The CroRIS Project: A National CRIS in Croatia

Davorin Kremenjaš
euroCRIS webinar
May 21 2021
Strategic Project “Scientific and Technological Foresight”

Holder: Ministry of Science and Education
Partner: University Computing Centre
Label: KK.01.1.1.03.0001
Total worth: €2.08M
EU funding: €1.77M
Period: Dec 2017 to Oct 2022 (expected)

The project is co-funded by the European Union from the European Regional Development Fund
Scientific and Technological Foresight Project

- Legal Framework
- CroRIS
- Mapping and Prediction
- Education and Training
CRIS & CroRIS

- (C)RIS - (Current) Research Information System
  - Scientific & Research Information System
- CroRIS
  - = Croatian CRIS :)
  - = Croatian Scientific Information System
- CroRIS is being built as a key part of the Science and Technology Foresight Project
CroRIS Vision

- Comprehensive, complete, reliable info
- Strategic decision making support/foundation
- Open Science promotion
- Business Process support (Ministry of Science and Education, Public Service, Scientific/Research Institutions)
- Open for public use, interoperable and integrated
CroRIS End Users

- Universities
- Science Institutes
- Researchers
- Board / Admins / Libraries / Repositories

- Ministry of Science and Education
- Agency for Science and Higher Education
- Croatian Science Foundation
- National and University Library
- Ministry of Economy and Sustainable Development
- Agency for Mobility and EU Programmes

CroRIS

- OpenAIRE
- ORCID
- WoS
- Scopus

- National Council for Science, Higher Education and Technological Development
- Croatian Bureau of Statistics
- ...

srce
Activities Completed

- Hiring & employment (internal support team)
- Public procurement: technical and consulting services (external teams)
- CroRIS Working Committee setup
- Hardware and Software procurement (internal teams and systems)
- State of Data and Business Processes Survey (within the Croatian Scientific/Research community)
- Project Administration and Public Exposure/Relations
- Conceptual & Project Design
- Public procurement: software development services (external team)
- Programming/Coding – the actual system building
- https://www.srce.unizg.hr/coris
What Next?

- Further software development and phased module deployment
- Project changes and extension (end of 2022)
- End user registration, science & research organisations onboarding
- Data exchange between key stakeholders
- End user education
- Legislative changes
- Working Committee cooperation
- euroCRIS conference 2022
- System maintenance
System Development

- Ministry of Science and Education official registries reimplementation and data migration
- MSE – the 1st CroRIS end user

- Tech talk/numbers:
  - ~ 400 tables in a DBMS
  - ~ 800.000 lines of code
  - 20 projects in a code repository (GitLab)
  - 21 virtual machine/server
  - > 1.500 entries in issue management system (Jira)
Interoperability modules

- Patents and Products
- Events
- Journals
- Publications
- Citation
- Equipment and Services
- Financing
- Projects
- Register of Scientists
- Register of Sc. Inst.
- Register of HE Inst.
- Tracks of Sc. Areas and Fields

APIs:
- P&P API
- Events API
- Journals API
- Publications API
- E&S API
- Projects API
- Scientists API
- Institutions API

Clients:
- Hrčak Client
- Scopus Client
- WoS Client
- HRZZ Client
- OIB Client
- OAI-PMH API
- Dabar Client
- Hrčak Client

CroRIS Portal
- Reporting System
- Instructions
- Administration
- Patents and Products
- Events
- Journals
- Crosbi
- Equipment and Services
- Projects
- Persons
- Official MSE Records
- Institutions
- Tracks of Sc. Areas and Fields
### Open Access

<table>
<thead>
<tr>
<th>CroRIS Portal</th>
<th>Reporting System</th>
<th>Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons</td>
<td>Institutions</td>
<td>Official MSE Records</td>
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</table>
Finished work

Registers of MSE:
- 37,000 persons
- 4,100 institutions
### Fakultet elektrotehnike i računarstva, Zagreb (MBU: 036)

<table>
<thead>
<tr>
<th>Details</th>
<th>Sub-entities</th>
<th>Documents</th>
<th>Authorizations</th>
<th>Leaders</th>
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<tr>
<td>Name (Croatian)</td>
<td>Fakultet elektrotehnike i računarstva, Zagreb</td>
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<td>Name (English)</td>
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<td>Court register name</td>
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<td>Registration number in the Court Register</td>
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<td>Institution kind</td>
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<td>Institution type</td>
<td>Znanstvena ustanova i visoko učilište</td>
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</table>

**Add New Institution**
# MSE Register of Scientists

**Ognjen Orel (MBZ: 310853)**

<table>
<thead>
<tr>
<th>Details</th>
<th>Employment</th>
<th>Expertise</th>
<th>Vocation</th>
<th>Foreign languages</th>
<th>Awards</th>
<th>HAZU</th>
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<tr>
<td>Surname</td>
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<tr>
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<tr>
<td>Gender</td>
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<td>Identification number</td>
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## ORCID Integration

### Personal data

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<tr>
<td>Login name</td>
<td><a href="mailto:user@srce.hr">user@srce.hr</a></td>
</tr>
<tr>
<td>First name</td>
<td>Testmi</td>
</tr>
<tr>
<td>Last name</td>
<td>User</td>
</tr>
<tr>
<td>Father's/Mother's name</td>
<td></td>
</tr>
<tr>
<td>Maiden name</td>
<td></td>
</tr>
<tr>
<td>Title before name</td>
<td></td>
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<tr>
<td>Title after name</td>
<td></td>
</tr>
<tr>
<td>Title before name (international)</td>
<td></td>
</tr>
<tr>
<td>Title after name (international)</td>
<td></td>
</tr>
<tr>
<td>Identification number of the scientist</td>
<td></td>
</tr>
<tr>
<td>ORCID</td>
<td><a href="https://orcid.org/0000-0002-3852-6484">https://orcid.org/0000-0002-3852-6484</a></td>
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Short term plans (summer 2021)

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Mid term plans (winter 2021/22)

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Long term plans (→ summer/fall 2022)
Information and data in Science, Research and Higher Education
Information and data in Science, Research and Higher Education

- Reports, Analytics, Machine Learning

- Wisdom
- Knowledge
- Information
- Data
Information and data in Science, Research and Higher Education

Reports, Analytics, Machine Learning

Data

Information

Knowledge

Wisdom
Technology Stack

- **CERIF**
  - Common European Research Information Format
  - made specifically to support development of CRIS systems
  - "open source"; managed by euroCRIS
  - strong institutional support: backed by the EU Commission
  - EU recommendation to member states
  - standards based: SQL + XML
  - relatively simple: in comparison to more abstract/rich generic semantic frameworks
  - designed from ground up as a relational data model - our area of expertise
  - extremely flexible: capable of modeling and meta-modeling just about any high-level concept using its semantic layer
  - strong support for vocabulary formalization: key enabling point for EU-wide (potentially global) CRIS systems standardization and interoperability
  - easy integration with external systems: OpenAIRE as a minimum, but a lot more to come
Technology Stack (Cont’d)

- Java
  - all apps are Java 11 LTS
- Maven
  - build & dependencies
  - binaries stored in Artifactory binary repository
- Jenkins
  - CI & Deployment
- Git
  - all source in Gitlab
  - feature branch workflow
- Spring
  - all apps are Spring Boot apps
    - web apps: Thymeleaf (server) + HTML/CSS/JS (client)
    - REST APIs: Spring Boot + Swagger (docs)
- R/Shiny
  - analytics/reporting
Technological Improvement Plan

- Containerization
  - Docker
  - dev/test/qa/perf test environments for a start
- CI/CD
  - consolidation within one tool – Gitlab
  - removal of external tools (Jenkins, Artifactory, …)
  - “native” use of Gitlab Dockerized CI workflow
- Performance
  - Spring Native (still beta)
  - GraalVM – JVM startup times < 1 second
- On the horizon…
  - Java 17 migration
    - first LTS after Java 11
  - Kubernetes deployments
    - start small (dev/test/qa environments)
    - evaluate for production use
CRIS2022

• Biennial conference organized by euroCRIS
• Part of the Foresight Project, 2022. conference
• co-organized by Croatian MSE
• Dates: May 12–14 2022

https://eurocris.org
https://mzo.gov.hr/en
Dubrovnik, 12.-14.5.2022.
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