



### DEVELOPING THE DIGITAL TWIN



### USING THE DIGITAL TWIN



### SCALING THE USE OF THE DIGITAL TWIN

DEFINITION OF A VISION, OBJECTIVES AND RESULTS OF SCALING UP    NETWORKING CREATION AND SYNERGIES    CONTEXT ANALYSIS    DEFINITION OF THE SCALING UP ROUTE    DEVELOPMENT OF LOCAL CAPACITIES    MONITORING

PEOPLE

USERS

2. Document the operations and collect necessary data  
3. Pay attention to business culture and how users want to use the DT  
6. Communicate the value of the DT and involve all parties to create awareness of changing operations  
7. Develop a training for users and include a transition period  
8. Users must provide reliable data for decision-making  
9. Change the working procedures by implementing the DT in the operations  
10. Gather lessons learned  
12. A new mindset of organizations to share data freely  
10. Gather lessons learned to improve future projects  
8. Users must provide reliable data for decision-making

DEVELOPERS

3. Start developing the DT  
4. Investigate the current ICT systems and IT infrastructure, and update if necessary  
7. Develop a training for developers  
4. Investigate the current ICT systems and IT infrastructure  
11. Improve the implementation process and prepare the DT  
7. Develop a training for developers  
13. Ensure modelling capability to maintain and upgrade the DT inhouse

PRODUCT OWNERS

1. Select the container terminal for the DT  
2. Identify an area of focus where gains could be made  
3. Make choices for the technical solution  
5. Determine the governance of the DT  
6. Clearly communicate and involve all members of the organization  
7. Provide training for the workforce to facilitate their adaptation to the DT  
8. Ensure robust data practice with clear agreements  
9. Start the pilot program  
11. Define vision and results  
12. Ensure support and inhouse knowledge. Form diverse teams for the transformation  
3. Make choices for the technical solution  
6. Involve all stakeholders  
11. Create a solid strategy for the scaling phase  
9. Monitor the pilot program

PROCESS

OPERATIONS

2. Aspects that drive the business or cause major disruptions have priority  
3. The UI with dashboards providing information is key for operations  
7. Establish new working procedures as input for the training  
8. Establish robust data practices for operations  
9. Industrialize the process, while implementing the DT  
10. Gather lessons learned  
11. Decide the goal of DT  
12. Develop a clear digital strategy to align people  
7. Establish new working procedures  
9. Industrialize the deployment process, while implementing the DT  
10. Gather lessons learned to improve future projects

STRATEGY

1. Start with a terminal with an efficiency program  
2. Prioritize business value over technology and start focused to expand over time  
5. Determine the governance of the DT  
2. Prioritize business, start focused and expand over time  
5. Determine the governance of the DT  
11. Determine the scaling strategy for container terminals  
12. Develop a clear digital strategy to align people

DATA

3. Ensure quality data for creating, validating and calibrating the DT  
8. Collecting, storing, organizing, and maintaining data with clear ownership is important  
12. Standardization and harmonization of data, definitions and processes is key  
8. Collecting, storing, organizing, and maintaining data with clear ownership

HARDWARE

3. Use a cloud-based environment and decide on hardware requirements  
4. Investigate the current ICT systems and IT infrastructure, and update if necessary  
4. Investigate current ICT systems and IT infrastructure

SOFTWARE

3. Copy interfaces from software and hardware that is already used  
4. Pay attention to system integration, interoperability and cybersecurity  
4. System integration, interoperability and cybersecurity are important  
13. Software modelling capability to maintain and upgrade the DT inhouse