

**MEMORANDUM OF UNDERSTANDING**  
**Multifunctional Research Platform Eisenwurzen**

**Approved version of 15 October 2005**

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## **Introduction** (January 2009)

The term 'Multifunctional Research Platform' (MFRP) reflects the essence of the setup described here. 'Multifunctional' describes the complex nature of the research themes, the transdisciplinary collaboration between research and region, the interface between data and infrastructure spaces, and much more besides (cf. section 3).

However, to many people the term is a complex one, often requiring further explanation. For this reason, the MFRP Eisenwurzen is now known as the LTSER Research Platform Eisenwurzen. The acronym LTSER indicates the type of research (long-term socio-economic research) on which the research platform focuses.

This explanation relates to the name change. The term 'MFRP Multifunctional Research Platform Eisenwurzen' continues to be used in the Memorandum of Understanding.

## **1 Preamble**

'LTER' stands for 'long-term ecosystem research'. This refers to research which focuses on ecosystems as a whole and their development over decades (processes and structures). Since the 1970s this type of research has largely been conducted at sites in natural landscapes (e.g. the catchment areas of small water bodies) of limited size (10 - 1000 ha), ideally semi-natural areas with protection status ('LTER sites'). These LTER sites were organised in national and continental networks. Thematically, LTER was geared towards studying scientific issues such as material cycles (a technically complex but selective method).

At the beginning of the 21st century, an intensive discussion was initiated on the future direction of existing LTER networks (NRC, 2004). At the same time, work started on developing a strategy for setting up new networks in areas in which there was as yet no formal framework for long-term ecosystem research. These include a number of European countries in which there are many LTER-relevant infrastructures, projects and research groups, most of which are uncoordinated and do not make full use of potential synergies. This fact is lamented in a report by the European Environment Agency (EEA) (Gee, 2001), which stresses the immense importance of effective ecosystem research for early detection of environmental problems and for the future direction of sustainable development (the precautionary principle). The European Commission's research strategy takes this into account in its Framework VI and VII research programmes (ALTER-Net, an EC infrastructure initiative).

A central element of all innovative processes in the LTER is the extension of the term 'ecosystem' to cover socio-economic, demographic and historical land-use aspects. The working title for this is 'LT(S)ER' (long-term socio-economic and ecosystem research), which embodies traditional ecosystem research plus the human factor. To be able to study ecosystems in these dimensions, it was necessary to expand the spatial context. The LT(S)ER research areas are units in natural landscapes which have a history of land-use and for which socio-economic information exists. They are therefore big enough to correspond to our term 'region', the general term used to describe areas such as the Eisenwurzen region in the Austrian core area.

The challenge was and is still to develop selected European regions into platforms of integrated research (Multifunctional Research Platforms - MFRPs). This interdisciplinary approach is also closely linked with local populations, regional developers and decision-makers. Following a complex analysis process, two regions in Austria were selected, namely the High Alps (the Oetztal and the Stubai Alps) and Eisenwurzen. These two regions form the elements of the Austrian LTER network and are our contribution to a range of continental and global networks.

The aim of the research is to develop a scientific basis for long-term regional development which takes account of regional characteristics and land-use history ('heritage') as well as the constraints of global change, social factors and economic areas. The structural focus is on creating a platform to enable the efficient use of existing set-ups and projects run by a wide range of organisations, to facilitate their

further development in the best possible way and to attract additional research activities and funding from outside, particularly on an international level.

This document represents the strategic basic agreement on aspects such as the structural elements and institutions (for client groups, see section 3.8) involved in the Multifunctional Research Platform Eisenwurzen (MFRP Eisenwurzen, MFRP-EW).

## **2 Background**

### **2.1 The international LTER process**

Austria has played an active role in the international LTER process since 2001. This involvement came about following a series of long-term discussions on national strategy development initiated in the mid-1990s (LERAMONA, EcoForesightsAustria, etc.) and an initiative of the Permanent Representation of Austria to the USA. The core aim, both at a national and an international level, is to streamline, integrate and harmonise the wide range of long-term research projects with a view to exploiting the synergies arising from the multifunctional nature of the research infrastructure to achieve optimum research activities and results despite ever tighter resources.

#### **2.1.1 LTER at the international level**

The international LTER body, ILTERN, is a global network subdivided into regional groups corresponding more or less to the continents, such as South America, North America, East Asia-Pacific, etc. Up until the 2001 ILTERN meeting, this system lacked a pan-European element: there were only two regional groups, Central and Eastern Europe (the former Eastern Bloc countries) and Western Europe.

Thanks to the efforts of one of the core groups of LTER representatives (NERC (UK), CNRS (F), Federal Environmental Agency (A)), a European LTER process was in place by 2002. This process resulted in two concrete products: the LTER Europe Initiative, in which the EEA was the central stakeholder, and the ALTER-Net Network of Excellence (FP6: the Sixth Framework Programme of the European Commission) which was launched in April 2004.

#### **2.1.2 ILTERN**

ILTERN, the global LTER network (International Long-Term Ecosystem Research), is a network of worldwide LTER regional groups representing the national LTER networks. ILTERN is based in the USA and was set up with financing from the National Science Foundation. Between 2004 and 2006 attempts were made to loosen ILTERN's rigid ties with the USA and to place it under the umbrella of an international institution, one of the possibilities under consideration being UNESCO.

Individual countries apply for membership of ILTERN, which is granted according to a catalogue of criteria. This and other information on ILTERN can be found at <http://www.ilternet.edu/>.

#### **2.1.3 LTER-Europe**

LTER-Europe is the name of the initiative set up to create a European LTER network. The purpose of this network is to represent Europe as a regional group in the international LTER network (ILTERN).

LTER-Europe (<http://www.lter-europe.net>) is closely associated with ALTER-Net, the organisation through which LTER Europe was established and institutionalised.

#### **2.1.4 ALTER-Net**

ALTER-Net is the Network of Excellence created in the European Commission's Framework VI research programme FP6, involving 25 partners and 500 experts. The ALTER-Net consortium came into being after five consortia submitted expressions of interest in FP6. One of these was ALTER-Europe, an LTER Network for Detecting, Forecasting and Managing Change in European Socio-Environmental Systems), whose main aim was to establish a European LTER network (initiated by CEH (UK), CNRS (F) and the Federal Environment Agency (A)). All the other consortia were from the field of biodiversity research, hence the thematic expansion into biodiversity issues.

### **Abstract (from the official project application)**

*This Network of Excellence (NoE) will create a European long-term interdisciplinary research facility for research on the complex relationship between ecosystems, biodiversity and society.*

*ALTER-Net will develop the research, the capacity and the institutional structures necessary to provide co-ordinated approaches to research on the socio-economic drivers of biodiversity, the assessment of biodiversity and its change, the impact of the main drivers and pressures on biodiversity, the development of conservation options, public attitudes to conservation, and forecasting change in biodiversity, structure, functions and dynamics of ecosystems and their services. These activities will consider biodiversity at the species and genetic and ecosystem levels, and will be integrated, notably through the consideration of socio-economic implications, public attitudes and policy dimensions throughout, with the ultimate goal of structuring biodiversity and ecosystem research into a long-term network.*

ALTER-Net's activities are organised in six thematic Work Packages (R1-R6) and six Work Packages addressing technical, strategic and integrative activities (I1-I6).

**From a content point of view, the whole of the Austrian participation has up to now been focused on achieving maximum synergy with the parallel development of the National LTER network and securing a decisive role in the creation of multifunctional research platforms (MFRPs, see below).** This approach follows the further development of the traditional LTER concept (sites of limited size, with the focus on scientific approaches) into research structures in which the emphasis is on entire landscapes and the interactions in them between ecosystem-related and social patterns and processes. **The medium-term aim was - and is still - to establish an Austrian MFRP in the first series of European LTER regions in which the MFRP concept is to be piloted.**

Information on ALTER-Net can be found at <http://www.alter-net.info/>.

## **2.2 Embedding of the MFRP Eisenwurzen in LTER in Austria (MFRP concept)**

Since 2001 the LTER process in Austria has been supported by two partners working in extremely close cooperation, namely LTER-Austria and the Austrian Federal Environment Agency.

### **2.2.1 Österreichische Gesellschaft für Langzeitforschung (LTER-Austria)**

In Austria the Long-Term Research node of the Network for Environmental Research (NUF) at the former Federal Ministry of Education, Science and Culture pushed for the formation of the *Österreichische Gesellschaft für Langzeitforschung* (Austrian Association for Long-Term Research, LTER-Austria) as a general community of interests for Austrian long-term researchers. The association has access to an extensive pool of experts and serves as a forum for the coordination of practical demand and scientific concepts or project developments. (<http://www.univie.ac.at/lter>)

### **2.2.2 Federal Environment Agency**

The Federal Environment Agency, an institution with a secure long-term future, acts as a formal (institutional) partner in many LTER processes. In addition to conceptual tasks in cooperation with LTER-Austria, it also fulfils the following management, networking and infrastructural tasks:

- Official ALTER-Net partner in Austria (networking of Austrian experts in ALTER-Net)
- LTER hub for implementation of multifunctional research platforms (MFRPs in Austria)
- Representing Austria internationally in ILTERN and in LTER-Europe (from 2001)

### 2.2.3 Establishment of the Austrian LTER network

The Austrian LTER network was formed in 2004 in response to the MFRP concept presented at the US-EU LTER Workshop in Motz, France, in 2003 (see below). The aim was to achieve consensus on the LTER concept and the planned spatial concentration of Austria's LTER activities, integrate supporting institutions and research partners into the research platforms, prepare institutional commitments, promote the development of research projects in the MFRPs and incorporate the emerging network into the international processes on an ongoing basis. Milestones in this process were:

- National LTER workshop in Gumpenstein (28-29 January 2004)
- Preparation of application for membership of the global LTER network (ILTERN)
- National LTER workshop in Obergurgl (28-29 October 2004)
- Startup workshop for the Research Platform Eisenwurzen (25 November 2004)

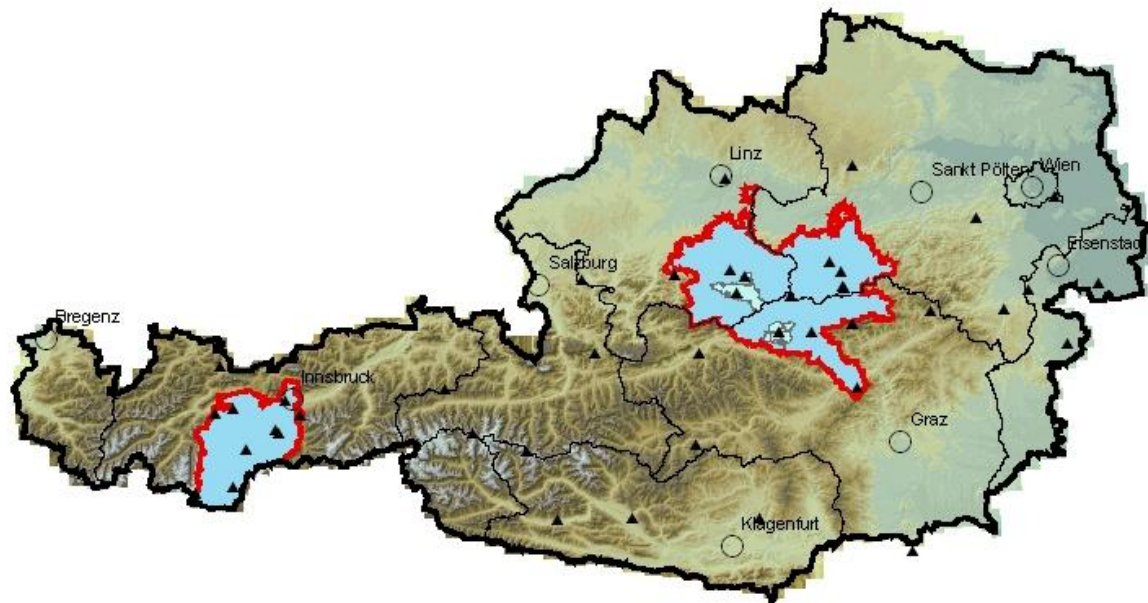
#### The main outcomes of the Austria-wide implementation of LTER are:

- Two out of the three planned MFRP regions have entered the implementation phase (High Alps, Eisenwurzen).
- The various points of departure and structures of the two MFRPs are an excellent example of the framework conditions that need to be met for a successful implementation: without permanent support, central management and a secure basic infrastructure that is not project-dependent, it is virtually impossible to set up and operate MFRPs successfully.
- LTER-Austria was successfully developed as a 'label' and presented to the outside world in a harmonised way. Its strategic approach is seen by many countries as an exemplary development, acting as impetus for the development of LTER-Germany and arousing strong interest in the MFRP concept in countries such as Italy, Spain and Brazil - the latter as part of the reorganisation of its already established national network.
- In the pan-European constellation of LTER organisations (ALTER-Net, WP I3), the two Austrian MFRPs were the first to be presented in the form of platforms with a modular structure.

## 3 Multifunctional Research Platform Eisenwurzen

### 3.1 Definitions of Multifunctional Research Platform terminology

Multifunctional Research Platforms (MFRPs) are a cluster of research organisations ('existing facilities') of different sizes or 'scales' ranging from small water catchment areas to entire landscapes, and other LTER-relevant elements in regions defined by their history of land-use and/or natural landscape. They serve as concentration areas for LTER activities in Europe which were previously highly fragmented. The aim of the European network of MFRPs is to represent the most important biogeographical zones (covering as wide a natural gradient as possible) and to enable sociological, socio-economic and scientific issues to be studied integratively in a regional context for the first time. Austria wants to contribute some showcase platforms for the evaluation of the inter- and transdisciplinary MFRP concept that is being developed and piloted in ALTER-Net's Work Package I3. There are currently two MFRPs under development, **High Alps** in Tyrol and the **Eisenwurzen** region in the northern Tyrolean limestone Alps.



[Legend: Wien = Vienna]

Austria is close to achieving its strategic goal of making an Austrian contribution to the first series of European LTER regions being used to pilot the MFRP concept, particularly with regard to the MFRP Eisenwurzen, for the following reasons:

- Its conceptual head start in the consortium is reflected in the increasing establishment of the concept of the MFRP and the leading inclusion of Austrian experts in the development of the design of European LTER sites (Alter-Net Work Packages I3: overall design; R1/I2: integration of socio-economic issues; R6: integrated assessment, scaling aspects).
- Austria is several steps ahead in terms of the implementation of MFRPs. For one thing, the MFRP concept is relatively widely accepted at the national level, and secondly the sites have already been selected in a relatively smoothly running process. Thirdly, there is fundamental agreement on cooperation among the organisations concerned, and fourthly, the modern and highly integrative concepts underlying funding for research in Austria are sending out appropriate signals.

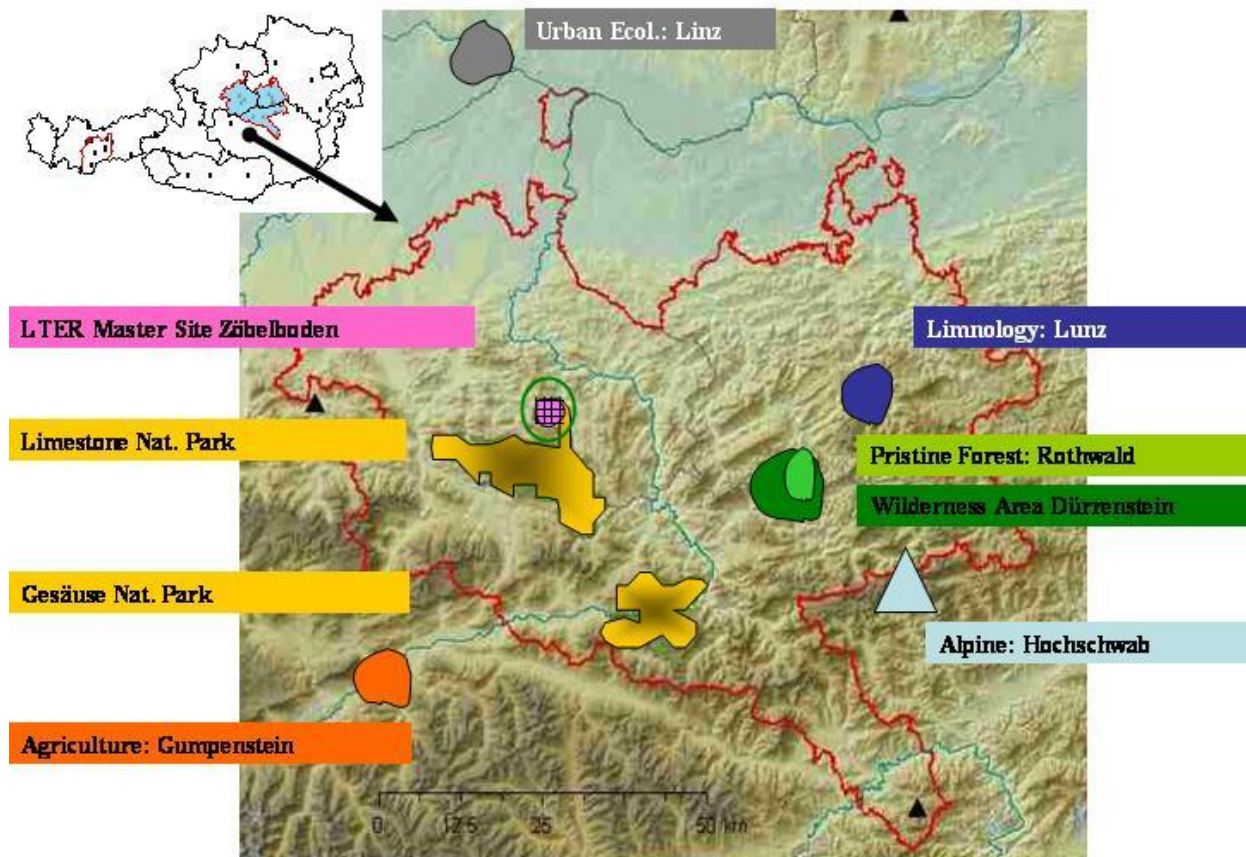


Fig. 1: Elements of the Multifunctional Research Platform Eisenwurzen (as at end 2004)

### 3.2 Aims of the MFRP Eisenwurzen

The aim of the MFRP Eisenwurzen is to research the complex interconnectedness between the natural landscape of the Eisenwurzen region, its historical and current use and the controlling variables of this use. Taking supra-regional constraints such as global change and socio-economics into account, the intention is to develop the scientific basis for sustainable management. Among other things, this means:

- Integrating, harmonising and focusing research activities and facilities in the region (work programmes, parameter sets, strategy development)
- Collaboration between different specialist fields (interdisciplinarity)
- Close links between science and regional development, regional decision-makers, regional educational establishments etc. (transdisciplinarity)
- Proximity to the changing subjective and objective needs of the regional population (participation)
- Stronger focus on the region's environmental history (historic land use, palaeoecology) and its impact on the present-day situation (including exploitation of potential for validating forecasting models)
- Coordination of the geographic resolutions at which individual disciplines work or for which they have data (e.g. census data at a municipal level) to facilitate reciprocal referencing
- Researching of long-term ecological processes in relevant habitats (primary production, carbon balance, deposition of materials, biodiversity, disturbances) and assessment of development trends
- Use of synergies by linking (environmental) monitoring and research
- Exploitation of the potential delivered by the many diverse LTER-relevant organisations and infrastructures in the region in multi-site analyses and experiments

- Production of development scenarios and empirical models for their testing (integrated modelling, millennium assessment)
- Development of strategies to secure, exchange and optimally exploit data, information and meta-information on the region.

**The aims can only be prioritised as they are being implemented and in line with the resources that come on-stream. Nonetheless, this combination of aims should illustrate one quality: the overarching issue is to create a platform for an innovative approach to research which will not only promote excellence in disciplinary research by creating a highly integrated working environment with a maximum level of basic data, but will also create a communication forum for developing methods for handling complex interconnections that can only be grasped in an integrated approach.**

### **3.3 Added value**

As is the case with the inventory of the MFRP Eisenwurzen's aims, a list of the likely value added can only serve as an example, although it can also provide a useful picture right across the various client groups:

- Commitment/concentration of research focusing on the Eisenwurzen region, both with relevant regional issues (including those resulting from local conditions) and with global developments and their impacts on the region.
- Use of national and international research funds for the region
- Opportunity to access infrastructural funds for research in the region (including the European Commission's infrastructure initiative in its Seventh Framework Research Programme, FP7)
- Placing the Eisenwurzen region on the international agenda
- Integration of structures and initiatives in the region (integrative effect)
- Use of the MFRP Eisenwurzen and its elements for educational purposes
- Methodical contribution to the development of a new research strategy (LT(S)ER)
- Creation of a physical research platform and a communication forum that can be used outside the context of the MFRP
- New insight into the natural landscape of Eisenwurzen and its interaction with society
- Research into sustainable development opportunities for the region
- Properly substantiated testing of future scenarios for the region
- Increasing the efficiency of environmental monitoring in the region
- Improvement in access to environmental information in and from the region

### **3.4 Organisation and financial support**

The MFRP Eisenwurzen aims to put structures in place as soon as possible that will effectively support the achievement of the aims outlined in section 3.2. The main functions of these structures are:

- Control over content-related aspects
- Internal organisation (including decision-making processes that incorporate all client and user groups)
- Representation on a national and international level
- Networking
- Data management (support for data exchange and comprehensive data mapping)
- Publicity (website)

The intention is for the pilot and set-up phase to lead quickly into a long-term secure production phase. The MFRP Eisenwurzen therefore ideally needs permanent financial support, preferably from the regional bodies concerned.



### **3.5 Data and other information**

A key basic requirement for multi-specialism and multi-site research is the availability of and rapid access to data that is documented in such a way that its proper use is guaranteed. Data management for a multifunctional research platform is multi-level and multi-layered:

- Providing an overview of the existing data and information (reports, monitoring and research activities, official statistics etc.)
- Enabling data stocks to be compared (integration) and described in a standardised way
- Facilitating and regulating accessibility (to secure intellectual property and other such rights)
- Organising efficient technical access to the data.

In the spirit of the Austrian Environmental Information Act and the implementation of the Aarhus Convention, the MFRP Eisenwurzen's information and data policy can be regarded as a case study for optimal use of information obtained at great cost and effort, with a view to encouraging national and international research projects to respond by applying know-how and other resources to the benefit of the Eisenwurzen region (also with a compulsory return flow of data and information).

### **3.6 Integration and multifunctionality of the MFRP Eisenwurzen**

The integration of the MFRP Eisenwurzen follows the network hierarchy outlined in section 2:

- One of two research platforms representing the Austrian LTER network (LTER Austria)
- Demonstration and pilot platform for the development of the European LTER concept in the context of ALTER-Net
- Element of the European LTER network (LTER-Europe) scheduled for launch in 2008 after preparation by ALTER-Net
- One of two Austrian contributions to the global LTER network (ILTERN)

The intention is to offer the MFRP Eisenwurzen to national and international programmes and projects as a research object. Among the criteria that will make it highly attractive are its internal organisation, the structured and effective potential for finding suitable contacts, good quality documentation and data and a high concentration of active projects and research groups for interdisciplinary issues.

In addition, the MFRP Eisenwurzen is widely networked via its individual elements (national parks, regional development associations, monitoring programmes). These networks are to be aggressively developed.

Every element and partner of the MFRP Eisenwurzen has resources in its area of operation (laboratories and other infrastructures, know-how), routine processes and access to information which could be put to good use in collaboration projects at little or no additional expense or effort. If greater expense were to be involved, such collaborations would also offer opportunities for additional service provision. Examples of such an integrated approach would be:

- Incorporation of local relevant issues in research projects
- Inclusion of on-site observations in day-to-day business (e.g. phenology, the development status of plants in their annual cycle)
- Installation of monitoring and other facilities at existing monitoring sites (additional sensors on monitoring towers)
- Use of office infrastructure in project monitoring campaigns
- Distribution of information on Eisenwurzen in the context of LTER, including tourist information
- Involvement of local firms and use of local products in projects
- Analysis of time-critical parameters in local laboratories
- Technical maintenance of the equipment of various MFRP Eisenwurzen elements, partners and projects by local engineers

### **3.7 Image and publicity**

The MFRP Eisenwurzen should be developed and publicised as a label at both a national and international level in order to exploit the full potential for achieving the goals through collaborations, resulting in a broader spread of financing for research activities.

For this purpose, standard texts and graphics are being designed which describe the MFRP Eisenwurzen and its context for different user groups.

This information is to be focused on the house media of the elements of the MFRP in the region in the form of flyers, brochures, direct mail and periodicals. By systematically referring to the MFRP Eisenwurzen in publications and reports, the name will become established throughout the relevant specialist circles.

A central portal for the MFRP Eisenwurzen is being created in the form of the LTER website, which BMBWK commissioned from the Federal Environment Agency. The website describes the LTER context and provides basic information and data on the whole project. Of particular importance in this regard are also the websites of the MFRP Eisenwurzen elements and partners linked to this central portal. In order to place the MFRP Eisenwurzen on the international agenda, the elements and partners of the MFRP Eisenwurzen and the descriptions of its establishment and role in the modern research context should ideally be presented in English. A description of the potential offered by the MFRP Eisenwurzen's various elements and partners as collaboration partners for research projects (infrastructure, data) could also boost corresponding project developments.

### **3.8 Signatories (client groups) and signature**

Examples of the potential signatories to this MoU:

- Supporters of LTER-relevant (research) facilities in the Eisenwurzen region
- Supporters and collaboration partners of research projects in Eisenwurzen (active researchers and research groups)
- Nature reserves
- Regional developers
- Educational institutions
- Local decision-makers
- Documentation centres
- Museums
- Supporters of the MFRP Eisenwurzen

In the knowledge of and in order to support the national and international processes outlined, and to the extent that they are able and depending on their other commitments, the signatories to the MoU wish to:

- help create innovative framework conditions for research which encompass the Eisenwurzen region in all its complexity,
- take all possible internal measures to support the achievement of the outlined goals,
- operate an open exchange of data and information (proactive information on LTER-relevant aspects) in the context of the MFRP Eisenwurzen's research activities,
- help create an efficient form of organisation and work towards achieving permanent financial support for the MFRP Eisenwurzen
- establish the MFRP Eisenwurzen (as a label) in their publicity work.

Signature of this MoU will take the form of a written declaration of consent to the contents, with reference to the version and date of the memorandum to which the consent relates.

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