

D2.3.1 Evaluation results of the LinkedUp Veni competition

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LinkedUp: Linking Web Data for Education Project – Open Challenge in Web-scale Data Integration

<http://linkedup-project.eu/>

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Executive Summary

This document D2.3.1 is the first report out of three deliverables (D2.3.2, D2.3.3) of Task 2.4 - Evaluation of challenge submissions. Task 2.4 is about the actual assessment of the participating projects within the LinkedUp Veni, Vidi and Vici competition on the basis of the LinkedUp Evaluation Framework (D2.2.1).

We especially report about the outcomes of the various competitions and analyse the practical experiences of the experts with the LinkedUp Evaluation Framework.

In the current document D2.3.1 we report about the Linked Data tools and ideas that have been submitted to the first data competition - Veni. In total, we received 23 submissions, 8 of them have been shortlisted and invite to a poster presentation at the Open Knowledge Conference (OKCon), 3 of them have been awarded at OKCon according to the Linkedup evaluation process, and one submission received an audience award.

This deliverable provides an overview of the Veni submissions, explains the evaluation procedure that result in a short list of the best submissions, justifies the decision for the winners, and also reports the experiences with the evaluation framework that has been created in the previous WP2 deliverables [7][8].

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1. Introduction

This document D2.3.1 is the first report out of three deliverables (D2.3.2, D2.3.3) of Task 2.4 - Evaluation of challenge submissions. Task 2.4 is about the actual assessment of the participating projects within the LinkedUp Veni, Vidi and Vici competition on the basis of the LinkedUp Evaluation Framework (D2.2.1). The objectives of Task 2.4 are two-folded:

- A.) To summarise and report the outcomes of the various competitions and analyse the practical experiences of the experts with the LinkedUp Evaluation Framework and suggest possible improvements of the framework.
- B.) To identify strengths and weaknesses of the participating projects according to the Evaluation Framework and forward those to WP4 to organize customised technology transfer workshops to support the development of the data applications of the participants.

In the following section 2, we will first report about the Veni competition and its main outcomes. In section 3, we will explain the main methods used to evaluate the Evaluation Procedure of the Veni competition. In section 4, we present the results of the analysis of the evaluation procedure and finally in section 4, we discuss the main conclusions towards the objectives of D2.3.1 and suggestions for the next Vidi competition.

2. The LinkedUp Veni competition

The Veni Competition was the first in the series competitions comprising the Linked Challenge (<http://linkedup-challenge.org/veni.html>). The competition was promoted through the LinkedUp Project website and the LinkedUp Challenge website, a site dedicated purely to promoting the challenge. Veni ran from 22nd of May to 27th of June 2013 and requested participants to submit “an innovative and robust prototype or demo that used linked and/or open data for educational purposes”. The LinkedUp Challenge website defines “educational purposes” by stating that the tools and applications developed must be relevant to education - in the broadest sense of the word. This might mean that they aid learning in some way or that they support educational objectives by expanding knowledge and encouraging critical thinking.

By the closing date, 22 valid submissions had been received from 12 different countries (4 from the UK, 3 from France, 3 from Spain, 3 from the USA, 2 from the Netherlands and 1 from Greece, Bulgaria, Belgium, Italy, Argentina and Nepal). The majority of entries were from teams based at universities or from start up companies. However, there were also entries from independent consultants. The entries were heterogeneous, consisting of varying number of authors, institutions, countries etc.

The participants in the competition had interpreted the specification “educational purposes” in a variety of innovative ways. A number of the submissions, such as *Course Finder*, *LinkedIn MOOCs counselor* and *Moocrank*, had looked at MOOC and course data and offered cross-searching mechanisms. Some, such as *PoliMedia*, *Dr Hoo*, *Neuro-Cloud Free Textbook Project* and *Enrichment of Young Digital Planet's biology lessons*, had focused on discipline-specific data such as political studies, biology, etc. and offered new pedagogical approaches based on data applications for learners to explore and understand discipline-specific content. Others, such as *REthink* and *Learner Journey Navigation System*, also took an exploratory approach using topic maps, but operated on the cross-section of several disciplines. Two of the submissions, *One Million Museum Moments* and *Mismuseos.net*, looked in particular at cultural heritage data and how museum data could be used in an educational context. The remaining submissions covered other educational related areas including use of conference publications, reading lists, mobile learning and annotation. The entries are listed in Table 1. Full abstracts are given in Appendix A.

Table 1: Overview of all submissions of the Veni competition.

ID	Authors	Title	Abstract
1	Madi Solomon, Marlowe Johnson and Ira Kleinberg	Open Linked Education Data	The Open Linked Education Data database is a curated "Subject" vocabulary offered as a community service to the education sector.
2	<u>Martijn Kleppe</u> , Max Kemman, Henri Beunders, <u>Laura Hollink</u> , <u>Damir Juric</u> , <u>Johan Oomen</u> and <u>Jaap Blom</u>	PoliMedia - Improving the Analyses of Radio & Newspaper coverage of Political Debates	PoliMedia aims to stimulate and facilitate large-scale, cross-media analysis of the coverage of political events focussing on the meetings of the Dutch parliament, and providing automatically generated links between the transcripts of those meetings, newspaper articles, including their original lay-out on the page, and radio bulletins.
3	Ricardo Alonso Maturana, María Ortega, María Elena Alvarado, Susana López-Sola and María José Ibáñez	Mismuseos.net: Art After Technology. Putting cultural data to work in a Linked Data platform	Mismuseos.net shows a case of consumption and use of Linked Data from museums and their valorisation in education, through innovative end-user applications, like facet-based searches, semantic context creation and navigation through graphs, which drastically improve user experience.
5	Devon Walshe and Lizzie Brotherston	Course Finder	The coursefinder app is a searchable map of UK courses from Elementary level to University.
6	Florian Bacle, Benoît Durant de La Pastellière, Fiona Le Peutrec and Lionel Médini	DataConf: Enriching conference publications with a mobile mashup application	DataConf is a mobile Web application that allows browsing of conference publications, their authors, authors organizations, and even authors other publications or publications related to the same keywords.
7	Jana Parvanova and Ilian Uzunov	Enrichment of Young Digital Planet's biology lessons	The demo uses allows exploration of biology lessons owned by Young Digital Planet and is a multimedia application with additional links and images.
8	Lazaros Ioannidis, Panagiotis Bamidis, Charalampos Bratsas and Eleni Dafli	Dr Hoo	The Dr Hoo game begins with a central concept, say a drug, that needs to be 'guessed' by the player. They guess the answer using hints which might be concepts (like a disease targeted by the drug) or a simple property of the original concept (like a brand name).
9	Vladi Trop, Raphael Glassberg and Peter Kollarovits	FavSync - Collect bookmarks together	FavSync allows users to easily share and sync groups of bookmarks with other users.
10	Jack Townsend	Globe-Town: open data for sustainable development education	Globe-Town.org opens up the successes and the challenges of sustainable development around the world and what they mean for you, through a fun and informative web application built from open data.
11	Dor Garbash	Knownodes - A collaborative project to explore, create and	Knownodes is a collaborative website that enables anyone to relate, define and explore connections between web-resources and ideas.

		define links between online resources and ideas	
12	Wilbert Kraan	Learner Journey Navigation System	The Learner Journey Navigation System is a linked data mash-up that illustrates how a learner can be helped to find her way through learning opportunities and resources when outcomes are published as URIs.
13	Marco Arrigo, Giovanni Fulantelli and Davide Taibi	MELOD: Mobile Environment for learning with Linked Open Data	The MELOD environment has been designed to support, through the use of mobile devices, the informal learning experiences that take place during the visit of a city.
14	Emiliano Marmonti	LinkedIn MOOCs counselor	The LinkedIn MOOCs counselor uses LinkedIn API to identify the skills from the profile of the user and maps these skills into more general concepts from a downloaded image of DBpedia and specific SPARQL query.
15	Israel Gutiérrez and Derick Leony	moocrank: recommendation of MOOCs based on learning outcomes	Moocrank combines open data about learning outcomes and data obtained from the main MOOC platforms (Coursera, Edx, Udacity).
16	Andrew L Varnell	Neuro-Cloud Free Textbook Project	The Neuro-Cloud Free Textbook Project creates an open-access, free forever textbook.
17	Suzanne Sarraf and Herminia Din	One Million Museum Moments	OneMillionMuseumMoments.org invites museum goers and museum professionals to share their own museum moments/experiences.
18	Vaidas Repecka	REthink, REassure, RElook, REsee, REMember, REDiscover. This is simple. This is ReCredible	REthink is a linked information system using topics maps.
19	Abdulaziz Aldaej and Paul Krause	Social VLE With Rich Structure Learning Data Using Semantic CMS	Social VLE makes use of Schema.org and the Semantic Content Management System (SCMS) Drupal to provide a more open, social and linked learning environment.
20	<u>Vincent Michel</u> , <u>Arthur Lutz</u> and <u>Adrien Di Mascio</u>	Suggest me content for further reading and learning	Suggest me enables students to submit text and the site suggests some courses, information, books, photos and videos related to it based, among others, on corpus by the French National Library and DBpedia (based on Wikipedia).
21	Adolfo Ruiz-Calleja	We-Share: a social annotation application that publishes and retrieves information about educational ICT tools from the Web of Data	We-Share is a social annotation application that allows educators to search, create and enrich descriptions of ICT tools from the Web of Data.
22	Rajendra Sharma	Wikipedia data linker	A wikipedia search engine like application, under which user can select category present within our system and fetch the results via wikipedia.
23	Maria-Hendrike Peetz	yourHistory: Personalising Historic Events	yourHistory allows linking of personal historic events with global events allowing users to write their own personal history book.

2.1. The Scoring Sheet for the Veni competition

One main outcomes of the LinkedUp project is the development of a comprehensive Evaluation Framework (EF) for data competitions. We therefore conducted in deliverable D2.1– Evaluation Criteria and Metrics [7] a Group Concept Mapping study with experts to work out specific evaluation criteria Open Web Data competitions in the Educational Domain. The Evaluation Frameworks acts as a comprehensive collection of possible evaluation criteria and their indicators that can be selected and customised for specific tasks in a data competition. In D2.1 we identified five relevant evaluation criteria of the LinkedUp EF: 1. Educational Innovation, 2. Usability, 3. Performance, 4. Data, 5. Legal and Privacy [7]. In a complementary literature review on suitable evaluation metrics and methods, the preliminary version of the LinkedUp EF was further adjusted and substantiated. The literature review provided more detailed evaluation indicators and also summarised potential evaluation methods.

Afterwards, in deliverable D2.2.1 [8] we operationalise the Evaluation Framework into a concrete evaluation instrument based on a Google form. The EF will be further developed and improved throughout the duration of the project, especially after each round of a data competition in the LinkedUp Challenge. This report is one of these evaluation milestones that will provide specific improvements to the LinkedUp EF.

In the Veni competition the LinkedUp judges rated the submitted tools with the concrete evaluation items in the Google form as reported in D2.2.1. They received the following instructions for their evaluation:

DETAILED REVIEW PLAN:

Please follow the following steps during your reviews.

1. Scan the submissions assigned to you – see the list at the end of this email. In each paper, there is a link to the demo site, either in the main text or in the references. Watch the demo or do a live test of the tools.
2. Start the review: Please go to the Google evaluation form (http://bit.ly/data_competition) and enter the ID, TITLE of the submission from the EasyChair system.
3. Please rate your assigned submission(s) according to the 6 criteria. In case you experience difficulties with some indicators or want to make a short note, use the open text field of a criterion.
4. When a review (Google evaluation form) has been submitted, please go to EasyChair and ‘submit’ your review there with a short quote “Review done”.

Afterwards the reviews provided their reviews according to the 6 evaluation criteria and various sub-scales on a 0-5 scale. For details about the evaluation from please look at Appendix B.

2.2. Evaluation results

After all reviews were collected, we started a thorough analysis of the evaluation results. First of all we visualized the evaluation results for each criteria in a single bar chart to get a rough overview of the assessment results of the LinkedUp judges.

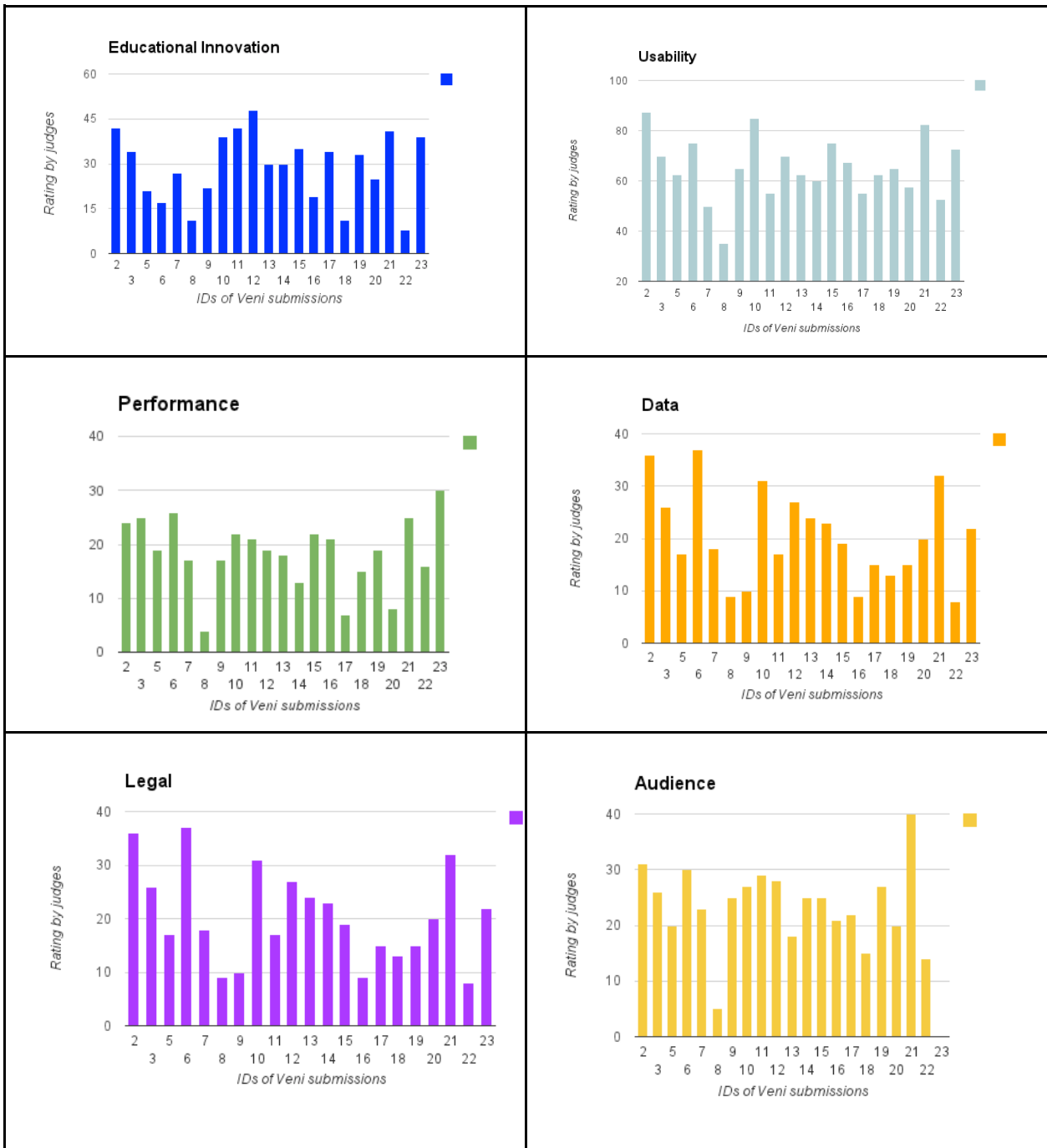


Figure 1: Overview of the evaluation results per criteria and submission ID.

The line chart presented in Figure 2 shows all evaluation criteria per submission in a single view. This presentation helps to follow the performance of a particular submission over all evaluation criteria. In the legend on the right side you find the submission ID color-coded. On the x-axis are the evaluation criteria listed and the y-axis shows the individual ratings that the submissions achieved for each of the criteria.

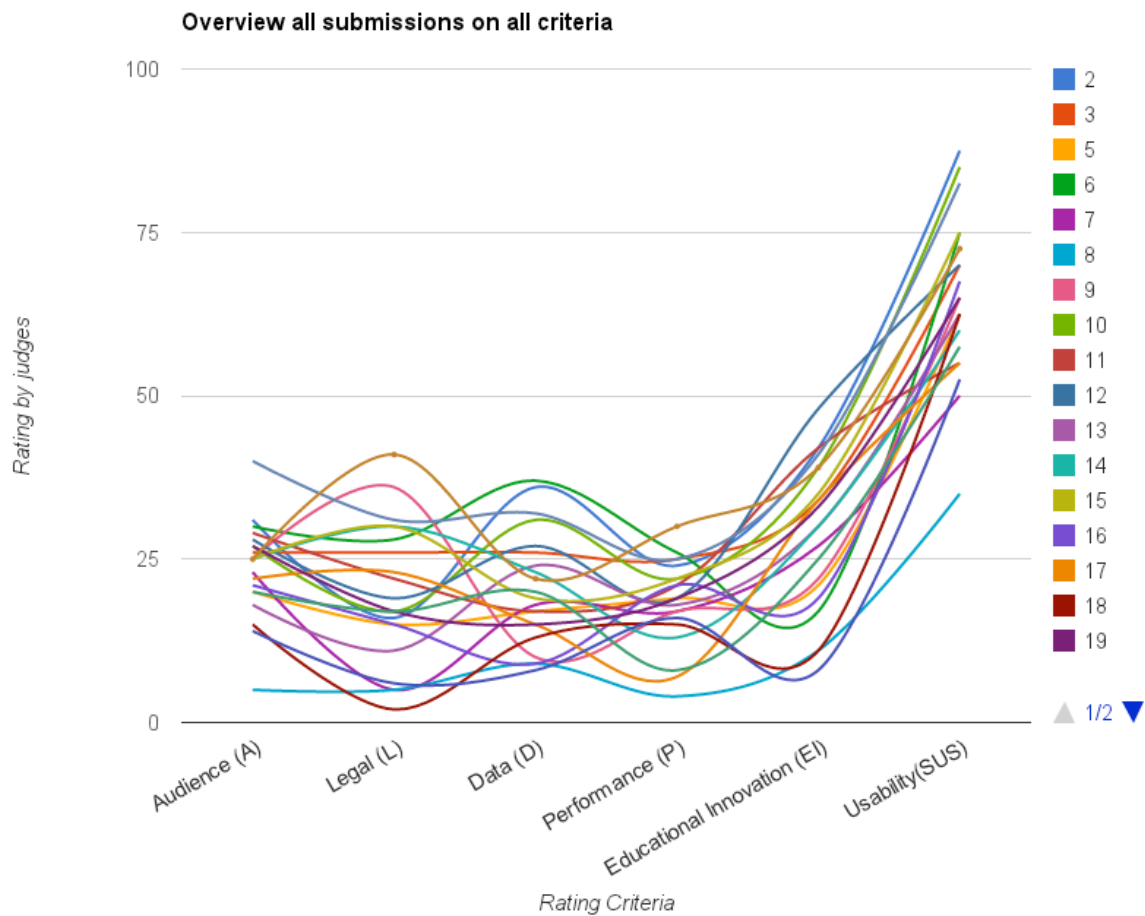


Figure 2: Line chart presentation of the ratings of the submissions over all evaluation criteria.

2.2.1. A shortlist of 10 submissions

Next to the line chart overview in Figure 2, we calculated the average score of each submission with regard to (a) all evaluation criteria and (b) all evaluation criteria without the usability score (SUS). The SUS score has a higher score (between 25 -100) than the other evaluation criteria. In order to make sure that the average score for the submissions is not affected by the high SUS value we calculated this additional value for the submissions.

We used figure 1 and 2 to identify the ten best submissions for further analysis and identify candidates for the award ceremony at the OKCon Conference. Figure 4 shows both average scores next to each other. Although we calculated the average scores with and without the SUS score, both figures lead to the same results. A zoom view into the top 10 submissions (see Figure 3), showed that submission 11 and 14 are behind their competitors. Note the list of submissions below is not sorted according to the average score.

- Submission ID 21 - We-Share
- Submission ID 2 - PoliMedia
- Submission ID 23 - yourHistory
- Submission ID 10 - Globe-Town
- Submission ID 6 - DataConf
- Submission ID 3 - Mismuseos.net
- Submission ID 12 - Learner Journey Navigation System