



# DML-CZ: Recent development and current state

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DML 2011, Bertinoro, 20 July 2011

# The project DML-CZ

- R&D Programme *Information Society (Czech Academy of Sciences)*
- 2005–2009
- 8,1 MKč (~330 k€)
- partners
  - Institute of Mathematics AS CR, Praha
  - Institute of Computer Science, Masaryk University, Brno
  - Faculty of Informatics, Masaryk University, Brno
  - Faculty of Mathematics and Physics, Charles University, Praha
  - Library AS CR, Praha

# Outcome of the project (December 2009)

- Full-featured digital library
  - 11 journals
  - 6 conference proceedings series
  - 32 monographs
  - 160 000 structured references
  - altogether approx. 275 000 pages of scholarly mathematical texts from about 10 000 authors
  - published in the area of the Czech Republic (and former Czechoslovakia)

## Outcome of the project (December 2009) – cont.

### ■ Metadata editor

- client-server application consisting of a web interface, a suite of supporting scripts and an internal database
- loading the input data into the ME internal structures
- article building – defining the logical structure of digitized publications
- metadata editing – creating descriptive metadata records from journal/proceedings series/monograph levels up to the article or book chapter level
- bibliographical references processing – creating, harvesting and linking lists of references
- automated metadata verification
- final PDF compilation and export to the publication system

# DML-CZ: Metadata editor (serials)

Save Save and Next

**Status**

in progress

**Title**

Solution of the Hall Field Boundary Value Problem by Fourie English

**Author**

Schi

- Papaschinopoulos, Garyfalos
- Schinas, John
- Schinzel, André

**Summary**

**Summary Language**

**MSC**

**idMR**

Mathematical Reviews

**idZBL**

Zentralblatt MATH

**idJFM**

Jahrbuch Database

**Article Type**

math

Pages: 106-116

**Accessibility**

true

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SVAZEK 15 (1970) APLIKACE MATEMATIKY

SOLUTION OF THE HALL FIELD BOUNDARY VALUE BY FOURIER SERIES

JAROSLAV SCHILDER  
(Received September 4, 1968)

1. INTRODUCTION

The two-dimensional current density field when respecting the field characterized by an isogonal system of equipotential and flow lines orthogonal one, as in classical problems on the current density field due to the Hall effect, the solution of the current density field, broad applications, leads to an unusual boundary value problem.

A way has been already shown of solving this problem by means of conformal mapping [1, 2, 3]. In the present paper, a way is shown how to solve the problem by developments into Fourier series. The problem will be explained in a semiinfinite strip (semi-slab), its frontal side being represented by the potential plane. In this case, the problem can be reduced to very simple boundary value problems for the coefficients of the Fourier series.

New methods of complex variable functions are used for the calculation of the Fourier coefficients. In comparison with conventional calculation methods, our treatment is less tedious, and we shall show its fruitfulness in future papers when dealing with regions for which the calculation mapping would be substantially more complicated.

2. BASIC EQUATIONS

Consider a two-dimensional current density field corresponding to a rectangular plate in a uniform magnetic field (Fig. 1). We assume that the medium is homogeneous and isotropic. We shall employ the following symbols:

- $J$  current density
- $R$  Hall constant
- $E$  electric field intensity
- $B$  magnetic field intensity

### Issue 2 (1970)

[edit structure](#) | [edit issue-metadata](#)

1

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Number: 2

Date: 1970

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initial state

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- --- Název článku nebyl zadán ---
- --- Název článku nebyl zadán ---
- [One generalization of the dynamic programming](#)
- [A transformation of a beta-distributed random v](#)
- --- Název článku nebyl zadán ---
- --- Název článku nebyl zadán ---
- [On the use of some properties of Leontieff's m](#)
- [Numerical integration with highly oscillating weig](#)
- [Inversion of quasi-triangular matrices.](#)
- --- Název článku nebyl zadán ---

	<p>Title: --- Název článku nebyl zadán</p> <p>Article Type: math</p> <p>Pages: (79a)</p> <p><a href="#">Logs</a></p>
	<p>Title: --- Název článku nebyl zadán</p> <p>Article Type: math</p> <p>Pages: (79b)</p> <p><a href="#">Logs</a></p>
	<p>Title: <a href="#">One generalization of the</a></p>

### Issue 2 (1970)

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- --- Název článku nebyl zadán ---
- --- Název článku nebyl zadán ---

	<p>Title: <a href="#">One generalization of the</a></p> <p>Author: Vlach, Milan; Zimmer</p> <p>Language: English</p> <p>Article Type: math</p> <p>Pages: 79-96</p> <p><a href="#">Logs</a></p>
	<p>Title: <a href="#">A transformation of a t</a></p> <p>Author: Pavlík, Miloš</p> <p>Language: Czech</p> <p>Article Type: math</p> <p>Pages: 97-105</p> <p><a href="#">Logs</a></p>
	<p>Title: --- Název článku nebyl</p> <p>Article Type: math</p>

### Issue 2 (1970)

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3

Status: in progress

Number: 2

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article metadata

#### Issue Articles

- [One generalization of the dynamic programming](#)
- [A transformation of a beta-distributed random v](#)
- [Solution of the Hall Field Boundary Value Problem](#)
- [Automatic Binarization of Quantities](#)
- [On the use of some properties of Leontieff's ma](#)
- [Numerical integration with highly oscillating weigh](#)
- [Inversion of quasi-triangular matrices.](#)
- [Book Reviews](#)
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	<p>Title: <a href="#">One generalization of the</a></p> <p>Author: Vlach, Milan; Zimmerma</p> <p>Language: English</p> <p>Article Type: math</p> <p>Pages: 79-96</p> <p><a href="#">Logs</a></p>
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	<p>Title: <a href="#">Solution of the Hall Field</a></p> <p>Author: Schilder, Jaroslav</p>

## Outcome of the project (December 2009) – cont.

- Established retro-digitization procedures
- Workflow for acquisition, control and enhancement of metadata
- Presentation system based on DSpace customized by Manakin
- Archiving
  - scans, OCR, metadata, PDF, source T<sub>E</sub>X-files
- Semantic similarity computation

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**Integral of multivalued mappings and its connection with differential relations.** (English). Časopis pro pěstování matematiky, vol. 108 (1983), issue 1, pp. 8-28

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 Please [contact us](#) . It will be helpful for future development.

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## Outcome of the project (December 2009) – cont.

- Functional workflow for born-digital material
  - different editorial environments for individual journals (AMST<sub>E</sub>X, LAT<sub>E</sub>X, modified PlainT<sub>E</sub>X), rather little flexibility in editorial offices
  - tools and workflows tailored to each individual journal enable semiautomatic production of inputs for DML-CZ (PDF, metadata)
  - validating procedures assure formal consistency and integrity of data and generally eliminate errors
  - easy for editors, helpful and efficient for managing DML-CZ
  - stress on increasing quality of outputs rather than changing the original editorial workflows
  - outputs from editors elaborated by tools based on Tralics
  - metadata enhancement and quality control

## Routine operation (since 2010)

- Continued cooperation of all project partners, based on tools and procedures developed during the project
  - scans, graphical adjustment, primary OCR and metadata (Digitization Centre of the Library AS CR)
  - metadata provision and enhancement (Masaryk University, Charles University, Institute of Mathematics)
  - final PDF, presentation, OAI-PMH server, archiving/[archival](#) (Masaryk University)
  - hardware, technical support (Masaryk University)
  - coordination, new acquisitions and development, financial support, sustainability, publicity, overall responsibility (Institute of Mathematics)

# Public acceptance

- Union of Czech Mathematicians and Physicists
- Czech Mathematical Society – History of Mathematics series
- Mathematical community – Eminent Czech Mathematicians section
- Publishers – new journal title added upon editor's request
- General public – presentations in TV and Radio, Science and Technology Week, Open Doors Days
- DML-CZ highly ranked by Google Scholar
- Google Analytics: around 400 accesses per day

# New content

- Additions since the end 2009
  - journal 1 (+1)
  - monograph 33
  - article/book chapter ~ 5 000
  - pages ~ 38 000
  - section 1

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**Eminent Czech mathematicians**

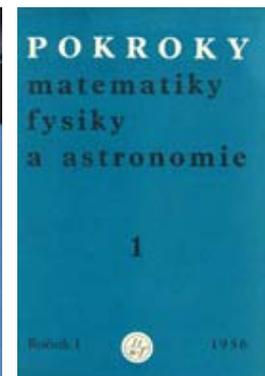
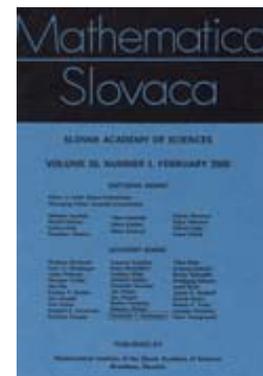
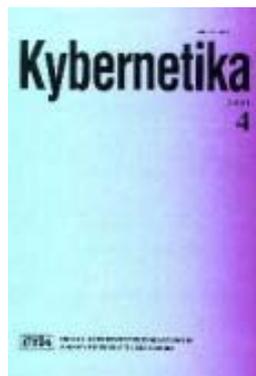
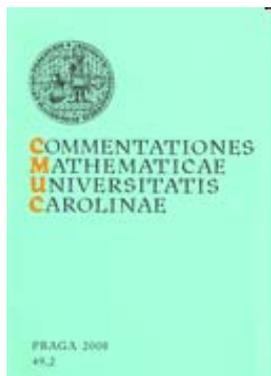
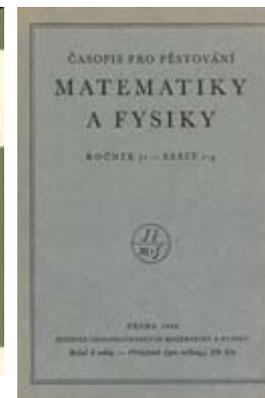
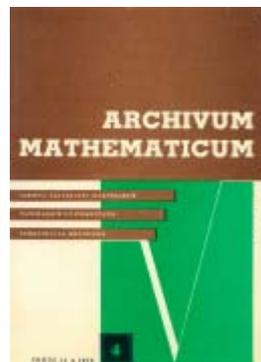
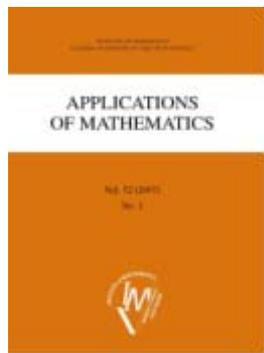
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# Journals



# Collected works – Eminent Czech Mathematicians

- Prof. Otakar Borůvka (1899–1995)
  - 209 items, almost 4000 pages
- Raising new questions
  - 3 subsections

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## Borůvka, Otakar



Otakar Borůvka (1899-1995) is one of the most prominent Czech mathematicians of the 20th century. He spent most of his professional life in Brno (working at Masaryk University and at the Mathematical Institute of the Academy of Sciences of the Czech Republic). His extensive scientific work, i.e. 85 original scientific works and 5 monographs which have been translated into many languages, covers 5 mathematical areas: classical mathematical analysis, graph theory, differential geometry, algebra and theory of differential equations. Digital Archive of Otakar Borůvka presents the complete collection of Borůvka's works as well as the collection of works about Otakar Borůvka, his life and achievements.

**Note:** <http://dml.muni.cz/boruvka-en> - more about Otakar Borůvka

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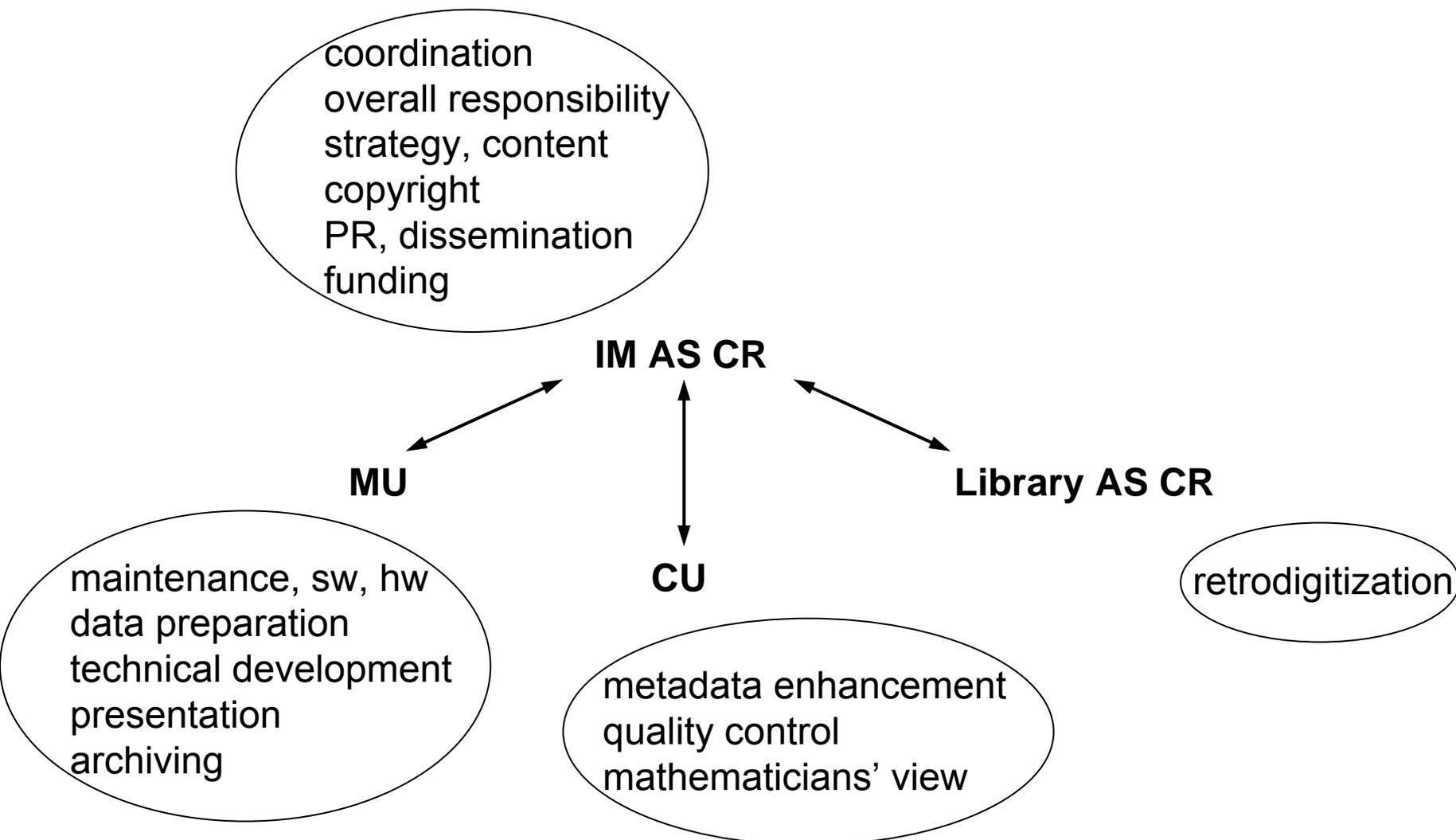
# Collected works – Eminent Czech Mathematicians

- Prof. Otakar Borůvka (1899–1995)
  - 209 items, almost 4000 pages
- Raising new questions
  - 3 subsections
  - metadata (FRBR model – manifestation vs. work?)
  - digitizing new book editions?
  - off-prints vs. preprints
  - conference proceedings vs. working papers
  - Should the whole archive be in EuDML or should it remain a national: “speciality?”

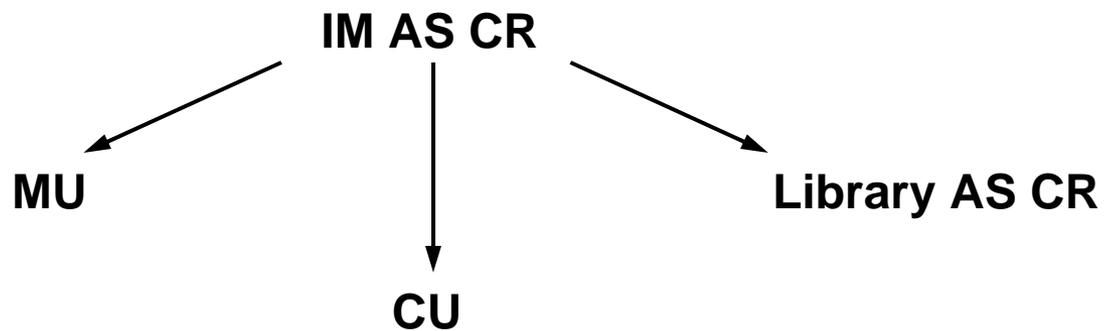
# Technical development

- Continues despite limited resources
- Improving the tools and workflow in editorial offices
  - Tralics configuration for transformation of metadata into MathML
  - validation procedures
  - accenting better quality of editorial work rather than changing workflow
- Incentives from the EuDML project
  - improving DML-CZ processes according to EuDML good practices
  - switch to providing data in the NLM format
- Working copy of DML-CZ
- Metadata Editor
  - internationalized, portable, further configuration support
  - <http://sourceforge.net/projects/dme>

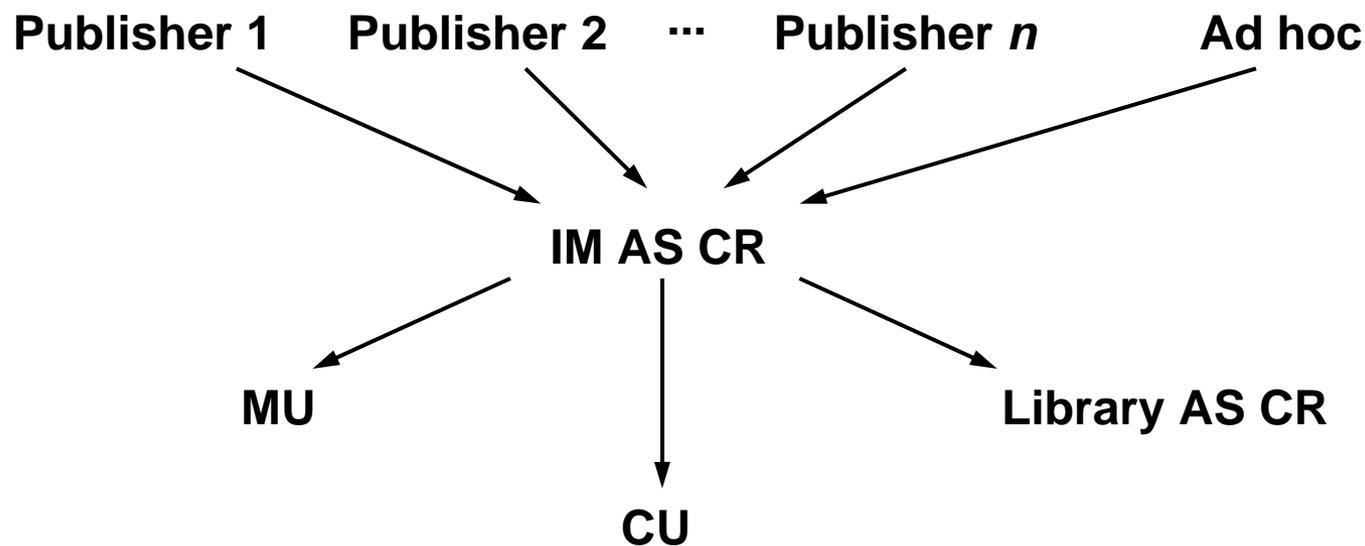
# Sustainability – organization

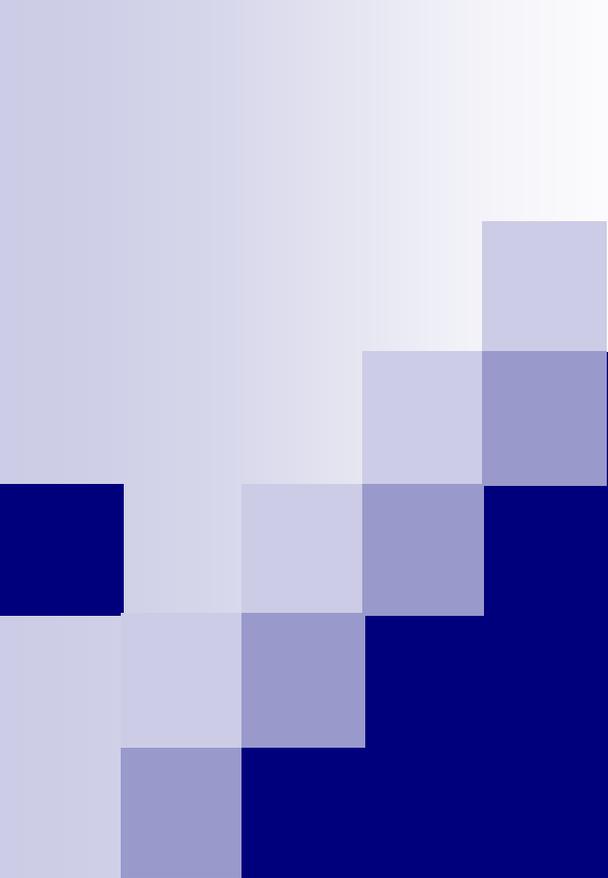


# Sustainability – funding



# Sustainability – funding





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