



Harnessing Digitalisation for the
Benefit of Maritime Industry

Digital Supply Chain for Shipbuilding

2.12.2020

Maarit Lappalainen

VP, Consulting Solutions, Carinafour



EUROPEAN
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DEVELOPMENT
FUND

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Why

- **Shipbuilding is material and work intensive business**
- Shipbuilding happens in **wide ecosystem** where massive network needs to **synchronize its operations and material management** to fulfill the customer promise on time with the right quality and cost
- There is room for improvement in terms of **material waste and work inefficiency** - based on the analysis outfitting worker has a lot of idle time during the workday and the rest of the time goes by inefficiencies like investigating design unclarities, searching or re-ordering missing materials or waiting workplace readiness because the previous work phases have not been completed
- These inefficiencies impact on both **productivity and environmental targets**

How

- **Current state analysis** made at the beginning to understand the challenges and the bottlenecks in more detailed
- **Development roadmap** created to define and implement standard processes to enable supply chain process digitalization and management system
- Solution **co-created** with all the stakeholders
- Solutions **tested and piloted in the real production environment**
- **Continuous improvement** based on the feedback





C4 Digital Supply Chain Solutions for HVAC production

Digital Supply Chain Management System

- 3D-model based work planning and work package material creation
- Production planning and scheduling
- Material identification and tracking with QR-code throughtout the pipeline
- Production progress status at work package material level
- Daily management
- Continuous improvement
- Reporting

Consolidation warehouse for logistics and pre-fitting

- Work package based material consolidation and delivery to workplace

Digital tools

- C4 Assembly and Logistics System CALS-software
- C4 Take a Grip TaG-software
- Web-based mobile applications



Digital grip throughout the material pipeline



Production plan and work packages created, material availability ensured



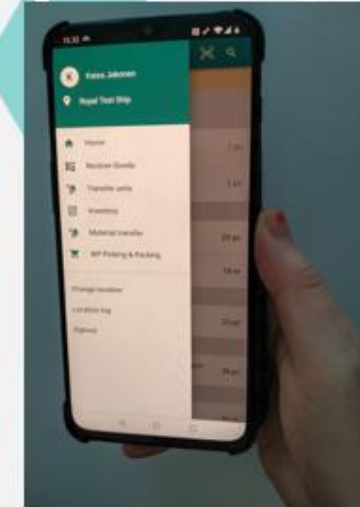
Materials and workpackages identified and marked with QR-code



Work package material content and delivery documentation



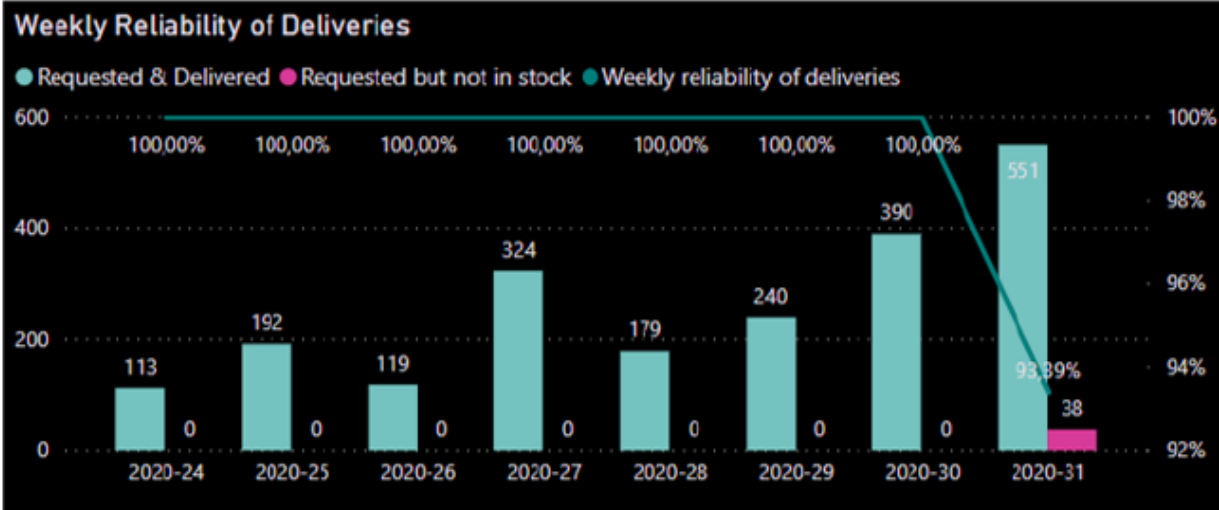
Work package based material batch ready for delivery



Digital Grip in every pocket
Material batch scanned at installation

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Reporting allows continuous situational awareness and timely corrective actions

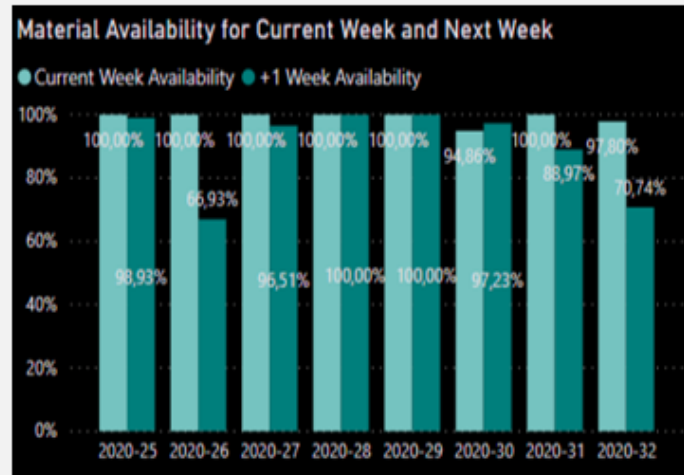


Monthly overall reliability
(Parts delivered within the same week)
97,7%
-2,3% from last month

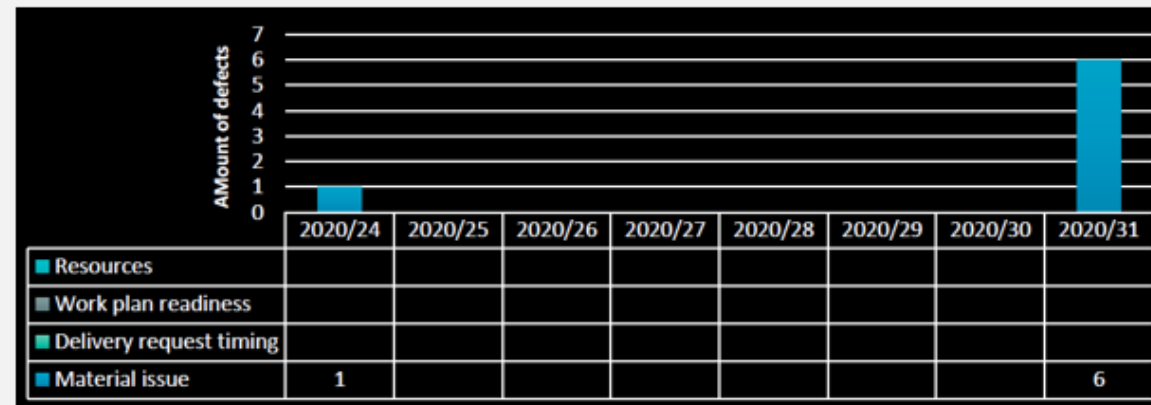
Metrics and reporting examples

- Material availability
- On-time-delivery to point-of-use
- Reclamation reasons
- Inventory levels
- Material transfer status
- Delivered material quantity

Graph shows the amount of all requested materials which have been delivered within the requested week and the percentage of the total requested.



Root Causes for Output Defects (per work package):



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Relevance and achievements

- **Productivity** improvement
- **Material waste** reduction
- Improved **transparency and control** of material and production status enable **right corrective actions to reach lead-time target**
- There is **still a lot to be done** to achieve environmental and business goals
- This **project proved that this is possible** when whole ecosystem works together
- **Digital Supply Chain and its benefits** can be achieved with the right tools, work processes, competent people and common goals

Thank you!



Maarit Lappalainen

Carinafour

maarit.lappalainen@c4.fi



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