Erasmus+ project:
Qualification, Validation and Certification of Maintenance Personnel

Goto meeting, 19 th October 2020

Present: **Absent:**

Guðmundur Jón Bjarnason   Maria Malmrud

Torsten Ekström   József Csiba

Ilkka Palsola   Jaakko Tennilä

Páll István   Attila Kiss

Ingemar Andreason   Mikaela Malmrud

Jan Skarka   Tomáš Hladík

Zsolt Nyeste   Silvia Stepanova

                                                           Damjan Maletič

1) **A generall status update (Erasmus+ Follow up of MCQ)**

   The number of MCQ today, October 19th, is as follows:

	CS	FI	HU	IS	SL	SV	Total
Total	326	137	229	213	136	342	1378

   The number of MCQ today, September 21st, is as follows:

	CS	FI	HU	IS	SL	SV	Total
Total	305	97	221	165	117	294	1147

   Last time, August 17th:

	CS	FI	HU	IS	SL	SV	Total
Total	305	79	221	126	117	294	1090

   Before that. June 15th:

	CS	FI	HU	IS	SL	SV	Total
Total	305	79	221	82	100	286	1015

   It was pointed out that we need rules / guidelines for creating questions for "phase 2", that is for the "certification level" testing skills and deeper knowledge.

   Issues that must be addressed before questions will be entered into a common database:
   - Labelling, such as who created this question"?
     - Anwer: _____
   - How will the questions still be accessible?
     - Answer: Through the MZ system, see below

- How can we use the same questions for other levels, where applicable?
  - Anwer: The intention is to make it possible to have one question for many levels and it will be possible to edit it once for all levels. To be explained further _____
- When will the questions be exported - and then the Excel files containing them will be locked?
  - Answer: Monday October 26th
- How will we work with the questions after they have been exported - imported to a common database? Demonstration is needed.
  - Answer: Torsten´s intention is to organise a demonstration before end of October .
- Where does this system come from?
  - Answer: The name of the system is MZ from MZ Competence
- Does the project pay for the system?
  - Answer: Free for use during project time
- Is this the best system for our purposes?
  - Answer: To be determined
- Can we later use another system, if we so chose?
  - Answer: Yes
- How will we continue adding new questions?
  - Answer: We can still add new Excel files, but we can also work directly with the system containing the common database. It is suggested to start with new Excel files.

From our previous meetings:
- Ilkka noted that many people from educational institutions in Finland recommend only to use multiple choice questions (MCQ).
- The goal is to have at least 20 questions per subject on average. Adding more questions, team members from different countries can choose subjects where they have experience and questions are still missing, based on the document Erasmus+ Follow up MCQ and OQ.xlsx stored in folder O5 - O6 Validation question for EQF level 6 and 7.
- Each country will review questions from their own team members. We will later get additional feedback during testing from persons from the field.
- All the questions will be property of the EU, as it is financed through Erasmus+ but it is an important assignment for us to come up with procedures, with EFNMS, how to maintain the questions in the future and in general the results from this project.

2) Review of the previous protocol

Ilkka told us that he gave an introduction on the EFNMS GA meeting last Saturday. A question was raised about the ownership, the question was answered that the intention is to hand it over to EFNMS/ECC, when necessary procedures are in place, as mentioned in earlier minutes.

At our last meeting Torsten mentioned that he has not gotten time reports from all, he will send a follow up e-mail.

3) **Updated qualifications - Proposal and decisions**
Not discussed

4) **Development of questions+**
Before the meeting Torsten sent the following analyzes whether to use MCQ or OQ for skill and deeper knowledge:

Open questions – Advantages	Open questions – Disadvantages
Relatively easy to write	Time consuming due to manual correction
Clear picture of the ability to solve problems	Extensive solution proposals are required
Easier to see if the individual has skills	Correction is based on individual assessment
Possible to give points despite incorrect answer	
All existing open questions can be reused	

Multiple-choice questions – Advantages	Multiple-choice questions – Disadvantages
Effective as correction takes place automatically	Difficult to create from the skills perspective
No solution proposals are required	Unclear picture of the ability to solve problems
Correction doesn´t need individual assessment	Difficult to see if the individual possesses skills
An answer is either right or wrong	Impossible to give points despite incorrect answer
	The existing open questions cannot be reused

Ilkka came with the idea that we can create both MCQ and OQ. Later ECC can take this further and before running each exam it can possibly be decided whether that exam will use only MCQ or MCQ and OQ He also noted that the project's intention was and still is to create 2000 MCQ and 400 OQ. It was also noted that it takes shorter time to create an OQ than complex MCQ, to have only MCQ could be difficult for the project, timewise.

Can we decide to write only MCQ, while the project application says 2000 MCQ and 400 OQ? COVID 19 is for example an argument for doing this.

Many believe we could, within the time frame of the project, create only MCQ. It is easier to administrate and execute MCQ exams.
Also, will ECC have time later to change OC to MCQ?

Decision, agreed by all: To create only MCQ. For the certification we will use more complex MCQ, more than one point for each question.
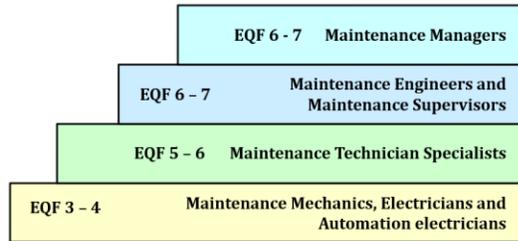
The following is from our last meeting:

Ilkka presented a suggestion for "EFNMS examination model". The suggestion includes:
- Digitized exam, only MCQ

Same exam model for all levels.

Maximum exam structure will consist of 3 sessions, two sessions a' 2 hours maximum with questions and 1-hour English language test.

Maximum total exam length will be 5 hours.

Maintenance Qualification Staircase

EQF 6 - 7	Maintenance Managers
EQF 6 – 7	Maintenance Engineers and Maintenance Supervisors
EQF 5 – 6	Maintenance Technician Specialists
EQF 3 – 4	Maintenance Mechanics, Electricians and Automation electricians

Erasmus+ structure

Subject
1. Maintenance within Physical Asset Management
2. Maintenance Management
3. Maintenance Execution
4. Health, Safety & Environment in maintenance
5. Maintenance Engineering Techniques
6. Maintenance Support
7. Basic knowledge

BoK structure

15628 will be our marketing base

EN15628 standard structure

EN17007 standard structure

This documentation must be created by FCC !!!!!!

We will use only multiple-choice type questions.

We will use three difficulty levels for questions, we will call levels as pockets. In Erasmus+ project each question will put into one pocket.

Each question will have four answering options, one right and three false ones. If answered right the question point value is equal the pocket rating value, if answered false question point value is zero.

The exam part will be built by using agreed amount of questions from each pocket.

The exam result will be the point sum of right answered questions. The limit to pass the exam is approx. 70 % of maximum points.

Question type	Number of questions	Points per question	Total
Pocket 1	15	1	15
Pocket 2	5	5	25
Pocket 3	3	10	30
Total	23		70
Passed			>50

The table is giving one suggestion how to compile the exam part.

- Ilkka showed three kinds of questions, an easy MCQ for pocket 1, a bit more difficult MCQ for pocket 2 and a MCQ with a numeric answer for option 3.
  - We still need an example for a MCQ in "pocket 3" testing "deeper knowledge/skill". One approach would be to have a situation explained and the student would have 4 options, each with a considerable amount of text explaining different approaches, one being correct. Ilkka will create an example.

- ■ Another similar way to test deeper knowledge could be to have a question with attachment(s) showing different "scenarios" text or picture, one of them being the best solution.
- ● It was discussed that we might want to have "cases". For each case the student has to read some text describing a situation within a company and then answer a few questions based on that case. Another way about this would be to have only one case - one question, which would be easier to create and maintain. We need an example to discuss further, Torsten will work on this.

5) Committee involvement

No additional discussions.

6) The QVCMP web page

Zolt sent an e-mail with a link for selection of naming suggestion. Please answer. The door is open for new suggestions.

7) Other issues