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Cost Action CA18203

Optimizing Design for Inspection (ODIN)

PRACTICAL INFORMATION GUIDE

Larnaca in-person MC meeting

Larnaca, Cyprus, 27-28.09.2022

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About COST

The European Cooperation in Science and Technology (COST) is a funding organisation for the creation of research networks, called COST Actions. These networks offer an open space for collaboration among scientists across Europe (and beyond) and thereby give impetus to research advancements and innovation.

COST is bottom up, this means that researchers can create a network - based on their own research interests and ideas - by submitting a proposal to the COST Open Call. The proposal can be in any science field. COST Actions are highly interdisciplinary and open. It is possible to join ongoing Actions, which therefore keep expanding over the funding period of four years. They are multi-stakeholder, often involving the private sector, policymakers as well as civil society.

Since 1971, COST receives EU funding under the various research and innovation framework programmes, such as Horizon 2020.

COST funding intends to complement national research funds, as they are exclusively dedicated to cover collaboration activities, such as workshops, conferences, working group meetings, training schools, short-term scientific missions, and dissemination and communication activities. For more information, please go to the Funding section of the COST website (https://www.cost.eu/).

The COST Association places emphasis on actively involving researchers from less research-intensive COST Countries (Inclusiveness Target Countries, ITC[1]). Researchers from Near Neighbour Countries and International Partner Countries can also take part in COST Actions, based on mutual benefit. For more information, please visit the global networking page (https://www.cost.eu/).

[1] Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Macedonia, Hungary, Latvia, Lithuania, Luxembourg, Malta, Montenegro, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Turkey

Cost Action CA18203 - Optimizing Design for Inspection (ODIN)

This Action will maximize the full benefit of in service, continuous monitoring of critical aerospace structures by integrating ultrasonic wave based non-destructive evaluation (NDE), energy harvesting and wireless sensor technologies at the design conception phase.

Optimization (of sensors and structures), computational modelling, advanced signal processing and advanced design approaches will be integrated to produce a novel framework, design tools and guidelines for the delivery of the first generation of self-sensing aircraft capable of delivering accurate structural prognosis.

Ultrasound based NDE techniques, energy harvesting and wireless sensor networks are being increasingly demonstrated to be effective in monitoring damage in aerospace components at a laboratory setting.

These components include critical elements such as airframe, engines, landing gear and control surfaces. However, there is an urgent need to integrate these approaches and techniques at the inception of an aircraft. This COST Action will bring together the top European experts across these areas to support the development of an integrated framework for optimized self-sensing structures capable of diagnosis and prognosis, together with demonstrators and educational activities, including training programs, which will ultimately lead to cleaner and safer skies.

General information

Start of Action: 02/10/2019
End of Action: 01/10/2023

Main Contacts

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Action website: https://odin-cost.com/
Domain website: https://www.cost.eu/actions/CA18203/

Action's Working Groups:

Working group 1	**Design, Optimisation and Integration** This group will encompass industrial aerospace design engineers and experts, mathematicians, computer scientists and optimizers with the objective to analyze the requirements for integrating SHM systems at the inception of an aerospace design. A significant challenge for this group is to ensure that specific aerospace requirements are communicated effectively and efficiently to the SHM system designers.
Working group 2	**Damage detection** This group will focus on the analysis of existing strategies including sensor technologies. They will quantify the capability of systems to identify damage in new structures, power level requirements and compare state of the art signal processing approaches to damage location and characterization. Finally, the group will deliver a strategy for sharing data and signal processing algorithms.
Working group 3	**Power management and energy harvesting** Power requirements are a crucial element of this Network. Currently there is a power gap between low power systems and the available energy through current harvesting approaches. Furthermore, there are large disparities between published data and that which is achievable based on methods of testing and analysis. Therefore, this group will seek to develop a detailed understanding of current vibration levels and temperature differences and the location or position they would be found on an aircraft and standard testing procedures to allow a comparison across European research groups. There will be cross work group activities associated with this group.
Working group 4	**Wireless Communications** Wireless communication is of great importance to unlocking the potential of SHM systems in aerospace, bridge structures and wind turbines. However, the greatest challenge lies in aerospace where there is a restriction in allowable wireless protocols and the complex geometry that signals have to propagate through and around. The working group will focus on aerospace protocols and strategies that will reduce power requirements at a sensor node. In addition, the working group will review the safety and security of existing protocols.
Working group 5	**Data management and signal processing** This working group will focus on human interface, data interpretation, data presentation, data mining, data efficiency/reduction and hardware integration. There are three tasks associated with this working group. The group will be heavily linked to WG1 and WG2. In addition, there will be strong activities focused on low power processing to reduce power consumption of systems.

A G E N D A

27th September 2002

Work Group Meetings 1

10 am to 12.30pm (coffee break at 11am) – Focus:

- How to increase group membership
- Identification of key conferences for ITC grants
- How to increase interaction with industry
- Data management and storage
- What can we offer as a group to community in terms of data/processing?

12.30pm -13.30pm Lunch

Work Group Meetings 2*

13.30pm – 4pm – (coffee break at 3pm) – Focus:

- STSM/ITC grant plans
- Key deliverables
- WG Interactions/requests for support
- GP4 Budget plan

*Written feedback to AC is required to prepare draft budget for next day

Lead Group Session (RU, RP, PD) - 4pm – close – next steps

28th September 2022

Management Committee Meeting – 10am – 12.30pm

1. Welcome to participants
2. Verification of the presence of two-thirds of the Participating COST Countries or, if applicable, a quorum
3. Adoption of agenda
4. Actions from last meeting
5. Update from the Action Chair
   a) Status of Action: start and end dates of Action, participating COST countries
6. Update from the Grant Holder
   a) Budget for GP3
7. Update from Communications Coordinator
8. Update from the COST Association (if available)
9. Update from Working Groups
10. Scientific planning
    a) Scientific strategy (MoU objectives, GP Goals, WG tasks and deliverables)
    b) Long-term planning (including anticipated locations and dates of future activities)
    c) Dissemination planning (Publications and outreach activities)
11. AOB
12. Location and date of next meeting
13. Summary of MC decisions
14. MC Closing

12.30pm -13.30pm Lunch

Work Group Meetings 3*

13.30pm – close (coffee break at 3pm)

- Key WG actions for remainder of Action
- Best practice
- Coordinated approaches

About Larnaca

Larnaca is an area of outstanding natural beauty, endowed with numerous attractions, waterfronts and scenic vistas, complemented by some of the island's most outstanding beaches.

The city of Larnaca is located on the southern coast of Cyprus, with a population of approximately 85,000 and is the third largest city, after the capital Nicosia and Limassol. It is home to the island's largest airport, Larnaca International Airport, which is located on the outskirts of the city to the south with excellent road links to the whole of the island. Larnaca also has the island's second largest commercial port and a marina, which are two of the four official entry points by sea into Cyprus.

Larnaca Salt Lake is a distinctive and picturesque landmark, consisting of a network of four salt lakes of different sizes, with an overall surface area of 2.2km, located just off the road leading to the airport. It is considered one of the most important wetlands of Cyprus and has been declared a special protected area and is a prominent domain for wild birds. The lake is home to 85 species of water birds and is a primary migratory passage through Cyprus. It is visited by flocks of pink flamingos that reside there from November until the end of March, a breath-taking sight to see.

The city also has a number of other landmarks, which include the Church of Saint Lazarus; the Catacomb of Phaneromeni Church; Hala Sultan Tekke; Kamares Aqueduct and the Fort of Larnaca. Additionally, Larnaca has a Municipal Theatre and an Art Gallery.

The beautiful seafront promenade, the "Phinikoudes", is not only lined with palm trees, but also an array of popular seafood restaurants, bars and cafés predominantly visited by tourists.

Transportation and getting there:

Cyprus is served by two International Airports:

- Larnaca International Airport, (LCA) and
- Paphos International Airport, (PFO).

More than 50 International Airlines connect Cyprus to the whole world; for more details regarding flights to/from Cyprus, please visit the official website of both airports at http://www.hermesairports.com. Furthermore, domestic communication between both airports and all the major cities on the island is very quick and easy via the extensive highway system.

The Larnaca International Airport is located about 3km (1.8 miles) from Larnaca, 67km (42 miles) from Limassol and 142 km (88 miles) from Paphos.

The Paphos International Airport is located about 15km (9 miles) from Paphos and 142 km (88 miles) from Larnaca.

- **Larnaca Airport to Larnaca**

  Use one of the public bus routes to get to Larnaca City Centre (Central Bus Station). https://www.larnaca-airport.com/bus.php

- **Paphos Airport to Larnaca**

  Airport bus service that connects Paphos Airport to Larnaca https://www.paphosbus.com/paphos-airport-bus/paphos-airport-larnaca

Venue

The meeting will be held at the Multi-functional Center for Social Activities and Welfare of Larnaca Municipality (Faneromenis 62, Larnaca 6025).

Meals & Refreshments

Refreshments during the meeting will be provided. Dinner is should be organized (at own cost), TBA. Lunch is the responsibility of the MC member.

Accommodation

Feel free to select an accommodation. The Travel Reimbursement Rules stipulate the daily allowance covers accommodation expenses, meals, and local transport expenses incurred in the country where the meeting takes place.