

# **Satellite Services for Integrated Port Logistics**

Market View

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# Satellite Applications Catapult Programmes



# Encouraging Growth in UK Space Sector - Globally

Combining the benefits of three space services -

Positioning  
Navigation Timing  
(GPS / Galileo)

Hybrid global  
Communications

Remote Sensing –  
Optical, Radar,  
Thermal & Weather

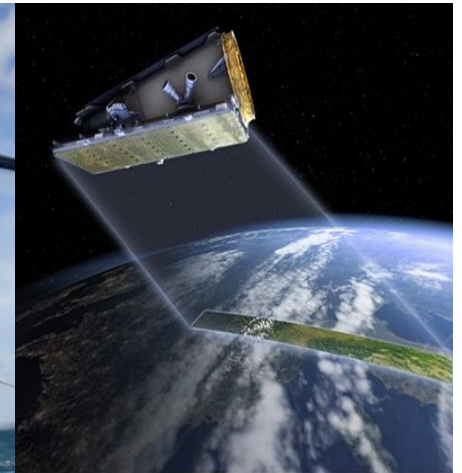
- Supporting business in the use of space services & applications
- Transfer innovation between Space and non-space organisations
- Help space sector engage with markets



Global Navigation  
Satellite Services  
(GNSS)



Satellite  
Communications



Earth  
Observation



# Influences on the Port of the Future



Port of Barcelona 2016 from Sentinel 2-A

- Centres for local value added processing and entrepreneurs
- Increased types of activity – green energy generation etc.
- Circular economy – products shipped for disassembly
- 3D Printing – change in manufacturing supply chains (production closer to demand)
- Continued importance of gas and LNG imports
- Expansion of role of renewables (carbon tax)

# Influences on the Port of the Future - Vessels

Sector	2014 No. of Vessels
Tanker	16,686
Bulk Carrier	13,152
Offshore Support	7,162
Passenger	7,083
Container	5,184
General Cargo	4,260
Gas Carrier	1,736
Car Carrier	782
Reefers	639
Other	6,786
<b>Total</b>	<b>63,470</b>

- Bigger vessels, consolidation in shipping sector
- Autonomous Vessels -
- Robotic cargo handling on board and in port
- Emissions regulations
- New fuels and change of fuel balance – All Electric Ship
- Crew Welfare
- Extreme weather more frequently disrupting voyages and port activities
- E-Navigation



# Influences on the Port of the Future – Vessels

- Environmental laws enforced in shipping sector (Ballast Water; Nox & Sox emissions; Bulk Vessel Cleaning et al)
- Internet of Things and Machine to Machine become ubiquitous
- Near real time monitoring – cargo, vessels, assets
- Fewer but more efficient ports or Hub & Spoke model
- Multimodal hubs – Sea; Air; Road; Rail
- Stakeholder connectivity
- Cargo owner demands more info





# Connected Vessel – extension of the Shore Based Corporate Network

- Growth in “Fleet Management” software  
Integrating vessel with corporate IT systems – ERP
- Connected Vessels - broadband to ships  
e.g. Inmarsat Fleet Express
- Ericsson “Maritime Cloud”
- Improved services for all stakeholders –  
Ship Managers, owners, operators, charterers and shippers
- Connectivity at sea – training, vessel monitoring, routing, crew welfare,

## MARITIME ICT CLOUD



Smart Port Logistics powered by .....T...



**CATAPULT**  
Satellite Applications

# Transfer of Technology

- Head up Displays
- Augmented reality
- Virtual Reality

It doesn't have to be expensive



But not everything sells



Fighter Jet  
(Buccaneer 1958)



Source: RR and VTT Future Bridge

Cars  
(Oldsmobile 1988)



## Possible Trends – Where is the Innovation Coming From?

- Consumer markets reward experiment and Innovation
- Historically defence research led to innovation for consumers
- Military buying COTS consumer products
- Smart Phones / wearables - low cost components
- Hi speed innovation - crew will have more up-to-date technology than the Bridge



# Satellite Applications



Thank you

We work with  
**Innovate UK**

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