Career Development Plan-Year 2
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BRIEF OVERVIEW OF RESEARCH PROJECT AND MAJOR ACCOMPLISHMENTS EXPECTED (half page should be sufficient):

The WP2 (Working Package 2 - Nautical Archaeology and Shipbuilding) ESR6 (Early Stage Researcher 6), to which this proposal of Career Development Plan refers, lasts for 36 months (started in 2014, 1st September).
All the tasks undertaken by this researcher within the ForSEAdiscovery Project will be developed under the supervision of the director of studies Professor Nigel Nayling, Roderick Bale (2nd supervisor and Jemma Bezant (3rd supervisor).
The main title for the research project is: Developing dendro-archaeological approaches in Nautical Archaeology and represents an active study about dendrochronology (including tree-ring studies) and timber morphology (3D CAD), and for the reconstruction of past forestry practice and exploitation. This includes hands-on experience in the commercial sector: timber recording, excavation, sampling and sample analysis such as:

1. The participation of the ESR6 (and also ESR5, ESR8 and ESR9) in fieldwork programmes related to both underwater archaeology and dendrochronology sampling undertaken by the SME Full Participant 5 - Maritime Archaeology Ltd. and excavations of Iberian shipwrecks by the SME Associated Project Partner 12 - Archeonauta S.L. and by companies or institutes outside (but linked to) the network, in order to select and sample ship timbers.
    a. Task Description:
        i. Contribute to an inventory of key construction features found in previously researched Spanish shipwrecks.
        ii. To assess and analyse excavated Spanish ship timber assemblages.
2. The application of ring-width analysis to recovered dendrochronology samples and delivery of data, samples and sub-samples to be analysed by the ESRs of WP3. Approaches employed here will accord with standard best practice in the United Kingdom (as defined by English Heritage), using Dendro for Windows software (the same software is employed by UWTSD and DDK). Data to be supplied to ESRs in WP3 will be translated into acceptable formats.
    a. Task description:
        i. To select a limited number of demonstration Spanish shipwreck sites for potential survey and dendrochronology analysis.
        ii. To survey and sample selected sites, carry out ring-width analysis and supply subsamples to others.

3. However, the specific tasks for ESR6 during the 36 months are related to the development of digital techniques for 3D reconstruction of the growth pattern, age structure and morphology of parent trees employed in ship timbers in Iberian shipbuilding of the period. This will build on approaches examined during analysis of the 15th century Newport Medieval ship deploying a combination of Co-ordinate Measurement Machines (e.g. Faro-Arm), laser scanning, and 3D graphics software (Rhino) which is increasingly being used within Nautical Archaeology for data capture, analysis, visualisation and dissemination.
   a. Task description:
      i. To synthesise results and assess best practice.

LONG-TERM CAREER OBJECTIVES (over 5 years):

1. Goals: Finish the PhD in the University of Wales Trinity Saint David and get post-Doctoral position in Europe or USA which can be followed by academic (Teaching / research) and commercial (maritime archaeology) job.
2. What further research activity or other training is needed to attain these goals? Improve skills in dendrochronology (tree-ring studies), maritime archaeology techniques and methods; reinforce position in the maritime and dendrochronology international network and scuba diving techniques (surface supply, etc).

SHORT-TERM OBJECTIVES (1-2 years):

1. Research results:
   a. Deliver three consistent drafts of the PhD thesis – peer review and the 1st chapter (research question), 2nd chapter (handicaps) and 3rd chapter (the references and data).
   b. Deliver the 1st annual detailed report, which consist on a resume of all performed tasks, analyzed data and first conclusions.
   c. Improve skills in computing systems achieve better efficiency on the post-process data analysis, as well as for dissemination.
   2. Develop a seminar session with ERS5 at the University of Wales Trinity Saint David based upon the thematic of maritime archaeology.
   a. Develop among other fellow researchers, supervisors and partners a full Underwater Activities Proposal Plan for WP2, for the income campaigns.
   b. Anticipated conference, workshop attendance, courses, and /or seminar presentations: It is expected to present at least one international presentations per year (e.g. IKUWA VI – Australia Dec 2016) and two within the ForSEAdiscovery Project.
   c. Attend secondment at the Steffy Reconstruction Lab at Texas A&M University. To improve skills on shipbuilding analysis and ship reconstruction.
   d. Attend secondment at Maritime Archaeology Trust, based in Southampton. To improve and engage commercial archaeology skills.

3. Research Skills and techniques:
   a. Training in specific new areas, or technical expertise etc:
      i. Attending courses in: Dendrochronology [C14 dating] and wooden shipbuilding techniques.
      ii. Improve skills in (software): GIS, 3D CAD modelling / FARO-Arm.
      iii. Improve skills in (timber record techniques): practice digital record techniques of timbers a CT scan.
      iv. Improve skills in site recording and practice with total station.
      v. Improve skills in (scuba diving techniques): attend to the courses of scientific scuba diving and commercial scuba diving surface supply.

4. Research management:
   a. Fellowship or other funding applications planned (indicate name of award if known; include fellowships with entire funding periods, grants written/applied for/received, professional society presentation awards or travel awards, etc.):
      i. Apply for funding (fund rising) within the Marie Curie Project or other to develop tasks related to the ESR6 for underwater sampling, 3D CAD and data dissemination (e.g. digital recording post process of the Esposende Wreck, which will promote 3D CAD record practice, improve interpretation skills in wooden shipbuilding techniques and results dissemination).

5. Communication skills:
   a. In order to develop or improve communication skills apply to international presentations related to the ESR6 tasks in maritime archaeology and dendro conferences, to promote both dissemination and personal confidence.

6. Other professional training (course work, teaching activity):
   a. Improving in assisting activities involving under-graduated students, develop courses / work in commercial maritime archaeology in UK and Spain (e.g. Maritime Archaeology Trust, Archeonauta S.L.) and others oriented to dendrochronology such as DendroDK.
   b. Training events within ForSEAdiscovery Project:
      i. Dendrochronology of Ships – Practice and Prospect – Nov 2016.
   c. Workshops within ForSEAdiscovery Project:
      i. Advance Team and Project Management – Nov 2016.
   d. Network Meetings within ForSEAdiscovery Project:
      i. Network meeting – Nov 2016.

7. Anticipated networking opportunities:
   I consider that international conferences such as IKUWA to promote and give the opportunity to meet, change experiences and learn with other specialists in the area of maritime archaeology, dendrochronology and forest engineering.

8. Other activities (community, etc) with professional relevance:
   a. Submit application forms for fundraising small projects within the ForSEAdiscovery, especially for the ones that involves extra costs such as underwater sampling and/ or high levels of logistic.
   b. Develop workshops with other ESR about maritime archaeology and dendrochronology.
   c. Start to develop small presentations (pps and films) for other students in the universities involved in the ForSEAdiscovery Project.
   d. Develop a UWTSD Archaeology Week where Professors, and both PhD and Master students will be invited to present their activity / projects and share experiences in the several areas of archaeology (underwater, classical, modern, pre-historic, etc.) to all the UWTSD students of History, Archaeology and Anthropology. This proposal is related in first place with the purpose talk about archaeology in all its extension of expertise and second to promote interdisciplinary between history, archaeology and anthropology.
   e. Develop a monthly training sessions about underwater archaeology eventually between under-graduated and post-Graduated students under the supervision of Professor Nigel Nayling, where can be done:
   f. Timber Record Training Sessions on swimming pool or at sea: to improve both record and scuba diving skills.
   g. (3D CAD) Timber Record Training Sessions on office: to improve skills in 3D recording with FaroArm or other.

h. Wooden Shipbuilding Timber ID Training Session: to understand and develop skills to identify timber frames.
k. Wood Anatomy Training Sessions: to identify tree species related to shipbuilding between the 16th and 18th Centuries.
l. Lab Tree-ring measurement and data base Training Sessions: to develop skills in dendrochronology.
m. Bibliography and references Training Sessions: to identify possible references related to archaeology, dendrochronology and wooden shipbuilding (16th to 18th Centuries).

Date & Signature of fellow: Date & Signature of supervisor

Career Development Plan
Guidance on some of the competencies expected

The following points are a non-exhaustive series of aspects that could be covered by the career development plan, and it is relevant to the short-term objectives that will be set by the researcher and the reviewer at the beginning of the fellowship period. The objectives should be set with respect to the skills and experience that each researcher should acquire at a given time of his/her career. A postgraduate researcher at PhD level will have very different needs compared to a post-doctoral researcher at an advanced stage of his/her professional development. These objectives should be revised at the end of the fellowship and should be used as a pro-active monitoring of progress in the researcher's career.

1. Research results.

These should give an overview of the main direct results obtained as a consequence of the research carried out during the training period. It may include publications, conference, workshop attendance, courses, and /or seminar presentations, patents etc. This will vary according to the area of research and the type of results most common to each field. The information at this level should be relatively general since the career development plan does not strictly constitute a report on the scientific results achieved.

2. Research Skills and techniques acquired.

Competence in experimental design, quantitative and qualitative methods, relevant research methodologies, data capture, statistics, analytical skills.
Original, independent and critical thinking.
Critical analysis and evaluation of one's findings and those of others
Acquisition of new expertise in areas and techniques related to the researcher's field and adequate understanding their appropriate application
Foresight and technology transfer, grasp of ethics and appreciation of IPPR.

3. Research management.

Ability to successfully identify and secure possible sources of funding for personal and team research as appropriate.

Project management skills relating to proposals and tenders work programming, supervision, deadlines and delivery, negotiation with funders, financial planning, and resource management.

Skills appropriate to working with others and in teams and in teambuilding.

4. Communication skills.

Personal presentation skills, poster presentations, skills in report writing and preparing academic papers and books.

To be able to defend research outcomes at seminars, conferences, etc.
Contribute to promote public understanding of one's own field

5. **Other professional training (course work, teaching activity):**

Involvement in teaching, supervision or mentoring

6. **Anticipated networking opportunities.**

Develop/maintain co-operative networks and working relationships as appropriate with supervisor/peers/colleagues within the institution and the wider research community

7. **Other activities (community, etc) with professional relevance.**

Issues related with career management, including transferable skills, management of own career progression, ways to develop employability, awareness of what potential employers are looking for when considering CV applications etc.