

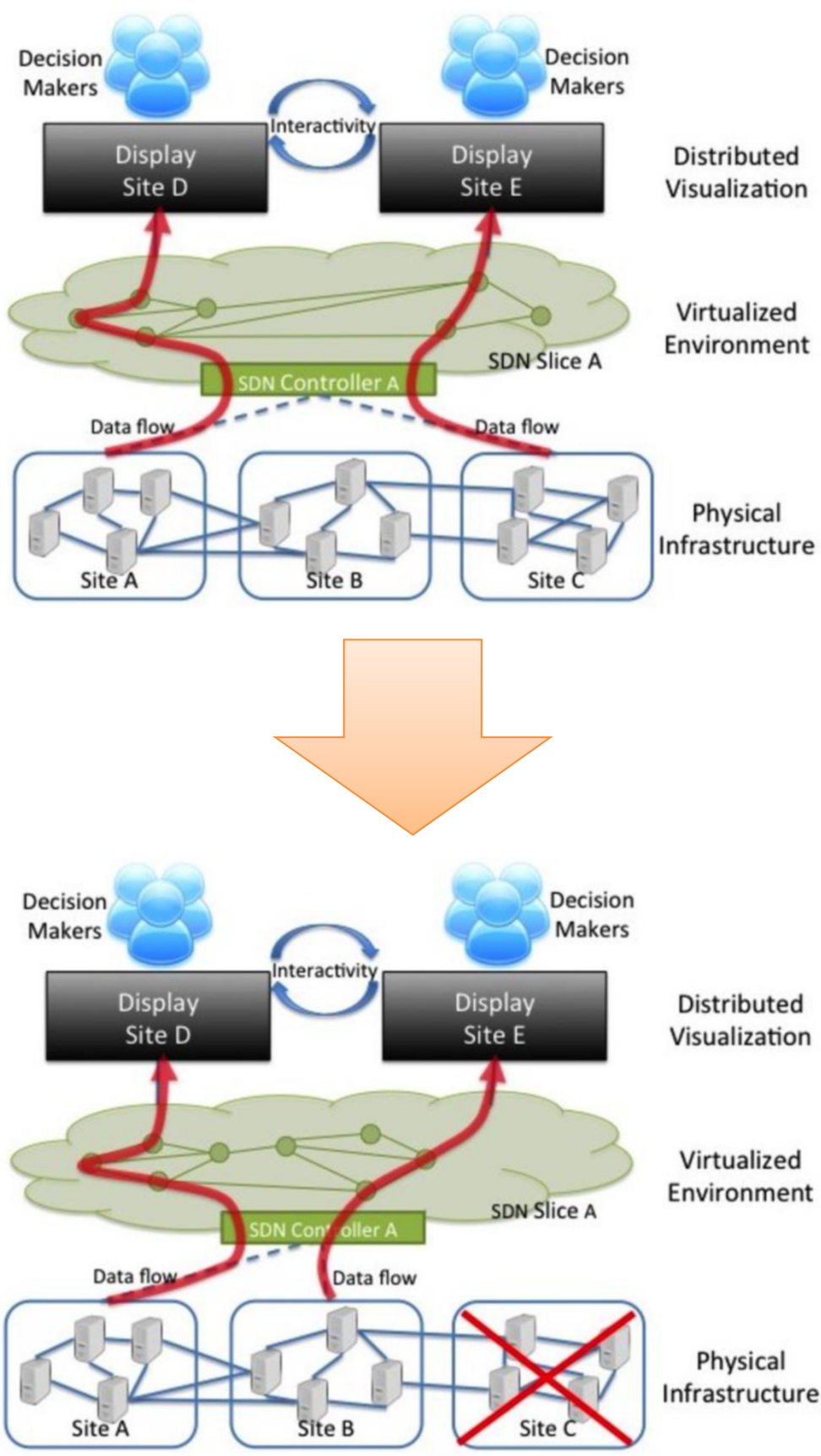
Yasuhiro Watashiba, Yuki Matsui, Yoshiyuki Kido, Susumu Date, and Shinji Shimojo  
Osaka University, Japan

Motivation

The concept of Information-as-a-Service (InfaaS) is important one for the disaster management and its applications to support the activities. In the disaster management, the communication and synchronization of the information among different groups on the distributed sites become important to support the decision making process. Furthermore, the information should be provided continuously to decision makers for the best decisions in the disaster progresses. A distributed visualization system with Tiled Display Wall (TDW) which has large-scale and high-resolution display enables to provide various information for multiple users and synchronize the information by the functionalities of TDW middleware. For achieving the continuity of information flows on the distributed visualization system, we have been studying and developing a **software-defined IT infrastructure** to support the continuous distributed visualization for clearly providing the information generated from various data during a disaster.

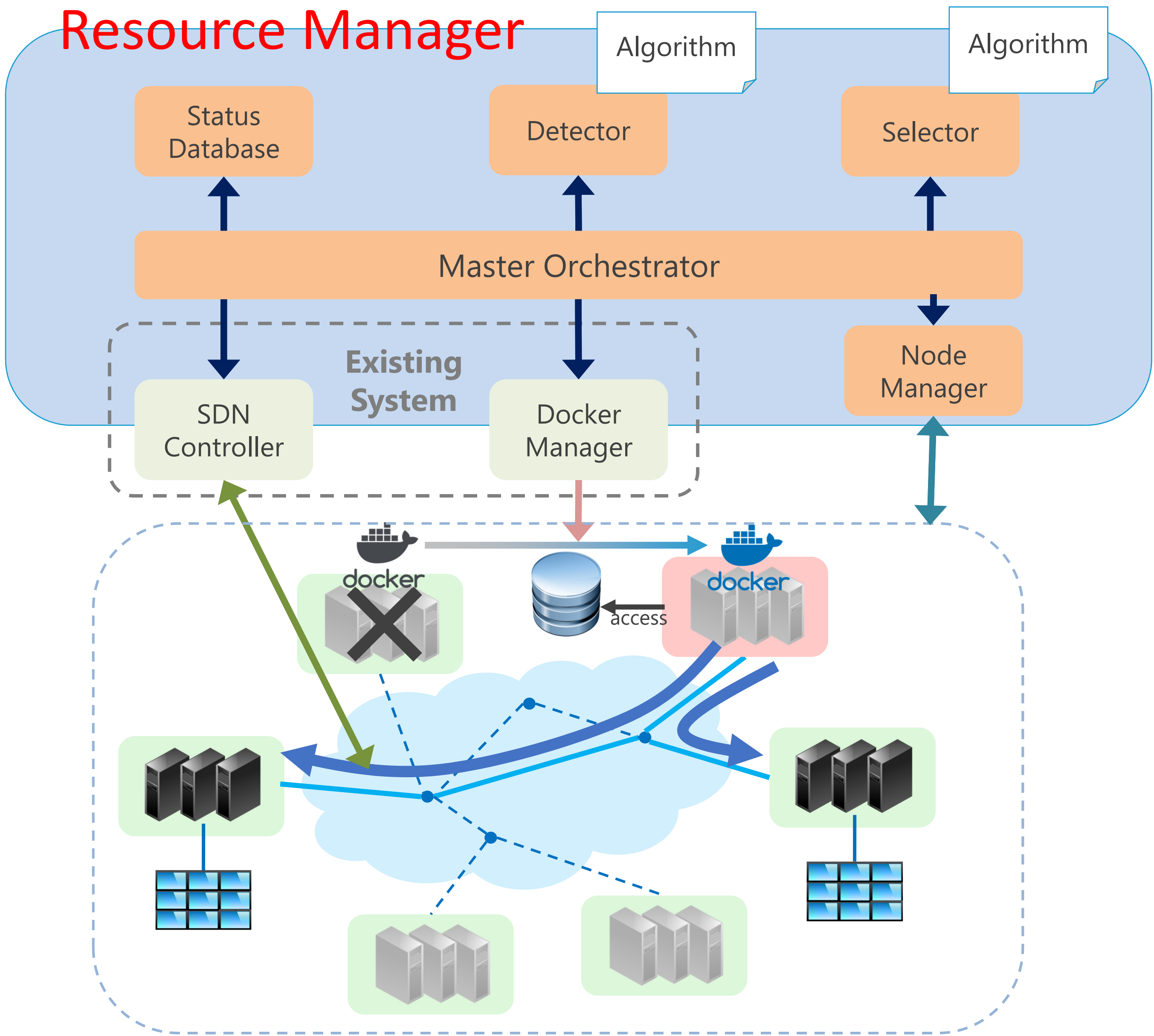
Objective

Every functionalities of the software-defined IT infrastructure is achieved by leveraging various technologies: Software-Defined Networking (SDN), Docker, and SAGE2 (Scalable Amplified Group Environment) for managing TDWs. The prototype has deployed on PRAGMA-ENT. However, there are not a mechanism to control the functionalities comprehensively on the current software-defined IT infrastructure. Therefore, we aim to realize a **novel resource manager** control the functionalities for various situation caused by a disaster appropriately.



Architecture Design of Proposed Resource Manager

The proposed resource manager has five functionalities: (1) collection of component’s status, (2) detection of resource failure, (3)selection of alternative resources, (4) reroute of network, and (5) Redeployment of docker container.



Acknowledgments

This work is partially supported by "Joint Usage/Research Center for Interdisciplinary Large-scale Information Infrastructures" in Japan (Project ID: jh160056-ISH, jh170056-ISJ, jh180077-ISJ) and JSPS KAKENHI Grant Numbers JP17K00101.