

A large container ship is docked at a port, with its deck covered in a dense stack of colorful shipping containers. Several large blue and orange gantry cranes are positioned along the pier, ready for loading and unloading. The ship's hull is white with a red stripe along the bottom. In the background, other smaller vessels and port infrastructure are visible under a clear sky.

OUT WITH THE OLD TO RING IN THE NEW?: SEVEN ISSUES UNDERLYING THE PORT INFRASTRUCTURE DEBATE



In 2015, global seaborne shipments between ports increased by 3.4 per cent at 9.84 billion tons in total, carried by a global commercial fleet of just less than 90,000 ships.

Cargo-carrying ships are ever-increasing in size and developing nations with underdeveloped infrastructure now account for 72 per cent of global port throughput.

As trade by sea becomes evermore voluminous, the world's ports are faced with the quandary of expansion or relocation to meet the demand of growing populations and burgeoning economies. Part of this next phase in development of a port will be the decision to either extend the operational life of existing infrastructure or decommission and build new assets in their place. In the following analysis, we speak to Nigel Nixon, a veteran with three decades experience in major marine projects about the major considerations to take into account when deciding whether to revamp the established or roll out the new.



NOT EVERY AGED ASSET DESERVES THE DEATH PENALTY

There is a general tendency in the industry to condemn the lives of existing assets and the asset passing its sell-by date so that the easiest option for engineers and other technical people is to take it down and renew.

The big issue there is simply cost and the broad infrastructure, particularly of ports because an awful lot of it's marine and below ground is... are expensive and there is considerable risk in renewing facilities. So the engineer's easy option is to demolish.

Existing assets can be more than a century old in some cases, so demolition seems like an easier option with that kind of lifespan. Personally, I believe there should be more attention given to establishing the residual life of an asset and not necessarily condemning it to death offhand. Historically, consultants tend to back analyse, which is all fairly theoretical and based upon factors of safety because of so many unknowns.

As port assets are partially underwater and in bad ground, the use of new technologies such as structural health monitoring campaigns are very applicable for determining the true residual life of structures. Often you don't have to demolish, there could be repairs at key points in the intervention along the design life of the asset, rendering it usable for a new operation or extending that asset life.

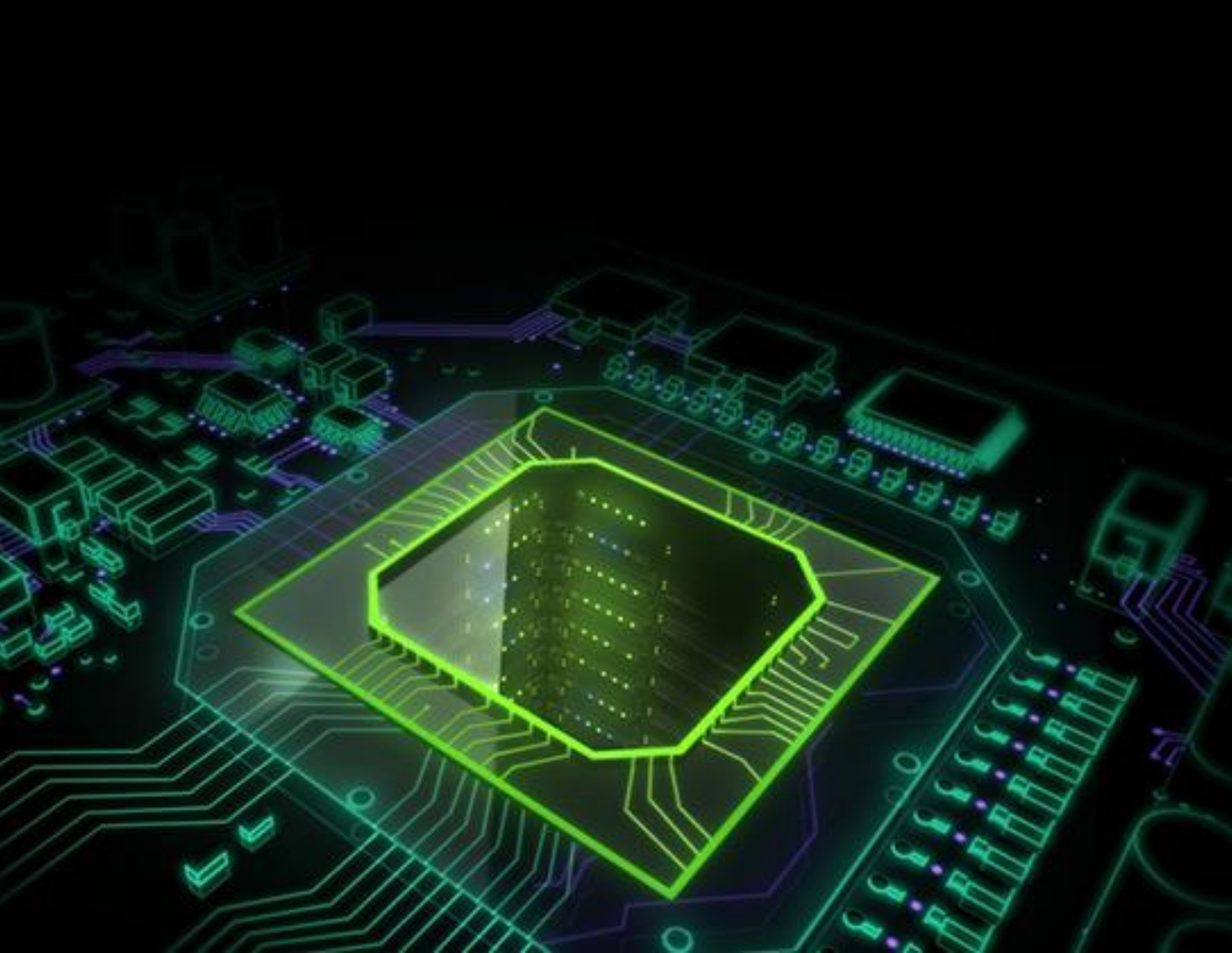
YOU CAN TEACH AN OLD CRANE NEW TRICKS

There are many cases that I've come across where the commercial operator of a port will announce a new incoming trade that will require a different usage of a facility and the chief engineer will say the extant asset is not fit for purpose. The commercial guy says this is not the case and then a tug of war ensues between the two sides.

This is a very typical case in ports worldwide. The engineers always go back to being safe and they're quite a regressive community. There is a reluctance to jeopardise their professional indemnity covers and an aversion to taking risks.

That is not necessarily a bad thing, it is part of the job, but in doing this, they lose the commerciality of trying to judge what's best for an owner.





DON'T SHY AWAY FROM THE HIGH-TECH

Simple marine structures and engineering assets in a port are very expensive and any costs incurred by the port are hidden costs. They come onto balance sheet and there's no guaranteed revenue stream as a result of that investment other than maintaining the business.

So, the money men - Chief Executives and CFOs of the world are always going to be looking at the bottom line, the necessity of ensuring that these solutions are cost effective will always be paramount.

Using new technologies that are available to the marketplace today is a sensible way forward and to ensure that these are properly adopted and understood rather than be frightened of using it because of the upset to their particular risk profile.

BEING GREEN IS ESSENTIAL

Environmental safeguards are important considerations in the marine business, with checks and compliance varying from country to country. In the UK, for example, you've got the whole coastline classified as "outstanding scientific value" and therefore environmental value. Port extension is, therefore, a very careful issue.

Port expansions are not cheap. Most of these projects, particularly in the privatised sector of ports, are generated by a business plan, and that business plan demonstrates the income stream based on a particular contract that goes through the port.

Whether it's traffic through the port or value-added business generated from that traffic is irrelevant. There is an income stream and there's a cost stream: if the cost stream is going to exceed the income stream, no investor is going to invest. Environmental issues and mitigation measures associated with port extensions are going to add cost and there's no direct revenue base.

You must choose the sites where the impact on the environment is minimised and try to demonstrate the importance of progress as opposed to being constrained by the need to maintain a clean, green environment. There's got to be a balance between what is good for wildlife and what is good for mankind and the need to trade, make money and be commercial.

There are some countries which are less concerned than others, and that gives the more laissez-faire a marketing edge in the short-term. There ought to be some sort of consideration by the taxpayer, which ultimately is where the buck falls in terms of environmental issues, to contribute to try and make way for commercial progress in a private port.





LET GO TO CREATE COST CERTAINTY

You can work opex but it is early capex investment that investors will be monitoring. An investor doesn't want the possibility of an open cheque because they're just becoming involved in a nonviable project that will have a tendency to lose money.

As a project manager, you've got to procure to create "cost certainty", that has to be a major driver and the procurement process has got to ensure that cost certainty is delivered.

To do that, the best way is for the contractors that are going to do the build need to be given full reins of responsibility, including shouldering the associated risks.

The ideal scenario would be to create a negotiated turnkey procurement method with one chosen contractor responsible for both design and the procurement and the delivery and the commissioning; but it can only work if he owns the information relating to the project.

Many port owners fall in the trap of delivering a portion of the information gathering and submitting it as part of a bid documentation package to contractors. Immediately, they take responsibility for that information and the contractors can use it to their benefit to create work change orders and which reduces cost certainty.

So minimising risk is clearly the most important thing for a commercial project. The bid package must be worded such that cost certainty must be achieved, minimising risk. The contractor must own the information that he's been provided, and augmenting that information to reduce his risk is his affair.

CONTRACTORS ARE NOT THE ENEMY

Over-engineering and over-designing as the bane of infrastructure projects. Looking at using your infrastructure to its best effect or to change or alter or renew, is going to be the mainstay of the contractors that you entrust with the job.

Therefore, it is crucial that the contracting fraternity, who are risk-takers in this case, become much more actively involved in the very early phases of a project.

Many inside the contracting world will not pipe up early enough and express that something cannot be built in such and such a time-frame or to such and such a specification.

Your contractors are at the coal-face so these are the people that you should communicate your trust in and interface with right from the outset.





RESPECT THAT THERE IS A POINT OF NO RETURN

Any large-scale capital project, be it public or private, requires rigorous pre-planning and efficient and effective execution.

Within that, the owner of the project must be disciplined in that he must not change his mind about the direction of the development mid-course.

He has to be disciplined to make sure that what he's asking the contractors to deliver is finite at day one and it won't change during the stream of the project.

The key is to let the contractor take the risk of any changes due to environment, wind, weather, or whatever else may arise, therein lies the skill.

WRITTEN & DESIGNED BY
Tim Haïdar

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