

CÓMO MEJORAR LA CONSTRUCCIÓN NAVAL CON EL CONCEPTO INTERNET OF SHIPS

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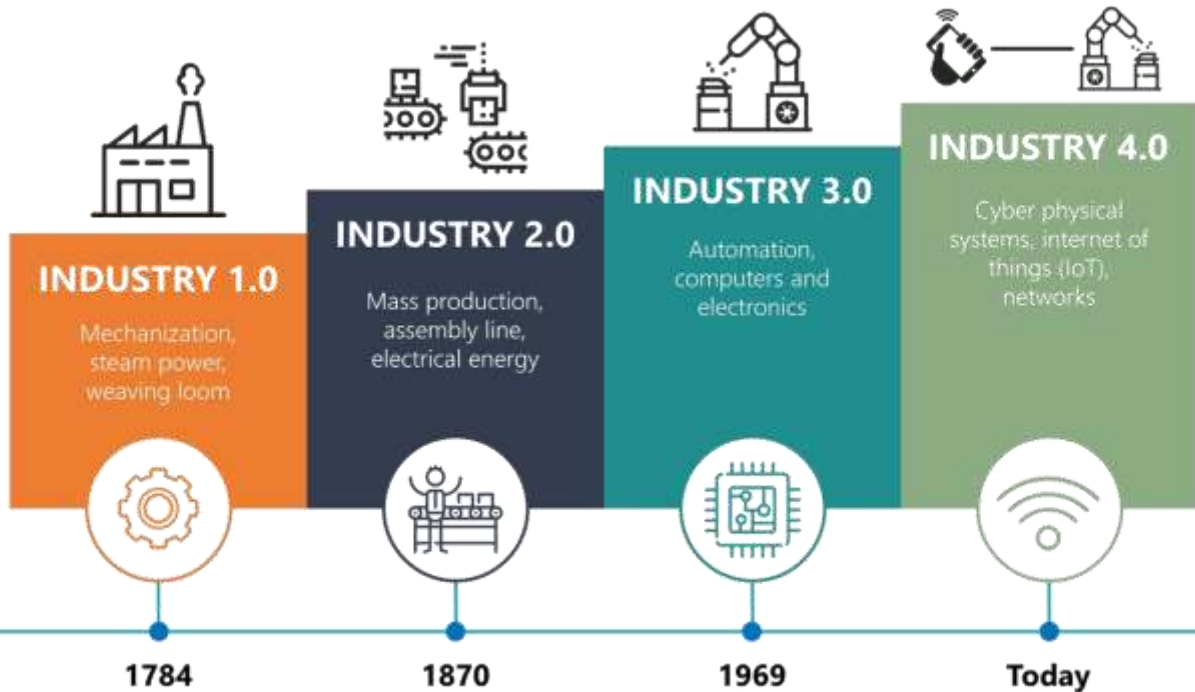
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Industry 4.0 in a shipbuilding environment



Digital Transformation: a revolution?

- COLLABORATION

- CO-CREATION

- CHANGE OF MIND

- STRATEGY



Internet of Things

Digital transformation is being driven by IoT

- Investment in *IoT* will surpass the barrier of *US\$ 1 billion* by 2022.
- Industries that invest more money
 - **Discrete manufacturing** (*US\$ 119,000 million*)
 - **Manufacturing** (*US\$ 78,000 million*)
 - **Transport** (*US\$ 71,000 million*)
 - **Public services** (*US\$ 61,000 million*)

IoT means hardware as well

- Along 2019 it is estimated that will have an expense of *US\$ 250,000 million* being *US\$ 200,000 million* the investment foreseen in modules/sensors purchases

European level the distribution of the investment by industry is different than worldwide

- Biggest expense foreseen in 2019 would be in the manufacturing industry (*US\$ 20,000 million*)
- Public services (*US\$ 19,000 million*)
- Retail (*US\$ 16,000 million*)
- Transport (*US\$ 15,000 million*)

Industry 4.0 & 5G

5G promises to be the answer in terms of flexibility and versatility that Industry 4.0 demands.

What will be the advantages that 5G technology will give?

Enhanced mobile broadband speed and more capacity

Ultra-reliability and latency

Massive machine-type communications

An architecture more open to third parties via *APIs*

Network slicing

Wi-Fi 6 technology for industrial environments

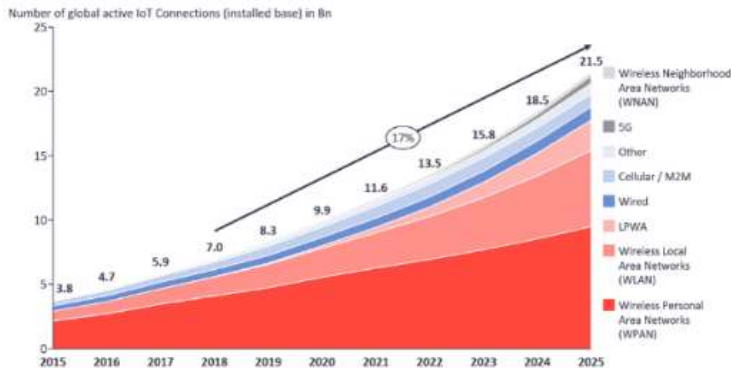
To work with high density of devices connected, up to now a bottleneck for IoT.

To reduce the interferences that makes that the efficiency of the data flows decrease.

Incorporation of technology Target Wake Time (TWT) that admits more autonomy of the connected devices.

Unless WiFi 5 or 802.11 ac, the new standard can operate in the 2.4 GHz or 5 GHz frequency, this being very important as we could see later on.

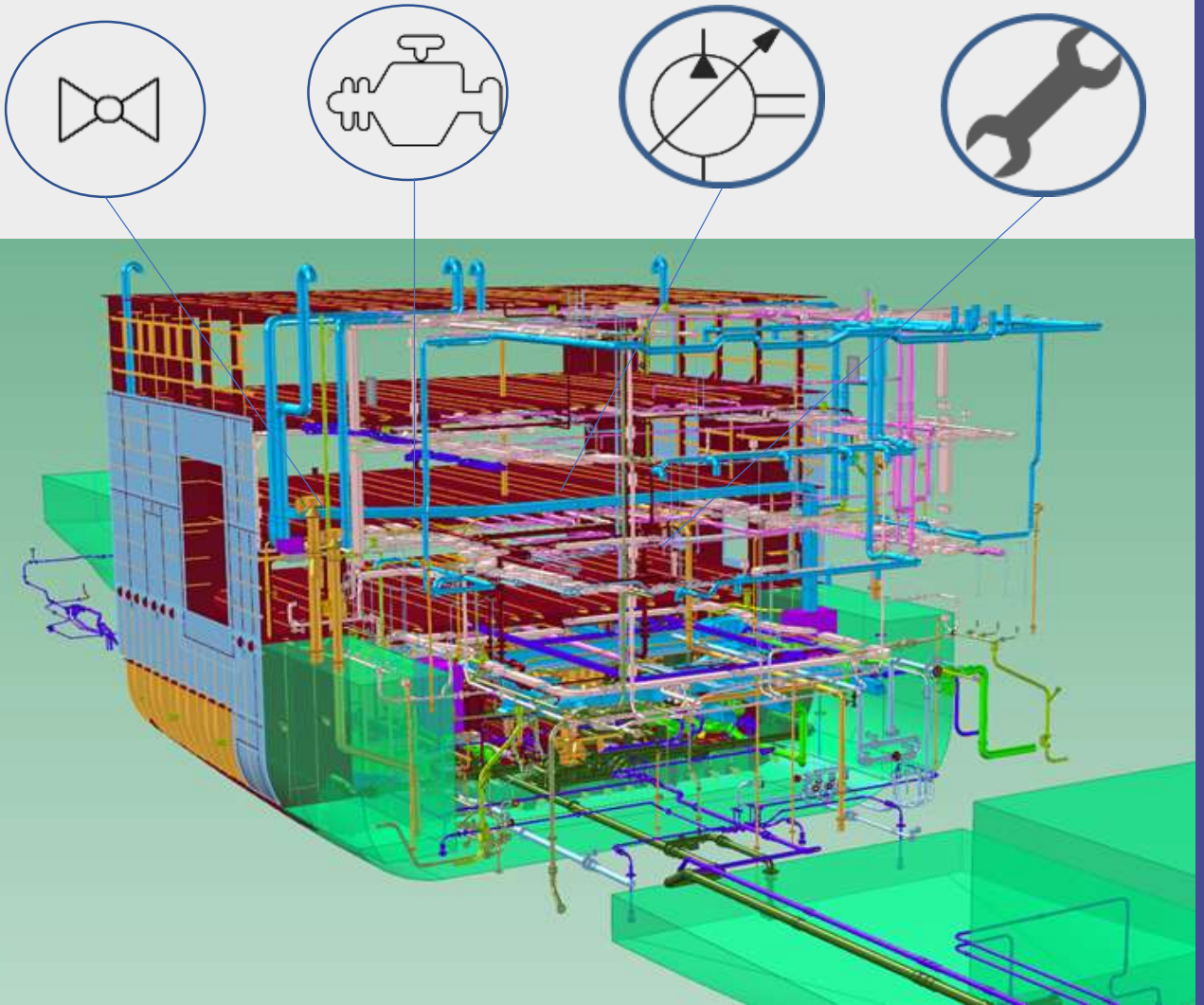
IoT & 5G



Before the COVID, the number of devices connected reached 17,000 million, of whose 7,000 million were IoT devices.

- **The promise of 5G in IoT world must be taken cautiously** because its deployment success is largely conditioned by the surrounding.
- **Among 5G qualities is its low latency** which is a key factor for IoT focused to Industry 4.0 as if we add large download speed offered by 5G, twenty times faster than 4G, actual needs will be covered and those that may arise from now to short term (WiFi 6 allows larger download speed than 4G but only five times faster as much)
- The demand for data traffic for devices that uses these types of networks is overcoming the forecasts and in this moment is growing by 40% to 70% annually.
- It is expected that **VR/AR/MR** would also benefit thanks to 5G technology as this is a strong data demander.

Internet of Ships



Internet of Ships



Conclusions

A deep change in the Industrial world
but also for the human being



Are our industries
and infrastructures
ready for this?



Are we ready for
this?