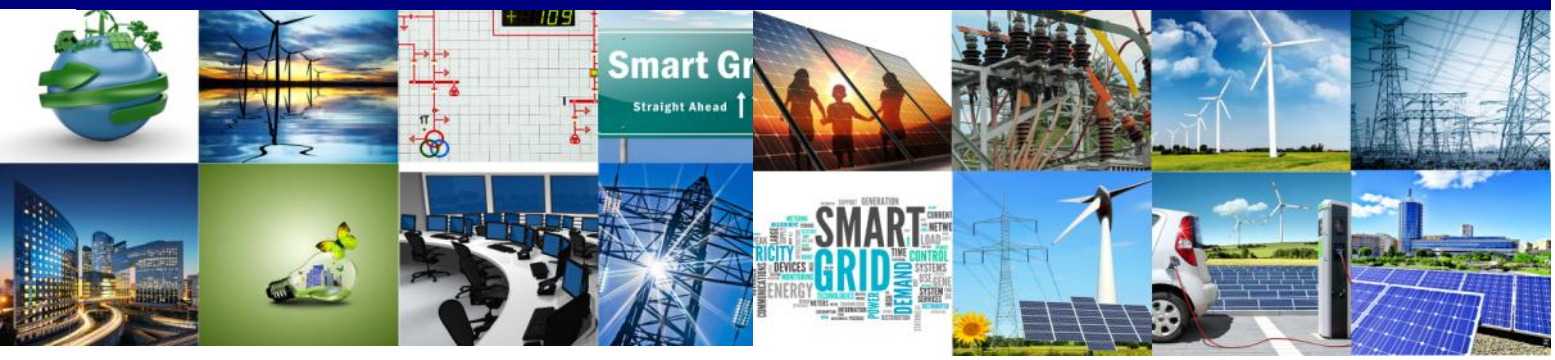
Project

No. 609687

FP7-ENERGY-2013-IRP

ELECTRA

European Liaison on Electricity Committed Towards long-term Research Activities for Smart Grids



WP 9.1

Researcher Exchange

Deliverable 9.1

Exchange programme procedures and documentation

03/08/2015

ID &Title	**D9.1** Exchange programme procedures and documentation	**Number of pages:**	69

Short description (Max. 50 words):

This is the procedure for Researcher Exchange as defined by the ELECTRA IRP. This process covers the creation of the call for proposals, the application process, the assessment of submitted applications, the financial arrangements, template contracts, reporting process, and finalization.

Version	Date	Modification's nature
V 0.1	20/07/2014	First draft internal
V 0.2	20/08/2014	WP Draft
V 0.3	29/09/2014	Project Officer Draft
V 0.4	06/11/2014	WP Revision
V 0.5	12/11/2014	To Coordinator Revision
V 0.6	13/01/2015	To Internal Reviewers
V 0.7	17/01/2015	Final Revision
V 1.0	18/01/2015	Final version for submission
V 2.0	03/08/2015	Updated revision following Call 1 experience

Accessibility

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Executive summary

The ELECTRA Integrated Research Programme on Smart Grids brings together the partners of the EERA Joint Programme on Smart Grids (JP SG) to reinforce and accelerate Europe's medium to long term research cooperation in this area and to drive a closer integration of the research programmes of the participating organisations and of the related national programmes. ELECTRA's joint research activity and collaborative support actions build on an established track record of collaboration and engagement.

Together, the JP SG and ELECTRA will establish significant coherence across national research efforts critical to the stable operation of the EU power system of 2020+. The EU energy strategy sets ambitious goals for the energy systems of the future that foresees a substantial increase in the share of renewable electricity production.

The whole-sale deployment of Renewable Energy Resources connected to the network at all voltage levels will require radically new approaches for real time control that can accommodate the coordinated operation of millions of devices, of various technologies, at many different scales and voltage levels, dispersed across the EU grid. ELECTRA addresses this challenge, and will establish and validate proofs of concept that utilise flexibility from across traditional boundaries in a holistic fashion. The ELECTRA consortium believe that a new control concept is needed and set out to develop and test vertically-integrated control schemes reinforced with horizontally-distributed control schemes to provide for a dynamic power balance that is closer to its optimal value than that achieved with a conventional central control scheme.

In addition to the joint R&D activities, coordination work packages in ELECTRA build on existing efforts established through EERA and will significantly escalate these through coordination and collaboration amongst leading EU research infrastructures, researcher exchange across EU and internationally, and actions on international cooperation. The support received at proposal stage from 16 national funding agencies, ENTSOE, EDSO4SG, ETP SG, T&D Europe as well as from a number of international organisations will be developed to leverage the research effort in ELECTRA and to strengthen its exploitation potential.

ELECTRA offers assistance to support transnational and international researcher exchanges to and/or from ELECTRA partners that will complement and enhance the collaborative research undertaken within the research programme and associated EERA Joint Programme. This enhancement will be seen in the work of the visiting researcher being aligned with the objectives or tasks of ELECTRA research work packages (WP3,4,5,6,7,8). However, where appropriate, an exchange may alternatively have as its primary driver the objective to enhance international engagement as defined by ELECTRA WP10. ELECTRA's Researcher Exchange Programme offers the opportunity for both partner staff and external collaborators (European or international) to take part in an exchange hosted at an ELECTRA partner's site.

This document details the procedure agreed amongst the ELECTRA partners to attract and evaluate potential researcher exchanges, (through effective calls and selection processes against agreed assessment criteria), and then to support and enhance the value and impact of successfully selected exchanges (through complementary monitoring, dissemination and review). Furthermore, the document establishes some contractual rules governing the relationship between hosting organisation, sending organisation, visiting researcher, and ELECTRA project.

The document includes a number of appendices, including a summary of each work package.

Further information on the ELECTRA IRP, with description of the consortium partners, is available at the Website http://www.electrairp.eu .

Terminologies

Definitions

Exchange Researcher	The person who is participating in a hosted researcher exchange experience.
Exchange Programme Management Committee	The committee of ELECTRA IRP responsible for managing the administration and selection of researcher exchange proposals
Home Organisation	The institute of which the Exchange Researcher is a normal member of staff or PhD student
Host Organisation	The institute at which a researcher exchange experience takes place, responsible for looking after the Exchange Researcher
Strathclyde University	Coordination body for Researcher Exchange Programme
REX Coordinator	Strathclyde University
ELECTRA IRP Coordinator	The person responsible for the whole ELECTRA IRP, Luciano Martini of RSE S.p.A

Abbreviations

EPMC	Exchange Programme Management Committee
ELECTRA	European Liaison on Electricity Committed Towards long-term Research Activity Integrated Research Programme
EES-UETP	Electric Energy Systems – University Enterprise Training Partnership
INCO	International Cooperation
IRP	Integrating Research Programme
MS	Milestone
REX	Researcher Exchange Programme

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Introduction

This deliverable covers the procedures for the Researcher Exchange Programme, a part of the ELECTRA Integrating Research Programme. This document explains in detail all the necessary processes to enable the successful advertisement, selection, and implementation of Researcher Exchanges.

This deliverable presents the steps to implement a Researcher Exchange call. These steps are

- Development of the Call for Researcher Exchanges,
- Publication of the Call,
- Submission of Researcher Exchange Proposals,
- Evaluation of Researcher Exchange Proposals,
- Selection of Researcher Exchange Proposals,
- Access to the Host Organisations (including example contracts),
- Dissemination and Publications.

Also included in this deliverable are the financial aspects of the Researcher Exchange Programme with the rates of reimbursement defined along with reporting requirements. Further defined are the best practice sharing methods to be performed throughout the time of activity of this work package.

1 Key Features

In this section the key features of supported ELECTRA researcher exchanges are described.

1.1 Primary Objectives

The primary objectives of the research exchange programme of ELECTRA are threefold:

a. The proposed work is relevant to the goals of creating and demonstrating advanced voltage and frequency control as described by the ELECTRA IRP.
b. The Exchange Researcher will be capable of completing a quality body of work from the exchange and will gain useful personal development from it.
c. The value of the exchange is such that the host organisation and key individuals are willing and able to commit to producing valuable outcomes

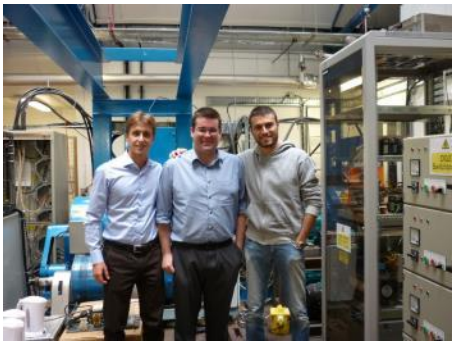


Figure 1 Early career researchers working together across countries and institutes

Successful outcomes from the researcher exchanges will include co-authored academic papers, elaborated architectures, collaborative demonstrations and pre-standardization activities. This is summarised in Figure 2 below.

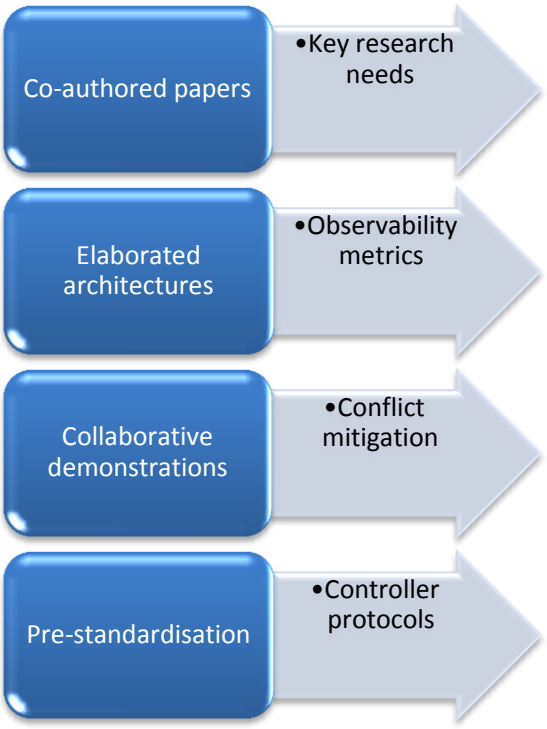


Figure 2 Examples of outcomes of successful researcher exchanges

1.2 Types of Supported Researcher Exchanges

The ELECTRA Researcher Exchange Programme provides supports for researchers from ELECTRA partners, from European research or industrial organisations, or from organisations outside Europe, as listed below:

a. A researcher from an ELECTRA partner (partners are listed at the start of this document) conducting collaborative work at another partner's site or that of another organisation in another country;
b. A researcher from a European research or industrial organisation out with the ELECTRA partnership conducting collaborative work at an ELECTRA partner's site in another country;
c. A researcher from an organisation outside Europe conducting collaborative work at an ELECTRA partner's site in another country.

The mobility of such individuals is encouraged and supported by three categories of exchange as illustrated in Figure 3.

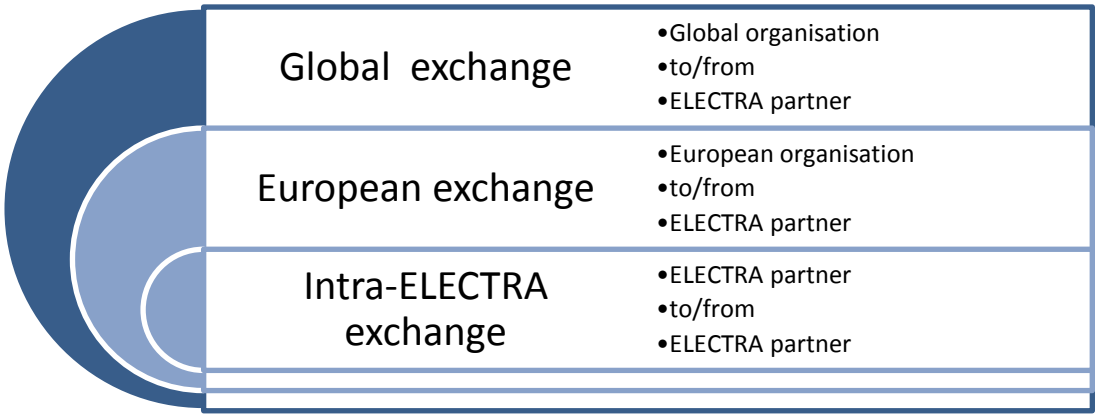


Figure 3 Diagram showing the types of possible researcher exchange

1.3 Eligibility to Host an Exchange

A host organisation must either be

a. A partner of the ELECTRA project (partners are listed at the start of this document); or
b. An organisation recognised by the ELECTRA Exchange Programme Management Committee (EPMC) as suitable for hosting ELECTRA researchers.

2 Researcher Exchange Procedure

This section describes, the steps to develop, advertise, and apply to a Call for Proposals. It also provides the criteria for the assessment and the selection of the proposals by the Exchange Programme Management Committee (EPMC). Furthermore this part of the document fixes the general rules for the implementation of the selected projects and the dissemination of the results. Finally this section defines the general contractual conditions ruling the stay of the researchers at the facilities, with specific reference to the management of their travel and subsistence costs.

2.1 STEP 1: Development of the Call for Proposals

A Call for Proposals for researcher exchanges will be developed in collaboration with the research work package leaders of the ELECTRA project. This will encourage proposed exchanges to be aligned with the project priorities for the forthcoming period.

The work package leaders will be asked to fill out a questionnaire detailing their priorities for the next period to allow the Call for Proposals to be suitably focused. The questionnaire used for this process is attached as Annex 5 below.

An example call is attached as Annex 6 below.

2.2 STEP 2: Publication of the Call for Proposals

A Call for Proposals for research exchanges will be launched on a regular basis by the ELECTRA Exchange Programme Management Committee, planned for every 6 months. Each call will include a particular topical emphasis but this will not be considered restrictively to exclude proposals, but rather to encourage focused contributions.

The exchange opportunity will be advertised through the dedicated ELECTRA website [1], via personal contacts, and through other relevant channels (including social media, posters, conferences and workshops, partner web pages, etc.).

A total of six calls will be issued with the schedule shown in Table 1.

Table 1 Planned call dates

Call	Issued
1	November 2014
2	June 2015
3	September 2015
4	May 2016
5	November 2016
6	May 2017

Each call will be targeted as agreed by the EPMC, however Call 3 will in particular focus on global exchanges to support ELECTRA's internationalisation agenda and promote collaboration outside of Europe.

2.3 STEP 3: Submission of Research Exchange Proposals

The proposing Researcher, in response to the Call and after discussion with the proposed Host, will submit their proposal to the EPMC. The submission can only be done electronically, after

previous registration at the ELECTRA website, through the assisted tool there available. Proposals submitted in other ways (e.g. by mail) or after expiry of the call deadline will be rejected.

The Proposal Template is available on the ELECTRA website, along with an online procedure which facilitates the preparation of the proposal and the electronic submission to the EPMC.

The Researcher undertaking the exchange in a proposal must fall into one of the two following categories,

1. A researcher from an ELECTRA partner undertaking collaborative work at the site of a partner, another EU organisation, or an appropriate international organisation.
2. A researcher from a European or International research organisation undertaking collaborative work at the site of an ELECTRA partner.

It is important that the proposer engages with the host (or potential hosts) prior to submission. Evidence of this is required in the application.

The Host Facility must be located outside the country that the Exchange Researcher currently works in.

2.4 STEP 4: Evaluation of Researcher Exchange Proposals

2.4.1 The Exchange Programme Management Committee

The evaluation of the Proposal will be undertaken by the EPMC. The EPMC is composed of representatives of each of the research work packages, along with the leader and deputy leader of WP9, and the Coordinator of the ELECTRA. The EPMC is chaired by the leader of WP9.

The entire Evaluation Process is expected to be completed within two months of the call deadline.

EPMC members will evaluate independently each proposal, assigning the following score:

- A for Excellent (75+/100)
- B for Good (65-74/100),
- C for Fair (60-64/100)
- D for Poor (55-59/100)
- E for Irrelevant (0-54/100).

The IRP Coordinator will not participate in the voting to be able to adjudicate in the event of a dispute.

2.4.2 Evaluation Criteria

The voting will be based on three sets of criteria, the quality of the ambition of the research proposed, the credibility of the team proposing to complete the research, and if the first two are met, a qualitative criteria which is to do with some of the non-technical aspects of the exchanges.

Application assessment

Criteria	Quality of Ambition	Credibility of impact
A. The proposed work is aligned with the goals of creating and demonstrating advanced voltage and frequency as described by the ELECTRA IRP. i.e. is the	/15	/15

proposal technically feasible and value adding for the ELECTRA IRP		
B. Based on the applicant's résumé they are capable of completing a quality body of work from the exchange and will gain useful personal development from it.	/10	/10
C. Does the host organization provide a value adding experience to the proposed research, i.e. will the research be better because of the facilities/experience at the Host Organisation.	/10	/10
TOTALS (out of 35)		
Overall score (out of 70)		

Qualitative criterion	
Is the application from an ELECTRA partner?	Yes (5 points)/ No (0 points)
Is the application from a European organisation involved in the EERA JP Smart Grids but not in ELECTRA?	Yes (5 points)/ No (0 points)
Is the application from a European or an international organisation that ELECTRA is developing a partnership with?	Yes (5 points)/ No (0 points)
Is this the first REX submission from the researcher's institution?	Yes (3 points)/ No (0 points)
Is this the first REX submission from the researcher's country?	Yes (3 points)/ No (0 points)
Is the researcher an 'early career researcher'?	Yes (6 points)/ No (0 points)
Is the researcher female?	Yes (3 points)/ No (0 points)
Final comments	

The Qualitative criterion section of the assessment will be preloaded by a nominated member of the EPMC to avoid subjective differences between reviewers arising within this criterion. The Overall Scores from each assessor are then averaged and it is this score that is used to rank applications for acceptance or rejection. This means that good technical proposals by Researchers not meeting any of the qualitative aspects of the assessment may still be accepted.

The truly necessary amount of access, costs and feasibility of the research will be, in general, assessed jointly with the Responsible Person of the Host Organisation. This estimation should concur with the evaluation of the proposal. The Responsible Person of the Host Organisation may suggest or request adaptations to the proposal in order to optimize the use of their resources. In

special cases the execution of the Research Exchange may request access to more than one Host Organisation.

The EPMC members meet within one month of the deadline for submission, for the selection of the winning proposals. Normally the EPMC Meetings are in person, in coincidence with ELECTRA periodic meetings.

2.5 STEP 5: Selection of the Proposals and Notification to the Exchange Researcher

The proposals are ranked based of the average of the scores assigned by each member of the EPMC. “D” and “E” scored proposals are normally rejected. Proposals re-submitted must make a strong case for their relevance to the ELECTRA project.

The result (positive or negative) of the Evaluation Process is notified to the Proposing Researcher and Host by the ELECTRA WP9 Leader through the Web Portal. The notification will be accompanied with a short Review Report with comments and, possibly, suggestions for improvement.

An Exchange Researcher, whose proposal has been positively evaluated but not admitted due to unavailability of the Host, can choose one of the following options:

- withdraw the proposal,
- update the proposal for re-submission in one of the next Calls,
- remain in the rank list with the assigned score for the next Call. These proposals will be ranked in a new list together with the new coming proposals.

The EPMC also notifies the selected Host Organisation for the planning of the exchange.

In all cases the notification will not be later than the end of the second month after the Call deadline.

2.6 STEP 6: Access to the Host Organisation

The exchange period is agreed by the Exchange Researcher and the Responsible Person of the Host Organisation. Normally the period is allocated in the next six months, after having finalised the technical details necessary for the proposed activity and fulfilled the administrative issues. An illustration of the schedule is provided in Figure 4.

MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Call for proposal															
Proposals evaluation				DP											
Selection Notification															
Activities Organisation and Administrative issues						DP									
Research Exchange activity							FP								
Submission of the Dissemination Report															
Final Approval by the EPMC															FP

DP – Decision Point for stop/ go on a project proposal

FP – Financial Point, where payments are made

Figure 4 Illustrated sequence of approval, conduct and completion

2.6.1 Signature of the Contract

Before starting the activities, a contract is signed between the Hosting Organisation and the Home organisation, with the University of Strathclyde as a third party to this contract (through the appointed Responsible Person). The contract (Template available from the Web Portal, and as Annex 3 of this document) is integrated with the detailed Technical Annex prepared by the Proposing Team and agreed with the Hosting Organisation, which clearly describes the research programme and indicates the estimated number of days of stay of the Researcher at the Hosting Organisation and the expected number of working days at the Hosting Organisation. Significant modifications to the technical programme or to the Hosting conditions (e.g. number of days of research), with respect to the planned ones in the proposal, should be submitted to the EPMC for further approval.

2.6.2 Assistance to the Exchange Researcher

The Host Organisation must identify a responsible person who is in charge of supervising the research activity underway at the Host Organisation and of supporting the Exchange Researcher in all the technical, administrative and other requirements the Researcher may have. They are also the reference person for security matters for the hosted Researcher.

2.6.3 Reimbursement of Travel and Subsistence of Exchange Researchers

The exchange offered in the project will cover the expenses for Travel and Subsistence of Researchers. The rules and reimbursement rates are detailed in Section 3.3 below and also in the FAQs of the Researcher Exchange web portal. Where lengthy exchanges are requested, the requirement for co-funding may form a condition of acceptance.

2.6.4 Notification of the Exchange Duration

At the end of the stay at the Host Organisation the Exchange Researcher declares the Total Number of Research Days and the Total Number of Days of Stay at the Host Organisation by signing the form attached to the Researcher Exchange Contract (electronic signature is allowable). A Research Day is defined according to the type of organisation offering hosting to Exchange Researchers: normally it is coincident with the working day.

Number of Days of Stay is the number of days for which the Exchange Researcher has been eligible for subsistence support under the Researcher Exchange Programme.

2.6.5 Questionnaires

The Researcher Exchange Procedure includes two questionnaire forms, the first one aimed at collecting the Researcher's feedback on the stay at the Host Organisation and the second one to be filled by the Host Organisation regarding the hosting experience. The aim of the questionnaires is to improve the Researcher Exchange Experience.

2.7 STEP 7: Dissemination and Publication of the Results

Figure 5 Summary of dissemination and publication of exchange results and learning

The contract clearly states the requirement for dissemination of results by the Researchers. The dissemination of the results in the form of an extended abstract and joint paper, conforming to a common format (the Template is available in the Web Portal) and lodged on the ELECTRA portal, is considered as a binding condition and will possibly affect the success of future applications for ELECTRA exchange. The submitted abstract will be published on the ELECTRA web page; it has to be submitted for approval and publication to the EPMC, not more than three months after the end of the exchange period. The EPMC evaluates the abstract not more than two months after the submission. As soon as the experimental results are published as reports, papers, or presentations, the Exchange Researcher is obliged to give detailed information to the EPMC, in order to provide evidence of the soundness of the scientific work performed at the Host Organisation(s). Figure 5 makes reference to the reporting of the exchange results in the context of the dissemination and training associated with the ELECTRA exchange programme. The training component is expanded on in section 4 of this document.

3 Exchange Funding Model

Applications are open for researcher exchanges of different duration ranging from two weeks to three months. The funding model incorporating travel and accommodation support follows.

3.1 Eligible Support

The funding made available under this scheme will provide funds for

- Travel by the researcher to and from their home institute to the host institute
- Accommodation for the duration of the stay subject to the below conditions
- A daily support for subsistence for the duration of the grant period, including meals, and travel from their accommodation to the host institute

3.1.1 Daily Support Conditions

Daily support will be granted in the following cases:

- During weekends within the grant period.
- During National holidays in the host country within the grant period.
- For vacation periods held during the grant up to two days per month, only for 3 month grants.
  The vacation days can be cumulated during the whole grant period.

Daily support will NOT be granted in the following cases:

- Vacation periods held during the grant period exceeding the above mentioned two days per month
- During days off held in connection with National holidays in the researcher's home country exceeding the above mentioned two days per month.

3.2 Numbers of Supports Available

Under this funding scheme support is available for 2 week, 4 week and up to 3 month exchanges as presented in Table 2- Table 4. The average length for an exchange within Europe is considered to be 4 weeks and for those involving partners outside of Europe the average length is considered to be 5 weeks.

Exchanges longer than 4 weeks must have a well-reasoned justification of the need for this level of expenditure.

Table 2 Available number of each length of researcher exchange through the entire length of the programme

Number of weeks	2	4	12
Days	14	28	84
Expected number	15	24	6

Table 3 Total number of individual grants and number of person-months allocated to the mobility programme within the 4 year duration of ELECTRA IRP

Grant period	2 weeks	4 weeks	12 weeks	Total
Number of individuals	15	24	6	45
Number of weeks	30	96	72	198
Person/ years				4

Table 4 Number of each type of grant budgeted to be approved in each year of the ELECTRA IRP exchange programme

Exchange programme year	Year 1	Year 2	Year 3	Sum of each type
2 weeks	4	5	6	15
4 weeks	7	7	10	24
12 weeks	1	3	2	6
Total	12	15	18	45

3.3 Funding Levels

The funding levels for daily subsistence and accommodation ('daily support') are shown in Table 5 below. This is the maximum that will be reimbursed by the Exchange Coordinator after the presentation of an invoice and related receipts. Exchange Researchers' expenses are subject to their home organisation's expenses policy, except all expenditure must be proved by receipts for reimbursement by the Exchange Coordinator.

Table 5 Maximum daily support for researcher exchanges

Maximum daily support		
For stays less than 4 weeks	€200	Max €6000 per exchange
For stays greater than 4 weeks	€200	Max €18000 per exchange

Table 6 shows the maximum travel support for return travel from the Home Organisation to the Host Organisation. This is the maximum that will be reimbursed by the Exchange Coordinator after the presentation of an invoice and related receipt(s).

Table 6 Maximum travel support for different types of exchanges

	Maximum travel support*
Travel inside Europe	€1000
Travel outside Europe	€1500

*Travel to/from Host should be on the most economical transport available, for flights only economy class flights will be reimbursed.

3.4 Financial Management

All funding provided under this scheme are the responsibility of the University of Strathclyde. All expenditure must be accounted for to the University of Strathclyde. Expenditure must be in accordance with the details specified in the contract between the parties.

4 Training, Development and Sharing Best Practice

4.1 Training as Part of the Exchange

Opportunities should be sought for researcher development during these exchange visits. This could include participation in short 3-5 day training courses (courses such as those run by EES-UETP [2] are useful in this regard), or witnessing laboratory testing in the host institution that is running concurrently with the visit (confidentiality issues should be addressed through appropriate NDA's where necessary).

4.2 Workshops

To share the best practice gained from the researcher exchanges a number of workshops will be organized for the early career researchers to present to each other, and to other stakeholders, their methods and experiences of the research and to transfer the experiences of those that have already been on an exchange to those scheduled to start. These workshops will be scheduled alongside relevant conferences to encourage the creation of a community of early career researchers.

4.3 Social Media Community

Online social media will be used to encourage the establishment of a community of researchers involved in exchanges. This will help the sharing of best practice and stimulate cooperation beyond the end of the exchanges. A forum will be available on the ELECTRA website for allowing researchers to keep in touch.

Participants will be encouraged to write personal commentaries about their research exchange experiences, for example, as a weekly blog or microblog.

5 Conclusions

This document shows the systematic procedure for managing the ELECTRA IRP Researcher Exchange Programme. This procedure will support the realisation of high quality exchanges that meet the objectives of the scheme, and includes:

- Requesting suggested topics and invited exchanges from the Work Package Leaders
- Definition of the possible types of exchanges
- Statement of the financial contribution to the exchanges
- Creating a Call text
- Advertising the Call text
- Supporting the Call with support material, including Frequently Asked Questions
- The application form for proposed exchanges
- The formation of the Exchange Programme Management Committee
- The guidelines and forms for assessment of researcher exchange applications
- The contract to be signed between the host and home organisations, and researcher exchange coordinator
- The process for having expenses reimbursed
- The sign-off of the exchange and dissemination

All of the steps and formalities for the Researcher Exchange Programme are detailed, from creation of the Call to sign-off of the finished exchange report.

6 References

[1] http://www.electrairp.eu (ELECTRA IRP web site)

[2] EES-UETP Information, http://www.ees-uetp.com/description.php .

7 Disclaimer

The ELECTRA project is co-funded by the European Commission under the 7th Framework Programme 2013.

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Commission.

The European Commission is not responsible for any use that may be made of the information contained therein.

Annex 1: Template for proposal

Some example screens from the web based form.

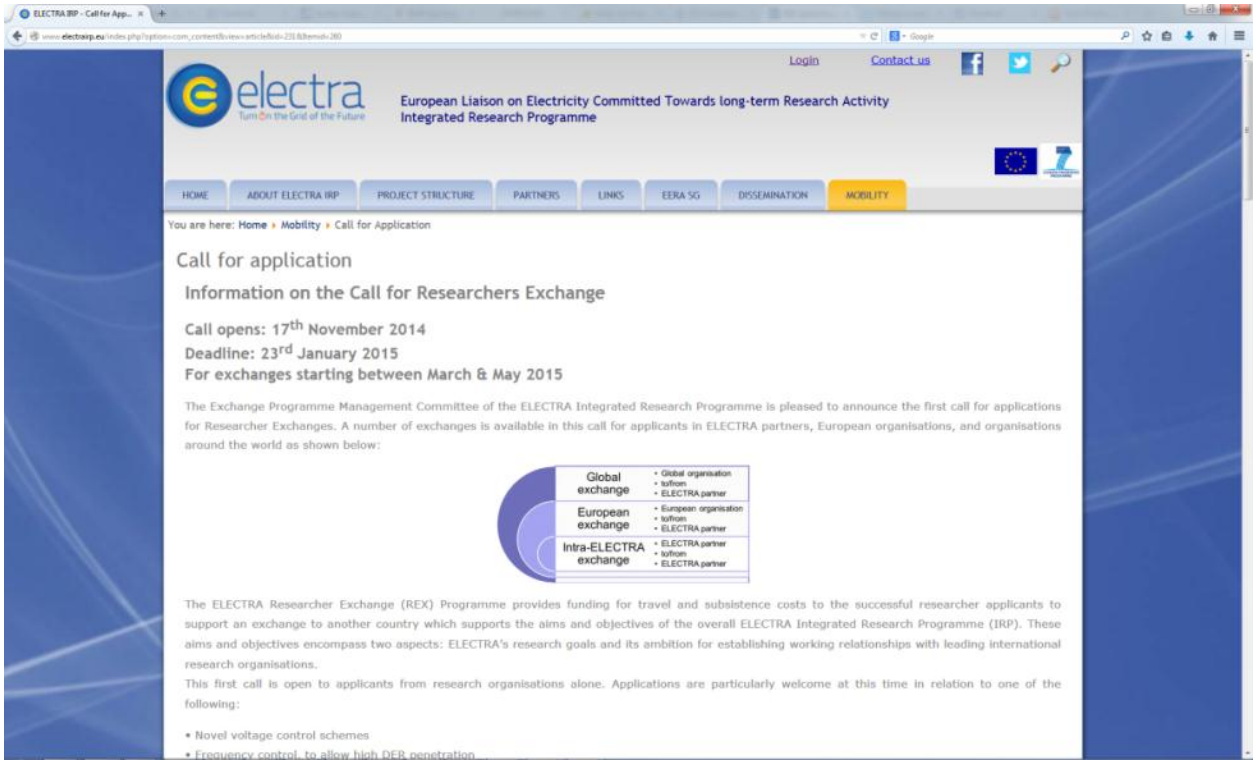


Figure 6 Website capture of call for exchanges details

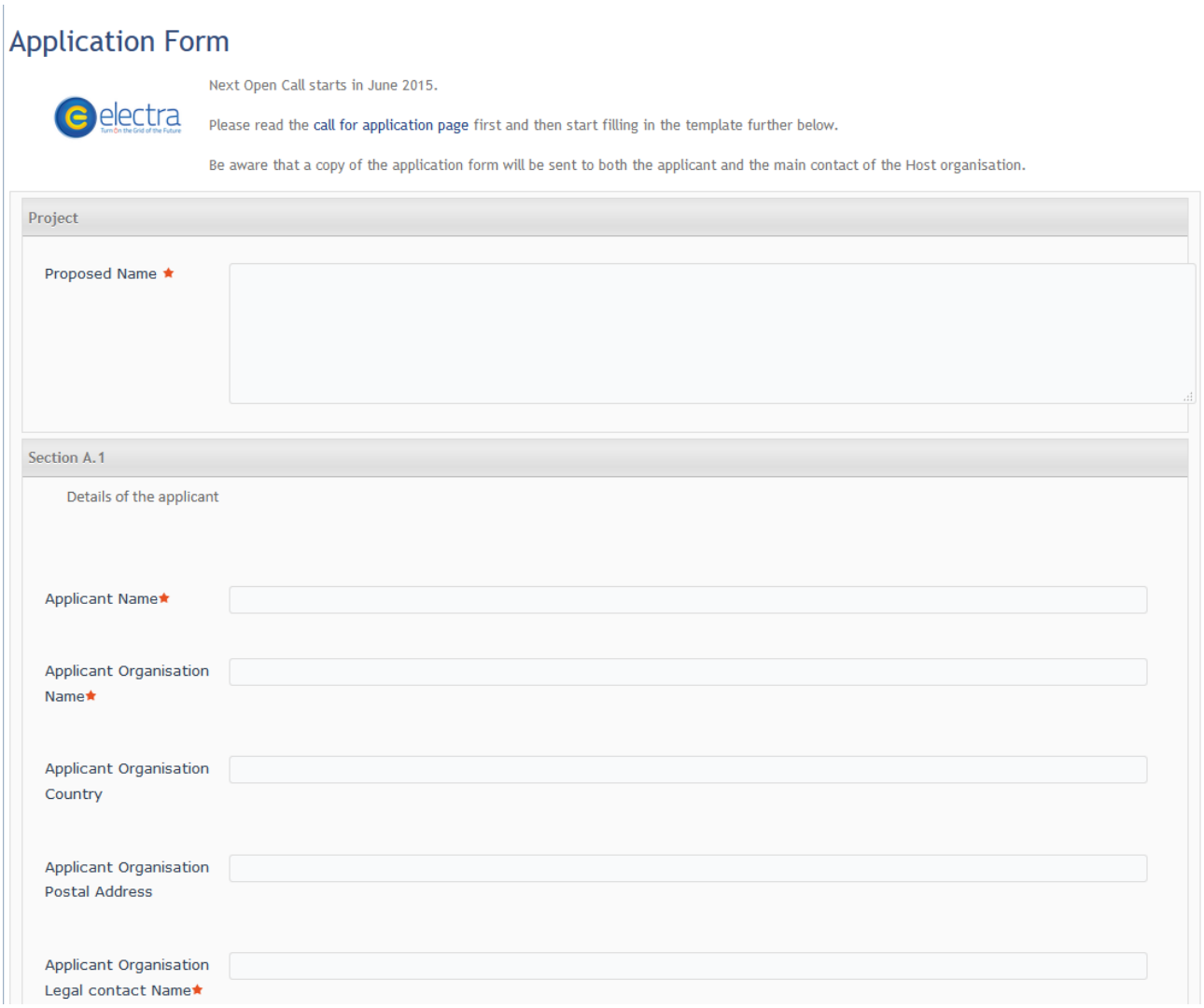


Figure 7 Part 1 of online application form

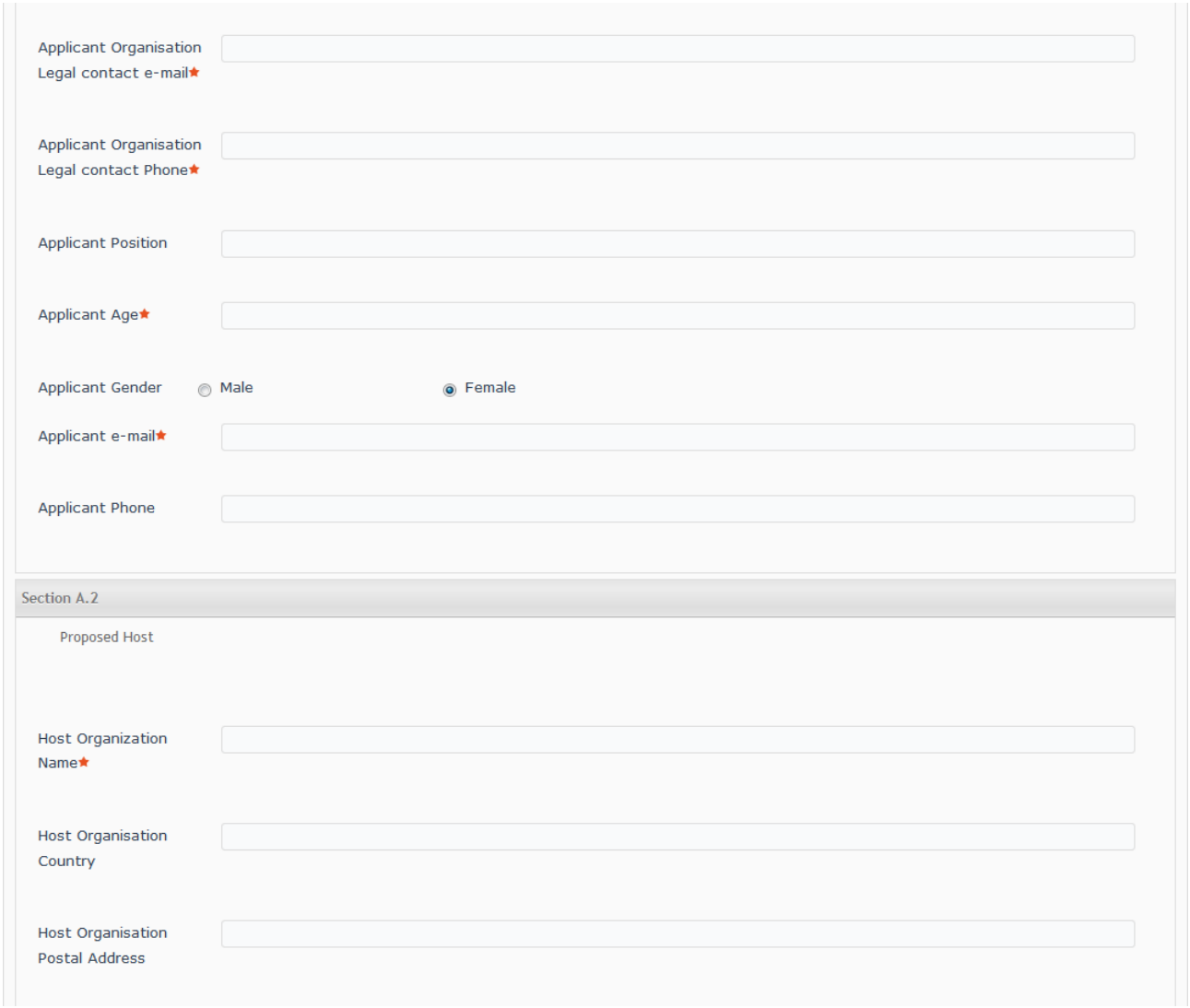


Figure 8 Part 1 cont. and 2 of application form

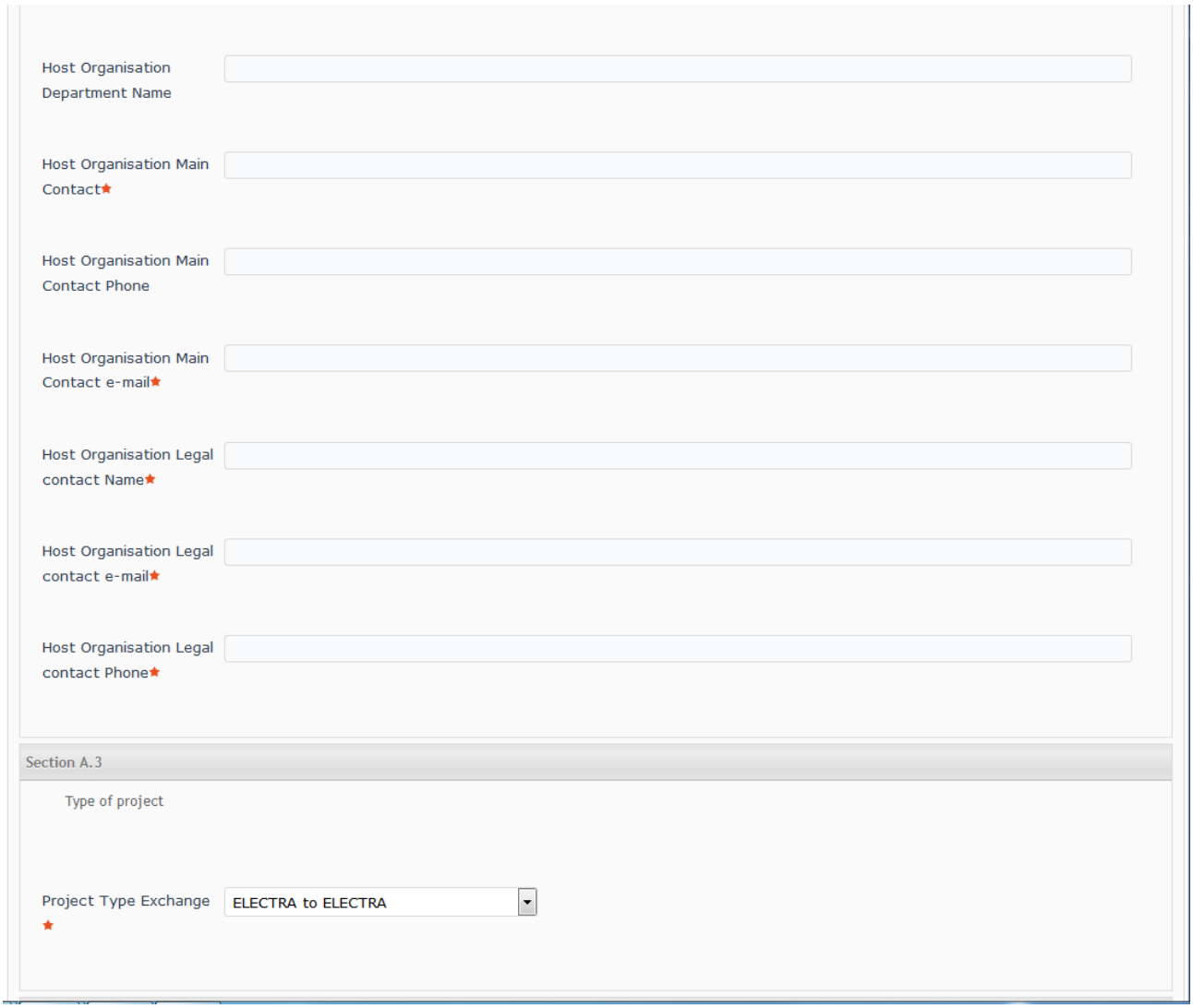


Figure 9 Parts 2 cont. and 3 of application form

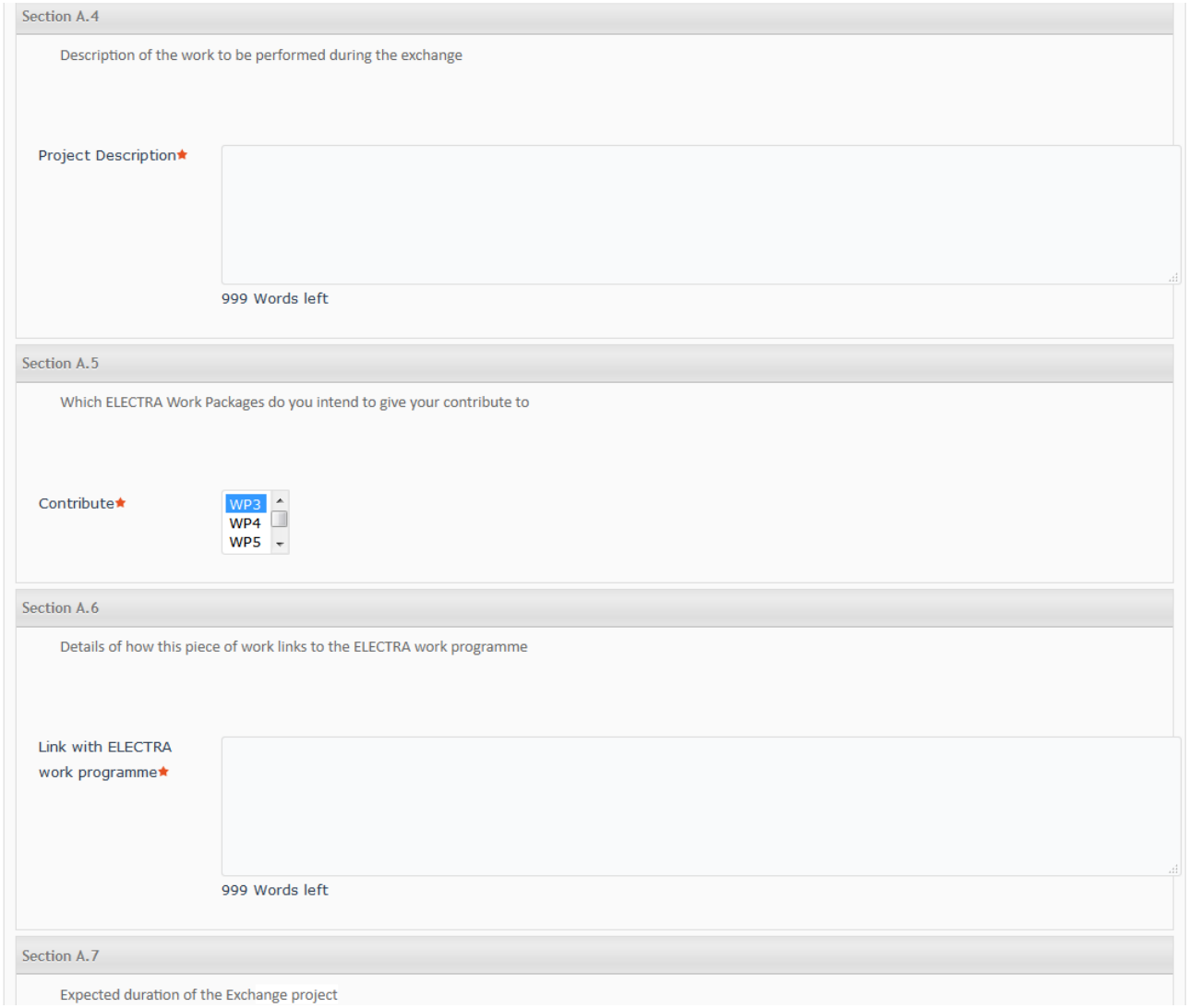


Figure 10 Parts 4 to 6 of application form

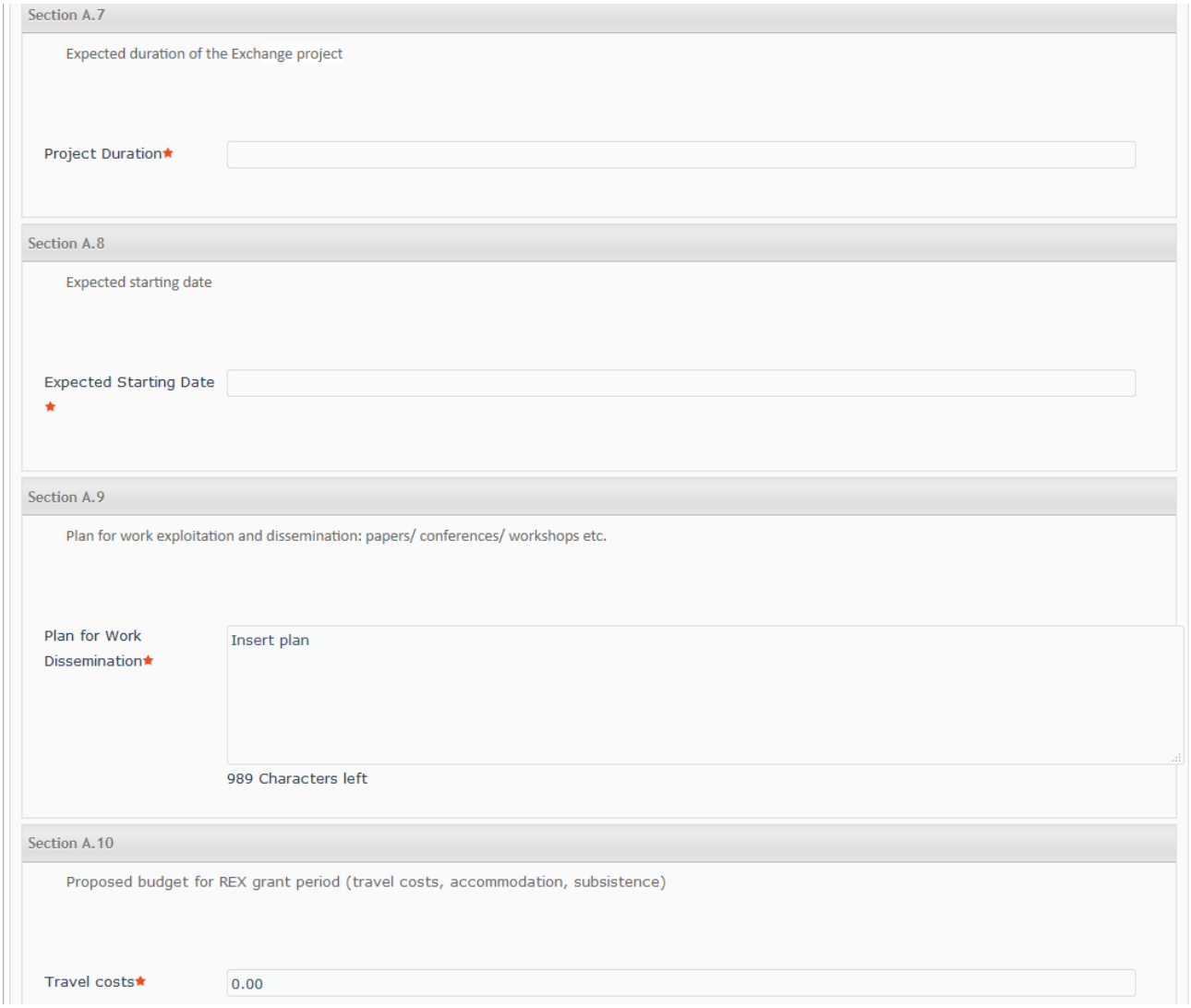


Figure 11 Parts 7 to 10 of application form

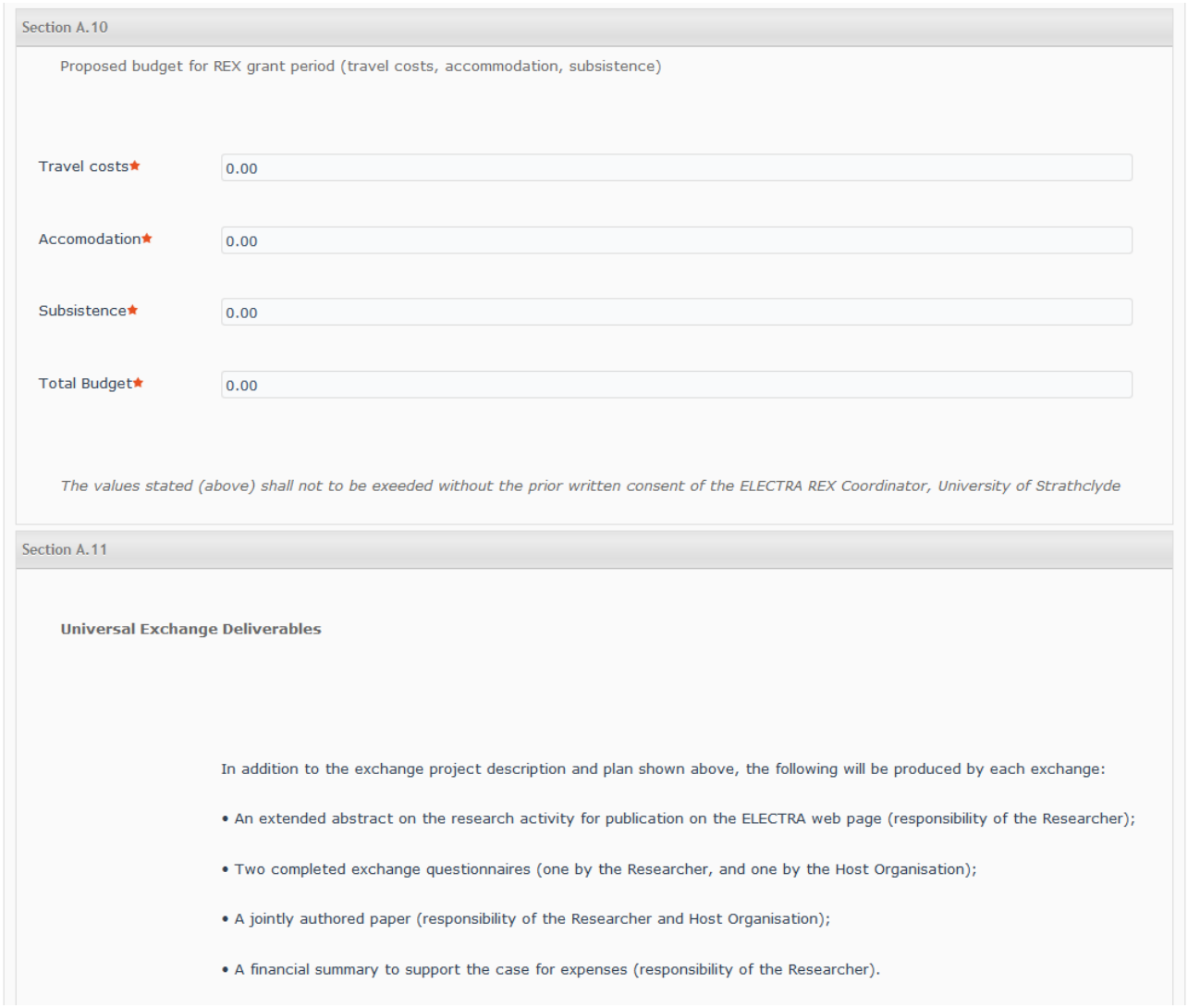


Figure 12 Parts 10 and 11 of application form

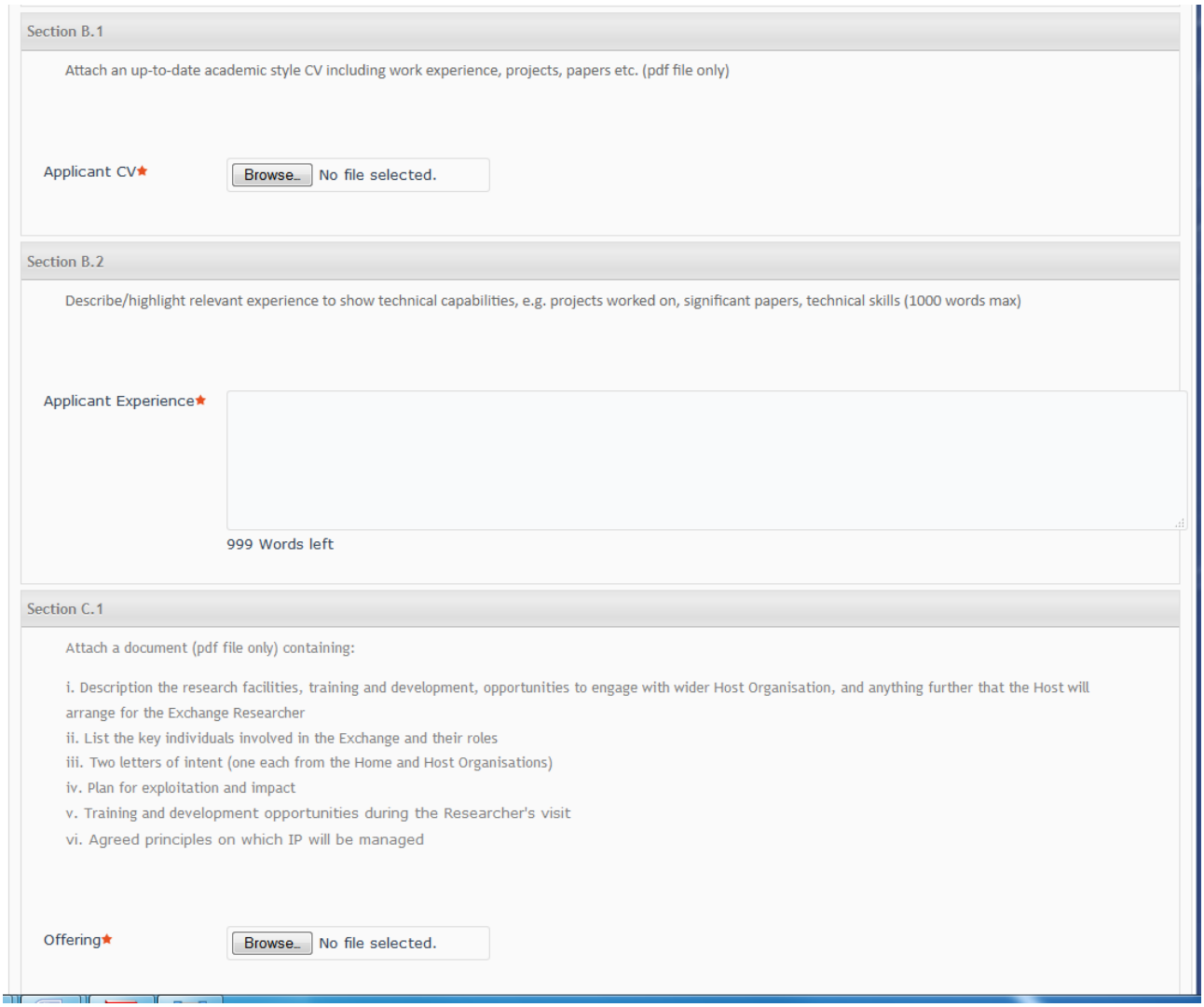


Figure 13 Final parts of application form

Annex 2: Essential information to be included in the Contract between the proposed exchange researcher and the host organisation

A Contract for hosting a researcher exchange between the Proposed Exchange Researcher and the Host Organisation (represented by the Legal Representative) has to be signed by both Parties before starting the Exchange by the Proposed Exchange Researcher. The final balance of Use Days and of Stay Days of the Researcher having access will be fixed in Addendum-A to the Contract signed by both Parties after the end of the Exchange. The receipts of the T&S Reimbursements received by each Exchange Researcher, countersigned by both Parties, will be annexed to the signed Contract as an Addendum-B after the end of the Exchange.

1. Identification of the Contractors: Host Organisation Legal Name; Name and Institution of the Proposed Exchange Researcher
2. Identification of the Representatives for the execution of the present Contract
3. Identification of the Proposed Exchange Researcher
4. Reference to the ELECTRA IRP contract
5. Definitions (whenever necessary)
6. Access Provisions: Total number of expected Research Days at the Host Organisation; Total number of expected Stay Days per Proposed Exchange Researcher
7. Travel and Subsistence Reimbursement conditions
8. Logistical aspects and Host Organisation access
9. Safety Provisions
10. Provisions for the Reporting: Reports/Questionnaires to be issued by the Proposing Team; Contents/Templates, Time plan;
11. Provisions for publication and dissemination for the results (until two years after the end of the Access)
12. Obligations for Intellectual Property Rights
13. Liability conditions
14. Signatures
15. Addendum-A
16. Addendum-B

Annex 3: Exemplar Contract for use between the Home Organisation, the Host Organisation, and the Exchange Coordinator

EXCHANGE AGREEMENT

BY AND BETWEEN :-

(1) **UNIVERSITY OF STRATHCLYDE** a charitable body registered in Scotland under registration number SCO15263, incorporated under the Universities (Scotland) Acts and having its main administrative offices at 16 Richmond Street, Glasgow, G1 1XQ, United Kingdom (hereinafter "SU" or "the Exchange Coordinator" as the case may be); and

(2) **[insert details of organisation hosting researcher]** (hereinafter the "Host Organisation"); and

(3) **[insert details of organisation sending researcher]** (hereinafter the "Home Organisation")

- hereinafter may be referred to individually as a "Party" or collectively as the "Parties".

WHEREAS:-

(A) SU and [insert other Party name if applicable] are partners and beneficiaries under a European Commission Grant Agreement No. 609687 (hereinafter the "Grant Agreement") for a grant funded project entitled "*European Liaison on Electricity grid Committed Towards long-term Research Activities for Smart Grids*" (ELECTRA) (hereinafter referred to as the "Project") and SU is the Exchange Coordinator responsible for managing the research exchange programme under work package nine (WP9) forming part thereof.

(B) The Host Organisation has agreed to provide training in research and transferable skills as well as Exchange opportunities for research staff or research students of the Home Organisation as set out in the Proposal (as hereinafter defined).

(C) The Parties wish to set out the rights and obligations towards each other under the terms of this Exchange Agreement.

1. Definitions

1.1 "Agreement" means this Exchange Agreement together with its Attachment 1 hereto.

1.2 “Background Intellectual Property” or “Background IP” means the rights in information which is held by a Party prior to the Exchange Start Date as well as copyrights or other Intellectual Property rights pertaining to such information which is owned by or within the control of a Party prior to the Exchange Start Date and excluding Foreground Intellectual Property and rights therein.

1.3 “Confidential Information” means any technical or commercial information including (without limitation) specifications, drawings, designs, samples, models, equipment, computer software and knowhow in whatever form or mode of transmission written, other visual or machine readable form, which is disclosed by one Party (the “Disclosing Party”) to another Party (the “Recipient”) either directly or via another Party to this Agreement for the purpose of performing the Exchange Activity (the “Purpose”) and which has been marked as “confidential” or, when disclosed orally, has been identified as confidential at the time of disclosure and has been confirmed and designated in writing within thirty (30) days from oral disclosure. All the protections and restrictions in this Agreement as to the use and disclosure shall apply during such thirty (30) day period.

1.4 “Foreground Intellectual Property” or “Foreground IP” means the rights in results including information, whether or not they can be protected, which are generated by a Party or jointly by the Parties during the Exchange Period. Such results include rights to Intellectual Property including those related to copyright; design rights; patent rights; plant variety rights; or similar forms of protection.

1..5 “Intellectual Property” means all rights in inventions, patents, designs, utility models, plant varieties, whether registered or not, copyright, trade secrets, know-how, software, discoveries, improvements, concepts, models, drawings, secret formulae and processes and all rights relating to confidential or proprietary information and all other rights of a similar nature throughout the world including all applications for any such protection and rights to apply for any of the same and for the avoidance of doubt, excludes trade and service marks and trade names, whether registered or not.

1.6 “Exchange Start Date” means [insert].

1.7 “Researcher” means [insert name of researcher] or such other researcher who is nominated by his/her Home Organisation to take part in the Exchange Activities during the Exchange Period.

1.8 “Exchange Activity” (or “Exchange Activities”) means the temporary secondment of a Researcher from his/her normal duties as an employee, researcher or student (as the case may be) of a Home Organisation to the office premises or technical / research facilities of the Host Organisation for the duration of the Exchange Period in order for the Researcher to perform work and to access training and/or transferable skills from the Host Organisation in accordance with the Proposal.

1.9 “Exchange Period(s)” means the temporary period(s) of time spent by a Researcher at the premises of the Host Organisation during the Exchange Activity in accordance with the Proposal.

1.10 “Proposal” means the proposal and exchange scope of work which defines the work, responsibilities, duration of Exchange Period, maximum budget and deliverables/outputs governing the Exchange Activity in accordance with Attachment 1 hereto.

2. Purpose

The purpose of this Agreement is to define the rights and obligations as between the Home Organisation and the Host Organisation with regard to the activities which the Host Organisation agrees to conduct.

3. Term and Termination

Notwithstanding the date of execution hereof which shall occur on the later date of signature between the Parties, this Agreement shall have effect as from [insert date] (the "Effective Date") and except as otherwise provided for in this Agreement shall remain in full force and effect for the Exchange Period.

4. Exchange Activities

4.1 General Obligations of the Parties

4.1.1 Notwithstanding Clause 10.5 (Governing Law), the Parties shall each abide by their own respective national laws and regulations including, but not limited to, laws and/or regulations which govern employment, immigration, taxation, social security, personal and public liability and insurance.

4.1.2 Each Party hereby agrees to keep confidential any Confidential Information disclosed to each other during the Exchange Period in accordance with the provisions of Clause 7 hereto.

4.2 Main Responsibilities of the Host Organisation towards the Home Organisation

4.2.1 During the Exchange Period, and at no additional cost or charge to the Home Organisation or to the Exchange Coordinator (except as otherwise provided for in Clause 4.2.1 (ix)), the Host Organisation shall use all reasonable endeavours to undertake the following:-

(i) To support the Exchange Activities via the hosting of a Researcher at its premises or facilities and to provide training and/or transferable skills to the Researcher in accordance with the Proposal.

(ii) To ensure that the Researcher devotes him/herself full-time to his or her work during the Exchange Activities.

(iii) To make available to the Researcher access to such of its facilities, equipment and on-site staff supervision and expertise as may be reasonably required for the Researcher to conduct his or her work.

(iv) To ensure that the Researcher enjoys a reasonable standard of care in relation to health and safety at its place of work as those of its staff holding a similar position and to offer at all times no less than a reasonable standard of care to the Researcher.

(v) To ensure that it has appropriate personal and public liability insurance cover for the Researcher whilst he or she is seconded at its facilities and have such other appropriate insurance as may be required under its own national laws or regulations.

(vi) Where applicable, to provide reasonable assistance to the Researcher in all administrative procedures required by the Researcher or his/her sending Home Organisation as required by its own national authorities, including but not limited to, assistance relating to obtaining visas and work permissions.

(vii) To designate a suitably qualified and experienced supervisor who will supervise the work of the Researcher.

(viii) To inform the Exchange Coordinator and the Home Organisation in writing as soon as possible of any event or situation which will significantly delay or hinder the Researcher's ability to undertake his or her duties pursuant to the Exchange Activity.

(ix) Subject to mutual agreement between the Exchange Coordinator and the Host Organisation and where set forth in the Proposal at Attachment 1, additional limited technical support or other contribution to the Exchange Activities may be undertaken by the Host Organisation (hereinafter the "Additional Support to the Exchange Activities"). The Host Organisation shall be reimbursed for performing the Additional Support to the Exchange Activities in accordance with Clause 6.6 hereto.

5. Main Responsibilities of a Home Organisation towards the Host Organisation

5.1 Where a Home Organisation is seconding a Researcher to a Host Organisation pursuant to the Exchange Activities, it shall use reasonable endeavours during the Exchange Period to undertake the following:-

(i) Ensure that its Researcher is obligated to perform his/her work and/or duties pursuant to the Exchange Activities in accordance with the Proposal at Attachment 1 hereto.

(ii) Ensure that its Researcher is suitably qualified or has the necessary experience to take part in the Exchange Activity.

(iii) Where required and in a timely manner prior to the start date of the Exchange Activity, to provide reasonable information and/or assistance in a timely manner to the Host Organisation in order for the Host Organisation to abide by its own internal procedures or those of its national authority.

(iv) The Home Organisation is responsible (where applicable) for providing suitable health and/or travel insurance for the Researcher during the Exchange Period.

6. Reimbursement of Costs Relating to the Exchange Activities

6.1 The Home Organisation shall be reimbursed for its eligible travel and subsistence costs by the Exchange Coordinator which are reasonably and properly incurred by the Researcher during the Exchange Period following completion of the Exchange Activities (including submission of the deliverables) in accordance with the Proposal. Except with the prior written consent of the Exchange Coordinator, no other costs may be claimed by the Home Organisation pursuant to the Exchange Activities or the Project.

6.2 The Home Organisation agrees to maintain detailed records relating to its travel and subsistence expenses claims (and any other costs approved in accordance with Clause 6.1 above) and shall submit to the Exchange Coordinator a valid invoice for its travel and subsistence costs (and any other costs approved in accordance with Clause 6.1 above) accompanied by evidence of its receipts and/or other information in support of its amount(s) claimed. The Home Organisation acknowledges and agrees that its travel and subsistence claims (and claims for any other costs approved in accordance with Clause 6.1 above) may be onward disclosed by the Exchange Coordinator to the European Commission at any time during the term of this Agreement and up to five (5) years following the earlier of termination or expiry of this Agreement for the purpose of a European Commission financial audit of the Project.

6.3 Invoices shall be submitted to the address set forth in Clause 6.7 below and payment shall be made by the Exchange Coordinator to the Home Organisation within thirty (30) days of receipt of a valid invoice via an electronic funds transfer.

6.4 If an expense was incurred by the Home Organisation in a currency other than Euro and is required to be reimbursed in Euro in accordance with the Grant Agreement, the rate of exchange will be applied as per the European Central bank rate of exchange on the date the expense was incurred by the Home Organisation.

6.5 The Home Organisation shall be solely liable for justifying any travel and subsistence claims (and claims for any other costs approved in accordance with Clause 6.1 above) to the European Commission pursuant to this Clause 6. Other than for any claim previously accepted by the European Commission for which this Clause 6.5 does not apply, in the event that the European Commission demands the return of any over-payment made to the Home Organisation where a claim (or part of a claim) has been deemed to be an ineligible cost , the Home Organisation shall be solely responsible for re-funding of any such payment immediately to the Exchange Coordinator upon written demand. The Home Organisation agrees to keep the Exchange Coordinator fully indemnified against any and all claims or refunds that the Exchange Coordinator is required to make to the European Commission on behalf of the Home Organisation.

6.6 Reimbursement to Host Organisation for Additional Support to Exchange Activities

Following completion by the Host Organisation of Additional Support to the Exchange Activities pursuant to Clause 4.2.1 (ix) and in accordance with the Proposal at Attachment 1, the Host Organisation shall be reimbursed for its eligible costs incurred up to the maximum amount set forth in the Proposal. The Host Organisation shall submit to the Exchange Coordinator, at the address set forth in Clause 6.7, a valid invoice (accompanied by evidence of actual costs incurred) and will be reimbursed in (€) euros by the Exchange Coordinator (via electronic funds transfer) within thirty (30) days of receipt of

such invoice. The Host Organisation acknowledges and agrees that any costs reimbursed pursuant to this Clause 6.6 shall be subject to the terms of the Grant Agreement and in the event of a European Commission financial audit of the Project, any amount deemed by the European Commission to be an over-payment made to the Host Organisation shall be repaid immediately to the Exchange Coordinator upon written demand.

6.7 Invoices (accompanied by receipts and supporting information) shall be sent to the Exchange Coordinator at the following address:-

University of Strathclyde
ELECTRA REX Coordinator
Institute for Energy and Environment
R371, Royal College Building
204 George Street
Glasgow, G1 1XW
UK

Quoting Reference: ELECTRA/130001

7. Non-Disclosure of Information

7.1 Except with the prior written consent of the Disclosing Party, the Recipient hereby undertakes that for a period of five (5) years following the earlier date of expiry or termination of this Agreement :-

(i) not to use Confidential Information otherwise than for the purpose of the Project and then only to the extent to which a further use is specifically authorised in writing by the Disclosing Party;
(ii) not to disclose another Party's Confidential Information to any third party without the prior written consent by the Disclosing Party except that each of the Parties hereby consent to their respective Confidential Information being disclosed by the Exchange Coordinator to the European Commission strictly for the Purpose of the Exchange Coordinator fulfilling its obligations under the Grant Agreement and for no other purpose;
(iii) to ensure that internal distribution of Confidential Information by a Recipient shall take
place on a strict need-to-know basis; and to return to the Disclosing Party on demand all Confidential Information which has been supplied to or acquired by the Recipient including all copies thereof and where reasonably possible to delete all information stored in a machine readable form.

7.2 The Recipient shall be responsible for the fulfilment of the above obligations on the part of their staff, students or agents.

7.3 Confidential Information does not include information which the Recipient can show that:-

(a) is publicly available by means other than a breach of the Recipient's confidentiality obligations;
(b) the Disclosing Party subsequently informs the Recipient that the Confidential Information is no longer confidential;

(c) the Confidential Information is communicated to the Recipient without any obligation of confidence by a third party who is in lawful possession thereof and under no obligation of confidence to the Disclosing Party;
(d) the Confidential Information, at any time, was developed by the Recipient completely independently of any such disclosure by the Disclosing Party;
(e) the Confidential Information was already known to the Recipient prior to disclosure; or
(f) the Recipient is required to disclose the Confidential Information in order to comply with applicable laws or regulations or with a court or administrative order.

7.4 The Recipient shall apply the same degree of care with regard to the Confidential Information disclosed as with its own Confidential Information, but in no case less than a reasonable standard care.

7.5 The Recipient shall promptly advise the Disclosing Party in writing of any unauthorised disclosure, misappropriation or misuse of Confidential Information after it becomes aware of such unauthorised disclosure, misappropriation or misuse.

7.6 If the Recipient becomes aware that it will be required, or is likely to be required, to disclose Confidential Information in order to comply with applicable laws or regulations or with a court or administrative order, it shall, to the extent it is lawfully able to do so, prior to any such disclosure notify the Disclosing Party as soon as possible of such a requirement and the Exchange Coordinator.

8. Intellectual Property Rights

8.1 No Party shall acquire title to any Background IP of any other Party pursuant to this Agreement.

8.2 Subject to the rights of any third party, Foreground IP shall be owned by and vest in the Party creating such Foreground IP. Each Party grants to the others a royalty-free, non-exclusive, non-transferable licence to use their respective Foreground IP:-

(i) for the purpose of the Exchange Activities (in the case of [insert Party which is not a beneficiary to the Grant Agreement]); or
(ii) for the purpose (and duration) of the (a) Exchange Activities and (b) the ELECTRA Project (in the case of the Exchange Coordinator and [insert other Party(ies) which [is/are] a beneficiary(ies) to the Grant Agreement]).

8.3 Where Foreground IP which has been generated jointly and inseparably between the Researcher and the Host Organisation as a result of their collaborative efforts and it is impossible to ascertain individual shares then such jointly developed Foreground IP shall, subject to the rights of any third party, be jointly owned by the Home Organisation and the Host Organisation (“Jointly Owned Foreground IP” and “Joint Owners” respectively). The Joint Owners shall establish a separate agreement in writing regarding the allocation, protection measures and terms of exercising such Jointly Owned Foreground IP on fair and reasonable terms and shall take into account the technical and financial contributions to the Exchange Activity made by each of the Joint Owners.

8.4 Where no joint ownership agreement has yet been concluded between the Joint Owners of the Jointly Owned Foreground IP pursuant to Clause 8.3 then the Joint Owners hereby agree that the following terms shall apply:-

8.4.1 Each of the Joint Owners shall be entitled to grant non-exclusive licences to third parties (excluding the right to sub-licence) to their Jointly Owned Foreground IP and without requiring the prior consent of the other Joint Owner(s) subject to the following conditions :-

(a) at least forty five (45) days prior written notice must be given to the other Joint Owner(s); and
(b) fair and reasonable compensation must be provided to the other Joint Owner(s).

8.4.2 The Joint Owners shall agree on all protection measures and the division of related cost in advance of 8.4.1 above.

8.5 Each of the Joint Owner's shall be entitled to use the Jointly Owned Foreground IP:-

(i) for the purpose of performing the ELECTRA Project solely in the case of [insert Party(ies) which are beneficiaries to the Grant Agreement] on a royalty-free, non-exclusive and non-transferable basis; and
(ii) for internal research and teaching purposes on a royalty free, non-exclusive, non-transferable basis as long as the protection of such Jointly Owned Foreground IP is not adversely affected.

8.6 Except where otherwise expressly provided for in Clause 8.4.1 hereto, the Joint Owner(s) shall not be entitled to undertake any other commercial exploitation activities without the prior written consent of the other Joint Owner(s) which may include the right of the Joint Owner(s) to seek a royalty bearing licence under commercial (market) conditions.

9. Liability

9.1 In the event of a breach by a Party of its obligations under this Agreement (a "Defaulting Party"), the non-defaulting Party ("Non Defaulting Party") shall give written notice to the Defaulting Party requiring that such breach be remedied within thirty (30) calendar days. If such breach is not remedied to the reasonable satisfaction of the Non Defaulting Party within thirty (30) calendar days or the breach is not capable of remedy, the matter may be referred to the senior management representatives of the Parties concerned.

9.2 No Party shall be responsible to any other Party for any indirect or consequential loss or damages such as, but not limited to, loss of profit, loss of revenue or loss of contracts howsoever caused.

9.3 The Defaulting Party's aggregate limit of liability towards one or more of the other Parties collectively under this Agreement (provided that such Defaulting Party shall only be liable for damages caused intentionally or through gross negligence or willful misconduct and that such breach is not due to the default of another Party) shall be limited to a maximum amount of five hundred thousand euros (€500,000).

9.4 Each Party shall be solely liable for any loss, damage or injury caused to any third parties resulting from the performance of said Party's obligations under this Agreement or under the Project.

9.5 The terms of this Agreement shall not be construed so as to amend or limit any Party's statutory liability.

10. Miscellaneous

10.1.1 **Exchange Coordinator.** The main point of contact for the Exchange Coordinator shall be Professor Graeme Burt, University of Strathclyde, Institute for Energy & Environment, Department of Electronic & Electrical Engineering, Royal College Building, 204 George Street, Glasgow, G1 1XW, United Kingdom, telephone number +44(0)141 548 2990 and e-mail graeme.burt@strath.ac.uk.

10.1.2 The main points of contact for the Home Organisation and the Host Organisation shall be as set forth in Attachment 1.

10.2 **No warranty**. In respect of any information or materials (including Foreground IP) provided or disclosed by one Party to another Party under this Agreement, no warranty or representation of any kind is made, given or implied as to the sufficiency or fitness for purpose nor as to the absence of any infringement of any proprietary rights of third parties.

10.3 **Disputes**. The Parties shall act in good faith to resolve any dispute, controversy or claim (the "Matter") via referral of the Matter to its senior management representative for dispute resolution between the Parties concerned. Where the Matter has not been resolved to the reasonable satisfaction of the Parties concerned within forty five (45) days or such longer period as may be mutually agreed between the senior management representatives of the Parties concerned pursuant to Clause 9.1 hereto, the Parties shall refer the Matter to the Belgian courts for resolution.

10.4 **Mandatory National Law.** Nothing in this Agreement shall be deemed to require a Party to breach or violate any mandatory national laws or regulations in the country where a Party is operating.

10.5 **Governing Law**. This Agreement shall be governed and construed in accordance with the laws of Belgium excluding its conflict of laws provisions.

10.6 **Third Party Rights**. Except as expressly provided for in this Agreement, none of the terms and conditions herein shall be enforceable by a third party.

10.7 **Amendments**. No modification shall be made to this Agreement except with the prior written consent of the Parties which shall be made by amendment to this Agreement by duly authorised signatories of the Parties.

10.8 **Severability**. Should any provision of this Agreement become invalid, illegal or unenforceable, it shall not affect the validity of the remaining provisions of this Agreement which shall continue in force notwithstanding such severance. In such a case, the

Parties concerned shall be entitled to request that a valid and practicable provision be negotiated which fulfils the purpose of the original provision.

10.9 **Survival of rights and obligations**. Those provisions of this Agreement which by their nature or implication are required to survive expiry or termination of this Agreement shall so survive and continue in full force and effect, together with any other provisions of this Agreement necessary to give effect to such provisions.

IN WITNESS WHEREOF, the Parties have executed this Agreement.

FOR AND ON BEHALF OF:
UNIVERSITY OF STRATHCLYDE

……..
Name:

Title:

Date:

FOR AND ON BEHALF OF:
[Insert legal entity for Host Organisation]

……..
Name:

Title:

Date:

FOR AND ON BEHALF OF:
[Insert legal entity for Home Organisation]

……..
Name:

Title:

Date:

Attachment 1 to Exchange Agreement
Proposal and Exchange Scope of Work

[The following information will be completed by the University of Strathclyde based on the application form details.]

Project Title:

Applicant Name:

Applicant Organisation Name:

Applicant Organisation Country:

Applicant Organisation Postal Address:

Applicant Position:

Applicant Age:

Applicant Gender:

Applicant Phone:

Applicant e-mail:

Host Organization Name:

Host Organisation Country:

Host Organisation Postal Address:
-

Host Organisation Department Name:
-

Host Organisation Main Contact:

Host Organisation Main Contact Phone:
-

Host Organisation Main Contact e-mail:

Project Type Exchange:

Project Description of Exchange Activities:

Contribution work packages (WP):

Link with ELECTRA work programme:

Exchange Period :
X weeks from the Exchange Start Date.

Exchange Start Date:
[insert]

Plan for Work Dissemination:

Applicant Experience:
A. Summary:

B. Deliverables:

Authored Journals :

C. Technical Skills:

D. Projects Undertaken:

Budget for Exchange Activities:

[breakdown of budget]

Total maximum budget = €[insert] euros

The total budget stated above shall not to be exceeded without the prior written consent of the Exchange Coordinator.

Exchange Activity Deliverables:

In addition to the exchange project description and plan shown above, the following will be submitted to the Exchange Coordinator within two months following completion of the Exchange Activity by :

(1) An extended abstract on the research activity for publication on the ELECTRA web page (responsibility of the Home Organisation Researcher);

(2) Two completed exchange questionnaires (one by the Home Organisation Researcher, and one by the Host Organisation);
(3) A jointly authored paper (responsibility of the Home Organisation Researcher and Host Organisation);
(4) A financial summary to support the case for expenses (responsibility of the Home Organisation Researcher).

Annex 4 Summary of ELECTRA Programme Research and International Coordination Work Packages

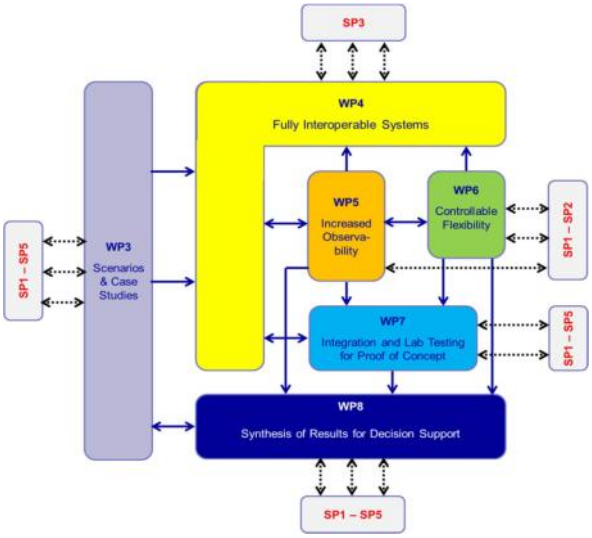


Figure 14 Interlinks of the ELECTRA work programmes

WP3 Scenarios and case studies for future power system operation

The main goal of WP3 is to provide a detailed problem description of the voltage and frequency control problem that we target to solve and to describe the concepts of the solutions that will be further specified, implemented and tested in WP4 – WP8.

The work to be performed within the work package will be divided in four main blocks:

- The first one will be gathering of requirements for future (2030) frequency and voltage control for system operation;
- The second one will focus on the SGAM business layer specification of Smart Grid functionalities to fulfil the identified requirements;
- The third one will be drafting electricity market designs able to cope with the above created requirements and functions, and
- The fourth one will gather the necessary information to provide inputs for a future regulatory framework for T&D businesses.

WP4 Fully Interoperable Systems

The role of WP4 is to translate the concepts (business layer specification) of the overall voltage and frequency control in WP3 as well as the concepts of the monitoring system (WP5) and the control system (WP6) into detailed technical specifications encompassing all layers of the SGAM model such that WP5 and WP6 are able to make the required implementations and WP7 is able to make the integration and testing of the overall solution.

The main objectives of this work package are:

- Create the detailed specifications of fully interoperable monitoring and control systems for future Smart Grids

- Participate in standardization activities to ensure that the proposed solutions of ELECTRA are aligned with existing standards and ongoing work in standardization organisations

WP5 Increased Observability

The main objective of the present work package is to develop and implement adequate concepts and methods for sufficiently observing the state of the future power system for the three axes identified before:

- Pan-European
- Vertically integrated
- Local (Horizontal/ Distributed).

The suggested observability schemes will be implemented in a generic lab platform programmable in an advanced language (MATLAB, SciLab or similar). The concrete programming environment will be defined and harmonized among the partners in course of the IRP.

WP6 Control Schemes for the use of flexibility

The main objective of this work package is to design and develop control functions for the three axes of operation as described before (distributed control, vertical control, and pan-European control). The main focus is in the frequency and voltage control in the transmission level but also the other control objectives in distribution level, among other reactive power, load control etc. will be taken into account in order to avoid congestions, security margins and minimizing losses.

This includes the following items:

- To describe the inherent and controllable flexibility across multiple resources and control boundaries.
- To design and develop robust coordination function modules for multiple controllers across different control boundaries.
- To design and develop new control function modules for emergency situations exploiting the flexibility of adaptive protection and inherent controllability of network assets.
- To design economically optimal coordinating control between system operators at European level in order to share flexibility resources via transmission system interconnections.

The purpose of this whole project is to research radical control solutions for the real time operation of the 2030 power system. The control solutions utilize the flexibility from across traditional boundaries (of voltage level, stakeholders, license areas, etc.) in a holistic fashion and build ubiquitous sensing and dynamic and autonomous control functions under normal and disturbed conditions

WP7 Integration and lab testing for the proof of concept

The objective of the WP is to conduct experimental testing for proof of concept evaluation of ELECTRA controllable flexibility solutions for voltage and frequency control, incorporating system modelling and simulation tools in order to prove the system performance across numerous devices distributed across the power system at laboratory scale level, since live tests are not in scope of ELECTRA. In summary:

- Definition of the requirements for evaluation and validation of future integrated frequency and voltage control algorithms
- To design and build an ELECTRA experimental proof-of-concept set-up including simulations, testing infrastructure and related interfaces in selected EERA research facilities
- To evaluate and validate the ELECTRA controllable flexibility concepts across a range of challenging system conditions
- Definition of key findings, lessons learned and recommendations for testing and validation of 2030 frequency and voltage control approaches

Beside the focus on control algorithms WP7 will implement and test the proposed communication interfaces from WP4 and work towards facilitating easy transfer of controller implementations across the different lab facilities and interfacing between simulation tools and lab facilities. The WP will take the results from WP5 and WP6 and integrate them in proof of concept implementations. Based on detailed scenarios and use cases specifications from WP4 along with the models of observability and flexible components from WP5 and WP6, lab scale implementations of the technologies and solutions will be designed and integrated. It is planned to use the models developed in the other work packages and consolidate them in to a coherent set of models creating tools that are more generically applicable thus ensuring that lab tests are rigorous and support quantified evaluation and validation. Within the simulation environment it will be possible to characterize the interaction of different controls. From a research infrastructure perspective the interaction between laboratory facilities (hardware) and system simulation tools will be particularly considered (e.g. software-in-the-loop, hardware-in-the-loop tests with focus on controller-in-the-loop).

WP 8 - Future control room functionality

The main objective of this work package is to develop and demonstrate the control room decision support that will be required for the real time operation of the 2030 power systems, utilising the visualisation and control features being investigated in WP5 and WP6 respectively to ensure that the control room operator is provided with the optimal information of the state of the system and of the possible control actions to enable taking preventive or corrective actions, in order to maintain or return the system in safe state of operation. With the increased flexibility within the power system, system-wide adoption of dynamic ratings, pervasive control and automation, increasing market influence, etc., it is recognised that significantly improved information and visualisation is essential for future control rooms. It will remain essential to have control engineers aware of system state and of potential threats, and informed of the suitability of potential interventions to emerging critical situations. This work package will demonstrate the means to achieving this and will be supported by direct interaction with end users such as TSOs and DSOs on the development of

measures/analytics/quantities that provide the information needed for operators to quickly and easily assess the system state and make safe/informed control actions to mitigate critical situations. It includes:

- Interaction with (Transmission System Operators) TSOs, (Distribution System Operators) DSOs and (Balancing Responsible Parties) BRPs to identify relevant measures/analytics/quantities for preventive and corrective actions
- Develop prototype visualisations of the measures/analytics/quantities
- Development of decision support tools for control operators at TSO, DSO, BRPs control rooms
- Integration of the results with other systems being used by those congestion management, market and trading systems

WP8 will interact strongly with WP7 for proof of concept implementations, data and models. It furthermore builds on the planned activities within the EERA JP with regard to the integration of new primary control cycles (SP1), new network monitoring (SP1), new disturbance management schemes (SP1), modelling platforms and system operation (SP2), and appropriate ICT architectures (SP3).

WP10 Actions on International Cooperation (INCO)

The main objectives of WP10 are:

- To identify promising International Cooperation (INCO) partner programmes, partner organisations, activities and lab-to-lab collaborations in the field of smart grids for teaming up of the ELECTRA IRP and the EERA JP Smart Grids with activities outside Europe.
- To establish an intense collaboration and effective interactions through the members of the International Coordination Board (ICB) with leading international organisations involved in defining the R&D strategy and/or the execution of R&D activities on smart grids in their own country.
- To define, in agreement with the inputs received by ICB members, the R&D topics of mutual interest for International Cooperation activities with respect to some of the most active countries worldwide in the field of smart grids and to coordinate these with the programmes of work of the IRP and the JP.
- To contribute through the ELECTRA INCO activity to the already ongoing work of the major worldwide initiatives such as ISGAN and the GSGF (Global Smart Grids Federation), highlighting the leadership of European research in the smart grids field.

Annex 5 Questionnaire Issued to ELECTRA Work Package Leaders to Identify each Call's Focus

Introduction

The ELECTRA Integrated Research Programme on Smart Grids (ELECTRA - www.ElectraIRP.eu), brings together the partners of the EERA Joint Programme on Smart Grids (JP SG – www.eera.eu) to reinforce and accelerate Europe's medium to long term research cooperation in this area and to drive a closer integration of the research programmes of the participating organisations and of the related national programmes.

This questionnaire has been prepared as part of the Researcher Exchange programme within the ELECTRA project (WP9). ELECTRA's Researcher Exchange (REX) programme offers the opportunity for ELECTRA partners and European or International collaborators to work closely together through an exchange of staff. The scheme is open to participants from research organisations and industry, including SMEs. Host organisations are encouraged to offer elements of training, and so this represents an excellent development opportunity, especially for early career researchers.

The ELECTRA REX programme supports:

- increased coordination across smart grid research programmes, complementing the work of EERA JP;
- personal development of early career researchers;
- enhanced impact from the laboratory demonstration within the ELECTRA IRP.

These aims are to be achieved by the internal, project, exchange of researchers between institutes to complete work useful to informing the IRP's work programme and research outputs. Further exchanges are possible to/ from international organisations to enhance knowledge, understanding, and practice in organisations outside the IRP; this information will then enhance the outcomes of the ELECTRA IRP.

Please send your contributions to Viviana Cigolotti and Ammar Zaher by e-mail to: viviana.cigolotti@enea.it and ammar.zaher@strath.ac.uk before the specified date**.**

Work Package Number: **Work Package Leader:**
1. In what topic areas would you particularly welcome exchange applications in REX Call 2 (to be issued June '15)

2. **Who in industrial organisations would you particularly welcome participating in an exchange to the benefit of the ELECTRA IRP programme?**
3. **Can you identify particular SME's that you can recommend participating in an exchange?**
4. **Which of the work packages should benefit most from the aforementioned topics and industry partners?**
5. **If you are a Work Package Leader, which aspect of the programme would particularly benefit from (a) intra-ELECTRA, (b) European, (c) Global exchanges?**
6. **REX Call 3 (to be issued September '15) will particularly focus on global exchanges - what topics and global partners would have the greatest impact on the realisation and testing of innovative smart grid controls?**
7. **What emphasis would you like to be made in the subsequent REX Calls: Call 4 (due early '16), Call 5 (due late '16) and Call 6 (due early '17)?**

8. **If you are a Work Package Leader, which of the following calls would you expect to make most use of in your work package:**

☐ Call 2 (June'15)

☐ Call 3 (Sep '15)

☐ Call 4 (early '16)

☐ Call 5 (late '16)

☐ Call 6 (early '17)

If you are NOT a Work Package Leader, which of the following calls would you expect to be most interested in:

☐ Call 2 (June'15)

☐ Call 3 (Sep '15)

☐ Call 4 (early '16)

☐ Call 5 (late '16)

☐ Call 6 (early '17)

9. **List exchanges you expect to apply and complete in each IRP year**

	Sending organisation	Receiving laboratory	Description	Value to IRP
Call 2 (June '15)	1. 2. 3.	1. 2. 3.	1. 2. 3.	1. 2. 3.
Call 3 (Sep '15)	1. 2. 3.	1. 2. 3.	1. 2. 3.	1. 2. 3.
Call 4 (early '16)	1. 2. 3.	1. 2. 3.	1. 2. 3.	1. 2. 3.

Call 5 (late '16)	1. 2. 3.	1. 2. 3.	1. 2. 3.	1. 2. 3.
Call 6 (early '17)	1. 2. 3.	1. 2. 3.	1. 2. 3.	1. 2. 3.

10. Are you personally aware of any benefit already achieved from an ELECTRA REX exchange? Please describe.

Annex 6 Example Call Flyers

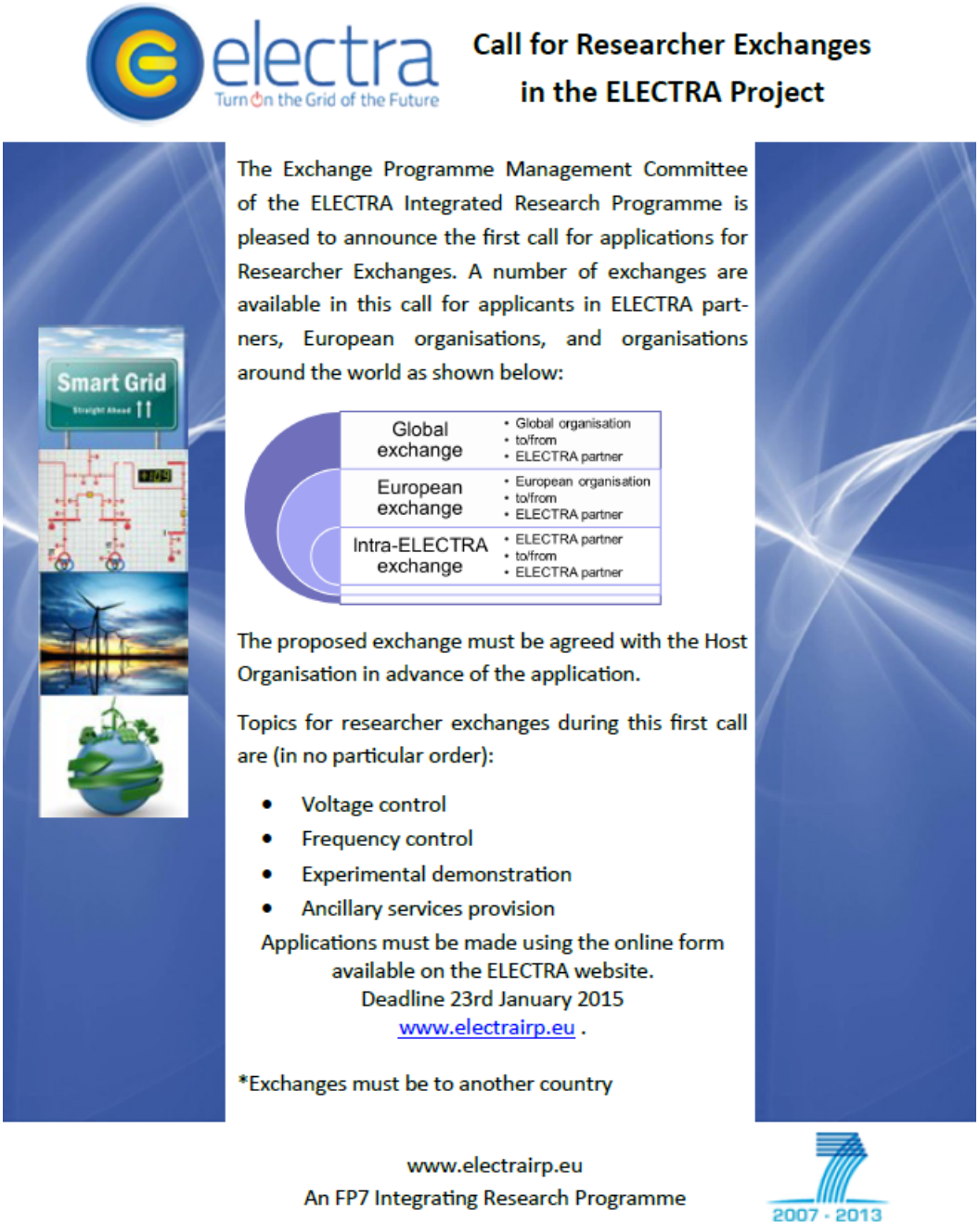
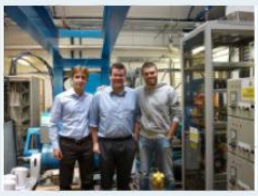


Figure 15 Example ELECTRA REX Flyer

Figure 16 Example Pre-Call ELECTRA REX Flyer side 1



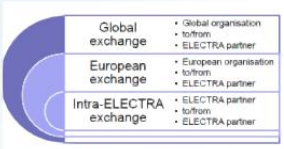
ELECTRA IRP

The ELECTRA Integrated Research Programme on Smart Grids brings together the partners of the EERA Joint Programme on Smart Grids (JP SG) to reinforce and accelerate Europe's medium to long term research cooperation in this area and to drive a closer integration of the research programmes of the participating organisations and of the related national programmes.

ELECTRA offers assistance to support transnational and international researcher exchanges to or from ELECTRA partners that will complement and enhance the collaborative research undertaken within the research programme and associated EERA Joint Programme. This enhancement will be seen in the work of the visiting researcher engaging with the host team and accelerating key smart grid concepts and solutions aligned with the objectives of the ELECTRA IRP.

ELECTRA REX PROGRAMME

ELECTRA's Researcher Exchange (REX) Programme offers the opportunity for ELECTRA partners and European or International collaborators to work closely together through an exchange of staff. The scheme is open to participants from research organisations and industry, including SMEs. A range of options are available:



Three types of ELECTRA REX exchanges

Host organisations are encouraged to offer elements of training, and so this represents an excellent development opportunity, especially for early career researchers.

ELECTRA REX supports:

- increased coordination across smart grid research programmes, complementing the work of EERA JP;
- personal development of early career researchers;
- enhanced impact from the laboratory demonstration within the ELECTRA IRP.

INTERESTED IN APPLYING?

REX Call 2 will be issued early June 2015.
Click the Mobility Tab at www.electrairp.eu for more.

ELECTRA REX WORKSHOP

The programme offers the opportunity to the visiting researcher to embed themselves within the environment of the host institution throughout the duration of their exchange, conduct collaborative research in support of the JP and IRP objectives, and write up their results in joint publications.

REX Call 1 was published late 2014 and 6 proposals have been successfully approved.

REX call 1 researcher Alexander Prostejovsky at PNDC, University of Strathclyde

The first ELECTRA REX Workshop on Smart Grid Researcher Exchanges will take place in Vienna at the EDST2015 symposium, 8-11 September. The main objectives of this dedicated workshop are to allow the participants in the first exchanges to:

- **disseminate the results of their exchanges, their methods and experience;**
- **share their experience of exchange working in leading global smart grid organisations.**

SAVE THE DATE—8-11 September 2015!!!!

For more information, www.electrairp.eu .

Figure 17 Example Pre-Call ELECTRA REX Flyer side 2

Annex 7 Researcher Exchange Application Form

The application for funding an ELECTRA researcher exchange has three aims, aligned with the aims of the Integrating Research Programme:

A. The proposed work piece is relevant to the goals of creating and demonstrating advanced voltage and frequency control algorithms as described by the ELECTRA project.
B. The Exchange Researcher will be capable of completing a quality piece of work from the exchange and that they will have personal development from it.
C. The host organisation and key people are willing and able to provide a high quality development opportunity during the Exchange.

The application form is split into three parts, which each part requesting input to support each of the aims in turn.

A. The proposed work piece is relevant to the goals of creating and demonstrating advanced voltage and frequency control algorithms as described by the ELECTRA project.

1. Details of the applicant [fields to be filled in online, facultative fields marked as *]

a. Name	
b. Home Organisation	
c. Home Organisation country	
d. Home Institution Postal address	
e. Home Institution legal contact name	
f. Home Institution legal contact email	
g. Home Institution legal contact phone	
h. Position within home organisation	
i. Age	
j. Gender	
k. Phone *	
l. E-mail address	

2. Proposed host [fields to be filled in]

a. Organisation Name	
b. Organisation country	
c. Institution Postal address	
d. Department Name	
e. Main contact	
f. Phone *	
g. E-mail address	
h. Host Institution legal contact name	
i. Host Institution legal contact email	
j. Host Institution legal contact phone	

3. Type of project [need to be options on the website]
    a. ELECTRA to ELECTRA Exchange
    b. ELECTRA to European Organisation Exchange
    c. European Organisation to ELECTRA Exchange
    d. ELECTRA to International Organisation Exchange
    e. International Organisation to ELECTRA Exchange

4. Description of the work to be performed during the exchange [field to be filled in online]

5. Which ELECTRA Work Package/Task(s) do you intend to give your contribute to? [need to list the different options on the website]

6. Details of how this piece of work links to the ELECTRA Work Programme [field to be filled in]

7. Expected duration of the Exchange Project (from 2 weeks to 3 months) [field to be filled in online]

8. Expected starting date [field to be filled in online]

9. Plan for work exploitation and dissemination: papers/ conferences/ workshops etc. [field to be filled in online]

10. Proposed budget for REX grant period (flights, accommodation, subsistence) [Field to be filled in online]

11. Universal Exchange Deliverables

In addition to the exchange project description and plan shown above, the following will be produced by each exchange:

- An extended abstract on the research activity for publication on the ELECTRA web page (responsibility of the Researcher);

- Two completed exchange questionnaires (one by the Researcher, and one by the Host Organisation);

- A jointly authored paper (responsibility of the Researcher and Host Organisation);

- A financial summary to support the case for expenses (responsibility of the Researcher).

B. The Exchange Researcher will be capable of completing a quality piece of work from the exchange and that they will have personal development from it.

1. ATTACH an up-to-date academic style CV including work experience, projects, papers etc. (unlimited page count, pdf or word document) [need to upload a file]

2. Describe/highlight relevant experience to show technical capabilities, e.g. projects worked on, significant papers, technical skills (1000 words max) [field to be filled in]

C. The value of the exchange is such that the Home and Host organizations and key individuals are willing and able to commit to producing valuable outcomes.
   a. Describe the research facilities, training and development, opportunities to engage with wider Host Organisation, and anything further that the Host will arrange for the Exchange Researcher (1000 words max)
   b. List the key individuals involved in the Exchange and their roles

c. Two letters of intent (one each from the Home and Host Organisations)
d. Plan for exploitation and impact
e. Training and development opportunities during the Researcher's visit
f. Agreed principles on which IP will be managed