

Expedition 2025

From Global Lean Project Delivery Strategy to
Local Lean Execution and vice versa

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Expedition 25
Protect · Build · Transform



MSD
INVENTING FOR LIFE

With Expedition 2025 we focus on our Vision to safely and effectively deliver projects to enable more patients served

Global Engineering Solutions (GES) Expedition25

Vision: Safely and effectively deliver >\$15B in capital to enable 1B more patients served.



Fortify our Future



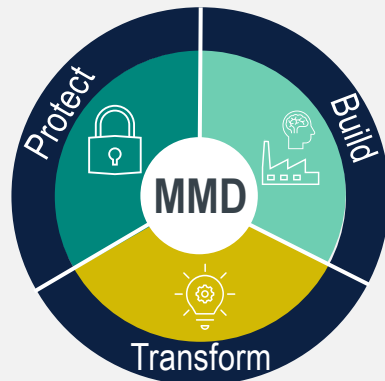
Ways of Working:
Mindsets and Behaviours



Inventing for Life



2025 Strategic Imperatives



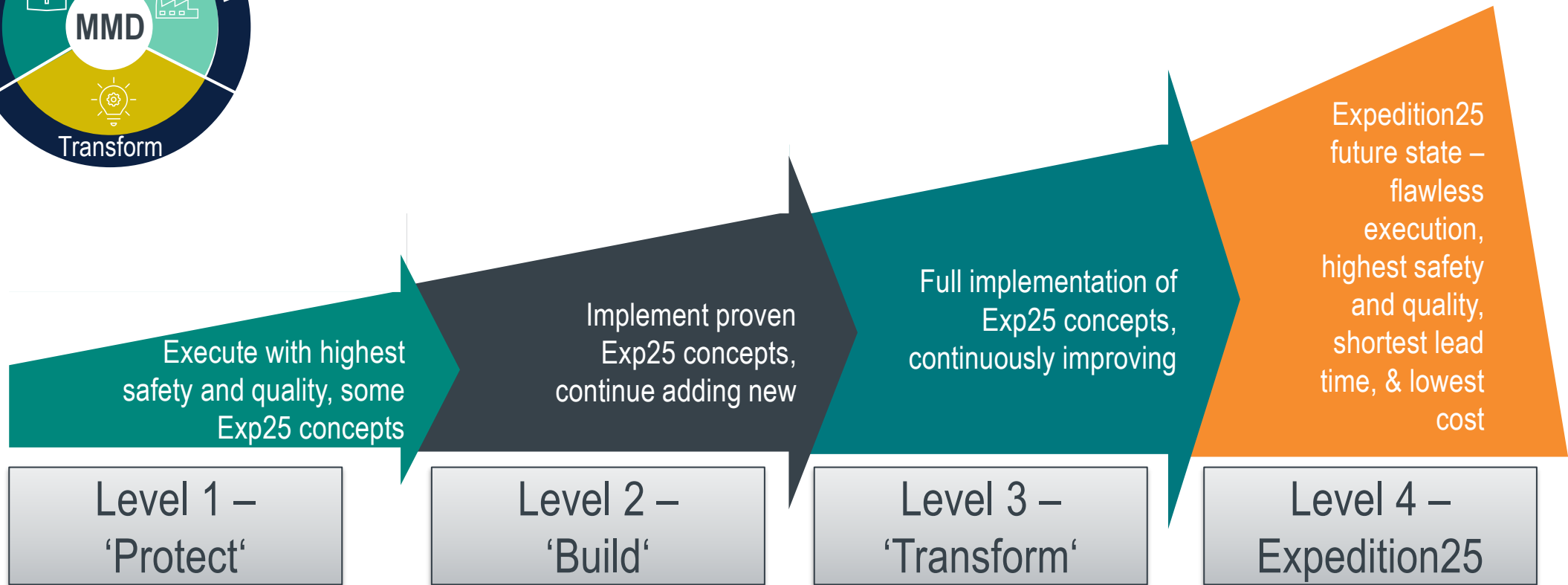
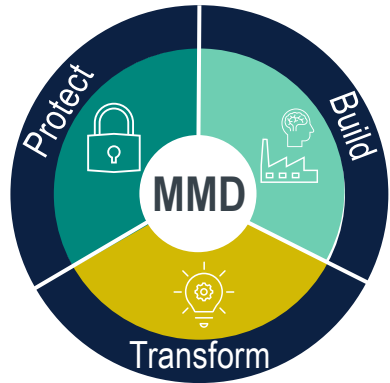
Protect Safety First, Quality Always

0 Incidents, 0 Defects

Build our Future – Workforce and Facilities
*New Design Thinking and MPS Capabilities
Agile Solutions with Digitally Enabled Results*

Transform our Business
40% Less, 80% Offsite – Capital Effectiveness

The levels of Expedition 2025 lead us to reach flawless execution, highest safety and quality, shortest lead time & lowest cost



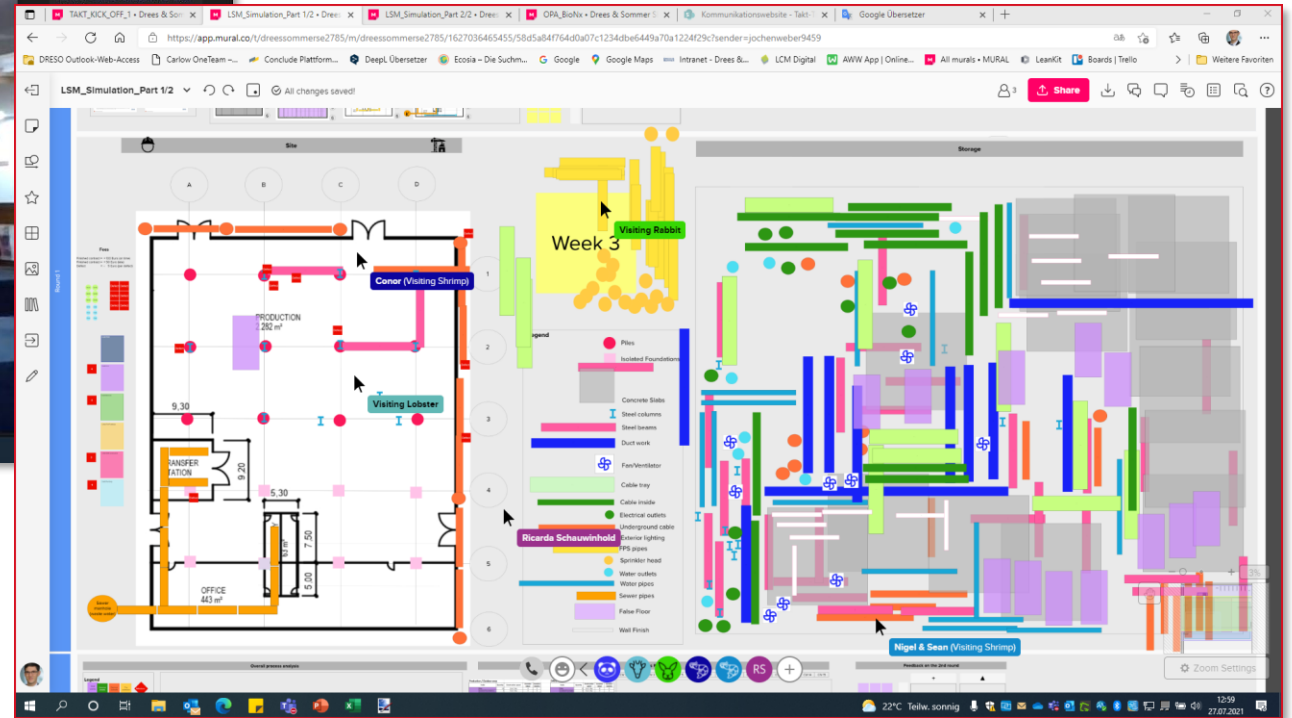
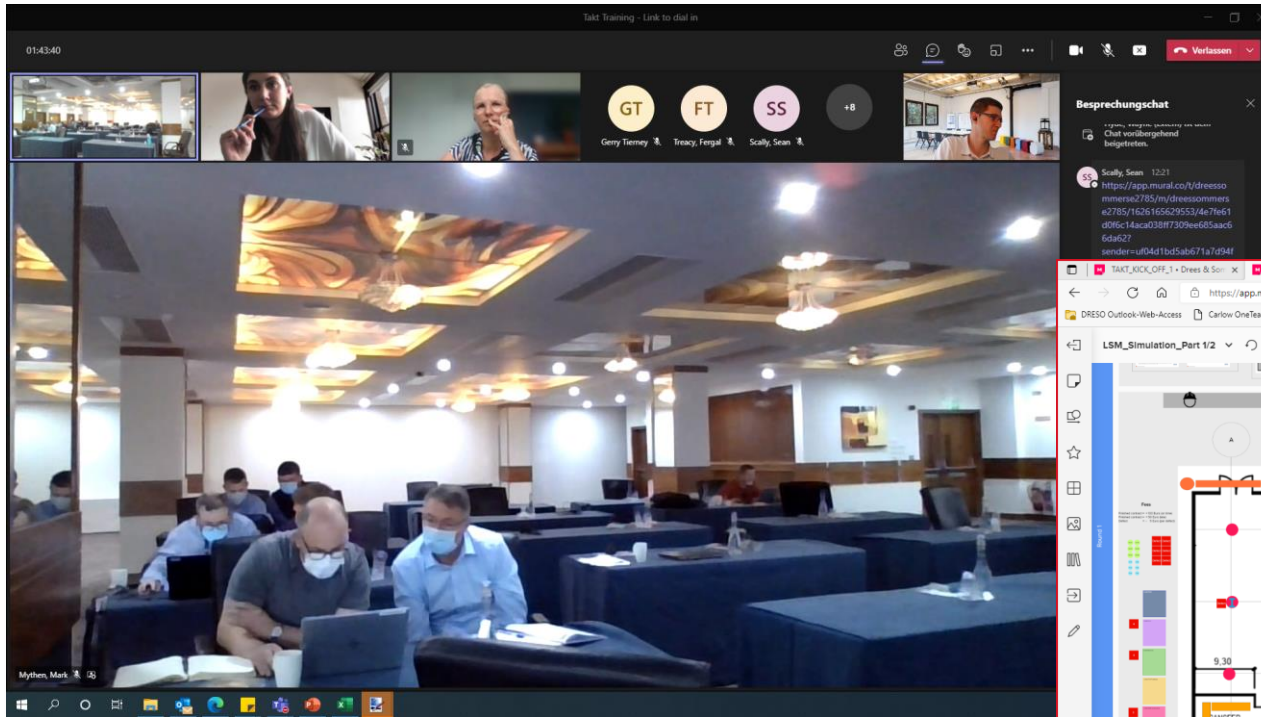
Six key areas were identified to reach Expedition 2025 – among them are IPD, Safety (EHS), Digitization, Project Production Management, Quality and TVD

Lean focus	People: Integrated Project Delivery	Safety: Variability Red.	Digital; Stds, Data & Digital	Delivery: Flow, PPM	Quality	Cost: Target Value Delivery
Level 4 Expertise, Realization.	Collaboration: Embraced Mission and behaviors include CoFS, Boundaryless with R/R shared among 8-10 key partners, HI >80%, integrated form of contract or poly party contracts and team formed in FEL2.	Generative: World Class Safety, >90, trades 80% SOR, Hearts & Minds deeply imbedded, effective training, invest in PPE, Health and logistics.	Design: 7D*, LOD 500 minimum, Interactive VR/AR (Oculus/HoloLens); BIM to Field; Delivery: Digital Twin, As-Built BIM model; Asset Data for Ops	Lean Fast Track: Milestones, committed to Takt & pull >60% offsite. JIT design and delivery linked to takt. Decisions are timely, minimum change	Generative: work is expected to be RFT and is 90%+ RFT. Digital twins are used to release work with ongoing checks between models. No changes after FEL2.	Experienced TVD: WBS, suite team leads own costs, priority and A3 tradeoff process <2 weeks. IPD team experienced with TVD and trades imbedded in CDP.
Level 3 Ongoing Experimenting, Adopting.	Coalition: Embraced mission and behaviors, reimbursable with risk/reward with Tier 1 partners, Health Index >70%, trades onboarded during BOD as partners. Build trust among team and risk/reward at Tier 2.	Proactive: Very good safety >85, built in, trades >60% SOR, Hearts & Minds and safety training paper based. Typical PPE and C19 programs.	Design: VDC Initiated; 5D implementation; LOD 400 minimum; Visualization (AR) for Design (Holobuilder); BIM Big Room Delivery: Real-time Collaboration (Construction Cloud); Record BIM model; BIM Kiosk (site)	Uninterrupted flow: Teams experienced with practice 5.7.1, >50% offsite with Manf and Assembly mindsets, first or second full use of Takt on project.	Proactive Quality: RFT is a clear expectation, systems to build in quality are used. Errors or omissions are not passed to next phase. No change after FEL3.	TVD Learning: WBS, suite team leads technical with need for estimate support, A3 tradeoffs process, trades active during BOD and project life cycle.
Level 2 Positive Perception, Experimenting	Coordination: Mostly top down, mission and behaviors communicated, some bottom up, HI >60%, trades onboarded after BOD. Boundaries from multiple transactional contracts.	Calculative: Good safety, checked in, >75 score, 50% trade SOR, training and permits paper based, traditional PPE.	Design: BIM Enabled Software; 4D implementation; LOD 350 minimum; Reality Capture Visualization > Laser Scan(Doxel), 360 Photo(Matterport) Delivery: Design Collaboration/Clash Reporting (Navisworks); Cloud Collaboration (BIM360); Paperless	First Fast Track or Last Planner: Practice 5.7.1 used but still learning, 30 - 50% offsite and some standards/reuse, not yet fully using Takt.	Inspected: errors are identified and corrected prior to passing along to next phase. RFT is expected and measured. Changes minimized after FEL3.	TVD New: Batch estimating by EPCM with risks/opportunities log, 10% ranges, tradeoffs take > 4 weeks. TVD new to team and primarily by CM.
Level 1 Traditional	Cooperation: Top Down MSD, EPCM with fixed price contract. Independent decisions and RFI common. Bidding trades after DD. No Team Health Index (HI)	Reactive: Top down safety, PSM checked in, <80 safety score.	Design: 3D Enabled; LOD 300 minimum; Model Viewer (Navisworks) Delivery: Execution Plans (BxP) 2D Drawing files; PIMS for Collaboration; Follow GES Procedure 2.0	Critical Path: Led by EPCM, Earned Value, <50% offsite with batch shipping, not JIT. Schedule bought from subs. <30% offsite, primarily stick built.	Punchlisting: Errors and omissions are captured and corrected at end of work. Late changes common.	Batch estimating: EPCM uses typical range estimates, value engineering, risk registers. EPCM manages costs.

FROM STRATEGY TO EXECUTION

The Takt Training with a virtual simulation was executed in a hybrid manner – two rounds showed the benefits of Lean Construction

Teaming with
CSA Trade
Partners

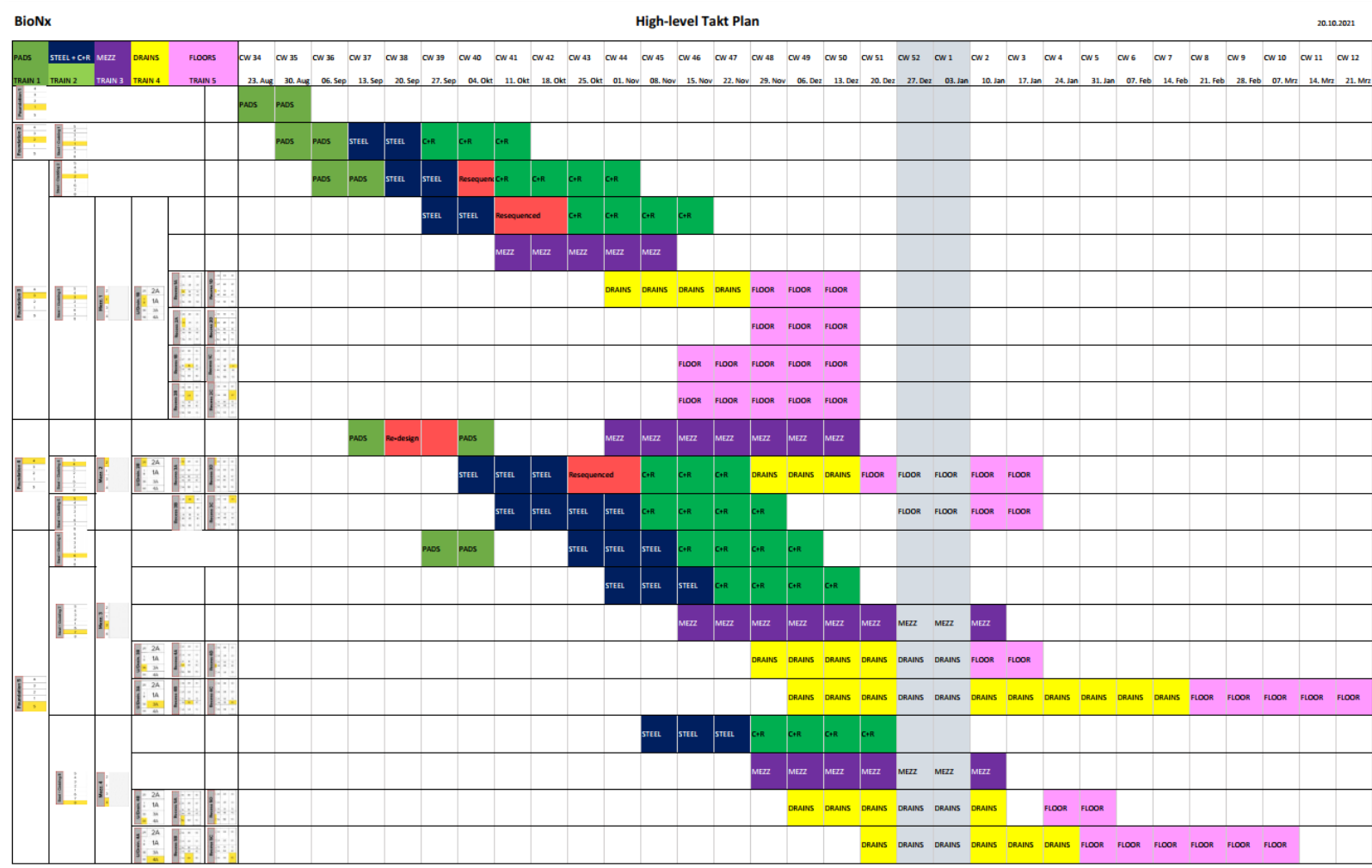


There is no substitute for real, in-person interaction and collaboration – teaming regularly takes place, for exemple with common experiences

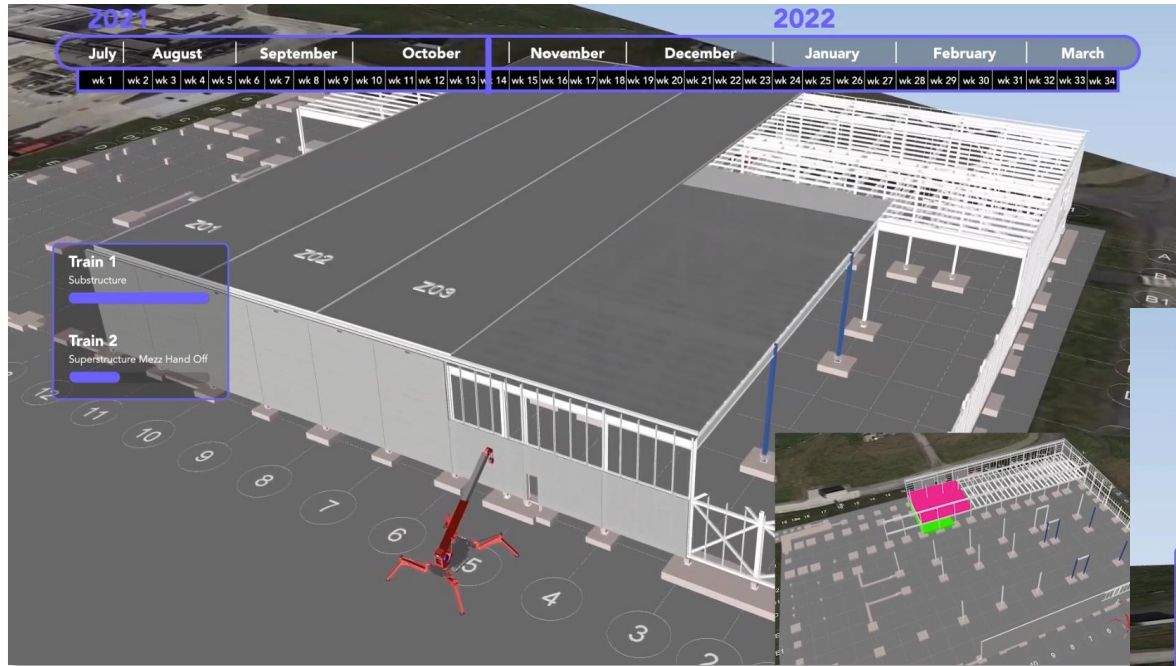
Teaming with
MEP Trade
Partners



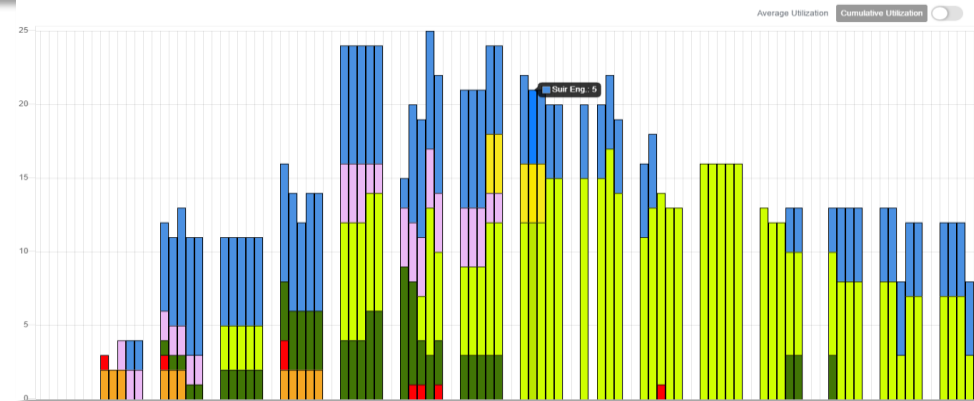
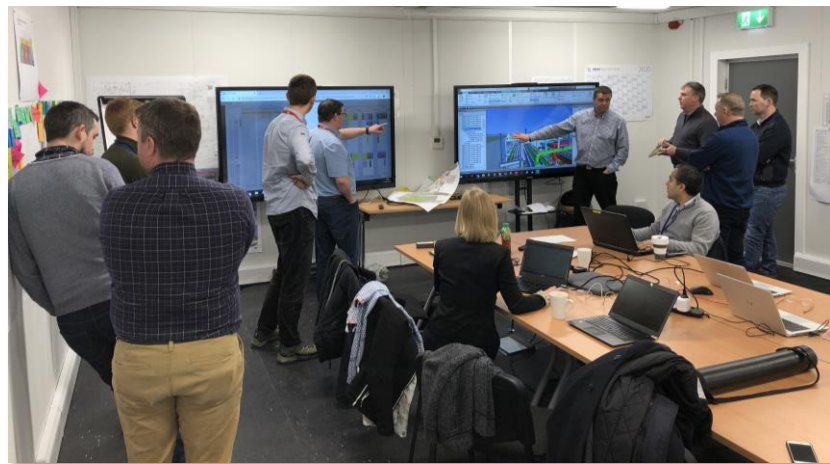
The high-level Takt Plan simply visualises the Takt areas (based on gridlines) and the commonly committed flow of trades through the building



With the 4D-schedule Takt is brought to live – internal and external CSA works are simulated to get a common understanding of flow



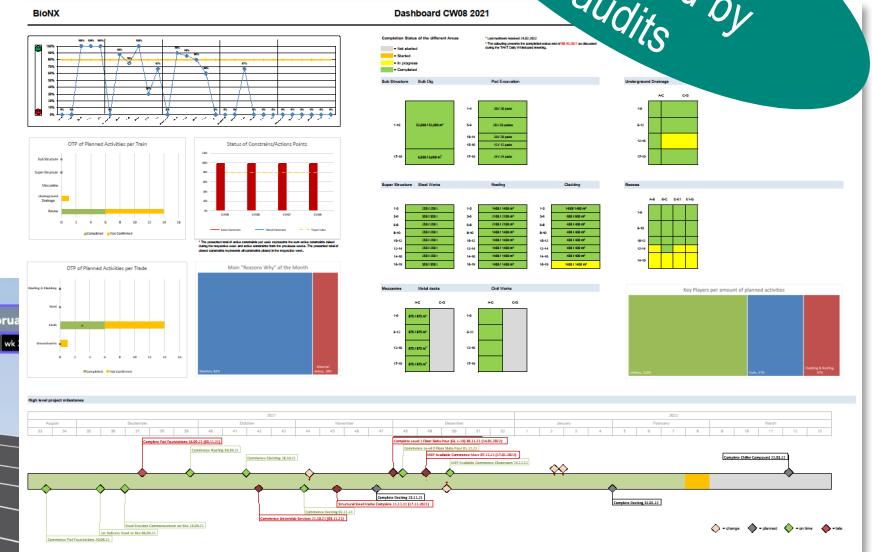
Engaging people with the best of both worlds – physically and digitally – leads to effective Project Production Management (PPM) focusing on process and product



FROM EXECUTION TO STRATEGY

To achieve the next level on Expedition25 regarding PPM, a high level takt plan, a 4D schedule and a dashboard are defined as standard PPM tools

Realisation controlled by audits



Key Take-aways – Lean Transformation is a Journey based on a clear vision, supporting structures and a cultural change – all in parallel

- Clear Vision and Strategy on highest management level with 100% commitment
- Measurable development levels with clear goals
- Dedicated people responsible for Lean
- An organisation of Lean Enthusiasts – formal and informal organised
- One Team approach
- Trade partner qualification

THANK YOU!

MSD

