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### Abbreviations used:

EMRP = European Metrology Research Programme,  
EMRP-MSU = EMRP Management Support Unit  
NMI = National Measurement Institutes,

JRP = Joint Research Project,  
FP7 = 7<sup>th</sup> Framework Programme  
DI = Designated Institutes,

REG = Researcher Excellence Grant  
SRT = Selected Research Topic (of the Call)  
JRC = Joint Research Centre.

### Need more help?

If you require further help or guidance after reading this document please contact the EMRP-MSU helpline.  
[emrpA169@npl.co.uk](mailto:emrpA169@npl.co.uk) or telephone: +44 20 8943 6666.

## **1 Scope**

This document explains how to write a proposal for a Joint Research Project (JRP) for the EMRP Call 2009-Energy. It describes:

- the responsibilities of the people involved,
- the type of activities to include in your JRP,
- advice on forming your consortium and sharing your workpackages,
- details on how to appeal if your JRP is not funded.

It does not include:

- guidance regarding delivering or participating in a JRP,
- detailed information on costing a JRP, as this can be found in the 'Guidance for costing a JRP'.

## **2 Role and Responsibilities**

### **2.1 Programme Owners**

#### **2.1.1 EMRP Committee Members**

The EMRP Committee members are responsible for:

- implementing the EMRP,
- decisions relating to the selection of JRPs (considering advice from the Referees),
- all decisions relating to the appeals process.

The EMRP Committee will not assist you in writing your JRP proposal.

#### **2.1.2 Referees**

The Referees evaluate all JRP proposals (and the related REG applications). They are independent and are forbidden from advising proposers on their JRP proposal submissions, if they have any links to a particular JRP or a JRP-Consortium member they would not be able to assess that proposal. The Referees have no responsibilities associated with writing the JRP proposals.

#### **2.1.3 EMRP Management Support Unit (EMRP-MSU)**

The EMRP-MSU operates under the guidance of the EMRP Committee and manages the EMRP. They:

- provide support to applicants and the EMRP Committee during the Call,
- ensure that the process runs smoothly and fairly,
- ensure that access to the information is strictly controlled,
- ensure that the most efficient use possible is made of the time of all concerned.

The EMRP-MSU is responsible for:

- ensuring relevant guidance and forms are available,
- managing the call process, enquiries and appeals,
- providing advice on the process,
- negotiating proposals that are selected.

## **2.2 Proposers**

### **2.2.1 The TP-Facilitator**

The EMRP Committee have requested the support of an expert from the metrology community, known as the TP-Facilitator, to support the proposers and facilitate the process of forming consortia.

The TP-Facilitator will work with the JRP-Coordinators and as the proposals are developed, collate information across all proposals regarding the degree of engagement of the various participating countries in the Call. The information collated by the TP-Facilitator will enable the EMRP Committee to ensure that the engagement per country is appropriate for the degree of commitment made by that country to the EMRP.

For the EMRP Call 2009-Energy the TP-Facilitator is Klaus-Dieter Sommer of PTB (Germany).

### **2.2.2 The Writer of the JRP Proposal**

Anyone from the JRP-Consortium can write the JRP proposal. Usually the JRP-Coordinator writes the JRP proposal jointly in consultation with other members of the consortium, but this is not a requirement. The writer should ensure that they represent the views of the consortium and that the JRP-Coordinator is clearly identified. The JRP-Coordinator has overall responsibility for the content of the JRP.

### **2.2.3 The JRP-Coordinator**

The JRP-Coordinator will be appointed by the consensus of the JRP-Consortium. They must come from:

- a National Metrology Institute or Designated Institute from a State participating in the Article 169 based EMRP or,
- an institute of the European Commission's Joint Research Centre that possesses research capabilities that are relevant to the EMRP.

The JRP-Coordinator is responsible for:

- creating a team of eligible JRP-Participants.
- coordinating with the technical experts in the participating organisations to agree,
  - the technical content of the work,
  - how this work is divided between the JRP-Participants,
  - the timings of the JRP and the deliverables.
- ensuring that the programme of work for the JRP is written and that
  - all JRP-Participants are eligible,
  - the proposed JRP is agreeable and affordable to each JRP-Participant,
  - the JRP meets the needs of the EMRP and the Call,
  - the JRP proposal and JRP Costing Spreadsheet is submitted on time.
- developing the costing the JRP, ensuring that
  - all JRP-Participants are able to meet their obligations.
- preparing a poster detailing the JRP, and selecting, in consultation with the consortium, a member of the team to present this poster to the Referees at the Review Conference (usually the representative is the JRP-Coordinator).
- project managing the JRP.
- the scientific and financial reporting detailed in Section 7.
- agreeing how communications will be handled between the JRP-Participants.
- undertaking negotiations with EURAMET on behalf of the JRP-Consortium if the JRP is selected.

#### **2.2.4 JRP-Partners (funded and unfunded)**

JRP-Partners (funded and unfunded) are responsible for agreeing participation in the projects (on behalf of their organisation). This includes:

- agreeing the research they are able to undertake.
- agreeing facilities available for use on this JRP.
- confirming the resources available for participation in the proposed JRP e.g.
  - matching national funding,
  - number of staff available to work on the project.
- and for funded JRP-Partners, ensuring that financial information for their organisation is available and correct; e.g.
  - the organisation's person-month rate,
  - the cost of facilities being used,
  - the organisation's overhead rate.

JRP-Partners will have both reporting and contractual responsibilities in delivering the JRP, which they must accept.

#### **2.2.5 Researcher Excellence Grant (REG) Applicants**

REG-Applicants are responsible for agreeing their participation in the projects. This includes:

- agreeing the research they are able to undertake,
- agreeing facilities available for use on this JRP,
- confirming that they are available for the time committed to this project.

Successful REG-Applicants along with all the REG-Recipients (comprising of the REG-Researcher, the Home and the Host organisations) will have both reporting and contractual responsibilities in delivering the project, which they all must accept.

## **3 Writing a JRP Proposal**

### **3.1 *Format of Submissions and Deadline***

Your JRP proposal must be submitted by 23:59 hours CET on 2<sup>nd</sup> November 2009.

Your JRP proposal must be emailed to [emrpA169@npl.co.uk](mailto:emrpA169@npl.co.uk). It should be a single email and include the following documents as email attachments:

- 'EMRP-A169 JRP Protocol' (required).
- 'EMRP-A169 JRP Costing Spreadsheet' (required).
- Researcher Excellence Grant (REG) application form(s) (only required if a REG-Recipient is included in the proposal).

The blank template documents are available from [www.emrponline.eu](http://www.emrponline.eu)

Incomplete Proposals (without all required documents/forms) may be rejected.

Your JRP must include a JRP number and name. This JRP number/name must be identical to the number, short name and title of the Selected Research Topic (SRT) on which it is based. i.e. a JRP submitted in response to SRT03 should have a JRP number of JRP03 and the same title as SRT03. The short name can be found from the JRP Costing Spreadsheet. At the negotiation stage, the JRP-Consortium of selected JRPs will have the opportunity to assign their own choice of JRP title and short name.

### **3.2 *Typical Cost of a JRP***

The indicative budget for the total eligible costs of all the JRPs selected at Stage 2 is around 29.24 M€ comprising a maximum of 13.94 M€ of European Commission funding (available via EURAMET), with the remaining funding provided, as matching funds, by the participating National Metrology Institutes, Designated Institutes and the JRC.

It is envisaged that between 9 to 11 JRPs will be funded in total for this Call, therefore proposed JRPs are likely to have a total eligible cost of around 2.9 M€ each (with just under 47.6 % funded by the EC and the remainder from the funded JRP-Partners). The actual EC funding ratio may be reduced slightly due to a number of factors including the amount of the last funded JRP that falls below the budget cut-off line and the level of participation by the JRC.

Due to the transnational nature of the JRPs it is unlikely that very small JRPs would be cost effective.

### **3.3 *Costing of the JRP***

The cost of your proposed JRP must be estimated using the 'JRP Costing Spreadsheet'.

There is a separate guidance document 'Guidance for Costing a JRP' which is available on the website [www.emrponline.eu](http://www.emrponline.eu).

All costing must follow standard FP7 rules regarding eligible costs (with the exception of any specific derogations applicable to the Article 169), and further information can be found in the FP7 '[Guide to Financial Issues relating to FP7 Indirect Actions](#)'.

Your JRP cost estimate is used to allocate annual budgets to each organisation, please ensure that is as accurate as possible, because;

- If organisations over-estimate their costs then fewer JRPs will be funded, and the total available budget may not be spent.
- If you underestimate your costs you may not be able to reclaim everything you have spent. This is because Commission funding is only reimbursed against your actual costs (which must be eligible, and audited). Where you exceed your allocated budget, you cannot automatically claim more funds unless other organisations within the JRP-Consortium under-spend and your additional costs are eligible and justifiable.

### **3.4 Participants in the JRP**

You can identify and select your consortium in any way you chose, however EURAMET have created an on-line tool (the website “EMRP-Connections” [www.emrponline.eu/connections](http://www.emrponline.eu/connections)) to assist organisations and individuals seeking potential funded JRP-Partners, unfunded JRP-Partners and REG-Recipients. If you wish to take part in collaboration you may add details of your capabilities on the EMRP online web pages and we encourage you to do so.

Three different groups of organisations can participate under contract in the JRP to deliver the JRP, and are subject to different eligibility criteria (see ‘Eligibility Criteria’ document available on [www.emrponline.eu](http://www.emrponline.eu)), they are;

- Funded JRP-Partner
- Unfunded JRP-Partner
- Researcher Excellence Grant Recipient (REG-Recipient)

Collectively these groups of contractual participants are referred to as JRP-Participants, and all will be subject to contractual obligations.

The EMRP Call 2009-Energy aims to create critical mass in cutting edge metrology R&D. Therefore a core evaluation criterion for JRPs is “The quality and efficiency of implementation and management”. To achieve this your JRP should make the best use of the available capabilities, avoid unnecessary duplication and clearly demonstrate that it is a collaborative project.

#### **3.4.1 Funded JRP-Partners**

Every JRP proposal must include a minimum of 3 funded organisations from at least 3 EMRP A169 participating States as members of the consortium (Note: the Joint Research Centre of the European Commission is deemed to represent a different EMRP A169 participating State from other funded JRP-Participants of the JRP-Consortium).

Researchers from funded JRP-Partners can transfer to host organisations, as well as working at their home organisation. At stage 3 there will be a series of researcher grants available to support this mobile working, and these will be competitive, facing independent expert evaluation. “Mobility grants” will support experienced researchers and “Early Stage Researcher Grants” will support those nearer the start of their research career. Full details can be found at [www.emrponline.eu](http://www.emrponline.eu).

#### **3.4.2 Unfunded JRP-Partners**

Participation in a JRP is open to organisations from any country worldwide to participate on an un-funded contractual basis when such participation is considered beneficial by the consortium, provided that the organisation meets the relevant eligibility criteria, is prepared to accept the rights and obligations of participation and can realistically ensure that it can and will provide the resources needed for its participation. Unfunded JRP-Partners undertake work and deliver part of the JRP and may add value to your research by:

- offering experienced researchers or capabilities.
- offering you access to specialised equipment.

Unfunded JRP-Partners may also be eligible for some Researcher Grants at Stage 3. Eligibility is dependent on the Country involved being eligible, as well as the eligibility of the researchers involved. Full details can be found at [www.emrponline.eu](http://www.emrponline.eu).

#### **3.4.3 Researcher Excellence Grant (REG) Applicants**

You are encouraged to include proposals for a Researcher Excellence Grant (REG) within your JRP proposal. The benefits of this are:

- You can use an experienced researcher in the field to work on specific activities in your project.
- The REG-Researcher will receive funding from the EMRP.
- The REG-Researcher will work at a non NMI/DI organisation, which enables you to build links with a related research community.

Full information about the REG scheme can be found in the document “Guidance for Researcher Excellence Grants”.

The website “EMRP-Connections” [www.emrponline.eu/connections](http://www.emrponline.eu/connections) will help you identify eligible researchers who are active in your area, or you may use researchers who you already have contact with.

Once you have found a researcher or organisation that can provide expertise in an area with synergy to your JRP you can:

- agree the specific research activities you wish them to undertake.
- agree the number of months they need to complete these activities.
- ask them to complete the REG application forms, and return it to you with sufficient time to allow for checking.

The REG-Applicant must be included in your JRP workpackages and activities as a JRP-Participant, however no cost would be associated with their time as this is covered by the REG. Further details about REGs can be found in the document “Guidance for Researcher Excellence Grants (REG)”.

#### **3.4.4 Collaborators**

Other organisations may participate in some of the activities of the JRP but do not deliver the JRP and have no contractual obligations. These organisations may represent end users or policy makers, they provide advice or input, or may be working on projects that have a close linkage to the JRP, or enable you to transfer knowledge gained in your research to a wider audience. They may be linked to the JRP through an Exchange of Letters. Collaborators do not necessarily need to be identified in the JRP Protocol at the proposal stage.

## **4 Completing the JRP Protocol**

### ***4.1 Section B1: The Need for the Project***

A clear need for the project must be identified and included here. This may include:

Identifying the area of the [EMRP Outline 2008](#) and SRT Supporting Documents that call for this work.

Identify any European Legislation (Directives and / or Regulations) that state a need for this work: You must specifically reference and quote the relevant paragraphs of the Directive identifying the need for the project. It is not sufficient to quote the entire Directive as the rationale for the metrology need. Proposals must also clearly link the identified need in the European Directive with the expected output of your project.

Proposals must demonstrate a tangible need for this metrology research from the “end user” community and / or Stakeholders. This may be demonstrated by:

- through the inclusion of unfunded JRP-Partners or collaborators,
- including links to industrial/policy advisory committees, standards committees or other bodies.
- Including evidence of support from the “end user” community (e.g. letters of support)
- Referencing and quoting specific paragraphs of published documents that state the metrology need in this area.

You must state why it is appropriate for the European Commission to fund the research. Where commercial companies stand to benefit from your research, it is of particular importance to clearly state why they cannot fund this research.

### ***4.2 Section B2: Scientific and Technical Objectives***

B2.a Conformity with the SRT supporting documents: Please state the degree of conformity of your proposal with the SRT supporting documents, specifically identifying any omissions or additions and the rationale for any prioritisation of objectives

B2.b This section of the protocol form should be used to give an overview of the scientific and technical work that you plan to do. You must clearly explain:

- The scientific and technological objectives of your JRP proposal, and explain how they create the impact that you described in Section B3.
- The scientific and/or technological methodology to be used, and why this concept is sound.
- The current state-of-the-art relating directly to your proposed activities, and how your JRP progresses beyond this, and why critical mass must be assembled in this technical area to ensure this progress beyond state-of-the-art.

### ***4.3 Section B3: Projected Impact of your JRP***

The impact assessment should help the Referees understand why your project is important. A good impact statement will increase support for your project, and increase your chance of receiving funding; it can also be a valuable tool in motivating and focussing the project team. If your JRP is selected you will have to report the impact of your project throughout its lifetime, so preparation now will save time later.

Remember “impact” is **not** a statement of what your project will do, it is a statement of what difference the completed research will make to the wider world. Your impact statement does not need to go into lots of technical details. It just needs to say why your project will create impact.

In addition to this “impact statement” which relates to the entire project, your JRP proposal must include a ‘Creating Impact’ workpackage. The workpackage contains activities to exploit and share the scientific results, to make sure that the projected impact is achieved. Specific guidance to writing the impact workpackage is given in Section 4.4.3

### 4.3.1 Guidance for Writing an Impact Statement

A core evaluation criterion for JRP is “Impact through the development, dissemination and use of project results”. This section (B3) of the protocol form requires an overview of the potential impact (benefits) of your proposed JRP (examples are given below).

You should be confident that your Impact Statement can realistically be achieved within the scope of the project. Because one of the workpackages of your project (“Creating Impact”) must describe the activities the JRP consortium will undertake to ensure this projected impact does occur.

One way of beginning your impact assessment is to consider the “so what?” question: Suppose your project plans to do X, Y, or Z, try to explain the difference that this achievement makes to the wider world. Start by answering the following questions:

- Why is this research important to Europe?
- What would happen if this research were not funded?
- Detail who will benefit from this research, and how you are ensuring the maximum benefits are realised, both within and beyond Europe.

You must also address the environmental, social and financial impact that your JRP will make across Europe (and internationally). Please try to quantify each of the impacts in financial terms wherever possible (though in most cases this is difficult, so a qualitative assessment may be the best you can achieve).

- Environmental impact.
- Social impact.
- Financial impact.

You may also wish to summarise the activities of the Creating Impact Workpackage here.

### 4.3.2 Examples of Impact Statements

Note these 4 examples are not “real” and contain data that has been fabricated for the purpose of illustration.

<u>Weak example</u>	<u>Improved example</u>	<u>Full Example in 3 areas (note numbers are made up)</u>
<p><b>Problem:</b> Measurement of small structures such as fuel injectors of combustion engines with a diameter &lt;0.1 mm</p> <p><b>Solution:</b> Development of an opto-tactile micro-sensor – spherical feeler element located at the end of a glass fibre – position is recorded by a CCD camera</p>	<p>Currently coordinate measurement machines cannot accurately measure small structures such as fuel injectors of combustion engines with diameters of less than 0.1 mm. This leads to variation in the nozzle size and therefore the fuel burning efficiency cannot be optimised.</p> <p>The development of a novel micro-sensor using optical fibre will facilitate more accurate machining of fuel injectors. Currently the fuel efficiency of two nominally identical engines can vary by over 10 % due largely to the random variation in fuel injector nozzle sizes, by optimising this process the average engine fuel efficiency will increase by 5 %</p>	<p><b>Environmental impact:</b> Currently the fuel efficiency of two nominally identical engines can vary by over 10 % due largely to the random variation in fuel injector nozzle sizes, by optimising this process the average engine fuel efficiency will increase by 5 %. If all European cars were fitted with optimised injector nozzles, carbon emissions would be reduced by 2 %</p> <p><b>Social impact:</b> Asthma affects 2 % of the European population and has been linked to vehicle emissions. A new technique to optimise the nozzle shape used in fuel-injection engines claims to reduce vehicle fuel consumption by 5 %, which, if successful could reduce city pollution by 5 %. Projections suggest this would reduce serious asthma attacks by around 50 000 per year, saving health services around 50 M€ a year.</p> <p><b>Financial Impact:</b> A new technique to optimise the nozzle shape used in fuel-injection engines claims to reduce vehicle fuel consumption by 5 %. If all vehicles across Europe were fitted with optimised nozzles the saving would reach around 8 B€</p>
<p>This does not describe why this research is needed</p>	<p><i>This describes exactly why the research is needed &amp; the benefit it brings (improved fuel burning efficiency). However this still doesn't explain the impact on the general population. This would be suitable for a specialist reader</i></p>	<p><i>The impact of the single scientific project has been assessed for 3 areas (environmental social and financial) there are clearly further impact statements that could be used here too.</i></p>

<u>Weak example</u>	<u>Improved example</u>	<u>Full Example in 3 areas (note numbers are made up)</u>
<p><b>Problem:</b> Automotive industry requires large quantities of LEDs selected for colour and luminous intensity</p>	<p>The automotive industry uses large quantities of LEDs, which must meet strict specifications regarding colour, colour variation and luminous intensity. Current measurements for LEDs are time consuming therefore an automated system for characterisation of LEDs will be developed.</p>	<p><b>Environmental impact:</b> A new automated measurement system for LEDs ensures that LEDs meet legal standards for automotive lighting. LEDs are 30 times more energy efficient than incandescent bulbs, with a lifetime of around 8 times longer. This decreases the waste going to landfill, and the energy consumed during operation.</p> <p><b>Social impact:</b> The use of LEDs in interior car lighting is subject to</p>

<p><b>Solution:</b> Development of measurement procedures and instrumentation for automated characterisation of LEDs</p>	<p>The ability to quickly and accurately group LED samples by colour and intensity ensure that a uniform colour finish is achieved that meets the legal requirements. This enables incandescent bulbs to be replaced by more energy efficient LEDs</p>	<p>strict colour and luminance criteria, the automated selection of LEDs by colour will facilitate a more uniform finish, and give a wider range of colour availability to designers. This could lead to selection of personal interior lighting colour schemes on new vehicles. <b>Financial impact:</b> The development of an automated sorting system for coloured LEDs in the automotive industry, offers significant savings from previous manual sorting. The new system sorts 10 000 LEDs per hour and, with no associated staff costs, halves the cost of each automotive LED, saving a typical manufacturer around 100 000 € a year.</p>
<p>Doesn't explain why the system is needed, or the benefits it brings</p>	<p><i>This describes why this advance is desirable</i></p>	<p><i>The impact has been assessed in 3 areas; note that the environmental impact could be improved by the inclusion of financial information. Social impact could have concentrated on how a manual procedure is now automated.</i></p>

<u>Weak example</u>	<u>Improved example</u>	<u>Full Example in 3 areas (note numbers are made up)</u>
<p>A technique to assess the efficiency of Thermal Barrier Coatings (TBCs) will be developed</p>	<p><b>Improving aircraft engine efficiency:</b> A measurement techniques to assess the efficiency of Thermal Barrier Coatings (TBCs) used on aircraft turbine blades will be developed. These very thin coatings will rapidly dissipate heat stopping the turbine blade itself from melting. The TBCs enable the engine to work at a higher temperature increasing the engine efficiency and reducing pollution.</p>	<p><b>Environmental impact:</b> A new measurement technique to assess the efficiency of Thermal Barrier will be developed. These very thin coatings are applied to aircraft turbine blades and rapidly dissipate heat stopping the turbine blade itself from melting. The coating allows the engine to work at a higher temperature potentially increasing the engine efficiency by around 10 %. The identification of the most effective TBCs will lead to more efficient engines and therefore reduce air pollution. <b>Social impact:</b> Air pollution has been linked to human respiratory diseases such as asthma. Currently around 30 million people in Europe have asthma, six million of whom have severe symptoms and around 1.5 million live in fear of dying from an attack. The total cost of asthma in Europe, as reported in 2003, was almost 18 B€ per year. Aircraft are responsible for 3.5 % of greenhouse gas emissions worldwide, which contributes to the creation of ground-level ozone a key trigger in asthma attacks. Just a 5 % cut in fuel consumption could lead to a Y % reduction in ground level air pollution, and the reduction of up to ZZ ZZZ new cases of asthma each year. This could equate to a saving of ABC M€ per year. <b>Financial impact:</b> Thermal Barrier Coatings applied to aircraft turbine blades enable the engine to work at a higher temperature increasing the engine efficiency. A new measurement technique has been developed to assess the efficiency of Thermal Barrier Coatings, just a 1 % increase in the TBC efficiency would lead to a 5 % fuel saving, or a saving of around 1 B€ per annum</p>
<p><i>This does not contain enough information, or any numbers</i></p>	<p><i>This provides a brief overview of why the development is of benefit, but it contains too few details</i></p>	<p><i>This would be improved by the inclusion of referenced numerical values</i></p>

<u>Weak example</u>	<u>Improved example</u>	<u>Full Example in 3 areas (note numbers are made up)</u>
<p>A technique has been developed to measure the power output from wind turbines</p>	<p><b>Improving efficiency of renewable sources:</b> Constant changes in wind speed make it difficult to accurately measure the power generated from a wind turbine. Current uncertainties in the power measurements of wind turbines are around 1 % by working to reduce this error by a factor of ten we will gain a better understanding of European wind power capacity, ensuring that all countries can measure whether they are meeting EU 2020 targets for renewable energy supply.</p>	<p><b>Environmental impact</b> Constant changes in wind speed make it difficult to accurately measure the power generated from a wind turbine. Current uncertainties in the power measurements of wind turbines are around 1%, by working to reduce this error by a factor of ten it is possible to ensure that the most efficient wind turbines are developed, to support European renewable power requirements. <b>Social impact:</b> New techniques to reduce the uncertainties in the power measurements of wind turbines by a factor of ten, will enable impartial comparison of various wind turbine designs, and ensure that all countries can measure whether they are meeting EU 2020 targets for renewable energy supply. <b>Financial impact:</b> The cost of energy generated from wind turbines can be accurately assessed thanks to a new technique that reduces the uncertainties in the power measurements of wind turbines by a factor of ten. This will enable comparison between the cost of wind power and other power generation techniques in various environments.</p>
<p><i>The original example does not have enough information</i></p>	<p><i>This addresses the reason why this is required</i></p>	<p><i>This would be improved by the inclusion of referenced numerical values The social impact is a legislative requirement in this example. (The environmental impact could have concentrated on reducing noise of designs whilst maintaining efficiency)</i></p>

#### 4.4 Section C: Detailed Project Description (By Workpackage)

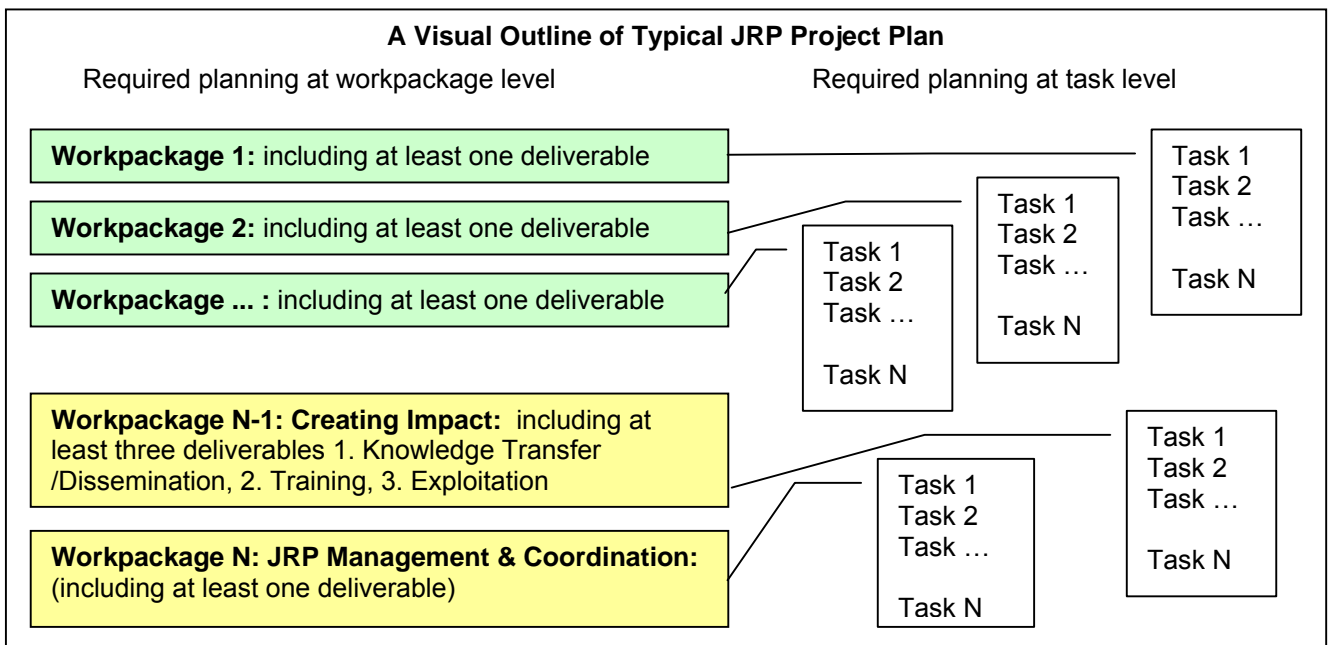
Write an overview of the proposed JRP, approximately 1 page. You should describe the workpackages and deliverables of the JRP, and the work that your consortium plans to do.

You may wish to note that ‘Scientific and/ or Technical Excellence’ is a core evaluation criterion for JRPs. Therefore your workpackages should be suitably challenging, and you should clearly explain how they progress current research beyond the current state-of-the-art.

Your project must be described as a series of workpackages and deliverables. Your JRP proposal must contain several workpackages:

- 3 to 8 technical workpackages (approximate numbers for guidance only).
- One “Creating Impact” workpackage (required workpackage).
- One “Coordination And Management” workpackage (required workpackage).

A visual outline of a JRP is given below:



Details of how to write workpackages are given in the next section, but in summary:

- Each workpackage should describe the work
- Break the work down into a series of bulleted and numbered tasks that describe the tasks that will be carried out.
- Each workpackage must contain at least one deliverable (or a minimum of three deliverables for the “Creating Impact” workpackage).
- Deliverables must be numbered in the form *D\_WorkpackageNumber.DeliverableNumber* E.g. D4.2 for WP4 deliverable 2.

Detailed project plans give confidence that your JRP will be competently managed, and that project issues will be identified early and overcome. Too little detail in project plans can imply that the project is not well managed and that major issues or risks have not yet been understood.

#### 4.4.1 Section C1a: Writing a Scientific / Technical Workpackage

For each workpackage write:

- A detailed description of the workpackage activities, including;
  - What the workpackage aims to achieve, and key dates (project month).
  - The tasks within the workpackage; identifying the project months when the tasks are active.
  - Details of deliverables: measurable markers of progress towards the goals of the JRP that can be monitored to show progress. All deliverables must be C-SMART (see Section 4.4.2)
  - Details of any *major* facilities/equipment to be used in this WP (minor equipment need not be detailed). Identify if the equipment already exists within a JRP-Participant laboratory, or whether the specific equipment vital to the project must be purchased and how this would be funded.
- A summary of the JRP-Participants involved in each workpackage/task/deliverable: The usual format is to use the JRP-Participants “short names”, with the responsible participant in **bold typeface**, and the other JRP-Participants in regular font.
- The total number of person-months to complete the workpackage.

#### 4.4.2 Section C1a. Writing a Scientific / Technical Deliverable

Every workpackage must contain at least one deliverable. Deliverables must:

- Identify the project-month when the deliverable will be completed.
- Occur throughout the duration of the project – i.e. not all in the final month.
- Identify the JRP-Participant who has responsibility for the deliverable.
- Reflect the level of progress and impact the project is working towards.
- Be “C-SMART”, that is: Challenging, Specific, Measurable, Attainable, Relevant, and Time-bound.

Examples:

Not C-SMART	C-SMART
Testing complete	All planned tests on the Master-test system to be executed. All tests either passed, or for failures, bug reports submitted. By January 2012.
Meeting held	Host a Stakeholder meeting on ‘new technology X technique’ by March 2010. Achieve attendance of at least 30 attendees (from at least 6 countries) by sending a promotional email to at least 300 scientists working in this area, at least 3 months prior to the event.
Publish Scientific Papers	Submission of 2 scientific research papers in Refereed journals (A, B or C) by March 2010, and Write and present 2 additional conference papers by April 2011 (likely conferences, X, Y, Z)

#### 4.4.3 Writing the ‘Creating Impact’ Workpackage & Deliverable/s

You will have written an Impact Statement that describes the potential of your JRP to create impact on the European Community.

This workpackage is mandatory because a core evaluation criterion for JRPs is “Impact through the development, dissemination and use of project results”, therefore this workpackage must ensure that the projected impact (in your Impact Statement) is achieved.

Your ‘Creating Impact’ workpackage must address the three areas given below, and include at least one deliverable. You should aim to include adequate and appropriate linkage to the “end-user” community and Stakeholders such as industrial/policy advisory committees, standards committees or other bodies.

**Knowledge Transfer/ Dissemination:** These are activities that aim to share your research findings with the wider community. They may include writing a journal / conference paper, holding a workshop / meeting, and/or developing promotional material relating to this research (such as web pages, brochures and so on), input into the standardisation process, links with user or policy groups.

**Training:** Detail activities that you will undertake to enable your project results to be used by potential beneficiaries. These could include running a training course, providing or accepting guest workers, developing on-line training material. The entire EMRP will be judged by the European Commission on its

ability to deliver training; therefore your JRP must contribute something in this area. Training can be at any appropriate level to any appropriate audience.

**Exploitation:** Give an indication of your plans for managing intellectual property relating to this research, both between JRP-Participants and with the wider researcher community. You may wish to include plans/activities for commercialisation of results such as licensing a product, patenting results or ideas, or selling a product/service relating your research, or exploiting the knowledge through standardisation.

#### **4.4.4 Writing the 'JRP Management and Coordination' Workpackage & Deliverable/s**

This workpackage is mandatory, because a core evaluation criterion of each JRP is "the quality and efficiency of the implementation and management". Therefore you must include details of how the project will be managed and structured. Note that the management and coordination costs would not usually exceed 7 % of the overall JRP budget so the JRP must be managed efficiently.

You will need to include some resource for every JRP-Participant, since everyone has reporting obligations, and most JRP-Participants will need to attend some project meetings.

Below are examples of management activities that you may wish to include:

**Project meetings:** (You may wish to detail: location, who to attend, purpose, duration...)

- Kick-off meeting.
- Periodic project meetings.
- Final meeting.

#### **Reporting by each JRP-Participant and the JRP-Coordinator:**

Please schedule in the following required reporting activities:

- Interim reports at 6, 12, 24 and 30 months
- Progress reporting and full financial reporting at 18 months
- Final report and full financial report at 36 months

You should also consider how the REG-Researchers and collaborators be managed, and what reporting you will require from them.

#### **4.4.5 Section Cx: Summary List of Deliverables**

- You must include a table showing all the deliverables detailed in the individual workpackages.

### **4.5 Section D: The Project Timescale: Gantt Chart etc.**

You must create a project plan:

- This must include a Gantt Chart showing when each workpackage and deliverable will occur, and who will undertake the work.
- Deliverables should usually be spread throughout the duration of the project.
- You are encouraged to include detailed plans at task level, but this is not compulsory.
- Your JRP must not take longer than 3 years, and must end before September 2013.
- Your JRP need not start immediately, although in most cases we would expect projects to begin as soon as possible unless there was good reason for this. The earliest realistic start date is 1<sup>st</sup> April 2010.

## 4.6 Section E - The JRP-Consortium: Rationale for Composition, Including Key Roles and Contributions

### 4.6.1 Section E1: Rationale for the JRP-Consortium (approx ½ a page)

- Explain how the JRP-Consortium brings critical mass, a balance of skills and high quality to the project.
- Note that a key evaluation criterion for each JRP is “the quality and efficiency of the implementation and management”, therefore you should clearly rationalise any duplicated skills or facilities between your consortium members.

### 4.6.2 Section E2: Description of Each JRP-Participant, including Key Roles and Contributions (approx ½ a page per JRP-Participant)

For each JRP-Participant:

- Clearly indicate whether they are a funded JRP-Partner, an unfunded JRP-Partner or a REG-Recipient.
- Explain how each proposed JRP-Participant brings scientific excellence, high quality and relevant experience to the project.
- Explain why the tasks are assigned to this JRP-Participant, and how this exploits complementarity, balance and expertise.
- List relevant key publications.

And, for the proposed project manager (who is usually the JRP-Coordinator):

- Include evidence of their experience in managing similarly complex and large projects.

## 4.7 Section F - Risk and Mitigation

You must complete this section. Thinking about how problems would be overcome can be very useful in planning a project, and helping the project to run smoothly. The risk analysis can be undertaken and presented in any format you chose, however a tabular template is provided for your convenience.

Some examples and guidance is given to help you develop a useful risk management and mitigation plan.

### 4.7.1 Guidance for Analysing Risks to your Project:

We suggest you separate risk into different categories:

- technical/scientific risks (when some of the science doesn't work).
- management/delivery risks (problems with staff, finances, IP, arguments...).

Scientific / Technical Risks should first be assessed at workpackage/task level and then at JRP level, since problems with certain workpackages/tasks may have a much greater impact on the overall JRP. The identification of a number of options, and a structured approach to go/no-go decisions may help mitigate risk.

For each risk, identify clearly:

- What is the risk.
- What is the likelihood/probability of the risk event occurring; and what impact would this have on the project (impact can be considered on timing, people, quality of the results etc).
- What could you do to decrease the likelihood of the risk occurring (mitigation) [*sometimes your mitigation can eliminate the risk entirely*].
- What you would do if (despite your mitigation) the risk still occurred (contingency) [*note that where your mitigation eliminates the risk entirely, then you may chose to not have a contingency action*].

#### 4.7.2 Scientific / Technical Risks Example

Risk (description)	Likelihood and impact of occurrence	Mitigation	Contingency
<b>WP1:</b> Technique A: Gas pressure deforms the capacitor, increasing the measurement uncertainty of capacitance in an unknown way.	<u>Likelihood without mitigation: high</u> Capacitor deformation is very likely <u>Impact:</u> Incorrect measurement of the capacitance, will affect the uncertainty of the main result, potentially beyond $10^{-6}$ <u>Likelihood after mitigation: low</u> Spending time on the capacitor design will significantly reduce this risk.	Capacitor design: Detailed investigations of the material properties, and comparison of different capacitor designs will be carried out in parallel with theoretical simulations. A “go/no-go” review will assess the feasibility of overcoming the risks relating to the capacitor design and use.	Should the resulting capacitor design be ambiguous, an independent laboratory can offer additional independent checking purposes. This checking would take an additional 8 weeks, and cost €.
<b>WP2:</b> Technique B The molar mass and the ideal gas heat capacity ratio of the gas samples need to be determined with uncertainty < xxx%	<u>Likelihood without mitigation: low</u> Published data values are available, and should be suitable for use. <u>Impact:</u> Uncertainty due to molar mass and heat capacity will affect to the uncertainty of the EMRP constant, potentially beyond $10^{-6}$ <u>Likelihood after mitigation: low</u>	Determine more accurate values: If the published values have too high an uncertainty, the lead JRP-Participant can determine values anchored to an absolute calibration within the budget of the project.	None required as risk low and mitigation should avoid the need for action
<b>WP3:</b> Technique c: Is a new technique and it is difficult to forecast the main factors limiting the achievable accuracy.	<u>Likelihood without mitigation: high</u> <u>Impact</u> The new technique gives an uncertainty of the EMRP constant beyond $10^{-6}$ <u>Likelihood after mitigation: medium</u>	Brainstorm likely issues: Early meeting of the project team to identify likely challenging areas, and agree alternative methods.	10% extra man-hours allowed to give time for finding alternative solutions, and undertaking them should problems occur.
<b>JRP level risk:</b> Determination of the “EMRP constant” is highly scientifically challenging. To achieve results at the $10^{-6}$ range of uncertainty, two independent methods must each have uncertainty $<10^{-6}$ or the project will fail	<u>Likelihood without mitigation: high</u> Given the scientifically challenging nature of the project it is highly probable that one of the methods would fail to gather results at the $10^{-6}$ range of uncertainty. <u>Impact:</u> The project would fail to yield any useable results. <u>Likelihood after mitigation: medium</u> The risk cannot be eliminated	<u>Redundancy is the main mitigation</u> Three methods are being pursued to increase the likelihood of two of these yielding results at $10^{-6}$ range of uncertainty. Only two of the three methods are required to achieve results at the $10^{-6}$ range of uncertainty, the third method can have larger uncertainty as long as the results agree with the other methods within uncertainties. The risks of each of the 3 methods are assessed below and will each have go/no-go review	Repeating some of the experimentation with improved design. Should none (or only one) of the 3 methods achieve the required uncertainty, there may be an opportunity to revisit the methodology used. But this would cost more and take longer.

#### 4.7.3 Management Risks Example.

Risk (description)	Likelihood and impact of occurrence	Mitigation	Contingency
Title: Key personnel are lost to the project The key personnel are identified in this JRP proposal. The loss of any team members would create difficulties in delivering the project.	<u>Likelihood without mitigation: medium</u> We understand that none of the team members are planning to leave or retire within the project duration <u>Impact</u> Each team member has valuable experience which is generally not replicated by other team members <u>Likelihood after mitigation: low</u>	The bringing together of many European experts for this project should minimise the technical areas where knowledge is held by a single person. Each team member will identify an “understudy” able to step in at short notice. Project plans will be emailed to the team and agreed prior to work. Progress and methodology will be written in lab books, & email summaries circulated to the team monthly.	If a Key member leaves we hope that the “understudy” can pick up the work, however this may delay in project delivery
There are problems dealing with Intellectual Property ownership and/or exploitation Where new techniques are developed there may be disagreements about where the IP originated.	<u>Likelihood without mitigation: low</u> Due to the research nature of this work it is unlikely to yield patentable activities. <u>Impact</u> Disagreement of this kind could delay publication of results.	All JRP-Participants will sign the collaboration agreements which include IP clauses.	EURAMET would act as independent arbitrators in the event of disagreements between JRP-Participants.
The JRP starts later than planned. If the Commission or EURAMET delay contracts we may not be able to start when planned	<u>Likelihood without mitigation: high</u> The EMRP is new and funding from the Commission is likely to incur some delays. <u>Impact</u> The project would be delayed <u>Likelihood after mitigation: low</u>	Working ahead of contract JRP-Participants have agreed to begin some preparatory actions ahead of contract, at their own risk.	none

## 4.8 Section G - Project Resources and Budget Overviews

### 4.8.1 Section G1 Summary of Labour Resources per Workpackage (in person months)

The labour resources detailed in the JRP Costing Spreadsheet should be divided by workpackages and JRP-Participants and reported in a table.

### 4.8.2 Section G2 Non-Labour Resources

Provide an explanation and justification for the non-labour resources listed in the JRP Costing Spreadsheet and summarised in the table in section G3.

- Travel and Subsistence: Provide details of T&S for JRP-Participants to attend workshops, other JRP-Participant organisations and meetings, including the project management meetings, together with the number of attendees expected. Indicate the costing basis for these workshops/meeting (usually a maximum of 950 € per person per meeting).
- Equipment: Provide information about any significant equipment that it is planned to purchase, or any existing equipment for which depreciation or lease fees will be specifically charged, identifying the owner organisation.
- Use of Major Facilities: Provide details of the major facilities used or required (irrespective of whether or not any costs will be charged to the project), identifying the organisation that owns the facilities. Indicate whether any costs will be incurred for using the facilities and include these under 'other costs' on the JRP Costing Spreadsheet.
- Consumables: Provide information about consumables e.g. liquid helium, specifically identifying any items where there will be significant expenditure.
- Other costs: Provide information about other costs. "Other costs" might include the reimbursement of travel and subsistence costs for invited speakers at a JRP workshop or invited experts from outside the JRP to whom it is important to disseminate outputs from the project or from whom input is actively sought (these might for example include organisations who do not currently have the capability to participate in the JRP as a participant but who need to implement the project outputs). Other examples include the costs for in-house catering for a meeting, in-house printing of material, in-house engineering workshop costs, registration fees for workshops or conferences.
- Subcontracting: Explain what if any subcontracting is planned and why the subcontracting is necessary. Detail the estimated cost of each subcontract. Confirm that tender rules will be respected. Some instances where subcontracts might be necessary/appropriate are; specialist manufacture or processing of samples venue hire, logistics costs and associated catering costs associated with a workshop/conference held at a non-participant venue e.g. a hotel, conference centre, printing of material, leaflets etc, financial auditing and the supply of the associated certificate (referred to as "certificate on the financial statements" under FP7).
- Third Party Resources: Provide information about any pre-existing third party resources that will be charged to the project.

## 4.9 Section H Contact Details

List the main contact for each organisation. If more than one contact per organisation is appropriate, please list all contacts, and indicate their tasks/responsibilities areas in the notes column.

## 5 The Selection Process for JRPs

### 5.1 *Eligibility Criteria*

The JRP-Consortium is checked for eligibility by the EMRP-MSU.

The eligibility criteria are different for funded and unfunded partners of the JRP, and are given in summary in Table 1. The full eligibility criteria can be found on [www.emrponline.eu](http://www.emrponline.eu).

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>Funded JRP-partner</b> (A or B or C) plus D	Is a National Metrology Institute (NMI) from an EMRP A169 participating State	Is a Designated Institute (DI) from an EMRP A169 participating State, whose participation in the JRP falls within a technical area for which the organisation is designated under the CIPM MRA.	Is an institute of the JRC	Is willing and able to accept the duties and obligations associated with participation within the JRP.
<b>Unfunded JRP-partner</b> A and B and C and D	Is located and registered in any country worldwide	Is a legal entity, and	Is able to demonstrate to the satisfaction of the consortium that participation adds value to the JRP, and	Is willing and able to accept the duties and obligations associated with participation, and can realistically ensure that it can and will provide the resources needed for its participation within the JRP.

**Table 1: Eligibility Criteria for JRP-Partners**

### 5.2 *Evaluation Criteria*

The core evaluation criteria for the JRPs are defined in the Co-Decision of the European Parliament and of the Council. They are:

1. Scientific and/or technical excellence.
2. Relevance to the objectives of the EMRP.
3. Potential impact through the development, dissemination and use of the project results.
4. The quality and efficiency of the implementation and management.

The evaluation criteria are equally weighted and JRP proposals are marked against each criteria between 0 and 5. JRPs that receive a mark of less than 3 against any criteria will be considered of insufficient quality to be funded.

### 5.3 *The Review Conference*

A representative of each eligible JRP will meet the independent Referees at the Review Conference on the 25 -26 November 2009 in Berlin. At the Review Conference a poster is presented and the Referees will questions to the JRP representative.

- 1) The independent Referees meet in closed session to agree consensus marks for each JRP proposal and REG application, where applicable. The marking criteria used by the Referees are detailed in the document: "Guidance for the Evaluation at Stage 2" which will be publicly available at [www.emrponline.eu](http://www.emrponline.eu).
- 2) All the JRP proposals are ordered into a ranked list dependent on the marks given.

The EMRP Committee selects the JRP proposals to fund using the ranked list.

## 5.4 Preparing a JRP Poster

Every JRP-Consortium must prepare a poster for the Review Conference. One member of the JRP-Consortium (usually the JRP-Coordinator) must attend the Review Conference, present this poster and answer the Referee's questions.

The poster should:

- Present the key aspects of your proposal in a clear and concise manner.
- Enable the Referees to evaluate your proposal.
- Have a maximum size of A0 (841 mm × 1189 mm).
- Your poster should have a portrait orientation.

The Referees will be seeking to identify:

- The objectives of the JRP, and how these progress science beyond the state-of-the-art.
- The deliverables of this JRP.
- The participants in the JRP and how your consortium creates critical mass in this area.
- The resources committed to this JRP.
- The expected impact of this JRP, and its related knowledge transfer and training activities.

An optional template is given in Annex 1: An Optional Template for a JRP Poster.

## 6 The Appeals Process

### 6.1 *Grounds for Appeal*

The only grounds for appeal are where an organisation's eligibility is in question or where the selection criteria have been unfairly or incorrectly applied.

Appeals related to the views of the Referees, Research Council or EMRP Committee are not grounds for appeal.

When an appeal is lodged the EMRP-MSU and the EMRP Committee will examine the claim and will aim to reply to the submitting party within 7 days.

### 6.2 *How to Appeal*

- 1) Once informed that their organisation is ineligible, parties have 7 days to lodge an appeal after which no appeals will be accepted.
- 2) If a proposer believes the selection criteria have been unfairly applied they should appeal within 7 days of the selection being published.
- 3) Only the organisation in question can lodge an appeal if they believe they have been wrongly categorised as ineligible.
- 4) Only one appeal can be lodged for each case. Usually the JRP-Coordinator would lodge appeals related to JRP. If the appeal is rejected there is no further right of appeal.
- 5) Any decisions made are binding to all parties.
- 6) All appeals should be submitted to the EMRP-MSU. The appeal should contain:
  - Grounds of appeal: "Incorrect eligibility categorisation" or "unfair application of selection criteria".
  - Clear unambiguous details about appeal.
- 7) Submit the appeal to the EMRP-MSU at [emrpA169@npl.co.uk](mailto:emrpA169@npl.co.uk).

## **7 Contractual Requirements After Selection**

If your JRP proposal is selected for funding you will be invited for negotiations. Negotiation may cover any scientific, legal or financial aspects of the proposal, based on the comments of the Referees or any other issue that was raised.

The EMRP-MSU have an obligation to the European Commission to ensure that the funded projects are scientifically excellent, represent good value for money, and comply with the funding rules. Therefore the EMRP-MSU may also require amendments to selected JRPs to ensure projects are optimised and that consistency exists between projects.

Once the contractual details have been finalised and all the necessary checks carried out, EURAMET may then enter into the contract with the JRP-Coordinator and the other JRP-Participants. This will include a JRP Contract (grant agreement) with the JRP-Consortium and a grant agreement with the REG-Recipients.

## Annex 1: An Optional Template for a JRP Poster

<p><b>JRP Title:</b></p>	<p><b>Participants in the JRP:</b></p> <p><b>JRP-Coordinator:</b> 1.</p> <p><b>Funded JRP-Participants:</b> 2. 3. 4. ... n</p> <p><b>Unfunded JRP-Participants:</b> n+1 n+2...</p> <p><b>REG-Researcher</b> <b>Home Organisation:</b> <b>Collaborators:</b> X Y Z</p>
<p><b>JRP Objectives:</b></p>	
<p><b>Workpackages and deliverables with dates and resources:</b></p> <p>WP1 WP2 WP3 .... etc</p>	
<p><b>Scientific and/or Technical Excellence:</b></p>	<p><b>IMAGES</b></p>
<p><b>Relevance to the Objectives of the EMRP:</b></p>	
<p><b>Potential Impact through the Development, Dissemination and use of the Project Results:</b></p>	
<p><b>The Quality and Efficiency of the Implementation and Management:</b></p>	