HYPER-AI

Revolutionising the Cognitive Computing Continuum with AI and Automation

Project Roadmap & Milestones

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1st HYPER-AI Webinar, 11 December 2024

Project Timeline & Overview

	Workplan				Year 1				Year 2				Year 3			
WP	Title	Leader	Start	End	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
WP1	**Project Management Phase 1**	**CERTH**	1	18		MS1										
T1.1	Project Management and Financial Administration	CERTH	1	18		D1.1	D1.2									
T1.2	Technical and Scientific Coordination	CERTH	1	18												
T1.3	Risk Management and Quality Assurance	NKUA	1	18		D1.3										
T1.4	Data Management, GDPR, Legal Compliance and Ethical Assurance	ODINS	1	18		D1.4 D1.5										
WP2	**Project Management Phase 2**	**CERTH**	19	36												MS11
T2.1	Project Management and Finacial Administration	CERTH	19	36												D2.1
T2.2	Technical and Scientific coordination	CUT	19	36												
T2.3	Risk Management and Quality Assurance	NKUA	19	36										D2.2		
T2.4	Data Management, GDPR, Legal Compliance and Ethical Assurance	ODINS	19	36												D2.3
WP3	**State Requirements Definition**	**CUT**	1	12				MS2								
T3.1	Technological Landscape Analysis	CUT	1	12				D3.1								
T3.2	End-Users Requirements Definition	SABO	1	12												
T3.3	Planning of Use Cases and Scenarios Definition	VIF	1	12				D3.2								
T3.4	Definition of KPIs and Evaluation Plan	ODINS	1	12												
T3.5	Specification of HYPER-AI Architecture	NKUA	4	12				D3.3								
WP4	**Key Enabling Technologies at Systems and Hardware Level**	**NKUA**	4	18						MS3						
T4.1	Resources Abstraction and Self-advertisement mechanisms (Registration)	NKUA	4	18						D4.1						
T4.2	Cognitive Cloud Softwarized Infrastructure Customization (Connectors)	NKUA	4	18						D4.2						
T4.3	Open Resources Semantic Representation Models (device/infrastructure/cloud capabilities)	NKUA	4	18						D4.3						
T4.4	Application modelling for planning and triggering decision making	VIF	4	18												
WP5	**Distributed Self-Configuration, Self-Healing and Self-Optimization Framework**	**CERTH**	7	30										MS4		
T5.1	Hyper distributed resources modeling AIs for reliable full-state estimation across the computing hierarchy	CERTH	7	30						D5.5				D5.1		
T5.2	Autonomous self-managed computing nodes and swarms	CERTH	7	30										D5.2		
T5.3	Asynchronous distributed optimization mechanism for real-time computing resources reconfiguration	CUT	7	30										D5.3		
T5.4	Distributed optimization mechanism for real-time data-related resources management	HESSO	7	30										D5.4		
WP6	**Distributed Self-Protection Framework**	**ODINS**	7	30										MS5		
T6.1	DLT-based Decentralised Data Trust and Security Framework	ODINS	7	30						D6.4				D6.1		
T6.2	AI-based distributed intrusion detection system for Cognitive Cloud Continuum architectures	CSEM	7	30										D6.2		
T6.3	Privacy and Security in Federated Learning	TID	7	30										D6.3		
WP7	**Prototyping, Verticals Preparation and IDE**	**NKUA**	19	33											MS6	
T7.1	APPs Submission IDE	NKUA	19	33											D7.1	
T7.2	Prototyping and Integration of HYPER-AI Platform	EBOS	19	33											D7.2	
T7.3	HYPER-AI Prototype Adaptation to the Verticals	SABO	19	33											D7.3	
WP8	**Applications, Verticals and Evaluation**	**ODINS**	22	36												MS7
T8.1	Vertical 1 - Manufacturing: AR-based Remote Assembly of Production Lines	SABO	22	33												
T8.2	Vertical 2 - Green Energy: Energy efficient data processing simulation for monitoring of critical	ENEA	22	33												
T8.3	Vertical 3 - Mobility and Automotive: Automated driving of connected vehicles	VIF	22	33												
T8.4	Vertical 4 - Farming and Agriculture: Precision Agriculture improved by computing continuum from Cloud-	ODINS	22	33												
T8.5	Vertical 5 - Healthcare: Disease Control originating from Wild Animals to prevent future Pandemics	SUNDO	22	33												
T8.6	Performance Evaluation and Impact Assessment	ODINS	25	36												D8.1
WP9	**Dissemination, Communication and Exploitation Phase 1**	**TRUST-IT**	1	18		MS8				MS9						
T9.1	Branding, Awareness and Communication channels set up	TRUST-IT	1	18		D9.1										
T9.2	Syngergies, Liaison and Events Planning	TRUST-IT	1	18						D9.2						
T9.3	Exploitation Plans, Business Strategy and IPR Management	TRUST-IT	1	18												
T9.4	Standardisation, Certification of Tools, Services and Training Procedures	TID	1	18						D9.3						
T9.5	Open Source Ecosystem, Community Building and Sustainability	ECL	1	18												
WP10	**Dissemination, Communication and Exploitation Phase 2**	**TRUST-IT**	19	36												MS10
T10.1	Engagement and Community Building	TRUST-IT	19	36												D10.1
T10.2	Syngergies, Liaison and Events Planning	TRUST-IT	19	36												D10.2
T10.3	Exploitation Plans, Business Strategy and IPR Management	TRUST-IT	19	36												
T10.4	Standardisation, Certification of Tools, Services and Training Procedures	TID	19	36												D10.3
T10.5	Open Source Ecosystem, Community Building and Sustainability	ECL	19	36												

Project Timeline & Overview

HYPER-AI is scheduled to run for 36 months organized into ten Work Packages.

- WP1 and WP2 focus on project management and coordination.
- WP3 establishes the conceptual framework.
- WP4 and WP5 develop technologies and tools for swarm intelligence and distributed optimization.
- WP6 handles security and UX modules.
- WP7 and WP8 focus on integration and validation in pilot applications
- WP9 and WP10 ensure dissemination, exploitation, and standardization for a sustainable future.

Highlight of the work packages and their objectives

Work Package: 1 **Leader: CERTH** **Duration:** M1-M18	Project Management Phase 1 WP1 focuses on the administrative and technical management of HYPER-AI during its first phase. It ensures seamless collaboration, aligning consortium participants and WP leaders for successful project execution. Key tasks include defining the coordination approach, creating a data management plan, defining a risk management strategy, monitoring progress, and preparing essential documentation.

Work Package: 2 **Leader: CERTH** **Duration:** M19-M36	Project Management Phase 2 WP2 is dedicated to on the administrative and technical management of HYPER-AI during its second phase. The activities and objectives remain the same as WP1.

Highlight of the work packages and their objectives

Work Package: 3 **Leader: CUT** **Duration:** M1-M12	State Requirements Definition WP3 focuses on defining user requirements and system characteristics in order to specify the design of HYPER-AI architecture as well as the detailed use cases design and evaluation.

Work Package: 4 **Leader: NKUA** **Duration:** M4-M18	Key Enabling Technologies at Systems and Hardware Level WP4 aims to develop the foundational technologies for implementing the FaaS architecture within the hybrid multi-cloud HYPER-AI environment. Key objectives include resource abstraction across the computing continuum, implementing self-advertising mechanisms for node registration, creating open connectors for transparent resource management, and designing semantic models to represent application requirements and computing resources.

Highlight of the work packages and their objectives

Work Package: 5 **Leader: CERTH** **Duration:** M7-M30	Distributed Self-Configuration, Self-Healing and Self-Optimization Framework WP5 focuses on cognitive cloud continuum resource management. The goal of the WP5 is to enable smooth orchestration and efficient execution of hyper-distributed data processing applications, utilizing deep learning techniques, optimizing resources across the computer continuum.

Work Package: 6 **Leader: OdinS** **Duration:** M7-M30	Distributed Self-Protection Framework WP6 focuses on enhancing security and trust in the Cognitive Cloud Continuum. It develops a decentralized trust and security framework using DLT for transparent and secure data management, and an owner-centric encryption mechanism for end-to-end data protection. Additionally, it designs a distributed intrusion detection system to prevent cyber-attacks and addresses privacy and security challenges in Federated Learning, ensuring data protection without compromising model accuracy.

Highlight of the work packages and their objectives

Work Package: 7 **Leader: NKUA** **Duration:** M19-M33	Prototyping, Verticals Preparation and IDE WP7 focuses on preparing the HYPER-AI prototype. Its key objectives include developing an IDE for application deployment workflows, integrating the platform's software and hardware components, and adapting the platform for all the project verticals.

Work Package: 8 **Leader: OdinS** **Duration:** M22-M36	Applications, Verticals and Evaluation WP8 focuses on validating and showcasing HYPER-AI. It defines environments and actors for comparable results, coordinates demonstrations to highlight HYPER-AI's benefits, and validates its open reference architecture and cross-layer interoperability support across different domains. Additionally, WP8 evaluates HYPER-AI’s innovative features across a wide range of applications in various industries and assesses its impact, usefulness, and acceptability based on application findings.

Highlight of the work packages and their objectives

Work Package: 9 **Leader: TRUST-IT** **Duration:** M1-M18	Dissemination, Communication and Exploitation Phase 1 WP9 focuses on promoting HYPER-AI through branding, social media, and a dedicated website to ensure visibility at both European and international levels. It organizes events, webinars, and stakeholder engagements while fostering collaboration with peer projects and key initiatives to enhance the project's impact and outreach.
Work Package: 10 **Leader: TRUST-IT** **Duration:** M19-M36	Dissemination, Communication and Exploitation Phase 2 WP10 emphasizes showcasing HYPER-AI's impact and results by increasing participation in third-party events and disseminating scientific findings through technical and business venues. As the project advances, it will organize demo stands, workshops, and webinars highlighting use case progress, produce White Papers and Policy Briefs, and finalize the exploitation strategy.

During the project's timeline, Hyper-AI consortium aims to achieve the following goals:

- **Initial Setup**: Project Handbook and Multi-Aspect Management Framework defined. (Due to month: 6)
- **Conceptualization**: Requirements and architecture finalized. (Due to month: 12)
- **Implementation**: Release of the resource abstraction, interconnection and semantic & application modeling. (Due to month: 18)
- **Optimization Framework**: Release of Distributed Self-Configuration, Self-Healing, and Self-Optimization frameworks. (Due to month: 30)
- **Security & UX**: Release of Distributed Self-Protection and UX framework. (Due to month: 30)

During the project's timeline, Hyper-AI consortium aims to achieve the following goals:

- **Prototype**: HYPER-AI Platform ready for pilot (system and application deployments). (Due to month: 33)
- **Demonstration**: Availability of final applications, vertical demonstrations and evaluation report. (Due to month: 36)
- **Engagement:** HYPER-AI website go live. (Due to month: 6)
- **Initial Exploitation**: Initial plans ready for dissemination, exploitation, standardisation, and open-source ecosystem creation. (Due to month: 9)
- **Finalize Exploitation:** Final completion of dissemination, exploitation, standardisation, and open-source ecosystem creation. (Due to month: 36)
- **Finalize:** Final Project Management completed. (Due to month: 36)

HYPER-AI

Revolutionising the Cognitive Computing Continuum with AI and Automation

Thank you