

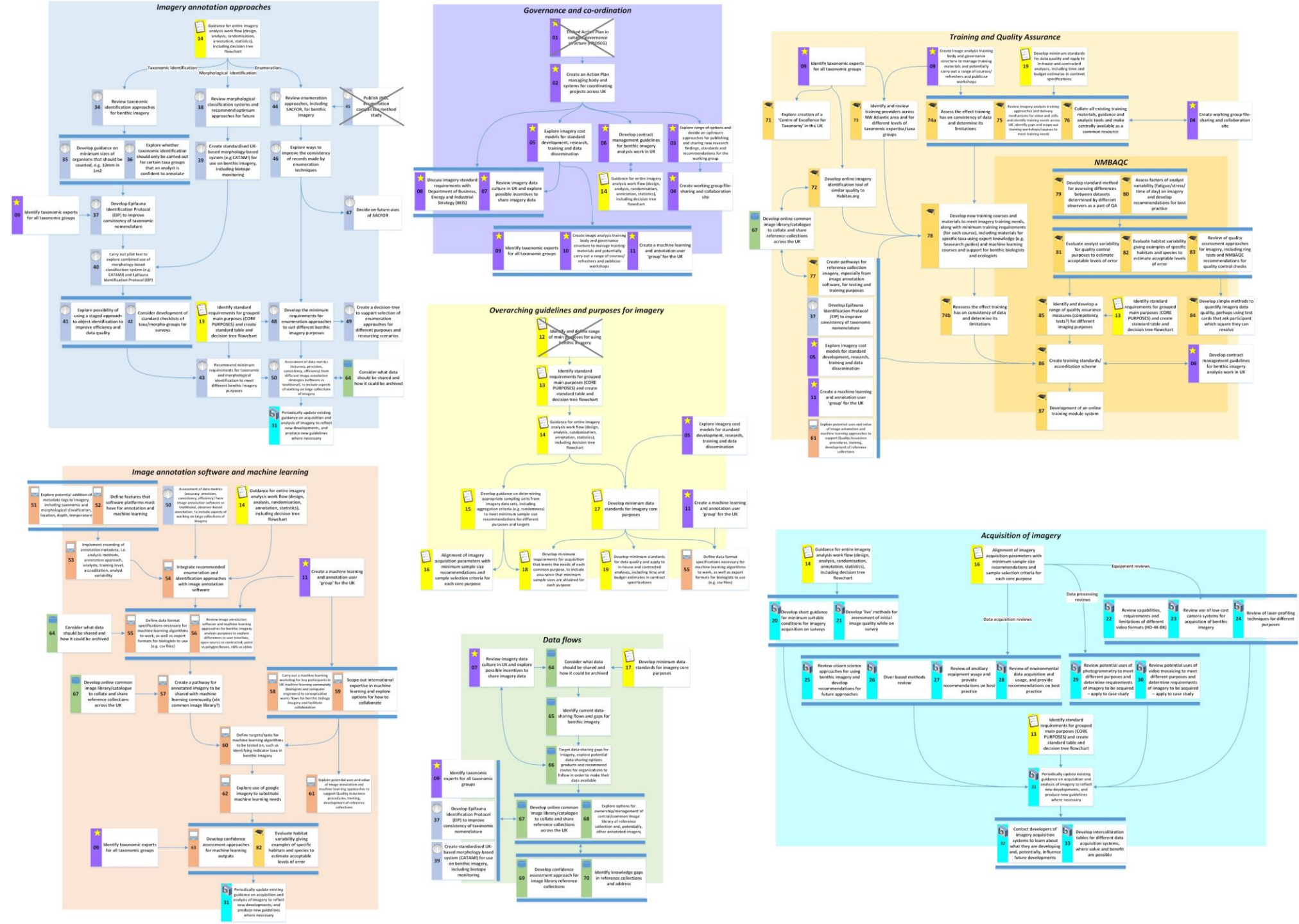


**Benthic imagery analysis training scheme working group**

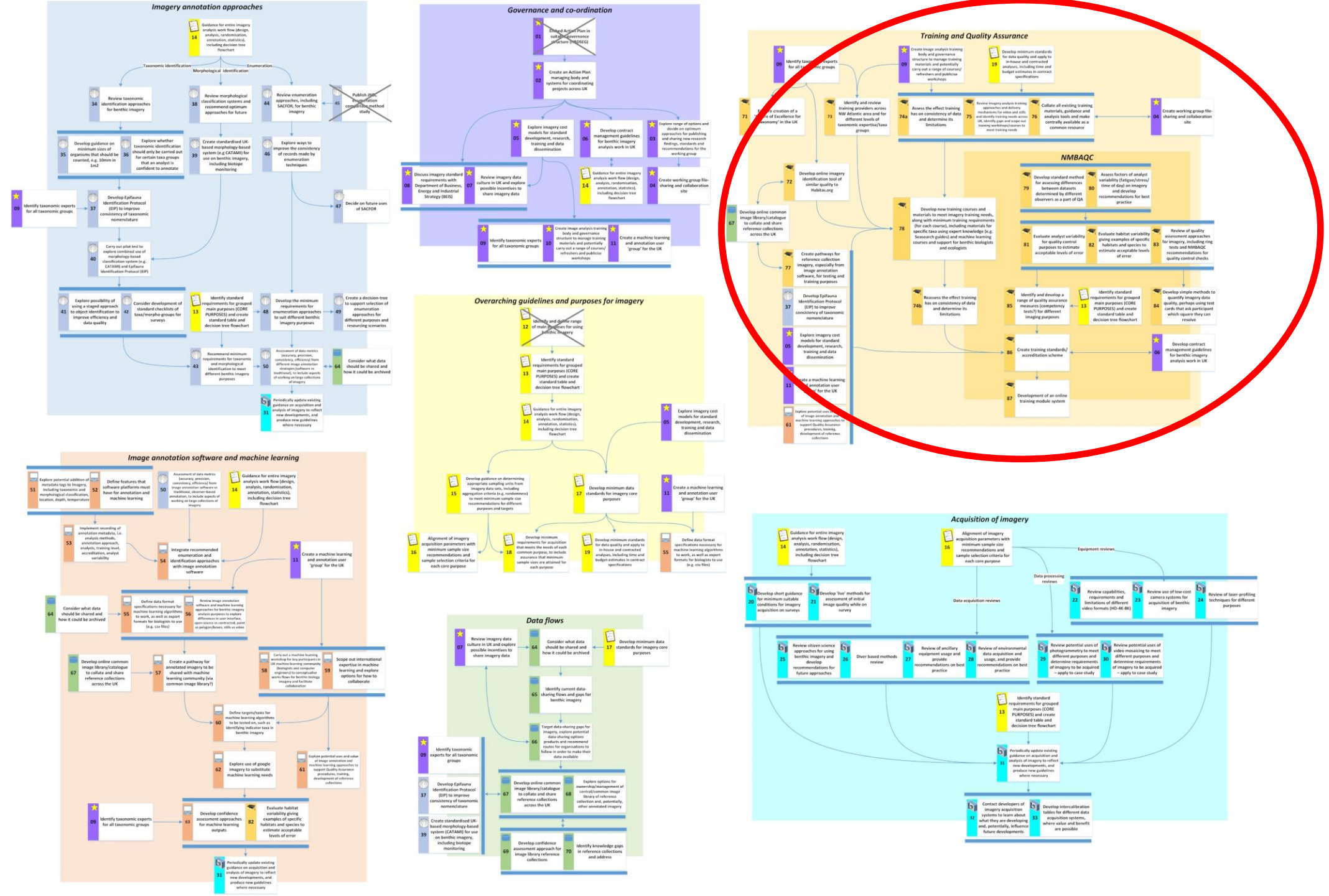
## Overview of WG

- Part of the Training and Quality Assurance tasks
- The tasks of this theme focus on:
  - Training of imagery analysts
  - Assessing their work to ensure standards are met
- Training methods to be reviewed, gaps and targets identified and a large range of new courses, workshop and resources are proposed, including developing a Centre of Excellence for Benthic Taxonomy in the UK

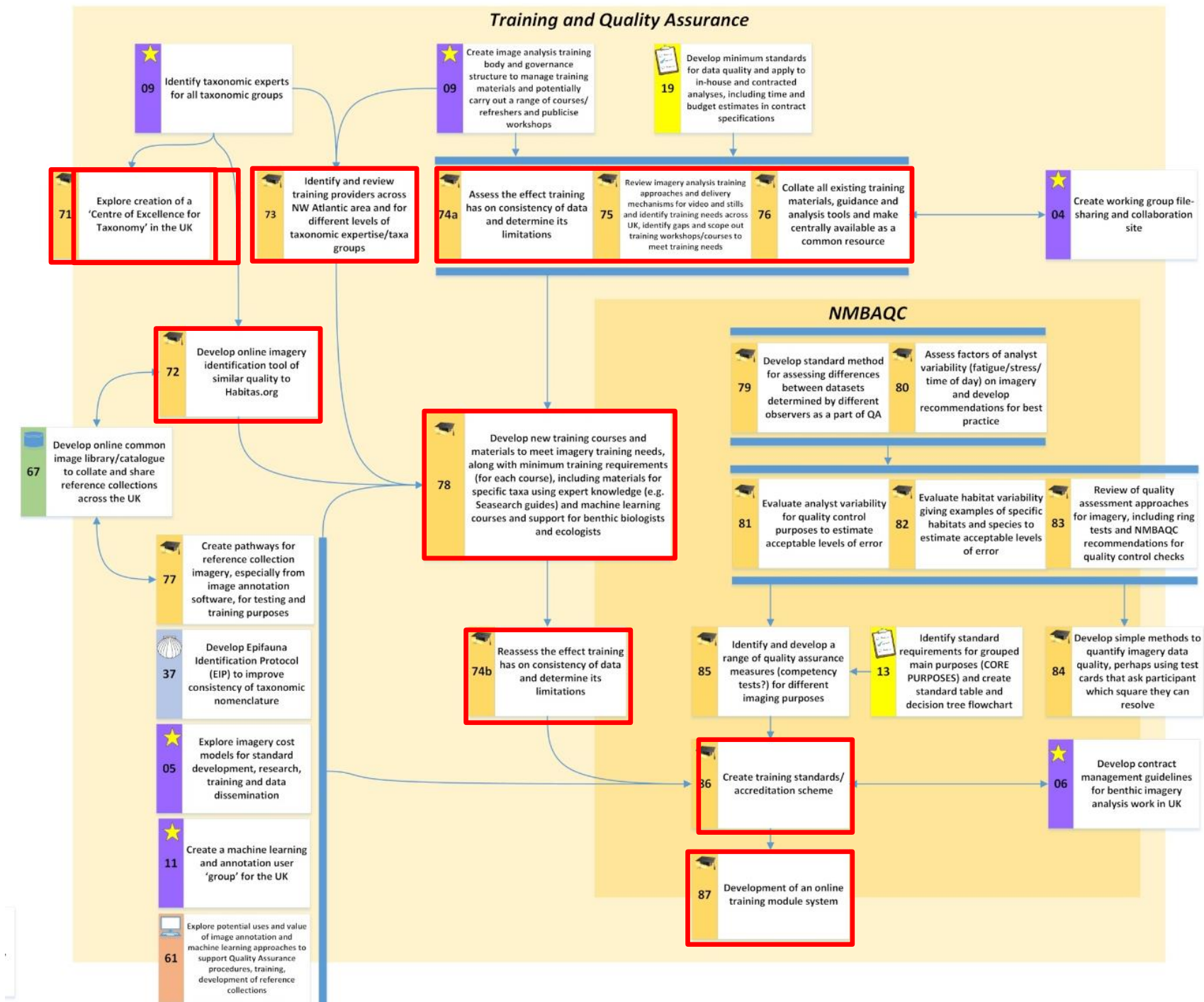
# Benthic Imagery Action Plan flowchart



# Benthic Imagery Action Plan flowchart





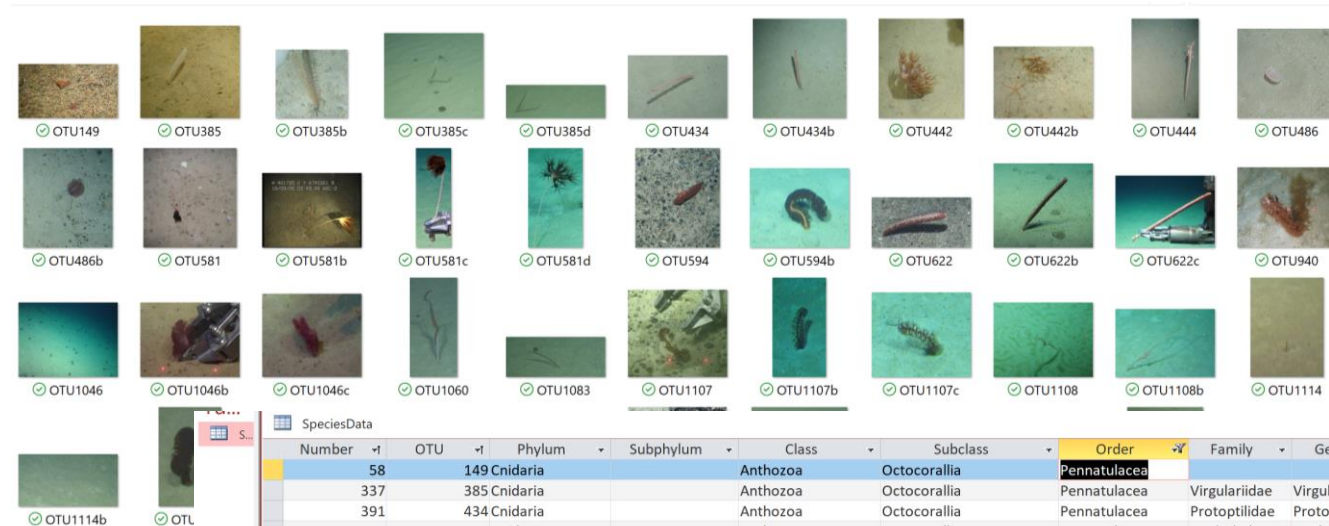


Task no.	Task	Proposed way of working	Suggested deliverable/s	Priority	Task status
71	Explore creation of a 'Centre of Excellence for Taxonomy' in the UK	Coordination	UK Centre of Excellence for Benthic Taxonomy	M	Hasn't started
72	Develop online imagery identification tool of similar quality to Habitas.org	Project	Online identification tool	M	Hasn't started
73	Identify and review training providers across NW Atlantic area and for different levels of taxonomic expertise/taxa groups	Coordination	List of training providers	L	Hasn't started
74	Assess the effect training has on consistency of data and determine its limitations	Project	Training benefits and limitations report	M	Hasn't started
75	Review imagery analysis training approaches for video and stills and identify training needs across UK, identify gaps and scope out training workshops/courses to meet training needs	Project	Imagery analysis training needs	H	Hasn't started
76	Collate all existing training materials, guidance and analysis tools and make centrally available as a common resource	Project	Imagery training resource hub	H	Hasn't started
78	Develop new training courses and materials to meet imagery training needs, along with minimum training requirements (for each course), including materials for specific taxa using expert knowledge (e.g. Seasearch guides) and machine learning courses and support for benthic biologists and ecologists	Multiple projects	Courses and materials bespoke to training needs identified in the review	H	Hasn't started
86	Create training standards/accreditation scheme	Project	Training standards/accreditation scheme	M	Hasn't started
87	Development of an online training module system	Project	Imagery training resource hub: live training module system	L	Hasn't started

# Evolution of the SMarTaR-ID project



- 📁 Annelida
- 📁 Arthropoda
- 📁 Brachiopoda
- 📁 Bryozoa
- 📁 Chordata
- 📁 Cnidaria
- 📁 Echinodermata
- 📁 Foraminifera
- 📁 Hemichordata
- 📁 Human artefacts
- 📁 Liebenspurren
- 📁 Mollusca
- 📁 Nemertina
- 📁 Phoronida
- 📁 Porifera
- 📁 Unknown
- 📄 SpeciesCatalogue1
- 📄 SpeciesData

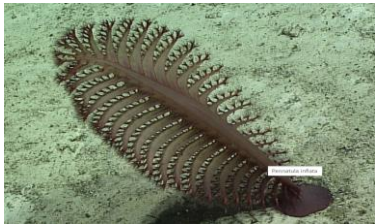


Number	OTU	Phylum	Subphylum	Class	Subclass	Order	Family	Genus	Species	Morphospec	Final name
58	149	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Virgulariidae	Virgularia	mirabilis		Pennatulacea sp. 1
337	385	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Virgulariidae	Virgularia	mirabilis		Virgularia mirabilis
391	434	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Protoptilidae	Protoptilum	sp.		Protoptilum sp.
399	442	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Kophobelemnidae	Kophobelemnella	stelliferum		Kophobelemnella stelliferum
401	444	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Funiculinidae	Funiculina	quadrangularis		Funiculina quadrangularis
446	486	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Pennatulidae	Pennatula	phosphorea		Pennatula phosphorea
765	581	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Umbellulidae	Umbellula	sp.		Umbellula sp.
778	594	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Anthoptilidae	Anthoptilum	grandiflorum		Anthoptilum grandiflorum
806	622	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Halopteridae	Halopteris	sp.		Halopteris sp.
875	940	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Kophobelemnidae	Kophobelemnella	sp.		Kophobelemnella sp.1
952	1046	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Pennatulidae	Pennatula	aculeata	sea pen	Pennatula aculeata
965	1060	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Pennatulidae	Pennatula	sp.	sea pen	Pennatulacea sp. 4
1006	1083	Cnidaria		Anthozoa	Octocorallia	Pennatulacea				sea pen	Pennatulacea sp. 2
1024	1107	Cnidaria		Anthozoa	Octocorallia	Pennatulacea				sea pen	Pennatulacea sp. 5
1025	1108	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Protoptilidae	Distichoptilum	gracile	sea pen	Distichoptilum gracile
1030	1114	Cnidaria		Anthozoa	Octocorallia	Pennatulacea				sea pen	Pennatulacea (indet)
1036	1120	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Anthoptilidae	Anthoptilum			Anthoptilum sp. 1
1055	1152	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Anthoptilidae	Anthoptilum		sea pen	Anthoptilum sp. 2
1076	1183	Cnidaria		Anthozoa	Octocorallia	Pennatulacea	Pennatulidae	Pennatula	inflata	sea pen	Pennatula inflata
1084	1191	Cnidaria		Anthozoa	Octocorallia	Pennatulacea				sea pen	Pennatulacea sp. 3

# SMarTaR-ID

standardised marine taxon reference image database

Deep-sea images submitted from  
over **xx** organisations covering the  
North Atlantic region



*Pennatula* sp.



*Pennatula* sp.



*Pennatula* sp.

Reviewed by taxon specific team



Incorporate taxonomy and  
morphotypes



Standardisation of taxa ID



*Ptiella* spp.



*Pennatula phosphorea*

A framework for the development of a global standardised  
marine taxon reference image database (SMarTaR-ID) to  
support image-based analyses

Kerry L. Howell , Jaime S. Davies, A. Louise Allcock, Andreia Braga-Henriques, Pål Buhl-Mortensen, Marina Carreiro-Silva,  
Carlos Domínguez-Carrió, Jennifer M. Durden, Nicola L. Foster, Chloe A. Game, Becky Hitchin, Tammy Horton, Brett Hosking,  
[ ... ], Daniel Wagner [ [view all](#) ]



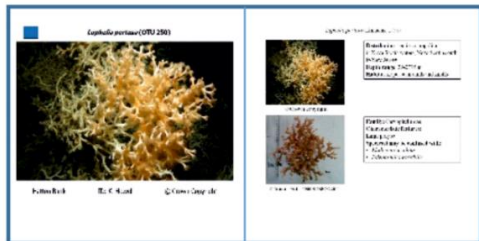
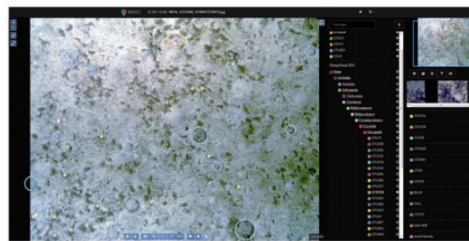
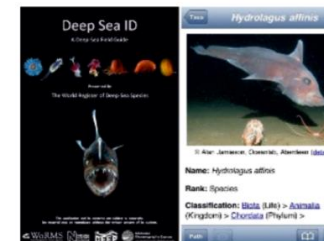


Photo ID book



Reference annotation scheme



E-guide (Deep-Sea ID app)

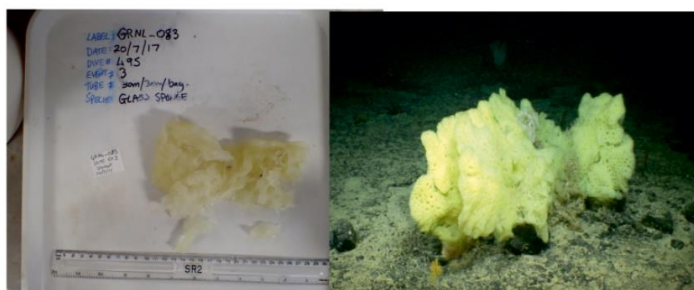
Export end products as required

Download (or create your own)  
empty template database consisting  
of the OTU table and Image table.

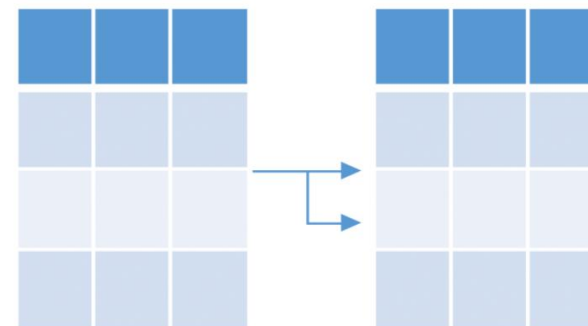
Web interface

Submit your  
reference guide to  
central team

Database  
supplies web  
interface



Images reviewed by taxon specific teams  
for quality, correct ID, merging OTUs  
from different submission sources, etc.



Quality controlled images merged  
with main database

## Training - UoP

Annotation software



Training manual (Biigle)

Student training sessions (Biigle)

Identification skills



# SMarTaR-ID

standardised marine taxon reference image database

Taking a regional approach to  
standardised ID

Training videos

Training material

Pilot student training session

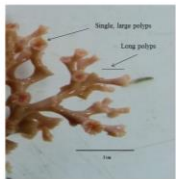
### Diagnostic sheet: reef-building Scleractinia

*Lophelia pertusa*, *Madrepora oculata* and *Solenastrea variabilis* are 3 of the reef-building Scleractinia. These corals are easily confused as their morphologies are similar.

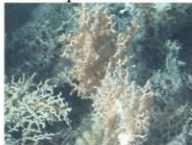
*Lophelia pertusa*



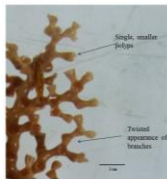
- Larger polyps
- Chunky branches



*Madrepora oculata*



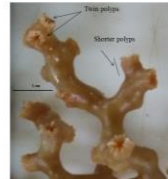
- Smaller polyps
- Twisted branches



*Solenastrea variabilis*



- Twin polyps
- Shorter polyps
- Chunky branches, more dense



## Next steps

WG scoping meeting and decide which tasks to take forward.