

# **DELIVERABLE 3.4**

## Evaluation Report and Recommendations

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## Executive summary

The web presence, <http://www.microreactortechnology.eu>, was developed for Network for Innovation and Learning on Micro Reactor Technology (NIL-MRT) as a platform for students, academia and SME's to expand their knowledge on the topic of microreactor technology. Online educational materials regarding the basic knowledge, case studies and living communities to exchange knowledge and MRT activities are included in this website.

This evaluation report summarises the feedback received from the initial evaluation of the NIL-MRT web presence in order to make an overall judgement on the live network and to facilitate improvements to sustain the international microreactor technology network for the future.

The evaluation was carried out by the steering committee, who have been directly involved in the project throughout, by means of a questionnaire assessing three main focus areas in the NIL-MRT website: web usage and usability, educational contents, and case studies. Questionnaire participants were given the choice to score from 1 to 5 indicating the degree of satisfaction. The average scores lay between 2 and 3 in all areas assessed. The most satisfactory aspect of the website was found to be the online closed communities where MRT activities were shared. However, a major improvement on the educational contents is required by re-structuring, providing more detailed information, and employing more interactive and visually appealing tools to present the information. In order to retain the network sustainability, attempts should be made to assure the quality of the website contents, to continue providing new materials to the website, to organise a collaborative plan to maintain the NIL activities, and to expand the network to a wider audience.

## Project description

Network for Innovation and Learning on Micro Reactor Technology (NIL-MRT) was constructed in order to provide a learning network with real-life communities for innovative knowledge to be accessible for students, academia and SME's who are in the field of chemistry and chemical engineering and would like to expand their knowledge on the topic of microreactor technology.

The learning network, <http://www.microreactortechnology.eu>, was developed as a website for subscribed users, providing educational materials for undergraduate students including basic information on microreactor technology as well as some case studies on the use of microreactors. A post-bachelor course (a masterclass), targeted at professionals already working in the field of chemistry, was also included in this section. This course outlines the possibilities of how to exploit microreactor technology in commercial environments. The second part of the network provides living communities for participants to exchange knowledge on microreactor technology.

### 1. Intended use and users

Defining the intended use and users is an important key to a successful evaluation. Once a decision has been made on the purpose of the evaluation, and the evaluative criteria for judging program success has been established, the next step is to identify the intended users who benefit from the evaluation. In order to keep the evaluation in focus, only the primary intended users are identified here.

For the evaluation of NIL-MRT web presence, the intended users interested in the program effectiveness are the program funder (EU), project partners and members of the general public involved in microreactor technology. The information needs for their intended uses, focus the evaluation. The intended use and users for NIL-MRT evaluation are summarised in Table 1.

**Table 1.** Intended use and users of the evaluation of NIL-MRT web presence.

User	Intended use
1. EU project funder	To judge if the project goals are attained and the funds are used appropriately for the intended purposes.
2. Project partners	
2.1 OUNL	To use the evaluation as a monitoring tool for the living communities and platform for knowledge transfer of MRT: <ul style="list-style-type: none"> <li>- Gauge the health of the living communities.</li> <li>- Determine the well-performed and underperformed parts in the web presence.</li> <li>- Track and report the activities of the visitors of the web presence.</li> </ul>
2.2 ZUYD	<ul style="list-style-type: none"> <li>- To employ the evaluation as a monitoring tool on the performance of the webpage as an online facility to access knowledge on MRT and as a discussion forum for students on MRT activities.</li> <li>- To exploit the evaluation findings as a tool for reallocating resources for increased effectiveness of the online educational materials.</li> </ul>
2.3 UHULL	To use the evaluation as feedback on the efficiency of the provided online education material and which areas need improvement.
2.4 Provalidis	To utilise the evaluation as feedback on the quality of the provided case studies, leading to the improvement of the existing cases and the recommendations for future case studies to be provided.
2.5 DCU	To use the evaluation as a tool for the improvement of the existing educational materials and case studies on MRT.
3. Members of general public involved in MRT	To utilise the evaluation as a means to direct the project information provider/communities manager to deliver accordingly.

## 4. Evaluation focus, data sources and methods

### 4.1 Evaluation focus

Determining the evaluation focus was based on the program's stage of development. NIL-MRT is a pioneering international live network for collaborating on, and learning about, microreactor technology. The developed NIL-MRT web presence was initially evaluated in November 2014 by focussing on the effectiveness of the current platform/website and its contents. The evaluation findings were subsequently implemented for improvement and sustainability of the NIL-MRT network.

### 4.2 Data sources

A variety of data sources can be employed to gather informative data, depending upon availability and relevance to the evaluation questions. Due to time constraints, the data source primarily used was from the feedback received from participants answering the online questionnaire.

#### **4.3 Methods employed for the evaluation**

Being a collection of online resources, the NIL-MRT web presence can be evaluated either quantitatively or qualitatively. The usage statistics on the frequency, types and content of materials being viewed by participants can be tracked as well as the qualitative observation notes. Communications within the NIL-MRT web presence can also be monitored regarding the extent to which topics, and the interactivity characteristics of the forum, are being discussed. The evaluation was carried out via a questionnaire consisting of five sections where the NIL-MRT web presence as well as the online materials within were assessed (Appendix A: Questionnaire for NIL-MRT evaluation). The satisfaction level of participants was scored from the lowest, 1, to the highest score of 5. The average score was used as the evaluation outcome. Discussion was subsequently made by project partners on the initial evaluation results in order to finalise actions required to improve the NIL-MRT web presence.

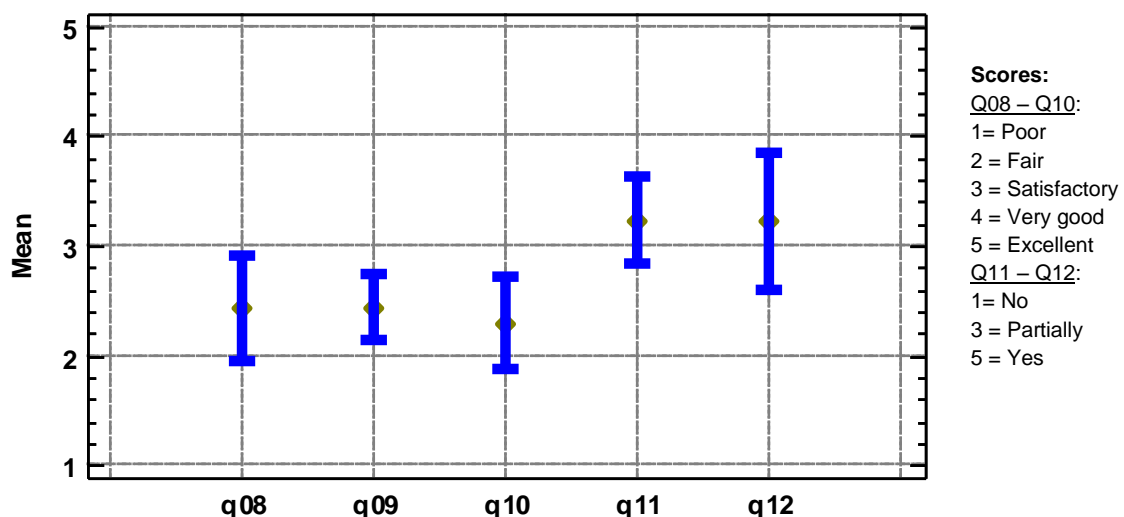
## 5. Results, conclusions and recommendations

In this section, results from the initial evaluation indicating qualitative and quantitative feedback on the NIL-MRT web presence are described. Conclusions and recommendations drawn from the first evaluation, providing an implementation plan for NIL-MRT sustainability, are additionally discussed.

### 5.1 Initial evaluation (November 2014)

#### 5.1.1 NIL-MRT web usage and usability

The first set of evaluation questions identified the usage and usability of the participants to the NIL-MRT web presence. The main purpose of NIL-MRT web usage for project partners participating in the initial evaluation was to read information within the website (54%). One of the participants defined other usage as: “to explore the website for the content within, structure of the educational material, online lectures, video and audio resources for knowledge exchange”. Figure 1 illustrates the usability of NIL-MRT website. From seven participants answering this set of questions, averages of 2.2 – 2.4 were scored for the structure and contents of the website, which were lower than participants’ expectation. For the information accessibility and useful information that raised participants’ interest, higher average score of 3.2 was observed. Additional information obtained from the qualitative evaluation suggests that the NIL-MRT website was expected to provide new ways of learning, innovation and virtual knowledge exchange. Despite the aforementioned deliverables, the NIL-MRT website should offer a platform to exchange knowledge, teaching resources and collaborations.



**Questions:**

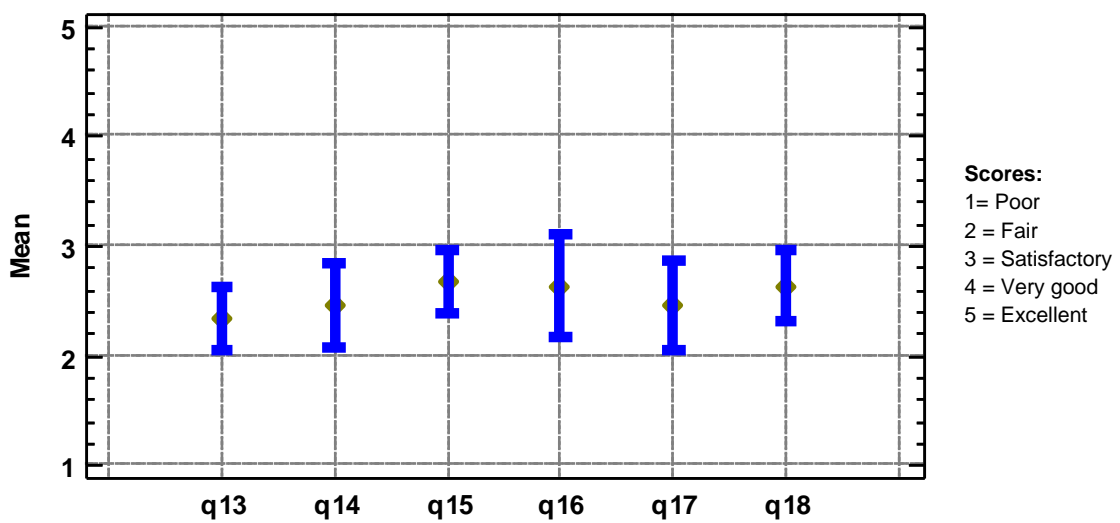
**Figure 1. NIL-MRT Usability.**

Q08: The structure of the website (average score = 2.4)  
 The participants also listed the most-liked aspects of NIL-MRT website being (i) the online closed communities for sharing project information, (ii) the agenda of MRT activities, (iii) the explorative pioneering orientation of partners  
 Q09: The website contents (average score = 2.4)  
 Q10: Level of satisfaction with respect to expectation (average score = 2.3)  
 Q11: Additional information on NIL-MRT that raised participant's interest (average score of 3.2)  
 Q12: Additional information on NIL-MRT that raised participant's interest (average score of 3.2)

professionals entering industry laboratory practices. An improvement on website accessibility was nevertheless suggested.

### 5.1.2 NIL-MRT educational contents

The next set of questions focussed on evaluating the educational contents within the NIL-MRT website. This includes six questions (Q13-Q18); the degree of satisfaction was scored from 1 (poor) to 5 (excellent). The objectives, quality of the materials, and the tasks provided after each lesson, were assessed by nine participants and the results illustrated in Figure 2. Overall, the degree of satisfaction on the educational contents ranged between 2.3 to 2.7.

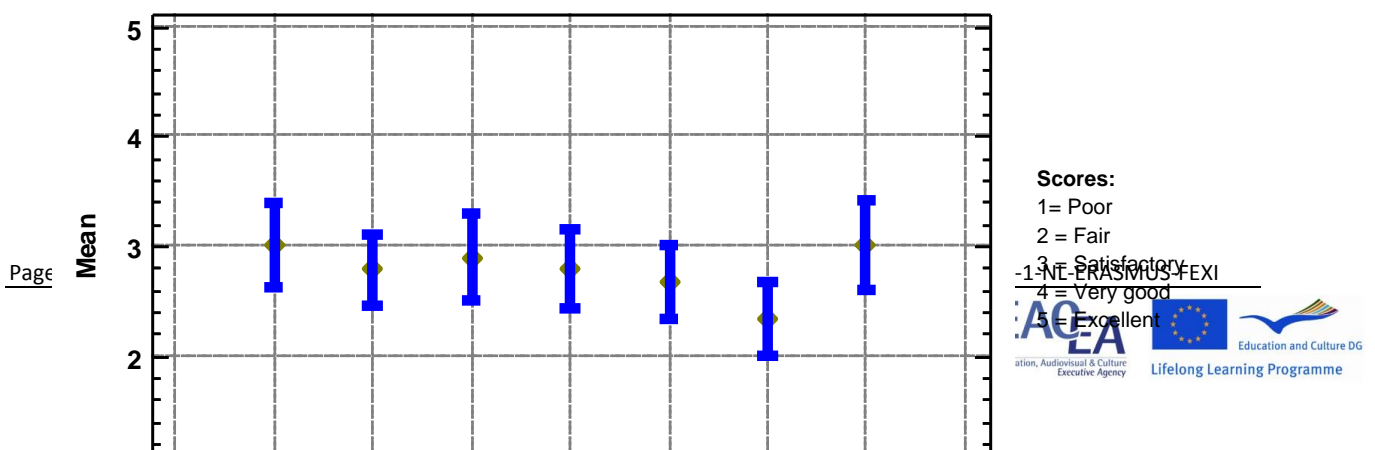


**Questions:**  
 Q13: The objectives of the learning material (average score = 2.3)  
 Q14: Overall quality of the online material (average score = 2.4)  
 Q15: Easy-to-understand approach (average score = 2.7)  
 Q16: Delivery of MRT basic knowledge (average score of 2.6)  
 Q17: Delivery of sufficient information set with MRT by predominantly textual environment (average score of 2.4)  
 Q18: Agreeability between tasks and learning outcomes (average score of 2.6)

Qualitative evaluation reveals that the education contents were unappealing; difficult to navigate, had poor structure, provided insufficient information set with MRT by predominantly textual environment. A more attractive way of presenting information is suggested, e.g. more interactivity (e-learning) with more visual content (pictures or video).

### 5.1.3 Case studies

Another main part of the NIL-MRT website being evaluated was the case studies. A set of seven questions (Q19-Q25) was employed for the assessment (Figure 3). Overall, a slight improvement, with respect to the educational contents, up to a score of 3 (satisfactory) were given from the answers of the nine participants.





**Figure 3.** Evaluation on case studies.

#### **5.1.4 Conclusion**

An initial evaluation on the NIL-MRT website was carried out by nine participants who were involved in the project by developing the website, providing information for the website or exploiting the website for MRT activities. The feedback given by the participants suggests a major improvement on the educational contents, by re-structuring, providing more detailed information and employing more interactive and visually appealing ways to present the information.

### 5.1.5 Recommendations

The aspects for improving the web presence for sustainability of the NIL-MRT are summarised as follows:

- Provide easy access and subscription to the website.
- Introduce quality control to the information available on the website.
- Structure the educational content for each target group for easy access to the required information.
- Stay active by continually providing new materials to the website.
- Maintain activities between partners within the NIL-MRT communities and seek to expand the network to wider audience.
- Organise a collaborative action plan to maintain the NIL activities.
- Focus on specific target groups and design the educational module to match each target group.

## 6. Improvement plan

The improvement plan on the NIL-MRT was drawn from the initial evaluation findings by the project partners as summarised in Table 2.

**Table 2.** Improvement plan on the NIL-MRT.

Action	Expected outcome
1. Improve the accessibility/subscription procedure	More visitors/audience
2. Structure the contents within the website to suit the target audience	Easy to navigate to the desired information
3. Enhance resources creation procedure	More frequent use by MRT teaching staff
4. Enable re-use of partner resources	More frequent use by MRT teaching staff and students
5. Introduce quality control	Improved quality of the materials provided and higher chance of capturing new audience
6. Accommodate scalability	Allow for larger user groups to access the materials simultaneously
7. Adapt website for multiple platforms	Enabling more visitors through PC/mobile/tablets
8. Continually providing new materials to the website	Repeat visits, and higher chance of capturing new audience

**Appendix**

**Questionnaire for initial evaluation on the NIL-MRT web presence (November 2014)**