

Layers	1 – Water Resource Management	2 – Smart Parking	5 – Combat Battlefield	7 – Dynamic Parking Service	9 – Intelligent Parcel Transportation	13 – Flexible Manufacturing	19 – Voltage and Power Control	37 – Flexible Manufacturing	41 – Robot Navigation	51 – Robot Navigation	62 – Smart Grid	63 – Intelligent Transportation	67 – CPS on a Chip
SOCIAL <i>Type of Adaptation</i>												Social Transportation System Social Network [Send Social Data]	
APPLICATION <i>Type of Adaptation</i>	Water Management Systems MAS [Request Rebuild]	Ensembles of Vehicles Self-Organization	Multi-Agent Planner MAS [Allocate Tasks]	Parking Reservation App Autonomous Entities [Request & Send Parking Data]	Intelligent Context-Aware Network MAS	Manufacturing Resource Agents Autonomous Agents	VVO/CVR Data Transmitter Intelligent Agents Autonomous Agents [Send control commands]	Customer Agents [Request order]	Robotic Control System Collaborative Autonomous Entities [Offload Tasks & Store Data]	Robot Rescue Force Swarm [Request Map / Report Consequences]	SG Control Center	Transportation App Autonomous Entities [Send Data] [Disseminate Data / Affect Behavior]	SmartBalance Application
SERVICE MIDDLEWARE <i>Type of Adaptation</i>	Application Rebuild Framework MAPE [Recompose]	Ensembles of Components Framework Autonomous Entities [(Re-)Organize]	Continuous Planning Service Autonomous Agents [Create partial plan]	Traffic Cloud Services MAPE [Send Parking Info]	Swarm Intelligence & Optimization Unit Swarm [(Re-)Organize]	Skill / Control System MAPE [Request] [Request Services]	Data & Controller Intelligent Agents MAS [Send reconfigurations] [Send optimized data]	Coordination Agents MAS [Commission operation]	Cloud-enabled Navigation Services Collaborative Entities	„Teachers“ with Navigation Services Autonomous Entities [Send Shortest Path]	Intelligent Bayesian Optimization MAPE [Send Decision] [Send Energy Negotiation]	Cloud Transportation Services MAPE [Send Synthesized Data]	Adaptive & Reflective Middleware 2 MAPE [Send actuator commands] [Optimize load balancing]
COMMUNICATION	Internet	Vehicle-to-Vehicle Communication		Internet (Wireless)	Internet (Wireless)	LAN	Modbus protocol	Internet	Wireless	Network Communication Protocol	V2V / Wireless	V2V / Wireless	
PROXY <i>Type of Adaptation</i>	Device Bundles Smart Elements [Send Data]	Smart Sensors Smart Elements [Send Data]	Physical Combat System Smart Elements [Send Data]	Context-Aware System Smart Elements [Send Context Data]	Smart Chips Smart Elements [Send Context Data]	Agent / Machine Interface Autonomous Events [Send Product Capabilities]	Customer Termination Points Smart Elements [Send Measurements]	Plant Agent MAS [Share Production Operation & Capabilities]	Robotic Clone Smart Elements [Send Environment Data]	Robot Controller Smart Elements [Send Environment Data]	Learning Automata MAPE & Collab. Entities [Send Environment Data & Generate Bid]	Traffic Detector / Control Smart Elements [Send Data]	On-Chip Sensing & Actuation Smart Elements [Send Sensor Data]
PHYSICAL	Sensor Network	Vehicles with Sensor Infrastructure	Sensor Network	Vehicles & Road Sensor Infrastructure	Chip-equipped Parcels	Manufacturing Equipment	Smart Meter & Voltage Controller Devices	Production System	Robotic Hardware with Sensors	Robotic Hardware with Sensors	Plug-in Hybrid Electric Vehicles	Cars / Road Infrastructure	Chip Hardware