

Smart Cyber-Physical Systems (sCPS) are complex systems performing smart coordination that often require decentralized and network resilient operation. New development in the fields of the robotic systems, Industry 4.0 and autonomous vehicular system brings challenges that can be tackled with deployment of ensemble based sCPS, but require further refinement in terms of network resilience and data propagation. This thesis maps the use cases of the sCPS in the aforementioned domains, discusses requirements on the ensemble based architecture in terms of network properties, and proposes recommendations and technical means that help to design network aware ensemble based sCPS. The proposed solutions are evaluated by the means of target systems simulation using state of the art realistic network and vehicular simulators.