Innovative Approach to Minimise Container Port Footprint

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The Challenge

1)pansion of the world's 'ontainer !orts is both uncontrollable and unsustainable.

/urging containerised*freight traffic flow creates ma+or headaches for many8

- 6overnments,
- !ort authorities,
- Transport industry, and
- The community.

!ressure on e)isting infrastructure causes8

- 'ongestion,
- 1nvironmental degradation,
- 3perating inefficiencies, and
- Increased operating cost challenges.

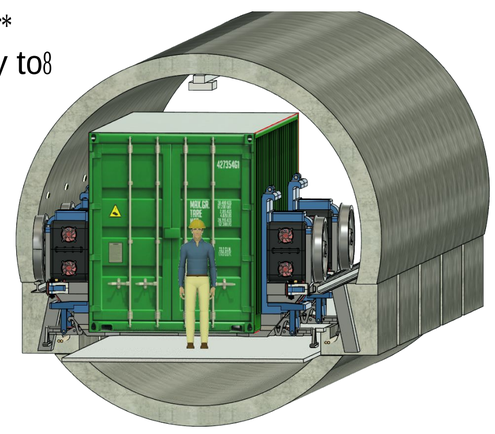
3ver the last couple of decades there have been many proposed technological innovations, but very few have made it through to produce real*world efficiency gains. '#T innovation aims to brea that mould and deliver tangible benefits.

The Paradigm Shift

The solution requires a paradigm shift in the way container ports are managed.

Innovative, sustainable and dedicated container* freight transportation infrastructure is necessary to8

- !rovide seamless integration between ports and intermodal hubs, with ship unloading and loading techniques designed to ma)imise throughput
- Automate the transportation of urban freight, essential to reduce both operating and social*environmental costs



The '#Technologies ('#T) system offers such a paradigm shift, and facilitates seamless integration with e)isting infrastructure. '#T introduces a solution that matches ongoing long*term requirements. It is fle)ible, able to scale efficiently and cost*effectively as the conte)t changes.

Key CFT Invention Features

All innovative features of the '#T system trace bac to a simple core concept ** Attach wheels to a shipping container and turn it into a vehicle. The concept is not new, but no practical design has ever been successfully commercialised. 'entral to the '#T solution is the "etachable "rive 0nit or ""0. These are electrically powered, semi*autonomous rail units that attach in pairs to containers when required, and can also function independently as vehicles without any container.

The attachment mechanism is novel in that it is automatic when the weight of a container is applied. $ut the most important unique feature of the wheels is their location relative to the vertical centre*of*gravity of the assembled vehicle. $eing close to the centre is vital for minimising tipping forces when cornering at speed.

'ombining the low centre*of*gravity with what is effectively a :4", split*a)le vehicle, creates a huge advantage ; cornering radius at a given speed is much less than can be achieved with traditional rail systems. %ot only does this allow for more fle)ibility in the layout of rail pathways, but it also leads to another unique '#T innovation ; the "ouble 2eli). This intertwined bidirectional pathway can be implemented to shift containers vertically within a relatively small area.

#le)ibility in rail pathways means that pipes conveying container*vehicles can be installed close enough to container ships to allow direct access by ship*to*shore gantries. Another '#T innovation relates to a gantry modification that claims to reduce ship loading and unloading times by about <= percent.

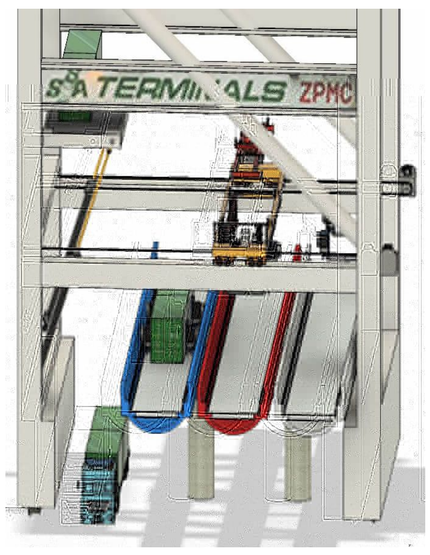
Implementation Blockages

There are critical obstacles to overcome when considering the application success for these innovations. Three ey phases of development and completion are required8

- !lanning and design,
- "evelopment and testing, and
- !articipation of governments and other sta eholders during all implementation stages.

/o where is '# Technologies currently positioned7

- Advanced stage of design and planning at the theoretical and research level,
- Advanced !atent development and registration in multiple +urisdictions,
- 1arly stage of testing and simulation modelling at a research level,
- 'ontinuing search for funding to build a prototype, and
- 5arious levels of engagement with governments and sta eholders in Australia and elsewhere.



Summary of Benefits

1nvironmental $enefits

- -ow %oise
- &educed !ort #ootprint
- %o !ollution at the !oint of "elivery
- .inimal Impact on /urrounding 'ommunity

3perational $enefits

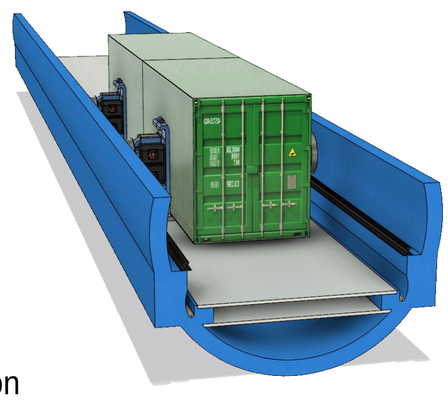
- 'ontinuity of 'ontainer #low
- Improved 'rane 1fficiency
- &educed %eed for "oc *side /torage
- Additional #le)ibility for Trac &outing
- &educed &is of Accidents due to &obotisation

.anufacturing 3pportunities

- -ocal "esign and .anufacture of "etachable "rive 0nits
- "evelop /oftware for 'entral 'ontrol /ystem
- "evelop 'ommunication /ystem
- !ilot for &efinement and Testing of the Technology
- 1stablish %ew 'onstruction Techniques for !ipe*&ail and "ouble 2eli)
- &esearch 'rane .odifications to Improve 1fficiency

1)port 3pportunities

- %o /ystem -i e '#T Anywhere in the 4orld
- -arge %umber of "oc s 4here 'ongestion is a !roblem
- Increasing 'ompetition for 5aluable "oc */ide &eal*1state
- As International*Trade 6rows, /o "oes the "emand for 'ontinual &efinements to 1nsure .a)imum #reight*2andling 1fficiency



The Long Road Ahead

The huge investment associated with port infrastructure and freight logistics has resulted in a reluctance to adopt new technology in a timely manner. '#T faces many challenges in delivering a radical solution for an industry adverse to change.

'ontainer !orts are increasingly constrained both in si(e and in number. #or many e)isting ports, the need for a new approach is critical. The solution proposed with the '#T system provides continuous and immediate transfer of containers between ports and remote hubs, thereby reducing the required doc storage*area.

'ollaboration is ey to our future success, and our immediate aim is to validate the patented technology to the point where a ma+or industry player might see a controlling sta e in '#Technologies !,-.

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