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Conception and evaluation of context-adaptive solutions in operating stations using the example of Copenhagen S-bane

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The railway industry changes slowly. In case of operation stations, they still look the same. Many user interfaces are outdated or weren't developed with the user in mind. Also, each system has its own software. This means the operator is confronted daily with a complex user interface with many different systems, interfaces and user experiences.

One of the new ideas on the market is to integrate all different systems into one for a better user experience. How integration is meant can be seen in the Copenhagen S-bane project with Siemens, where other Siemens systems are integrated into VICOS OC 100. The interfaces can still be differentiated through its design and user experience.

To change that and overthink the user experience in general of operation stations, this thesis developed a user-friendly operational concept for dispatcher. Based on findings and concepts from UX, interaction and visualization research, a uniform, easy-to-use operating concept was developed that functions as a reference and collection of components with an overarching concept. In problem situations, adaptive solutions were developed that offer further and context-specific support. Based on the research and conception, a clickable prototype was created that contains a uniform operating concept and translates the concepts into concrete implementations that can be tested. It was developed using the Copenhagen S-bane as an example. In addition, this prototype was extended by adaptive solutions in example scenarios. The prototype implementation was evaluated as part of a UX interview. The work explores which concepts can improve the UX of operating stations in rail operations, create references and examine the extent to which adaptive solutions help in rail operations and what implications they have.

The results will show if the new concept creates a better user experience, then the old one.