

## DELIVERABLE

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### D2.3: EuDML business plan

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## Abstract

This report documents work done as part of Work Package 2 of the EuDML project. One main objective of this Work Package was to define the EuDML Business Model, based on user requirements, technological environment studies and supplier business cases. Based on this, a model for future, sustainable operation of the EuDML services was developed.

The report starts with an Executive Summary, which is intended to be published e.g. in the form of short announcements. The following section gives an overview of the analysis carried out in order to finally reach an agreement on the future EuDML business model. This model is then presented in detail in the remaining sections.

A final section gives recommendations for further work, as several issues still need to be settled.

“Prediction is very difficult, especially about the future.”

Niels Bohr

## Executive Summary

EuDML is a European based world class Digital Mathematics Library with up-to-date technological solutions, well accepted by users.

The EuDML services provide a library of collections and repositories of mathematical publications of the participating entities, while the latter retain complete responsibility and control over the creation and maintenance of their collections as well as the access provisions pertaining to their offerings.

Based on the achievements of the EuDML project, it is recommended that the EuDML services be continued by a newly formed Initiative made up of former project participants as well as new partners.

The EuDML Initiative, as a membership association, will pursue its goals through the activities of its members. Informally, members can be classified as information providers (publishers, repository owners), technical services hosts and operators, mathematical experts (representing the user community), and Mathematical Knowledge Management professionals (caring about information infrastructure research for future development of EuDML services).

The Initiative acts through its members to ensure the continuation of the EuDML services. Co-ordinating and administrative tasks will be cared for by an Executive Board. A Technical Committee ensures the technical operations of EuDML services. As necessary, other tasks can be distributed to specialized Committees. A Scientific Advisory Board consisting of the appointed representatives of the European Mathematical Society (EMS), and other suitably qualified and recognized members is responsible for ensuring the scientific quality of the EuDML service, and advises the Executive Board on scientific and science political matters. The European Mathematical Society (EMS) represents the interests of the mathematical community for which the EuDML service is made. The EuDML services shall remain under control of organizations representing the public interest.

## 1 Introduction

An investigation of options for sustainable operations of EuDML project results was carried out, in conjunction with the main goals of the project:

- make a wide variety of electronic publications in mathematics available through a unified gateway based on the EuDML metadata format
- continue working toward comprehensiveness, service integration, and cost efficiency of the EuDML services to assist in exploiting the benefits of networking for integration of publications such as citation linking or metadata enhancement
- advance cooperations between information and service providers (academic)
- support a common policy for long-term archiving and possible eventual open access to the digital content publishers, commercial publishing houses, etc.)
- create a non-profit service in the interests of the mathematical community

These initial considerations have led to the following list of topics that were considered to be of primary relevance for the EuDML business model. In order to define the EuDML business model, it is necessary to clarify, describe and define the following items:

- Mission Statement and Guiding Principles
- Membership and Tasks of Members
- Organizational Structure
- Usage and Exploitation Rights
- Legal Structure
- Finances, Resources and Membership Contributions
- Cooperation and Communication
- Future Directions

The following sections describe the relevant topics in detail, one by one.

## 2 Mission Statement and Guiding Principles

To provide a Digital Mathematics Library for the worldwide scientific community as a public service.

EuDML's main purpose is to help scientists locate the information they need and discover information related to their work in an optimal way, it is also to encourage the public to use it as a public knowledge repository. EuDML will adapt to using new information technologies and will get involved in research projects aiming at improving its services to its user base. EuDML aims at being exhaustive and comprehensive in the field of mathematics.

- EuDML is a virtual scientific digital library with a focus on European mathematics (including applied mathematics).
- EuDML is a digital library open for all providers of high-quality mathematical publications.

- EuDML has the potential to become one of the leading open access points for mathematical knowledge.
- EuDML is a part of a new digital scientific infrastructure (e-science) aiming to provide the users a direct access to knowledge. Therefore, an enhanced content analysis and processing of the information is a necessary assumption for EuDML.

Access will be organized by a central search engine allowing a simple and unified retrieval and access to the mathematical literature. EuDML aims to be an exhaustive and comprehensive library in the field of mathematics at least of the mathematical literature published in Europe and makes accessible the information in the best possible way.

The EuDML services provide a gateway to the electronic publications and repositories of participating entities, while the latter retain complete responsibility and control over the creation and maintenance of their data collections as well as the access provisions pertaining to their offerings. In as far as the EuDML service indexes or stores metadata records (or full texts) of its participants, these data are used strictly in accordance to the stated aims.

Based on the achievements of the successfully completed EuDML project, the EuDML Initiative will work to achieve the following main goals:

- Encourage synergies, accelerate wider adoption and overcome barriers to exploitation by lowering entry barriers for new information providers such as full text repositories or publishers;
- Scientific information exchange through the preparation of comprehensive meta-information concerning scientific publications, and standardization thereof;
- Development and management of an integrated scientific information system;
- Promotion of a network organization of providers of scientific publications;
- Participation in research projects on locating, using and creating scientific information, e.g. semantic discovery and authoring, knowledge representation.

Other goals are:

- Dissemination of knowledge concerning procedures and methods of scientific information, and the related research and development;
- Cooperation with other institutions and initiatives that aim to develop standards and systems in the area of scientific information;
- Wide dissemination of results and exchanging experiences across borders and scientific sectors and participation in co-ordination frameworks;
- Exploitation of EuDML service model leading edge technology in service applications and its continuous evaluation, adaptation, and consolidation;

The EuDML Initiative will be steered by the EuDML Executive Board and will be advised by the Scientific Advisory Board and supported by the Technical Committee.

The EuDML services shall remain under control of organizations representing the public interest.

### 3 Membership – Tasks and Benefits

All providers of high-quality mathematical publications can become members of the EuDML Initiative. The members should actively take part in the development of the EuDML.

The Initiative acts through its members to ensure the continued operations of the EuDML services.

Each provider of high-quality mathematical publications can become a member of the EuDML Initiative if they integrate (at least partially) their collections into the EuDML. The Executive Board decides on individual entities becoming members of the EuDML Initiative.

The EuDML Initiative has a strong interest to provide access to as much European mathematical publications as possible. Therefore the EuDML Initiative actively recruits new members.

EuDML members are the basic units of the EuDML Initiative which provide collections for the EuDML and/or actively maintain and develop EuDML services.

Tasks of the Initiative members consist of the following:

#### 3.1 Information Providers

The main role of the EuDML members is maintaining and possibly expanding access to their publications through the EuDML service. Other information providers can participate as associate or sponsoring partners in EuDML without having to become formal full members. The EuDML members provide their collections to EuDML according to the EuDML guidelines [1] and standards.

The EuDML guidelines and standards for the content analysis base on international accepted standards and trends which are adapted to the special needs of mathematical publications.

Usually, metadata provision will be according to the Journal Archiving and Interchange Tag Set (JATS) based EuDML specifications and OAI-PMH harvesting technology. The necessary software for the conversion are the responsibility of the member. The Initiative can provide initial and basic technical advice. The interfaces for offering the full text of a publication, including possible access restrictions such as pay-per-view are the sole responsibility of the information provider. If a member does not have the means to provide the required publication metadata, the Initiative can provide the necessary technical support on a negotiable basis.

Data provision and update procedures might need further specific agreements between the Initiative, the service provider(s), and the information provider, depending on special cases and needs.



### 3.2 Service Providers

This role consists of installing and maintaining the EuDML central services at the site of one or more of the Initiative's full members. The central EuDML services are a gateway to the local repositories of the EuDML members. EuDML has a central indexing and search engine. The central services index gathers standardized metadata provided by the EuDML members and optionally processes also the full texts of the publications to enhance the metadata and the fulltexts, e.g., by transforming fulltexts into mathematic-specific formats such as MathML, by extracting additional keywords, classifying automatically, etc.

### 3.3 Research and Development

Several partners of the current EuDML project consortium participate as research and development partners. EuDML will adapt to using new information technologies and will get involved in research projects aiming at improving its services to its user community. The development of new sophisticated concepts, methods, tools, and functionalities of EuDML which go beyond the automatic extraction of simple bibliographic data is a research task. Partners and institutions who are interested in contributing to research and development for the continuous evolution of the Digital Mathematics Library are invited to join the Initiative to help coordinating their R&D efforts.

### 3.4 Membership Benefits

- Better visibility of publications, facilitating access to providers collections of digital mathematical content, promoting and supporting its use and exploitation. Providing services and features that might be difficult for individual content providers (tackling multilingual and multicultural barriers, enhancing data, opening widely access and navigation to a currently fragmented, noninteroperable set of isolated repositories).
- Coordination of efforts (also for members active in research & development); reinforcing cooperation between the digital content stakeholders; providing a common platform for stakeholders.
- Promotion of members activities.

## 4 Organizational Structure

### 4.1 General Assembly

Every full member is represented in the General Assembly Meeting. The General Assembly is responsible for the following concerns:

- Election and dismissal of members of the Executive Board;
- Decisions concerning changes in the Mission and Statutes and the disbandment of the EuDML Initiative;

- Approval of a budget set forth by the Executive Board, acceptance of the yearly report, exoneration of the Executive Board;
- Determination of amount and due dates of the member fees;
- Decisions concerning complaints about the rejection of an application as well as an appeal against a resolution decided by the Executive Board.

The voting and decision making procedures are currently under discussion. Depending on the legal form of the Initiative, this has to be either strictly one vote per member, or some staggered model, where the number of votes a member has would depend on the role of the member (service provider, information provider, etc.) Since service providers are essential for the operation of the services, integration of new content etc., they might have more votes than other members. An option that ensures that no action can be taken against the will of all service providers would be to allocate 50% of all votes to the service providers, and require that decisions require strictly more than 50% of all votes.

## 4.2 Executive Board

The Executive Board is the overall steering board of the EuDML Initiative and handles all issues that are not explicitly assigned to another organ. It will carry out co-ordinating as well as administrative tasks. As necessary such tasks can be distributed among the full members. Specifically, the following tasks will be handled:

- **Recruiting new information providers**  
Registration and administration of new members and partners. This includes legal and rights management, negotiating (sponsoring) contracts with commercial partners.
- **Copyright and data ownership management**  
This task consists of maintaining a point of contact for addressing legal questions with regard to copyright questions relating to metadata and full texts.
- **Financial management**  
Keeping proper books of income and expenditure. Calculating yearly business plans for the Initiative finances. Maintaining relations with the tax office.
- Preparation of the General Assembly and setting up the agenda;
- Statement of resolutions of the General Assembly;
- Setting up a budget for each business year, bookkeeping, compiling yearly reports;
- Resolution concerning acceptance and removal of members.

The board consists of a number of membership elected officers, jointly chaired by an elected **Chairman of the Board** and his **Deputy**. The members of the Executive Board will distribute among themselves necessary Chief Officer roles such as for example Information Officer, Operating Officer, etc., according to tasks and responsibilities that are to be handled. These roles will be defined on an as-needed basis.

The Executive Board may install specialized **Committees** for larger present issues such as a Research & Development Committee. These Committees will be chaired by respective Chief Officers.

### 4.3 Technical Committee, and Service Providers Responsibilities

The Technical Committee (TC) ensures the continuous technical operations of EuDML services. The TC is formed by the institutions which maintain the central EuDML services (EuDML service providers) and some further technical staff from EuDML Initiative members. The Technical Committee is responsible for the technical development, technical standards and workflows, and the technical operations of the system. The chairperson of the Technical Committee will be member of the Executive Board

The Technical Committee will especially take care that the following issues are handled:

- System-level maintenance (hosting): providing hardware servers and infrastructure (network etc.), system administration, security issues (frontend proxy), system level backups, system upgrades/updates, redundancy, downtime procedures, load balancing if/when needed.
- Application-level administration (operations): application level (data) backups and upgrades.
- Information provider support, consisting of basic technical advice concerning EuDML specifications to new members. If required, advanced technical support can be negotiated.
- Content ingest/aggregation: contact with providers, manage harvesting, manage provider specific data conversions.
- General workflow management, including enhancers (e.g. manually triggering enhancers for subsets of data, if necessary). This is related to content curation, stored content management.
- Continuous dissemination: web pages information, news, statistics etc. managing information on web pages.
- First level end-user support, distributing end-users input to the right people (mostly automated by a ticketing system).
- Content level quality control and feedback.
- Service level quality control and feedback, uptime monitoring, generating/reviewing statistics.
- Software maintenance: bug fixes, enhancements, integration of new services and releases when available.
- Software development: updating the software to conform to the latest adequate technology standards in order to maintain the desired level of competitiveness.

### 4.4 Scientific Advisory Board

The European Mathematical Society forms the Scientific Advisory Board (SAB) of their representatives and other suitably qualified and recognized persons. The Scientific Advisory Board is supervised by the Executive Board and supervises the scientific quality of the EuDML service, and advises the Executive Board on scientific matters. Members of SAB give recommendations for the development of the service, take part in the evaluation, and bring in the feedback of the mathematical community.

The Scientific Advisory Board works out recommendations for the development of EuDML with regard to the content and the organization of the EuDML Initiative.

The initial list of Scientific Advisory Board members is:

Frédéric Brechenmacher (Paris Jussieu)  
James Harold Davenport (University of Bath)  
Norbert Fuhr (Universität Duisburg-Essen)  
Thomas Hempfling (Springer Basel (Birkhäuser Mathematik))  
Thomas Hintermann (European Mathematical Society Publishing House)  
Carol Hutchins (Courant Institute of Math. Science, New York University)  
Ulf Rehmann (Chair) (Universität Bielefeld)  
Masakazu Suzuki (Kyushu University)  
Günter Törner (Universität Duisburg-Essen)  
Bernd Wegner (TU Berlin)

## 5 Usage and Exploitation Rights

The EuDML information providers retain all rights pertaining to their collections. They grant to the EuDML Initiative the right to keep and use copies of their provided data for the purposes of search and retrieval display in EuDML public services.

Each information provider may decide, whether only the publication metadata or metadata plus full text will be provided to the EuDML Initiative, and to which extent (original or EuDML-enhanced) full text information might be used or distributed. Standard agreements between the EuDML Initiative and the information providers will specify these and further usage and exploitation rights for each collection. These standard agreements will cover the cases

1. Only metadata of publications are provided to EuDML.
2. Metadata and full text of publications are provided to EuDML, full text may only be used for retrieval enhancements. Copies of full text files are only to be stored temporarily in order to compute these enhancements.
3. Metadata and full text of publications are provided to EuDML, full text may be used for retrieval enhancements and may be stored, transformed, and redistributed with EuDML-specific transformations (e.g. text-to-speech).

Special cases may require further individual agreements.

The indexing and other metadata information generated by the central services of EuDML (enhanced metadata) is owned by the EuDML Initiative. Information providers are entitled to use and exploit copies of EuDML enhanced metadata of those publications for which they have provided metadata.

Copies of provided and EuDML-enhanced metadata will be kept at the EuDML service providers sites. If a service provider withdraws from this role, data and respective rights and obligations stay with the remaining or new EuDML service providers.

EuDML Initiative members who are active in the research area of Digital (Mathematics) Libraries are entitled to use (copies of) the EuDML metadata for their research purposes. However, usage of particular subsets for this purpose may be restricted by the respective information providers. Results of such research activities will be made available to the EuDML Initiative and its members.

Exploitation rights for software and tools developed in the EuDML project and by the EuDML Initiative stay with the originator. However, EuDML advocates an open-source policy for software, and encourages developers to put their developments for EuDML in the public domain.

In case of disbandment of the EuDML Initiative, all (meta)data and rights are to be transferred to the European Mathematical Society.

## 6 Legal Structure

The legal structure that is proposed for the EuDML Initiative is currently under discussion. The options being discussed are

1. an informal membership association (no legal body),
2. a formalized network under the umbrella of the European Mathematical Society (EMS), with the responsibility to distribute routine work and maintenance among the network members on a voluntary basis,
3. an incorporated society (membership association), according to national law,
4. an European Economic Interest Grouping (EEIG).

These options were singled out with the background of experiences made by the EULER Consortium [2, 3]. EULER has investigated several options, in order to be able to decide on the basis of advantages and disadvantages, and consequences with regard to the organization and related issues (e.g. liability and taxation). The choice made by EULER was that of an incorporated society (association).

In addition to an incorporated association, also the legal forms of Foundation and Co-operative Association/Society were studied by EULER. It turns out, however, that these two models are not in line with the stated aims of neither EULER nor EuDML.

A detailed comparison of the last two legal forms (Incorporated society, EEIG) lead to the following observation:

### **Incorporated society:**

- Advantages:
  - Any category of membership is possible, independent of its country of origin

- No liability for its members except for the capital that has been invested.
- Disadvantages:
  - The seat of the association must remain in the country where it was founded.
  - Limited flexibility: all possible different formal objectives and regulations need to be defined in advance. Any changes would mean changing the by-laws for which a notary public is required.

#### **EEIG:**

- Advantages:
  - Relatively simple to set up; a public notary is not required.
  - Trans-nationality; although this can be a disadvantage because its participants must originate from at least two European Economic Area (EEA) countries. If this condition is no longer fulfilled the grouping must be discontinued.
  - Flexibility with regard to membership fees. Consultation or other contributions can be regarded as (part of) the membership fee.
  - New members can join simply without too many formalities; only a new contract is needed. Therefore, special cases or exceptions can be defined as necessary.
  - The seat of the grouping can be moved to another EEA country without having to dissolve and restart the grouping. A translation of the by-laws will be necessary.
- Disadvantages
  - Only members from the EEA countries may become full members and can vote. Probably some kind of involvement by associate members can be arranged by means of the separate cooperative contracts.
  - Full liability of members. Limiting it would require extra effort.

Both legal forms are seen as adequate for EuDML Initiative, as well as the other two forms, 1) an informal association (no registered legal body) and 2) a formalized network under the umbrella of EMS. The final choice has to be made on the basis of criteria that are currently under discussion within the EuDML project consortium.

## **7 Finances, Resources and Membership Contributions**

EuDML would need human resources, machine capacities and income for maintenance, administration, technical services and development in a relevant size, especially for the central EuDML services. A financing only by membership fees seems not to be a realistic concept. The current EuDML project consortium was formed on a project basis in order to develop the EuDML services. It should not turn into a costly activity for the partners.

Instead, a model of voluntary membership contributions is foreseen. In this model, various members contribute various resources to the initiative, in a way that the collective contributions facilitate the continuous operations and further development of EuDML services.

These contributions will have to be in line with the normal activities of members, in a way that they also facilitate or develop the activities of the members, and to improve or increase the results of those normal activities.

The EuDML project started with the vision of a Digital Mathematics Library based on reliable not-for-profit scientific institutions archiving the mathematical corpus and cooperating in order to make it a global resource. This is aligned with the missions of most of the participating institutions, thus they will organically participate in any effort in this direction as they view this as a way to give more value to their own services. To achieve this, the founding members of the Initiative will use own resources and try to share operating costs for mutual services. This should preferably be achieved through sharing the work to be done across the network of institutions rather than having a separate administrative entity.

A major progress in establishing this model was the announcement of some EuDML project partners to care for hosting, system and service maintainance, and basic technical operations after the end of the EuDML project, for a mid-term duration of 3 years:

For a medium time period, FIZ, ICM, and IST have agreed to provide human resources and machine capacities to maintain and provide the central EuDML services for at least three years after the end of the funding period. This model of service maintenance depends on the interest of the participating institutions. Although the institutional missions of the institutes that have made this offering seem to accomodate the EuDML goals quite naturally, it is not guaranteed that the experiences made during this initial period will be taken by the respective institution management as a signal for "thumbs up" for a longer term engagement in EuDML activities. In any case, the current commitment of the three institutions is an important indication for the perceived relevance of EuDML results in three European member states.

For the future technological development, the Initiative intends to proactively search new partners and new funding opportunities in order to enhance the service and be more global.

EuDML Initiative will strive to minimize the costs for its services. To guarantee this, open-source software, and common hardware will be used and the initiative will use a stable metadata scheme.

More detailed responsibilities of the institutions and sharing thereof will be defined in detail by contracts of the institutions with the EuDML Initiative.

Information provider expenses consist mainly of efforts to provide metadata conversion tools (one-time costs), and a delivery mechanism such as an OAI-PMH compliant repository server, regular updating of data and end-user support. In principle the provider should carry the financial consequences.

The current EuDML activities do not include financial transactions. It is therefore the question (that will have to be decided by the founding members of the Initiative) whether

the Initiative won't handle own finances by totally relying on the capacities of its members, or whether the Initiative would have to deal with finances on its own.

In case of the **first option**, the EuDML Initiative will not be engaged in any financial transactions and not possess any financial or other assets. Any actions involving income/expenses like for example collecting conference fees/paying conference costs will be handled by individual members as part of their individual operations.

**Alternatively**, income/expenditures categories will have to be defined. Special care would have to be taken to align the actual financial business of the Initiative to special regulations that derive from the legal form that will be chosen. These requirements are different for a nonprofit membership association, and for a European Economic Interest Grouping. Further regulations apply if a tax privileged charitable non-profit status needs to be obtained.

The following is a list of basic income/expenditures categories, that are considered relevant to the EuDML Initiative. One should note that these income/expenditures are pertaining only to the organizational and coordinating activities of the Initiative. As noted above, the technical operations of EuDML services are not covered here.

## 7.1 Income

### Membership fees

Members are requested to pay a (one-time) entry fee to join EuDML. This is a fixed fee to cover the initial administrative and support costs.

An annual fee will be levied; it depends on the type of membership and may further be differentiated according to the size of the metadata of products to be included, and other criteria.

### Funding

Funding (grants, gifts etc.) from other sources (e.g. mathematical societies, research funding agencies etc.), should be sought after.

EuDML will adapt to using new information technologies and will get involved in research projects aiming at improving its services to its user community. The development of new sophisticated concepts, methods, tools, and functionalities of EuDML which go beyond the automatic extraction of simple bibliographic data is a research task. This task should be solved by the acquisition of new projects, typically together with partner institutions.

### Consultations

Basic technical advice concerning EuDML specifications will be given to new members in any case. If required, advanced technical support may be provided on a negotiable basis.

Other paid consultations to third parties in the area of networked scientific information systems is another source of possible income.



### **Other income**

Other income consists e.g. of registration fees for scientific conferences and workshops organized by EuDML.

## **7.2 Expenses**

### **Coordination costs**

These consist costs necessary for the coordination of the various activities of the Initiative, e.g. costs for meetings.

### **Consultants**

The Initiative may pay contractors to carry out tasks that support the normal activities of the Initiative.

### **Other expenses**

Other expenses consists e.g. of costs for scientific conferences and workshops organized by EuDML, of taxes, and of overhead costs related with the administrative tasks of the Initiative.

## **8 Cooperation and Communication**

The EuDML Initiative must act in a transparent way towards the mathematical community and to information providers or publishers to become an attractor for the mathematical information in the Web. Therefore, the EuDML Initiative will organize and maintain a public forum to discuss the aims and challenges of digital mathematical libraries by the following activities:

- installing an electronic communication and discussion platform both for EuDML members, EC, SAB, and TC and for the public.
- publishing of EuDML guidelines and standards
- organizing events to discuss the state and the perspectives of the EuDML and appoint the next steps, at least, one general EuDML meeting annually. EC, SAB and TC can organize workshops for special objects.

The EuDML Initiative seeks for strategic partnerships with other related initiatives. EuDML cooperates with the mathematical community — especially, the European Mathematical Society — to address the needs of the users.

The embedding of EuDML into the Mathematical Knowledge Management community and the cooperation with institutions which have their focus on information and communication in mathematics is substantial for the further technical enhancement of the EuDML services.

The EuDML Initiative aspires to develop an enhanced model for a digital library focussed to a single science. This aim requires an embedding of EuDML in the European landscape.

EuDML will look for a dialog with the leading European digital libraries initiatives regarding the concept, the implementation and the linking with other relevant digital libraries.

Identifying relevant funding opportunities, especially North American-European cooperation funds, it will be a possible next endeavor. If this works EuDML could contribute to building the worldwide Digital Mathematics Library bottom-up, from states to continents, and then interconnect continental chapters. The International Mathematical Union (IMU) would support this kind of gluing.

## 9 Future Directions

It is obvious, given the rapid development in the area of Internet services, that a continuous adaptation of the service offers will be necessary.

### **Changing user demands**

As the Internet develops, and the usage basis of the Internet broadens, expectations of users change. The EuDML services will have to be adapted to new expectations.

### **New technological options**

The rapid development of new technology which offers potential for better or richer EuDML services will be closely observed and adequate solutions will be developed and implemented.

## 10 Recommendations for Further Work

The present report is a summary of the discussions and conclusions that were made in the EuDML project so far. As already noted in some places above, several areas are still under discussion, other require further clarification and agreement within the EuDML project consortium.

Specifically, it is recommended that the following items be further clarified, specified, and decided upon before the implementation of the EuDML business plan starts. Most clarifications will have to be done until Summer 2012, so that the remaining time of the project can be utilized to implement the decisions.

- Clarify the legal form that will be implemented, and the timeline for the founding of the EuDML Initiative. A stepwise process may provide some flexibility: In a first step, an informal association might be formed which will later, in a second step, be transformed to some legal entity (EEIG or registered membership association).
- Agree on official address (and applicable legislation) of the Initiative.
- Clarify questions of legal support, depending on the legal form.

- Statutes or a founding contract for the EuDML Initiative will have to be formulated. The complexity of such statutes depends on the legal form that is singled out. Formal requirements for different legal forms are different, and must be considered.
- Agree on Initiative's finances. From an administrative point of view, it might be better if the Initiative has no income/expenditures at all. Especially, this might be an option for the first stage of EuDML Initiative founding.
- Clarify number of votes of members, depending on their status. Clarify voting procedures.
- Formulate standard agreements between the EuDML Initiative and the information providers, specifying usage and exploitation rights for each collection (metadata and full texts).
- Is the establishing process and other matters concerning the Scientific Advisory Board left to the EMS?
- Voluntary membership contributions do not offer much financial stability. It should be investigated whether the European Mathematical Society can be involved much stronger. EMS has proclaimed its support for the EuDML activities. They might be able to arrange a stable support, e.g. by collecting special contributions from its members, trying to get a basic support from organizations like the ESF (or the newly created ScienceEurope), negotiating with publishers etc.
- Set up a list of those members of the current EuDML project consortium who agree to be the founding members of the Initiative.

## References

- [1] EuDML Project Consortium. The EuDML metadata specification, 2011. <http://www.eudml.eu/eudml-metadata-specification> .
- [2] Michael Jost, Ay-ling Ong, Wouter Mettrop, Dick Broekhuis, Valdo Pasqui, and Michael Derr. EULER-TAKEUP - Report on sustainable service and business model, 2002. Deliverable D2 of Project EULER-TAKEUP (European Libraries and Electronic Resources in Mathematical Sciences, Takeup Action), Information Society Technologies (IST) project no. IST-2000-29445 <http://www.emis.de/projects/EULER/takeup/d2.html> .
- [3] Aleksandar Perovic. Plans and recommendations for the continuation of the EULER services, 2000. Deliverable D5.2 of Project EULER (European Libraries and Electronic Resources in Mathematical Sciences), Telematics for Libraries project no. LB-5609 <http://www.emis.de/projects/EULER/Reports/D52.html> .