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Issue 2

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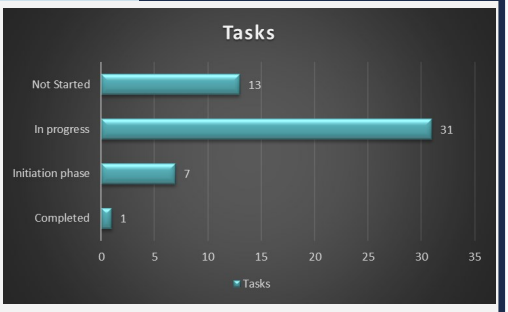
HEALTHY SAILING

HEALTHY SAILING Project Status Update

In September the project will complete its first year of implementation and is currently finalizing the **initiation phase of evidence accumulation**. During this phase, data collection and assessment of infection disease per ship type/port facility is being conducted. Of the 52 tasks in the HS project, one is completed, 31 are in progress, 7 are in the initiation phase and 13 have not started yet.



Updates from the Coordination

UTH as project coordinator is tasked with performing day-to-day technical, financial and contract management, establishing project working groups and continuously communicating with all partners regarding project management.

Establishment of an independent Research Ethics Committee: An independent Research Ethics Committee was established, with Terms of Reference (ToR) prepared and sent to research partner institutions that will be represented in the committee (UKE, UoG, INP, UGOT, USN, PFRI, NKUA). In parallel, ethics approval has been received for the following study protocols by the University of Thessaly's Research Ethics Committees and Healthy Sailing project.

⇒ Epidemiological study to identify underlying evidence for mechanisms facilitating the spread of infection and mitigation measures (Task 3.2.1)

⇒ Knowledge, attitudes and practices surveys on infectious disease prevention and control among cruise ship passengers and crew members (Task 3.2.3)

⇒ Pilot-testing a syndromic diagnostic testing system onboard a cruise ship (part of the inventory of diagnostic laboratory methods for infectious agents) (Task 5.3)

⇒ Intervention study for technology induced behavioural change in hand hygiene management (Task 7.1)

Integration of General Data Protection Regulation (GDPR) - legal assessments of project outputs: A template titled "Joint Controller Agreement for the processing of personal data within the Healthy Sailing Project" was developed and shared with the HS partners for processing data.

Steering Committee Meetings: From the start of the project, three scheduled Steering Committee meetings and one ad-hoc meeting were conducted, where Work Package leaders discuss the project status.

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This is a biannual publication of the HEALTHY SAILING project. Next issue: February 2024

Inside this issue:

HORIZON EUROPE

Project Nr. 101069764

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Project Status Update

Updates from the Coordination

1st Advisory Board meeting

UTH coordinated the establishment of the Advisory Board. Members of the HEALTHY SAILING Advisory Board include representatives from: DG MOVE, DG SANTE, EMSA, ECDC, US CDC, CDC in Chinese Taipei, CDC VSP, CLIA, MEDCRUISE and ABC/HS4U. During the 1st Advisory Board meeting organized online (23 May 2023), members of the HS Advisory Board recommended to include social partners (e.g. port associations, ship owners, unions of workers) in project dissemination, communication and the stakeholder list. It was also recommended to engage social partners on issues related to vaccine preventable diseases (for crew members), vaccination guidance and occupational health issues.

Collaboration between Aspect 1 (HEALTHY SAILING) & Aspect 2 (Healthy Ship 4U)

UTH facilitated the link with the Aspect 2 consortium Healthy Ship 4U. The two consortia established a Joint Committee and a Joint Dissemination and Communication team.

⇒ **1st Joint Committee meeting between HS & HS4U**

The Joint Committee was set up and the first meeting conducted online (29 May 2023), with the participation of the project officer. The two consortia discussed areas of collaboration and establishment of working groups. The joint meetings will be conducted at 9-month intervals from the beginning of the project lifecycle.

⇒ **1st Joint Dissemination and Communication Team meeting between HS & HS4U**

The objective of the Joint Dissemination and Communication team is to increase visibility of the two projects, and to disseminate outputs in a wider audience. A first meeting was conducted online (10 July 2023) and projects agreed on initial activities. A document outlining the principles of collaboration has been drafted. The joint collaboration will respect the IP rights, personal data, and any other legal rights of the participating consortia and their members. To that end, a Memorandum of Understanding will be signed between the parties.

HEALTHY SAILING Upcoming Events

4th Steering Committee meeting
6 September 2023 | Online

2nd General Assembly meeting
20 September 2023 | Online

SAVE THE DATE

Dissemination & Communication

Scientific Publications & 1st Scientific Publication Team meeting

The HEALTHY SAILING Scientific Publication Team during their first meeting (5 May 2023) reviewed the Terms of Reference and defined recommendations for publications, authorships, scientific options for journals. In It was agreed that all Work Package leaders in collaboration with Task leaders will prepare publication plans for their own tasks, and share with the Publication Team for review and approval, to ensure representation of all project results/outcomes.

From May until now, the Scientific Publication Team has received 8 “intention to publish forms” for approval. The publications received are either for submission to conferences or scientific journals.

Intellectual Property Rights

An Intellectual Property Management Plan was developed, with the general purpose to address the protection and disposition of Intellectual Property developed during the implementation of the HEALTHY SAILING project, within the framework of intellectual property laws, regulations, and policies.

Project Status Update

Dissemination & Communication

Horizon results booster—Collaboration with HS4U: Project representatives from UTH and SHIPSAN are collaborating with experts from Horizon Results Booster. Under *Service 1: Portfolio Dissemination & Exploitation,* the aim is to identify other projects to formulate a project group and propose joint dissemination activities based on the needs of the projects. HS is already in close collaboration with the HS4U project, and the two projects have established a common joint working group on Communication and Dissemination between the two Aspects. Currently, a Memorandum of Understanding and the Principles of Collaboration are being drafted. The above mentioned service from Horizon Results Booster will facilitate joint collaboration and support the implementation of up to two joint dissemination activities. HS has also applied for Module C under the Horizon Results Booster, which is a service assisting projects to improve their existing exploitation strategy. In the following months, HS will collaborate with the experts on the exploitation strategy.

Social media analytics

Over the past six months, the numbers of followers, impressions and engagements have doubled on the HS social media accounts.

Website analytics

Since the launch of the HS website in November 2022, **2,719 page views and 1,031 visits** have been recorded.

The 1st issue of the **Newsletter was downloaded 558 times from the HS website.**

	Number of impressions	Number of followers	Number of engagements: shares, likes, comments
LinkedIn	14,684	1,557	219
Twitter	741	110	72
Facebook	142	39	36

HEALTHY SAILING presented at the Asia-Pacific Economic Cooperation (APEC) conference

Chinese Taipei, August 24 –25/08/23

Represented by Prof. Hadjichristodoulou and Assoc. Prof. Mouchtouri, the HEALTHY SAILING project was presented at the Asia-Pacific Economic Cooperation (APEC) conference, Chinese Taipei, 24-25 August, 2023. This was a one-day conference and a half-day site visit to the Port of Keelung. The event aimed to establish a platform for experts, government officials, port administrations and industry in the APEC economies to exchange experiences in infectious disease management practices on cruise ships, and knowledge from using digital tools to respond to COVID-19.

Other Upcoming Events

Transport Research Arena (TRA) 10th Conference

15-18 April 2024 | Dublin Ireland

The Waterborne Technology Platform (www.waterborne.eu) started the process of preparation of the TRA 2024 in Dublin.

HEALTHY SAILING submitted an abstract titled "HEALTHY SAILING: Prevention, Mitigation and Management of Infectious Disease on Cruise Ships and Passenger Ferries" and will also participate with a stand at the Waterborne Technology Platform exhibition space. Read more **here**

16th International Symposium on Maritime Health (ISMH16)

October 5-8, 2023 | Athens, Greece

Read more here

16th European Public Health Conference

8-11 November 2023 | Dublin, Ireland

Read more here

2023 CLIA Ports & Destinations Dialogue

4-5 September | Hamburg, Germany.

Read more **here**

7th International Consortium on Prevention & Infection Control (ICPIC)

12-15 September 2023 | Geneva

Poster Presentation by HS partner USN title "EFFECTIVENESS OF ANTIMICROBIAL SPRAYS APPLIED ON FREQUENTLY TOUCHED SURFACES".

Read more **here**

23rd International Association of Maritime Universities Conference (IAMUC)

18 – 21 October, 2023 | Helsinki, Finland

(on a ship Helsinki-Stockholm-Helsinki)

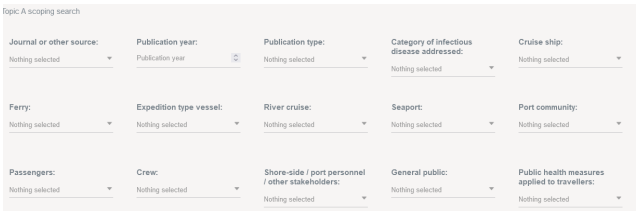
HEALTHY SAILING submitted an abstract titled "Introducing maritime educational standard for mitigation of infectious diseases spread on large passenger ships". Read more **here**

Project Status Update

Evidence accumulation, overall assessment and integration

Foundation Report: The final version of the Foundation Report (Deliverable 3.5) is being developed for submission at the end of November 2023. This version will update the interim Foundation Report (submitted February 2023) and consists of five parts. A systematic review and epidemiological studies are underway for PART A (led by UTH-EL) to generate evidence for mechanisms facilitating infection spread and mitigation measures. Results from the scoping search and systematic review are being analysed for PART B (led by UKE-DE) to understand capacities and interactions of passenger ships and land-based operations. Systematic reviews have been conducted and a "Knowledge, Attitudes and Practices (KAP)" survey has been prepared for PART C (led by UGOT-SE) to understand behavioural, social and cultural aspects affecting infectious disease spread among passengers and crew. Collaborations with HEALTHY SAILING partners and participating ship operators are underway for PART D (led by UTH-EL) to identify the IT requirements for interoperability of project outputs with existing ship operation systems. Finally, for PART E (led by NTUA-EL) a report for compatibility and interoperability of project outputs within existing marine operations onboard large passenger ships has been prepared.

Scoping search results and inventory: Under the framework of HEALTHY SAILING Task 3.2.1, a scoping review was initially conducted in February 2023 searching PubMed and Scopus databases, as well as grey literature (WHO, ECDC, international organizations, industry associations and health/maritime transport agencies of EU/EEA Member States). The aim of this search was to produce an inventory of published documents related to mechanisms facilitating infection spread on board large passenger ships, and to better understand the effectiveness of prevention, mitigation and management measures implemented. Results of the scoping search have been collated into two searchable inventories accessible via the HS website, as a resource to support development of future HEALTHY SAILING deliverables. The scoping search inventories will be continuously updated throughout the project life cycle.



Systematic Review—evidence about mechanisms facilitating infection spread onboard passenger ships: A systematic review is being conducted in accordance with PRISMA 2020, to generate evidence about mechanisms facilitating infection spread onboard passenger ships and understand the effectiveness of measures implemented. The review describes the infection frequency onboard as well as the burden of ship-borne disease to communities and the travelling public, the dynamics of disease outbreaks, and risks for disease spread. Results of the review are being used to inform the development of other HEALTHY SAILING deliverables, including evidence-informed guidelines and training materials. Searching PubMed, Scopus and Cochrane Library databases, data has been extracted from 125 publications related to all infectious disease types. Currently, UTH is appraising the publications for strength of evidence and synthesizing data to be included in Deliverable 3.5: Foundation Report.

Blended Learning training toolkit enriched with hands-on training

(Task 7.4, Task leader NKUA)

HS E-learning Platform: As part of the project training activities, HEALTHY SAILING will build a web-based environment that will host different training modules and offer personalized learning environment for users. It is expected to include also a digital library as an online repository to host education resources for training. The task will consider and, if possible, enhance existing e-learning and training platforms such as the SHIPSAN e-learning platform and the existing training platforms used by cruise ships.

HS4CREW App: HS4CREW will be an Augmented Reality application for AR glasses. HS4CREW will be used by the crew members of large passenger ships to complement typical training that will be offered to the crew through the HS e-learning platform with more intuitive hands-on experiences (hands-on training, HOT). HS4CREW will focus on training of specialised personnel about daily housekeeping and food handling activities. HS4CREW will help crew members improve their behaviour on-board, and familiarise with the best practices they should adopt during their daily activities according to their role in order to effectively mitigate and manage infectious diseases on-board.

HS4PASS App: HS4PASS will be an Android mobile application. As part of the passengers' training, HS4PASS will implement a set of on-board training scenarios (called missions) that take place in the real ship environment. HS4PASS app aims to make passengers' training more attractive by implementing a set of gamified AR experiences that may also generate rewards for the trainees that can be used during the travel.

Project Status Update

Toolkit for systematic monitoring of surface cleaning and disinfection

Two ship visits were conducted under the framework of Task 5.2, which has the objective of improving effectiveness of current cleaning and disinfection practices on board cruise ships. Nine representatives participated from the University of Thessaly (Greece), EU SHIPSAN Association (Greece), the Leibniz Institute for Plasma Science and Technology (Germany) and the National and Kapodistrian University of Athens (Greece), visiting **the MSC Sinfonia on 27 July and MSC Musica on 30 July in Piraeus**. Participants mapped in detail the application of cleaning and disinfection. The ship visits provided an opportunity to understand daily routine cleaning and disinfection practices applied in a real-world cruise ship setting, identify critical points in the cleaning and disinfection process, gain useful insights into training needs, and consider potential interventions to improve cleaning and disinfection practices.

HEALTHY SAILING Team Members: Barbara Mouchtouri, Christos Hadjichristodoulou, Lemonia Anagnostopoulos, Leonidas Kourentis, Sotiris Vassiliadis, Pierfrancesco Lepore, Raphael Rataj, Lazaros Merakos, Smaragda Reppa, Maria Chadjichristodoulou

Computational modelling of droplet and aerosol dispersion in different ship environments

As part of HEALTHY SAILING Task 3.4 (led by University of Greenwich, with GCARE - University of Surrey and VTT) an experimental trial was conducted on the MSC Virtuosa during a cruise voyage departing Southampton on 12 August 2023. Measures of aerosol and droplet dispersion were taken under controlled conditions within selected cruise ship locations, using different ventilation scenarios. Experimental data onboard were collected by the University of Surrey, to build a set of validation data for improving and tuning computational modelling of infection risk in those (and other) spaces. To prepare for the experimental trial, two ship visits were organized in collaboration with MSC. During the first visit on 15 July 2023, five representatives from University of Surrey (UoS), led by Professor Prashant Kumar, visited the MSC Virtuosa in Southampton. UoS visited 10 previously identified spaces on board that could potentially be used in the experimental trial. The second visit was conducted on 29 July 2023. The University of Greenwich (UoG) team led by Professor Ed Galea visited the MSC Virtuosa while berthed at Southampton. The purpose of the visit was to identify and select the most appropriate spaces for the experimental trials, and to meet the cruise hotel and engineering staff that HEALTHY SAILING would be working with during the trials.

Team Members: Professor Prashant Kumar, Dr Sarkawt Hama, Dr Ana Paula Mendes Emygdio, Wickson Cheung & Vicky Wei

Technology induced behavioural change in hand hygiene management

During Task 7.1 an intervention study will be carried out, aiming to find effective ways to decrease the chance of infection transmission. During the hand hygiene intervention study led by the University of South-eastern Norway (USN), innovative surface-disinfection methods will be applied, and measure its effectiveness. To prepare for that task, USN tested several different surface disinfectant sprays at the university's campus to find the solution to apply onboard. Automatic door opener buttons were treated with various sprays, which had different compositions, but all promised long-lasting antimicrobial effects. The microbial load was measured on the door openers by different techniques over time. Results of that study were sent as an abstract to the 7th International Consortium on Prevention & Infection Control (ICPIC), which will be held on 12-15 September 2023. The abstract was accepted, with the title "EFFECTIVENESS OF ANTIMICROBIAL SPRAYS APPLIED ON FREQUENTLY TOUCHED SURFACES". The work will be presented as a poster on 13rd of September, between 13:00-14:00, in the poster session "Environmental hygiene: Surfaces and monitoring".

Related projects and actions

Healthy Ship 4U: For a healthier future in shipping

Healthy Ship 4 U (HS4U) is a cross-national 3-year long Research and Innovation Action (01/09/2022-31/08/2025), supported by the European Union within the framework of the Horizon Europe programme. The project involves a multidisciplinary consortium of 22 partners from 8 different countries. Its aim is to develop and demonstrate holistic ship design solutions that will facilitate the early detection, prevention, and mitigation of general health conditions, pandemic crises and communicable disease outbreaks in large passenger and cruise ships by ensuring healthy ship operations and safe return to port during a health emergency.

The HS4U project tackles this challenge by following a 4 Unique pillars approach including societal/human, environmental, technological, and legislative factors. A multidisciplinary approach involving different perspectives is key to providing efficient and effective solutions in addressing this challenge. Indeed, the societal/human factor involves creating a digital framework for human and Internet of Things (IoT) edge devices' live interaction using co-robotics and Artificial Intelligence (AI) mechanisms. On a different note, the environmental pillar is expected to conduct live condition analysis to offer high-quality environmental conditions through smart systems onboard. Furthermore, the technological factor focuses on modularity for co-robotics with the aim to identify the specific location of the virus outbreak on naval architecture and marine engineering plans. Last but not least, the legislation pillar will develop best practices and policy recommendations to be updated according to emerging needs in times of health crises.

Figure: HS4U's 4 Unique Pillars

Among the main assets of the project is the creation of a Collaborative Digital Framework (CDF), a data and analytics platform using Artificial Intelligence for enabling machine-human interaction that among else monitors the status of ships systems (e.g. pathogens in air, temperature, etc.), performs a risk assessment, makes short- and long-term predictions as well as creates scenarios and assists the ship crew during emergency situations (automatic enabling of actuators on the ship). In addition to the platform, the project will develop an innovative Viral Detection Sensor (VDS) with unique characteristics that will include the online indication of pathogenic airborne spreads in indoor environments and on the air conditioner outlets.

To improve the crew's reaction during health crises on board, HS4U offers training based on multi-player gaming, embedding realistic role-playing and context combined with the "robot-cabin" real-life demonstrator. The 'robot cabin" will display the interoperability of evidence-based technologies and models developed by the HS4U team to prevent, detect, mitigate and manage virus outbreaks and spreads at an early stage. Overall, the HS4U project will leverage the multidisciplinary expertise to cross-fertilize research results and the obtained data to provide a set of best practices, protocols, and recommendations to follow during health emergencies in large passenger cruise ships.