SMARTINCS

SELF-HEALING - MULTIFUNCTIONAL - ADVANCED REPAIR TECHNOLOGIES IN CEMENTITIOUS SYSTEMS

Self-healing concrete, repair mortars and grouts as key enabling technologies

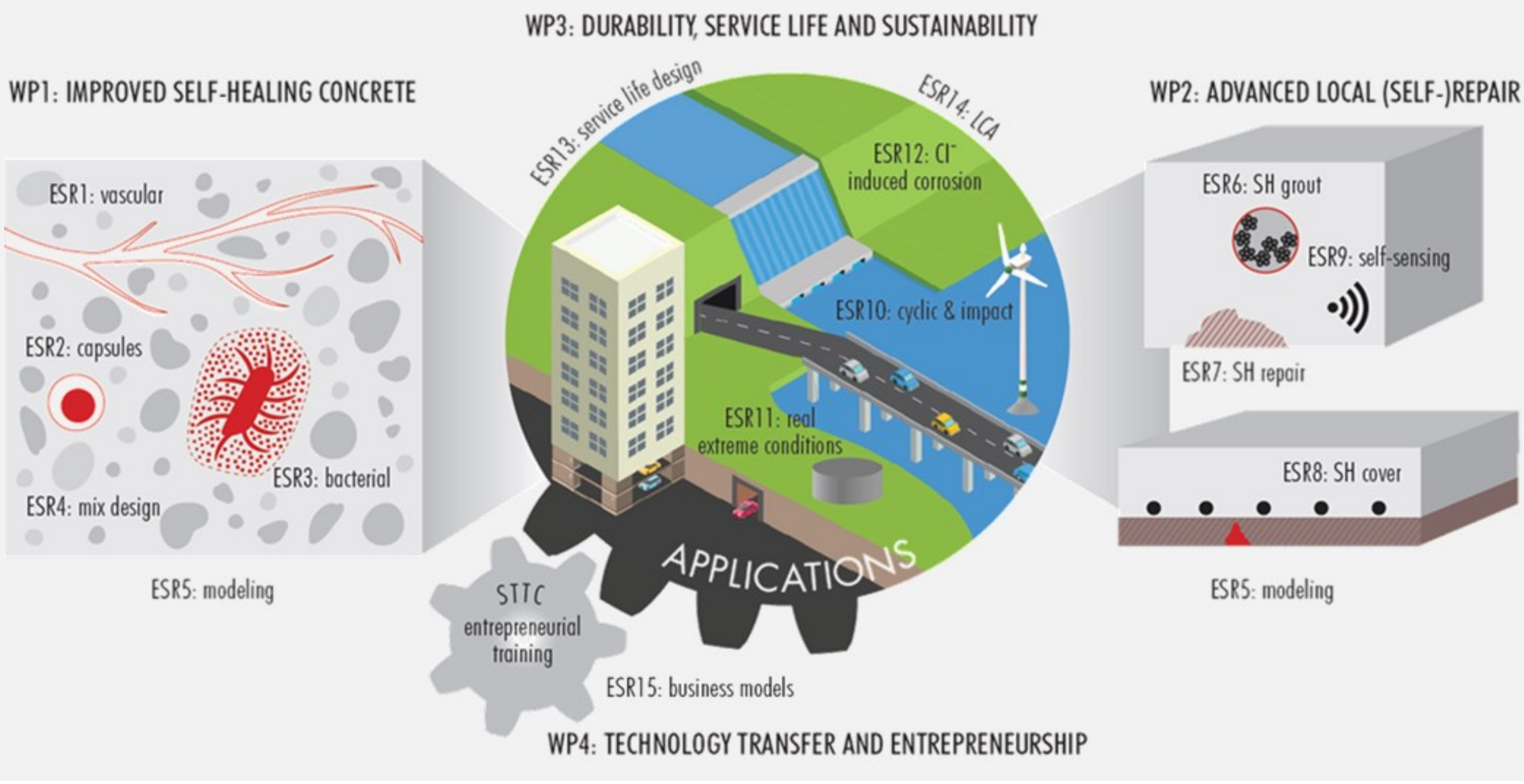
This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 860006.

ABOUT SMARTINCS

SMARTINCS will implement new life-cycle thinking and durability-based approaches to the concept and design of concrete structures, with self-healing concrete, repair mortars and grouts as key enabling technologies. This will create a breakthrough in the current practice of the construction industry, which is characterized by huge economic costs related to inspection, maintenance, repair and eventually demolition activities and additional indirect costs and environmental effects.

SMARTINCS will train a new generation of creative and entrepreneurial early-stage researchers in prevention of deterioration of (i) new concrete infrastructure by innovative, multifunctional self-healing strategies and (ii) existing concrete infrastructure by advanced repair technologies. The project brings together the complementary expertise of research institutes pioneering in smart cementitious materials, strengthened by leading companies along the SMARTINCS value chain, as well as certification and pre-standardization agencies.

They will intensively **TRAIN 15 EARLY STAGE RESEARCHERS** to respond to the clear demand to implement new life-cycle thinking and durability-based approaches to the concept and design of concrete structures, minimizing both the use of resources and production of waste in line with Europe's Circular Economy strategy. The new generation of researchers will be immediately employable to support the introduction of the novel technologies allowing the expected spectacular growth of the self-healing materials market to take place.



Scientific objectives are attained by joint PhD research and envisage:
(i) To develop and model innovative self-healing strategies for bulk and local application, including optimization of mix designs and development of multi-functional self-healing agents with attention to cost, applicability and environmental impact.
(ii) To scientifically substantiate and model the durability of self-healed concrete and repaired systems for an accurate service life prediction and to integrate self-healing into innovative service-life based structural design approaches to foster the market penetration through an innovative life-cycle thinking.
(iii) To quantify and prove the eco-efficiency of newly developed smart concrete / mortars by life cycle assessment modeling.

CONSORTIUM

Europe has the key advantage to host pioneers and specialists in self-healing disciplines who can make the ambitious goals become a reality. They teamed up in the SMARTINCS consortium and include actors in all parts of the value chain, having the capacity to create the needed break-through to introduce the novel innovative self-sensing and multifunctional self-healing strategies and advanced repair technologies into the market.

Project coordinator: UGent

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