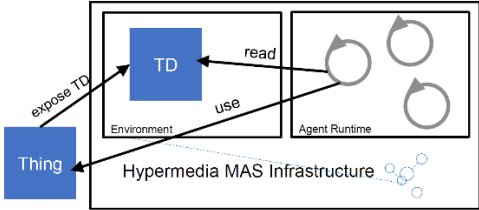


IntellioT component available for OC #2 integration - Details

Name	Hypermedia MAS Infrastructure
Responsible partner(s)	HSG
Brief description	This component manages available artifacts and agents along with available procedural knowledge (i.e., agent plans). It runs the Hypermedia Multi-agent System and manages agents that are part of it. It furthermore enables the functioning of the Web-based IDE for Hypermedia MAS through discovery and search facilities and accepts input from that component, in terms of agent organization specifications and procedural knowledge.
	 The diagram illustrates the Hypermedia MAS Infrastructure. It features a central box labeled 'Hypermedia MAS Infrastructure' containing two sub-sections: 'Environment' and 'Agent Runtime'. The 'Environment' section contains a blue box labeled 'TD' (Thing Description). The 'Agent Runtime' section contains three circular icons representing agents. A blue box labeled 'Thing' is positioned outside the main infrastructure box to the left. Arrows indicate the following interactions: an arrow labeled 'expose TD' points from the 'Thing' box to the 'TD' box; an arrow labeled 'read' points from the 'Agent Runtime' section to the 'TD' box; an arrow labeled 'use' points from the 'Agent Runtime' section to the 'TD' box; and a dashed arrow points from the 'TD' box to the 'Hypermedia MAS Infrastructure' label at the bottom.
Interfacing (I/O)	Inputs - i1: Agent Organizations - i2: Agent Procedural Knowledge - i3: Run-time information derived from user goals - i4: Information about service APIs (some of which relate to devices) in the form of W3C Thing Descriptions or TD Templates Outputs - o1: Available Artifacts - o2: Available Procedural Knowledge - o3: Running Agents and Organizations
Main interactions	Accepts i1, i2, i3 from the Web-based IDE for Hypermedia MAS (responsible: HSG) Provides o1, o2, o3 to the Web-based IDE for Hypermedia MAS (responsible: HSG) Accepts i4 from any service that should be used by agents in the Hypermedia MAS when the system is running. Here is a non-exhaustive list of these services: - Field/Farming Management API (UC1, responsible: AVL) – information about the fields and their coordinates. - Tractor API (UC1, responsible: AVL) – information about the available tractor(s) and their locations and functionalities. - Rehabilitation Plan Knowledge Base (UC2; ?) – information about available machine-readable rehabilitation plans. - Patient Devices (UC2; ?) – information about devices available to patients.



- Doctor User Interface (US2; ?) – information about user interfaces that can be used to alert doctors.
- Patient Analysis Service (UC2; ?) – information about a service that can determine whether a doctor should be alerted given information from patient device(s).
- Edge Orchestrator (UC3, responsible: SIEMENS) – I include here all services that are managed by the Edge Orchestrator (e.g., the Robot Controller, Laser Controller, Engraver Controller, Stock Management (i.e., workpiece information), Production Management (i.e., available materials and processes).
- Human-in-the-loop Service (UC3; SIEMENS) – information about a service that delivers a specific operator given information about the problem.
- Smart Contract Application (UC3; AAU) – information
- The HyperMAS uses the wot-td-java library (<https://github.com/Interactions-HSG/wot-td-java>) in order to process W3C WoT Thing Descriptions.
- The Example-TDs library (<https://github.com/Interactions-HSG/example-tds>) is used to generate and store W3C WoT Thing Descriptions that can be used by the HyperMAS as inputs.
- The JaCaMo hypermedia library (<https://github.com/Interactions-HSG/jacamo-hypermedia>) is used to create JaCaMo applications able to interact with the HyperMAS infrastructure
- The Search Engine (<https://github.com/Interactions-HSG/wot-search>) is used to explore the HyperMAS.
- The HMAS ontology (<https://ci.mines-stetienne.fr/hmas/core>) will be used by the HyperMAS infrastructure.

Deployment The Hypermedia MAS infrastructure is a Java application available from <https://github.com/Interactions-HSG/yggdrasil>. The deployment information is indicated there.

Licensing Apache 2.0

Deliverable references Deliverable D3.1 section 3.1

