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PP	Restricted to other participants	
RE	Restricted to a group specified by the consortium	
CO	Confidential, only members of the consortium	



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Deliverable 21.1 F.I.S.HUB Validation protocol

1. **Executive Summary**

In this task we describe the validation protocol of the F.I.S.HUB server classifier. We here define the standard related to this activity, in particular concerning the list of fish species and the instructions for the personnel involved in this proceeding.

2. **Description of Deliverable**

Introduction

This deliverable is linked with the WP15 and describe the validation protocol of the F.I.S.HUB server classifier. First of all we defined the list of species to be validated and then we provided the guideline to the staff involved in this process.

Test users will be recruited in order to create a heterogeneous group including inexperienced users working in an Italian food company, veterinary officers or other kind of controllers (who could have different degrees of experience with fish identification), as well as common end-users at selling points.

List of species

The list of fish species considered in the validation process is the same one used previously in the classification training process (WP15). We have also provided the Italian and English common name to facilitate the personnel involved in the validation. The number of the considered species is 25.

ORDER	FAMILY	GENUS	SPECIES	Italian common name	English common name
Clupeiformes	Clupeidae	<u>Clupea</u>	<u>harengus</u>	aringa, aringa atlantica	herring, atlantic herring
Clupeiformes	Clupeidae	<u>Sardina</u>	<u>pilchardus</u>	sardina	european pilchard, sardina, sardine, pilchard
Clupeiformes	Clupeidae	<u>Sprattus</u>	<u>sprattus</u>	spratto, papalina	sprat, european sprat, bristling, brisling, skipper
Clupeiformes	Engraulidae	<u>Engraulis</u>	<u>enerasicolus</u>	acciuga europea, acciuga, alice	european anchovy, anchovy
Gadiformes	Gadidae	<u>Gadus</u>	<u>morhua</u>	merluzzo nordico, merluzzo bianco	cod, codling, atlantic cod
Gadiformes	Gadidae	<u>Melanogrammus</u>	<u>aeglefinus</u>	asinello, eglefino, haddock	haddock
Gadiformes	Gadidae	<u>Merlangius</u>	<u>merlangus</u>	merlano, molo	merling, whiting
Gadiformes	Gadidae	<u>Pollachius</u>	<u>virens</u>	merluzzo nero, merluzzo carbonaro	saithe
Gadiformes	Merlucciidae	<u>Merluccius</u>	<u>merluccius</u>	nasello, merluzzo	european hake

Perciformes	Sparidae	<u>Dentex</u>	<u>dentex</u>	dentice	common dentex, dentex
Perciformes	Sparidae	<u>Dentex</u>	<u>gibbosus</u>	dentice corazziere, dentice dalla corona	pink dentex
Perciformes	Sparidae	<u>Diplodus</u>	<u>annularis</u>	sparaglione, sarago sparaglione	annulus sea bream
Perciformes	Sparidae	<u>Pagellus</u>	<u>acarne</u>	pagello bastardo, fragolino bastardo	axillary sea bream
Perciformes	Sparidae	<u>Pagellus</u>	<u>bogaraveo</u>	occhione, occhino, besugo, pezzogna, occhialone, mupo, rovello	blackspot seabream, red seabream
Perciformes	Sparidae	<u>Pagellus</u>	<u>erythrinus</u>	pagello fragolino, fragolino	pandora, common pandora
Perciformes	Sparidae	<u>Pagrus</u>	<u>caeruleostictus</u>	Pagro azzurro, pagro reale, pagro reale maschio	blue-spotted sea bream
Perciformes	Sparidae	<u>Pagrus</u>	<u>pagrus</u>	pagro, pauro	red porgy, common seabream
Pleuronectiformes	Pleuronectidae	<u>Hippoglossus</u>	<u>hippoglossus</u>	halibut, ippoglosso	atlantic halibut, halibut
Pleuronectiformes	Pleuronectidae	<u>Limanda</u>	<u>limanda</u>	limanda	dab, common dab
Pleuronectiformes	Pleuronectidae	<u>Microstomus</u>	<u>kit</u>	limanda-sogliola, sogliola limanda	lemon sole
Pleuronectiformes	Pleuronectidae	<u>Pleuronectes</u>	<u>platessa</u>	platessa	european plaice
Pleuronectiformes	Pleuronectidae	<u>Reinhardtius</u>	<u>hippoglossoides</u>	halibut della Groenlandia	greenland halibut, greenland turbot
Pleuronectiformes	Scophthalmidae	<u>Psetta</u>	<u>maxima</u>	rombo chiodato, rombo maggiore, rombo gigante	turbot
Pleuronectiformes	Scophthalmidae	<u>Scophthalmus</u>	<u>rhombus</u>	rombo liscio, rombo, rombo di rena	brill
Pleuronectiformes	Soleidae	<u>Solea</u>	<u>vulgaris</u>	sogliola, sogliola comune	common sole, dover sole, black sole

Guidelines

Recruited people will receive minimal instructions for taking pictures, along with a list of the species to be photographed. They will have to look for the species declared on the label. Common people recruited at selling points will be supported by IZSPLVA and USAL staff.

We provided the guidelines in a smartphone friendly format that is the following one in the figure.



Along with the pictures, a biological sample of each specimen will be collected and sent to the laboratories of IZSPLVA and USAL to verify the actual species by DNA analysis.

POLITO will check the accuracy of the results with the classifier in the F.I.S.HUB server, comparing the species identified by the software and the real species as identified by DNA analysis by IZSPLVA and USAL.

The results will also be correlated to variables like the people who took the pictures, the quality of the pictures, and the usability conditions.

The validation results will be examined in order to identify the need of possible further minimal improvements in terms of usability or settings and thus to release the first official version of the F.I.S.HUB App.

Validation set

The validation set will be composed with the minimum of 10 fish per species and for each of them we will carry out the DNA barcoding too.