



H2020-ICT-25-2016-2017



HYbrid FLying rollIng with-snake-aRm robot for contact inSpection

HYFLIERS

D7.1

HYFLIERS Project Website

Contractual date of delivery	31-Mar-2018
Actual date of delivery	31-Mar-2018
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Workpackage	WP7
Estimated person-months	0,1 pms
Dissemination level	PU
Type	R
Version	1.0
Total number of pages	11

Abstract:

This deliverable presents the website for the HYFLIERS project.

Keywords:

Dissemination. Horizon 2020. HYLIERS. Internet. Website.

Executive summary

This deliverable presents the design principles for and the realisation of the website for the HYFLIERS project.

Abbreviations and symbols

HYFLIERS	Hybrid flying rolling with-snake-arm robot for contact inspection
URL	uniform resource locator
WP	work package

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1. Introduction

The objective of this deliverable is to present the HYFLIERS' project website and to describe the choices behind its design.

The scope of the projects' website is to inform about the project, to raise awareness and to educate on the achievements, and to stimulate discussion with the wider community. Targets of the website span over a wide range of potential readers, from non-experts people to professionals and researchers in the field.

2. Description of the web site

From the visitor's perspective, an ideal website should be easy to read and pleasant to look at. On the other hand, from the content producer's viewpoint, it should be easy to maintain. When the latter is achieved, content updates are more frequent and so the main objective of the website is more easily achieved.

The content of the HYFLIERS project website is physically located at the coordinator partner University of Oulu. Presence at partner premises ensures improved control and hence dependability. The proper web address (the uniform resource locator, URL) for the site is www.oulu.fi/hyflinders, but two addresses from the eu domain are reserved to the project and can be used for dissemination: hyflinders.eu and hyflinders-project.eu. The former is chosen as a more immediate option. The latter, justified by the previous existence of #hyflinders in Twitter for a different use, is the preferred one (the recognition mark for the project is selected as hyflinders-project). To ensure availability and integrity, both above URLs are reserved initially for ten years.

3. Design principles and realisation

The top design principle is to make the content easy to follow and to proactively propose content to the readers' eyes. For this reason, the content is as much as possible given on a single page, so that all the most relevant information, possibly also that information not directly searched by the reader, is delivered to the visitor. To make this feasible, heavier content, when necessary, is provided on separate pages. Envisaged examples for these pages are for additional description of achievements of the project (see below) and possibly for more detailed news.

Following the above design principle, the structure of the project is dynamic and expanded during the lifetime of the project. The structure and an outline of the contents is presented in Table 1 and discussed in the following.

To quickly provide information to followers, at the top of the page are given brief notices of news, listed in reverse chronological order to emphasise the most recent ones. Also towards the beginning, an overview of the project is presented, followed by the description of the consortium. Results of the project are categorised under major categories, and include highlights on the HYFLIERS achievements that are added during the lifetime of the project. To communicate the evolution of the project, here items are listed in chronological order. Finally, coordinator's contact are provided, followed by the project's identification details.

The content is made to be readable from a range of the devices, from desktop computer to smart phone, as shown by Figure 1 to Figure 6. A good level of accessibility is also actively targeted to promote inclusive access to the contents. To achieve that, the design of the website can be subject to

changes (improvements), but the aspect of the site, including graphical aspects, is kept as constant as possible. This is facilitated for example by the adoption of HYFLIERS colouring, uniform from the HYFLIERS logo to text font.

Table 1. Structure of the website.

Level 1	Level 2	Contents
Header		Menu bar. Project name and graphics. Logos of EC and project.
News and Events		Brief notices.
Overview	Use Case: Inspection Measurements	Description of the main use case.
	Top Objective and Approach	Top objective of the project and approach to achieve it.
	Prototype A: Hybrid Mobile Robot	Brief description of component.
	Prototype B: Hybrid Robot with Arm	Brief description of component.
	Operation Support System	Brief description of component.
Consortium		Name, logo and websites for all consortium partners.
Results	Achievements	Brief summary of main achievements.
	Deliverables	Project deliverables.
	Articles	Journal and conference articles.
	Other dissemination	Meetings, popularisation, etc.
Contacts		Project coordinator.
Footer		Grant number, etc.



Figure 1. A screenshot of the top part of the web page as seen on a desktop computer.




Figure 2. A screenshot of the top part of the web page as seen on a smart phone.

HYFLIERS PROJECT
NEWS
OVERVIEW
CONSORTIUM
RESULTS
CONTACTS

OVERVIEW

HYFLIERS (HYbrid Flying-rolling with-snake-aRm robot for contact inSpection) is a research and innovation action of EU Horizon 2020 programme for advanced robot capabilities research and take-up, worth 3,9 million euro funding. HYFLIERS, running from 2018 to 2021, will develop the world's first industrial integrated robot with hybrid air and ground mobility with a long-reach hyper-redundant manipulator capable of reaching sites where no other robot can access, reducing the exposition of human inspectors to potentially dangerous working conditions. Targeting ultrasonic thickness measurements for oil and gas refineries and chemical plants, the results could be applied to many other robotic inspection technologies.

USE CASE: INSPECTION MEASUREMENTS

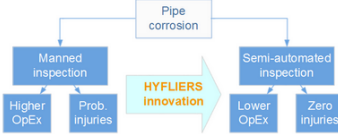


An example petrochemical processing plant. Grangemouth, Scotland. CC Public Domain. Source: pxhere.com.

In oil and gas production plants, all or part of the components are often subject to degradation caused by exposure to the environment or products within the production process. Excessive pipe corrosion may lead to accidents, including catastrophic failures with explosions and release of toxic products, thus having impact on safety, environment and availability of the plant. Inspection processes for thickness measurements ensure that plants are in safe operating condition or provide alerts to execute necessary corrective actions. These measurements are traditionally executed by personnel that requires access to specific locations. Typically, more than 50% (and up to 90%) of these activities are carried out by working at elevated locations with the use of ladders, scaffold, rope access or cranes, and sometimes in presence of high temperatures or toxic materials. Obviously, this causes considerable costs for ensuring safety of inspection personnel but in some cases, casualties may occur. Moreover, anxiety and exposure to dangerous locations affects concentration and promote human errors.

There are safety, quality and cost drivers for novel inspection methods.

TOP OBJECTIVE AND APPROACH



The top objective is to reduce inspection costs and improve safety by exploiting a robotic inspection system. The technology results will be validated in the inspection of pipes, which is a very relevant short-term application, but the results of the project could be also applied to other industrial scenarios, such as power generation plants.

HYFLIERS will address the above objectives by studying, designing, developing and testing a robotic system including prototypes for the first worldwide hybrid semi-ground robot with a hyper-redundant snake-like robotic articulated arm.

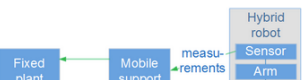



Figure 3. A screenshot of a mid-part of the web page as seen on a desktop computer.

HYFLIERS PROJECT

OVERVIEW

HYFLIERS (HYbrid Flying-rolling with-snake-aRm robot for contact inSpection) is a research and innovation action of EU Horizon 2020 programme for advanced robot capabilities research and take-up, worth 3,9 million euro funding. HYFLIERS, running from 2018 to 2021, will develop the world's first industrial integrated robot with hybrid air and ground mobility with a long-reach hyper-redundant manipulator capable of reaching sites where no other robot can access, reducing the exposition of human inspectors to potentially dangerous working conditions. Targeting ultrasonic thickness measurements for oil and gas refineries and chemical plants, the results could be applied to many other robotic inspection technologies.

USE CASE: INSPECTION MEASUREMENTS



An example petrochemical processing plant. Grangemouth, Scotland. CC Public Domain.

In oil and gas production plants, all or part of the components are often subject to degradation caused by exposure to the environment or products within the production

Figure 4. A screenshot of a mid-part of the web page as seen on a smart phone.

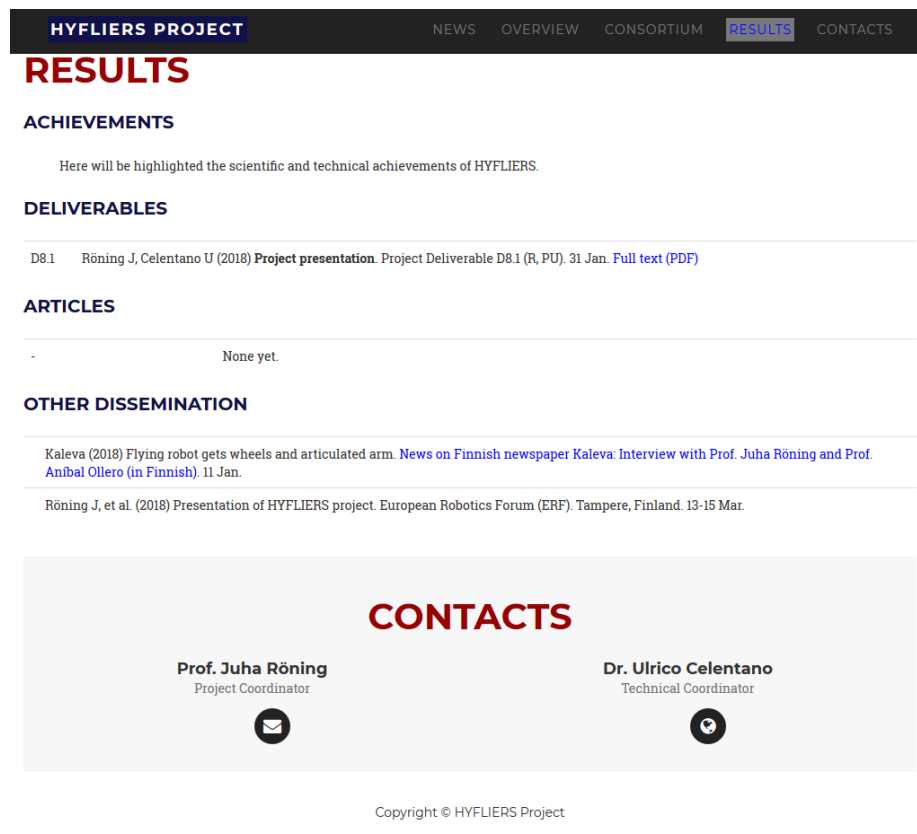


Figure 5. A screenshot of a bottom part of the web page as seen on a desktop computer.

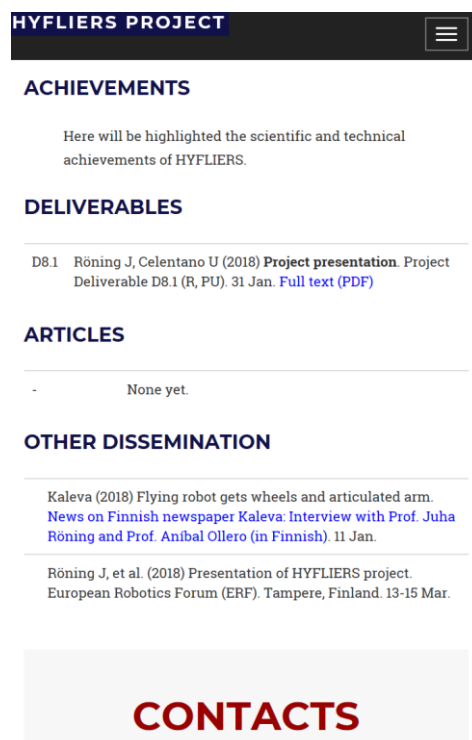


Figure 6. A screenshot of a bottom part of the web page as seen on a smart phone.