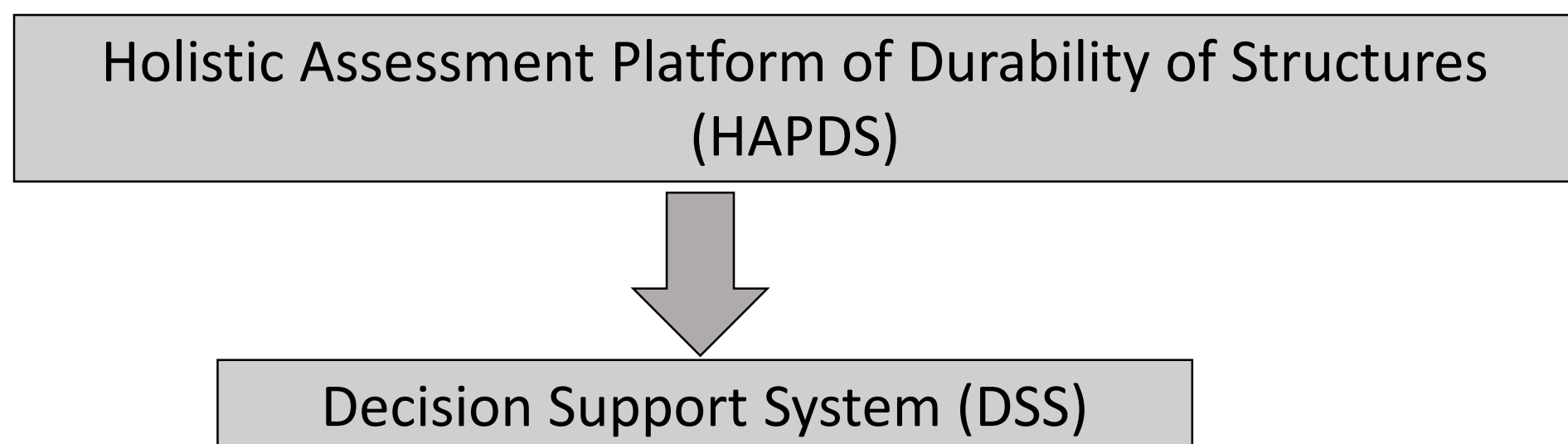


Development of a decision support system based on intelligent management tools for the maintenance of existing buildings and the design of new buildings, in order to extend its working life to cope with climate change and extreme events.

Objective:

Develop an Integrated assessment platform focused on the working life (WL) of the structures.

Methodology (in-house computational tools):



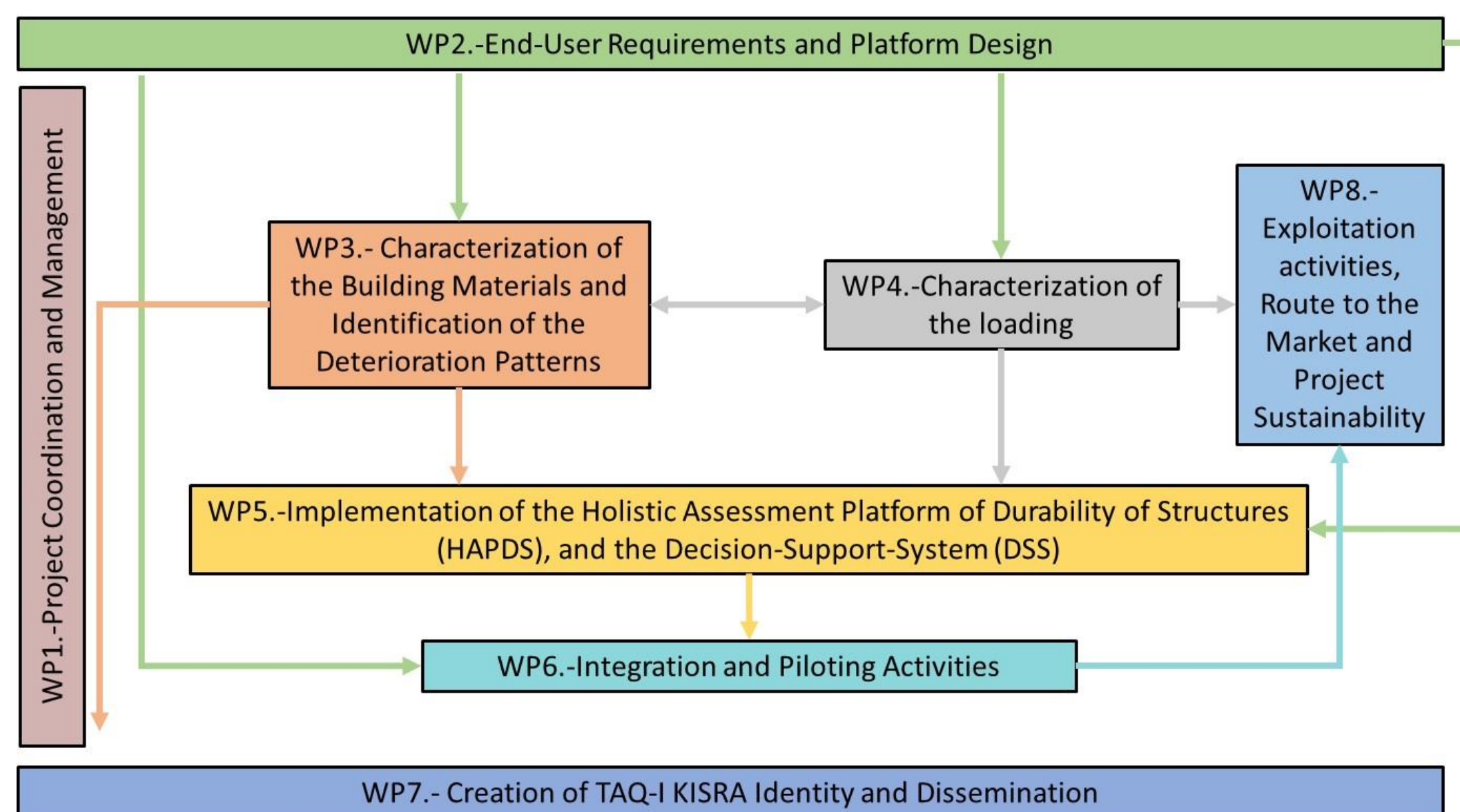
Demo sites in Granada:

- Wall of piles in Granada Metro.
- Santander Building.
- Design of a new Extremely Durable Structure (EDS)

Members:

- Research partner: University of Granada and Instituto de Ciencias de la Construcción Eduardo Torroja.
- End-users: Ayuntamiento de Granada and ERSI-Group.

Work Packages:



Timetable:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48					
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UGR's Work Packages:

WP2.-End-User Requirements and Platform Design.

- ✓ T2.1 End-users' need and expectations [M1-M5;M34-M40]. Collect the advises and expectations from the end-users.
- ✓ T2.3 Design the architecture of the platform [M6-M12;M34-M40]. Specifications of the platform architecture, and guidelines and toolset for development activities.

WP3.- Characterization of the Building Materials and Models of Deterioration.

- ✓ T3.5 Integration of the information related with the materials used in structures or buildings in the intelligent management tools [M20-M40]. Effect of the climate change and extreme events in the characteristics of materials (deterioration models), and integration into intelligent decision-making systems.
- ✓ T3.6 Mechanical modelling of deterioration of materials [M5-M42]. Implementation of the mechanical deterioration models in an open-source structural software.

WP4.- Characterization of the loading.

- ✓ T4.1 Probabilistic study of the earthquake actions for EDS [M5-M24]. The Probabilistic Seismic Hazard Analysis (PSHA) method will be extended for the consideration of small mean annual frequency of exceedance values.
- ✓ T4.2 Creation of artificial acelerograms [M8-M24]. Based on available records and on available software.
- ✓ T4.3 Study of environmental actions caused by CC [M8-M24]. Soil alteration, humidity and temperatura cycles will be considered.

WP5.- Implementation of the HAPDS and the DSS.

- ✓ T5.1 Failure mode, vulnerability identification and criticality analysis assessment [M18-M36]. Develop a methodology based on failure mode, effects and criticality analysis to identify potential failure patterns and to help redeploy monitoring components and focus mitigation efforts.
- ✓ T5.2 Integration of deterioration information and data into a dynamic Bayesian framework for hazard assessment [M18-M36]. Integrate the physics-based deterioration models (WP3) within a holistic structural model implemented using open access tool.
- ✓ T5.3 Prognostics and health management of structural remaining useful life [M18-M36]. Prognostics algorithms to predict the structural useful life under damage conditions using on-line data from structural health monitoring sensors.
- ✓ T5.4 Integration of post-prognostics information within an expert system for decision making (DSS) [M20-M38]. Integrate how the structural system behaves, when and how it can fail, pathways to restoration after assessment, maintenance policies to avoid potential failure modes and monitoring and environmental data, as well as expert-knowledge.
- ✓ T5.5 HAPDS software package deployment for health assessment investigation [M18-M40]. Design and develop the open source code developed over the WP5.

WP6.- Demonstration cases

- ✓ T6.3 Design of a new EDS in Granada [M8-M18;M36-M48]. Use HAPDS and DSS for the design of the EDS, taking into account different solutions concerning materials employed and structural typologies.

WP7.- Dissemination, Communication and Standardization Activities

- ✓ T7.1 Corporate identity and general templates for dissemination materials [M1-M3].
- ✓ T7.2 Dissemination and Communication plan [M1-M48].
- ✓ T7.3 Development and use of dissemination materials and tools. [M3-M48], such as Project website, brochures, posters, social networks, and technical blogs.
- ✓ T7.4 Ongoing and special dissemination efforts [M1-M48], such as journal and conference papers.

WP8.- Exploitation Activities, Route to the Market and Project Sustainability

- ✓ T8.1 Exploitation and Business Plan [M1-M48].
- ✓ T8.2 Exploitation Implementation-Route to Market [M24-M48].
- ✓ T8.3 Long-term TAQ-I KISRA Roadmap&Creation of the Project Handbook [M30-M48].