversity of available options leads to a tendency to revert to the simplest most familiar and perceived lowest risk solution. Over time this factor can lead to a stagnating and risk aversion pathway developing, and paradoxically, choice leading to a narrowing of engineering innovation rather than widening it. To avoid over-choice we need to 'dial out' to a simpler, higher level view and set a methodical narrative that underpins our choices.

Firstly, let's look back 100 years and examine the state of the superyacht industry. In 1919 the last steam yachts were being built, fired by oil but still with steam as the main means to transfer energy from the fuel to the shaftline. Now look ahead 100 years. Do we expect that the internal combustion engine will be the given choice of prime mover?

Regulation will be one factor in driving us to find alternative solutions. In the wider international marine industry, regulatory frame works are already in place to focus on carbon dioxide limits from shipping. For example, in 2018 the IMO set an initial strategy for the reduction of greenhouse gas emissions from ships, setting out a vision to reduce GHG emissions from international shipping and phase them out, as soon as possible in this century.

Secondly, the demographic of the average superyacht purchaser, charterer or other future 'stakeholder' is shifting to a younger generation, with a very different belief system and buying motivation. Focus on 'good for me, good for the planet' will be key. We must not underestimate the pressure that this factor will bring on the need for us to engineer, design and build yachts which can operate in a 'leave no trace' manner, perhaps even operate with a positive impact. And let's be realistic optimists here, a few clever onboard garbage solutions are not going to cut it with this generation.

We can therefore say with certainty, that the future is 'Zero'; zero carbon, zero emissions. But how do we get to Zero?

Lateral Futurology is the framework and methodical narrative that underpins how we strategize our technology and engineering choices.





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Lateral Futurology is based on the idea that there are three key elements that shape the choices we can make:

- 1. Technical innovation.
- Challenge The Paradigm. 2.
- 3. Alternative fuels.

Technical Innovation

Everyone is familiar with the progress of technology via innovation. It is at the heart of what engineers, designers, yacht builders, equipment suppliers and a whole plethora of our industry do every day. However, the pace of innovation is progressive, it is a long-term game and generally delivers benefits in an incremental gains approach. We believe that, in the long term, the progressive development of technical innovation may deliver up to 20% of the progress to Zero.

Futurology

Challenge The Paradigm (#AskNewQuestions)

Take a look at the world's superyacht fleet. Aside from a highly diverse range of adventurous and iconic styling, audacious lifestyle features and artisan interiors, the yachts all follow a similar technical format. That similarity is reflected within the statistical data of principal dimensions, Gross Tonnage and general proportions and form. If those de facto norms were challenged, then there are gains to be made. When you get down to what Challenge The Paradigm can produce, it is powerful because it can deliver in a short timescale and at low technical risk. Lateral believe that Challenge The Paradigm can deliver a relatively easy 30% of the progress to Zero.

You can see that, before we have even got to the matter of alternative fuels, we could be 50% of the way towards Zero.

Alternative Fuels

Alternative fuels hold the promise of achieving the full 100% required to get to Zero. It is possible to engineer and build a yacht today that would achieve Zero, with a relatively low technology risk. However, it is the operation that presents the barrier because the mechanism to deliver alternative fuels across a prolific and well-established distribution network remains very embryonic.

One vision of the future, based around the use of hydrogen, is that electrical energy generated via renewable sources is transported via the land-based grid, and converted locally at the point of distribution to hydrogen. This is then used onboard via fuel cell technology to generate electrical energy for propulsion and house load within an integrated electrical architecture.

Within the conception of new technical platforms, or when advising design studios, clients and shipyard in relation to new designs, Lateral believe that innovative projects should capitalise on technologies from one, two or all three of these elements. We call the application of our thinking Lateral Futurology. Two such projects released for the 2019 Monaco Yacht Show illustrate the output.

Firstly, project **Inception**. This project has been developed as a technical platform with engineering architecture intended to offer greater creative flexibility to designers. In this way engineering is enabling design to challenge the paradigms of layout that are normally constrained by technical layouts.

To achieve this the Inception platform leverages Technical Innovation via an innovative energy architecture based on batteries as the primary source of onboard power. Lateral call this E-Hybrid; a system which allows the varying power demands of a modern superyacht to be seamlessly met. Diesel engines are provided for battery recharging only, and the system enables diesel generators to be selected purely on the basis of efficiency and optimum energy density bringing advantages to overall architecture efficiency, flexibility of layout, noise and vibration, maintenance and flexibility in operation. Critically the systems arrangement flexibility, and greater flexibility in generator selection, allows for a far more compact system arrangement than traditional diesel electric, thereby offering enhanced flexibility to the application of design concepts.

Lateral invited Isaac Borough Design to apply his creative design talents to conceive a design on Inception to Challenge The Paradigm of layout and configuration, with equally futuristic styling.





Secondly, project **AQUA**, has been developed from an idea initiated by SINOT Yacht Architecture & Design. AQUA utilises 100% with liquid hydrogen powering an innovative propulsion system via PEM fuel cells.



The architecture, exterior and interior design developed by SINOT Yacht Architecture & Design, in collaboration with the application of Lateral Futurology technology and engineering, projects an audacious view of how Zero will achieved in the future; Technical Innovation, Challenge The Paradigm and Alternative Fuels in one package.