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**INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC SYSTEM FOR CERTIFICATION TO STANDARDS RELATING TO EQUIPMENT FOR USE IN EXPLOSIVE ATMOSPHERES (IECEx SYSTEM)**

**TITLE: Report from the IECEx Personnel Certification Committee (ExPCC)**

**Circulation to: Members of the IECEx Management Committee, ExMC**

**INTRODUCTION**

This document (based on ExPCC/106/RM) contains a report from the IECEx Personnel Certification Committee (ExPCC) following their May 2019 Meeting held in Singapore and is submitted for consideration/discussion at the 2019 ExMC meeting.

This report includes, for ExMC noting in particular, advice that

1. The ExPCC has (refer Item 7 below) published the first ExPCC Decision Sheet (as ExPCC/102/INF) regarding the analysis of knowledge assessment results. The publication of this ExPCC Decision Sheet was endorsed by the 2018 Meeting of the IECEx Executive.
2. The ExPCC endorsed the IECEx Question Bank Implementation Plan proposed by the 2018 ExPCC WG3 meeting. This plan basically requires all accepted ExCBs to use the IECEx Question Bank for all assessments conducted after 1 January 2020. The full plan is provided as Annex C to this report.

There are no new ExPCC Recommendations at this time and no ExCMC decisions are requested on this report.

**IECEx Secretariat**

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**INTERNATIONAL ELECTROTECHNICAL COMMISSION SYSTEM FOR CERTIFICATION TO STANDARDS RELATING TO EQUIPMENT FOR USE IN EXPLOSIVE ATMOSPHERES (IECEx System)**

**Meeting of the IECEx ExPCC (Personnel Certification Committee)**

**MEETING REPORT**

**held at IEC Asia Pacific Regional Centre, Singapore**

**on** **Thursday 9th May 2019 (commencing at 9:00 a.m.)**

**Attendance**:

Mr Peter Thurnherr IECEx ExPCC Chairman

Mr John Allen IECEx ExPCC Deputy Chairman

Mr Ron Sinclair SGS Baseefa (GB)\*

Mr Thierry Houeix INERIS (FR)\*

Mr Muhammad Nazif Zakaria SIRIM (MY)\*

Mr Basori HJ Selamat SIRIM (MY)\*

Mr Klauspeter Graffi TUV Rheinland (DE)\*

Mr Eduardo Galera UL do Brasil (BR)\*

Mr Lei Cai Tech Skills International (AU)\*

Mr Einar Thoren Trainor AS (NO) as alternate for Mr Geir Larsen

Mr Kristof De Gersem TUV SUD PS GmbH

Mr Mike Slowinske UL LLC (USA)\* as alternate for Ms Erin LaRocco

Mr Marco Edrhuizen PBNA Royal (NL)\*

Mr Marty Cole Hubbell (CA)

Mr Paul van der Sneppen NCOI Techniek & Veiligheid

Mr Geoff Barnier Simtars (AU)

Mr Mark Amos (MA) IECEx Secretariat & ExPCC Secretary

Mr Paul Meanwell SANC / Observer

Mr Mark Coppler TC 31 Chairman / Observer

Mr David Yang Trainor / Observer

 \* denotes participating Scheme ExCB

**Apologies:**

Mr Robert Bulgarelli Petrobras (BR)

Mr Dirk-Jan Schreurs DEKRA (NL)\*

Mr Roger Jones National Oilwell Varco (GB)

Ms Ursula Aich RP Darmstadt, Abt IV/Wi (DE)

Mr Tor Arne Appfjell Presafe (NO)

Ms Janet Middlehurst Sira Certification Services (GB)\*

Mr A Wahid Jafar Petronas (MY)

Mr Ralph Wigg Immediate past Deputy Chairman

Mr Chris Agius (CA) IECEx Executive Secretary

1. OPENING OF THE MEETING

The Meeting was opened at 0900 by the Chairman, Mr Peter Thurnherr followed by self -introduction of all participants.

1. Apologies

There were no additional apologies.

1. Approval of this Agenda

Members approved the draft agenda without changes or additions.

1. Constitution
	1. ExPCC Constitution & Membership Update

Members considered as circulated as a draft ExPCC/001G/INF and as amended by ExPCC WGs earlier in the week and approved this with the replacement of Mr Ogden by Mr Oates.

ACTION #1: Secretary to write to Mr Heribert Oberhem’s organisation (Currenta GmbH & Co OHG (DE)) and request that they confirm his ongoing membership or nominate a replacement.

Members were also reminded of the following principles agreed at the 2014 Dubai Meeting of the ExPCC and listed below:

1. individuals nominated to WGs may delegate to others within their organisations,
2. alternates are only permitted at meetings for ExCBs (as defined in the revised constitution and membership summary document (published as ExPCC/001B/Inf) due to the confidential information of the Question Bank
3. Observers may only attend WGs (with the exception of WG3) at the agreement of the Conveners
4. Membership provisions allow for ExCBs that have applied to attend as be observers on the ExPCC and WGs BUT must have submitted an application to show their commitment noting the amount of IP generated within the Scheme. In this regard meeting participants will be identified as representatives of “Accepted ExCBs” and “Applicant ExCBs”
	1. ExPCC Leadership Succession Planning

Members noted that the 2018 IECEx ExMC meeting

* Approved Mr Peter Thurnherr as ExPCC Chairman for a second term of three years commencing 1st January 2019.
* Approved Mr John Allen as ExPCC Deputy Chairman a first term commencing following Mr Wigg’s resignation (that was subsequently tendered effective 1st January 2019).
1. Confirmation of ExPCC WG Constitutions

Members accepted the proposed update of ExPCC Working Group constitutions and members as recommended by ExPCC Working Groups

1. Report on Actions Items arising from Decisions at previous ExPCC Meetings

Members noted a report from the Secretariat on the status of Action Items detailed in the Report to the IECEx 2018 ExMC Meeting in Cannes, France (refer document ExMC/1387/RM) as summarised in ***Annex A*** to this Report.

1. Action Items Referred to the IECEx ExPCC for consideration:

Members were advised that no actions for ExPCC were assigned by the 2018 ExMC meeting and that all Actions from previous ExMC Meetings have been completed.

Members noted that the 2018 ExMC Meeting approved the 2018 ExPCC Recommendation #3 that the ExPCC be permitted to prepare and publish ExPCC Decision Sheets. Members then considered a draft Decision Sheet on the topic of analysis of knowledge assessment results and agreed that

1. It not be published as drafted and then amended the draft in readiness for publication
2. That an IECEx Operational Document (perhaps based on IECEx OD 035) for ExPCC Decision Sheets preparation, consultation and publication is required. This task will be assigned to ExPCC WG1

Members also to note that, in response to 2018 ExPCC Recommendation #2 on revised fee structure, the ExMC and 2018 IECEx Executive Meeting requested additional data to assist analysis of options - *refer Agenda Item 19.5 in this agenda for the status of this work.*

1. Reports from ExPCC Working Groups
	1. ExPCC Working Group 1 - Rules

The Secretary advised that ExPCC WG1 have not met since the last ExPCC meeting and that no progress on tasks assigned to ExPCC WG1 has been reported.

* 1. ExPCC Working Group 2 – Units of Competence and outcome criteria

Members accepted a report from Convenor, Mr John Allen on the activities of ExPCC WG2.

Members supported the recommendation of ExPCC WG2 on the need to work more closely with Mr Beyer as IEC SC31M Chairman on developing competence units for non-electric equipment and also supported Mr Allen’s offer to represent both the ExPCC and ExSFC on IEC 31M.

* 1. ExPCC Working Group 3 – *Question Bank*

Members accepted a report from Mr Amos on behalf of the ExPCC WG3 Convenor on the activities of ExPCC WG3 and endorsed the IECEx Question Bank implementation plan recommended by the ExPCC WG3 May 2019 meeting.

* 1. ExPCC Working Group 4 – Qualification of Training Bodies

Members accepted a report from the Deputy Convenor, Mr van der Sneppen on the activities of ExPCC WG4 and the April 2019 RTP Forum / ExPCC WG4 Meeting.

Members also endorsed the recommendation from the Forum regarding Records of Training publication and supported further work on this.

* 1. RTPP Review Panel Membership

Members endorsed the membership of the RTPP Review Panel (as per Clause 6 of IECEx OD 521) for 2019/2020.

1. IECEx05 IECEx Scheme for Certification of Personnel Competence for Explosive Atmospheres – Rules of Procedure
	1. Revision of IECEx 05, CoPC Scheme Rules

Members noted, without comment, the 2017 ExMC approval and subsequent publication of Edition 4.1 of IECEx 05 and that this document was further revised and republished as Edition 4.1 to align with IEC CA 01, Harmonized Basic Rules and IECEx 01-S, IECE Supplement to CA 01.

* 1. Other Issues with IECEx 05

Members did not raise suggestions or other issues regarding IECEx 05.

1. OD 501 – IECEx Scheme for Certification of Personnel Competence for Explosive Atmospheres – Assessment procedures for IECEx acceptance of Certification Bodies (ExCBs) for the purpose of issuing and maintaining IECEx Certificates of Personnel Competence (CoPCs)
	1. Revision of OD 501

Members noted, without comment or suggestions of further work, the 2017 ExMC approval and subsequent publication of Edition 3.1 of IECEx OD 501

1. OD 502 – IECEx Scheme for Certification of Personnel Competence for Explosive Atmospheres – Application for an IECEx Certificate of Personnel Competence (CoPC), documentation and information requirements
	1. Revision of OD 502

Members noted, without comment or suggestions of further work, the 2016 ExMC approval and subsequent publication of Edition 3.0 of IECEx OD 502.

* 1. Proposal for Certificate Holder Contact detail

Members accepted the recommendation of ExPCC WG2 on the proposal from the IECEx Secretariat for a revision of Annex A to IECEx OD 502 to enable ExCBs to include the applicant or their employer’s contact details in the PCAR and supported the revision of IECEx OD 502 as outlined in *Contact Details Form in IECEx OD 502\_DRAFT.docx* as circulated.

1. OD 503 – IECEx Scheme for Certification of Personnel Competence for Explosive Atmospheres – ExCB Procedures for issuing and maintaining IECEx Certificates of Personnel Competence
	1. Revision of OD 503

Members endorsed the plans of ExPCC WG2 to conduct further work on revising IECEx OD 503 in conjunction with a revision of IECEx OD 504.

1. OD 504 – IECEx Scheme for Certification of Personnel Competence for Explosive Atmospheres – Specification for Units of Competence Assessment Outcomes
	1. Revision of OD 504

Members endorsed, without comment or suggestions of additional work, the plans of ExPCC WG2 to conduct further work on revising IECEx OD 504 in conjunction with a revision of IECEx OD 503.

1. OD 505 – Site Re-Assessment Report for Assessment of IECEx Candidate and Accepted Ex Certification Bodies (ExCBs) for the IECEx 05 Certificate of Personal Competencies Scheme (CoPC)
	1. Revision of OD 505

Members noted, without comment or suggestions of further work, that Mr Wigg advised the 2018 ExPCC Meeting that he has commenced a draft revision of IECEx OD 505 that will incorporate suggestions and ideas arising from assessments that he has conducted.

1. OD 506 – Guidance on the use of the IECEx Certificates of Personnel Competence Scheme’s Assessment Question Bank by ExCBs
	1. Revision of OD 506

Members did not raise suggestions or other issues regarding need to revise IECEx 506 however it is recognised that suggestions may arise as all ExCBs use IECEx OD 506 and the Question Bank to prepare assessments in the future.

1. OD 521 – IECEx Scheme for Certification of Personnel Competence for Explosive Atmospheres - IECEx Recognised Training Provider Program
	1. Revision of OD 521

Members noted, without comment or suggestions of further work, the 2018 ExMC approval and subsequent publication of Edition 4.0 of IECEx OD 521.

1. [IECEx 05A - Guidance and Instructions for Applicants to obtain a Certificate of Personnel Competence (CoPC)](http://www.iecex.com/docs/iecex05A%7Bed1%200%7Dpt%20%282013-12-05%29.pdf)
	1. Revision of IECEx Guide 05A

Members noted, without comment or suggestions of further work, the 2016 ExMC approval and subsequent publication of Edition 2.1 of IECEx Guide 05A.

1. IECEx CoPC Question Bank
	1. Outstanding Question Bank

Refer item 8.3 above on this matter.

1. New Business
	1. ExPCC ISO/IEC 17024 Checklist

Members noted, without comment or suggestions of further work, the publication, as IECEx OD 507, a Checklist intended for use by IECEx 05 Scheme Applicants, ExCBs and IECEx Assessors regarding the specific requirements of ISO / IEC 17024.

* 1. Content of IECEx Certificates

Members considered a proposal that the language used in assessments (where this is not English) needs to be specified on the Certificate instead of OR in addition to the PCAR as is currently required by Clause 8.4 of IECEx 05. Members then agreed that the PCAR is the appropriate location and also that language restrictions should also be considered as a limitation to be listed in the PCAR.

ACTION #2: Secretary to investigate the introduction of a pulldown list of countries in the PCAR template as a mandatory field

* 1. Content of IECEx Certificates & PCARs

Members to considered and supported the proposal (refer *‘Guidance on required content of Date Field in IECEx CoPCs.docx*’ as circulated) from the IECEx Secretariat to revise IECEx OD 011-5 to provide guidance to ExCBs and improve the consistency of Certificates

* 1. ExPCC Strategy

Member were reminded of the suggestion from SIRA in 2015 that there is a need to establish a strategy and a “Five Year Plan” for the IECEx CoPC Scheme and of the request from the 2015 ExPCC meeting for assistance by *ExMC WG13, Business Development.*

Members then agreed the need to continue the preparation of a project brief to guide ExMC WG13 with consideration of ***Annex B*** to this Report. As no progress has been made on this work, members supported the repeat of an invitation join a Task Group to conduct a SWOT Analysis using the format circulated as *‘IECEx EXPCC SWOT Analysis Template 2019.docx’*

* 1. IECEx Certificate Fee Review

Members considered the two ExCB responses to the ExMC and IECEx Executive request for more data to enable further analysis of the 2018 ExPCC Recommendation #2 to the 2018 ExMC Meeting (the details of data submitted were included in *‘Revised Fees – Survey Results Summary.docx’* as circulated). As the submissions did not indicate justify a reduction of fees where loss of revenue could reliably be offset by growth, it was agreed that this outcome be reported to the IECEx Executive. [SECRETARY NOTE: The IECEx Executive meeting agreed that there is still no clear justification for a reduction in the fees specified in IECEx OD 019]

ACTION #3: Secretary to also advise the Executive of a proposal to amend IECEx OD 019 to permit the application of a CHF 100 fee for certificates issued to replace a CoPC previously issued by a different ExCB. [SECRETARY NOTE: The 2019 IECEx Executive meeting did not support this]

1. Feedback on IECEx CoPC Scheme Operation

Members discussed the questions from the IECEx Secretariat regarding the use of ‘assessment centres” (where these are not visited by IECEx Assessors) and :

* Noted the provisions and requirements of ISO/IEC 17024 regarding “outsourcing”
* Agreed that there is a need for IECEx assessors to review how ExCBs manage “outsourcing” and suggested that IECEx OD 501 be revised to cover this
* Suggested that IECEx 05 be amended to require ExCBs to register their “assessment centres” (perhaps via a method similar to the IECEx OD 024 registry) with the IECEx Secretariat as a means of assisting IECEx Assessors to plan assessments of ExCBs

ACTION #4: ExPCC WG1 to consider the above suggestions

1. Promotional Activities
	1. IECEx CoPC Scheme Brochure

Members accepted a report from the IECEx Secretariat on the development of IECEx CoPC Scheme Brochure and then discussed how this can be used by ExCBs and also improved.

* 1. To inform members of recent and planned Promotional Events

Members noted that no IECEx International Conference will be held in 2019 and that suggestions for locations for a 2020 event are welcomed. Possible locations could include Japan and Vietnam.

1. General Business

Members did not raise any other items of business for ExPCC consideration.

1. Next Meeting

To be convened as part of 2020 IECEx Operational Meetings with venue and dates to be determined by the IECEx Executive.

1. Close of Meeting @ 1535

Annex A – Status of Actions Items arising from Decisions at past ExPCC Meetings

| **Item** | **Mins Item** | **Actions Arising from the Weimar 2018 Meeting of ExPCC**Reference Document = ExMC/1387/RM | **By Whom** | **Completion Date** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 4 | 19.1 | ACTION #4: content of proposed Checklist to be incorporated in draft revision of IECEx OD 505. Note mention in ExMC/1387/RM, Item 14.1 that Mr Wigg has commenced work on this. | ExPCC WG1 |  | To be on agenda for next meeting of ExPCC WG#1 |
| 9 | 22 | ACTION #9: the IECEx Secretariat will prepare and circulate the outcomes of ExPCC WG2 discussions [on clarifying the requirements in IECEx OD 503 for analysing knowledge assessment results] in the form of an ExPCC Information Document. **Secretary Comment:** As the 2018 ExMC approved ExPCC to prepare and publish ExPCC Decision Sheets, a Decision Sheet may be a more appropriate tool for this purpose  | ExPCC to consider Secretary Comment |  |  |
| **Item** | **Mins Item** | **Actions Arising from the Hawarden 2017 Meeting of ExPCC** | **By Whom** | **Completion Date** | **Status** |
| 10 | 15.2 | Action #10: IECEx CoPC Scheme Assessors to prepare a draft revision of OD 505 and present this for ExPCC consideration at the 2018 ExPCC Meeting. | IECEx CoPC Scheme Assessors |  | Outstanding |
| **Item** | **Mins Item** | **Actions Arising from the Northbrook 2016 Meeting of ExPCC** | **By Whom** | **Completion Date** | **Status** |
| 8 | 19.2 | DECISION: members endorsed the proposal for a third date field and allocated an ACTION that the Secretariat investigate options for providing this via the IEC IT Department. | Secretariat |  | Possible but has legacy issues for existing certificates (no data exists |
| 9 | 19.2 | DECISION: members endorsed the proposal for a History Summary field and allocated an ACTION that the Secretariat investigate options for providing this via the IEC IT Department. | Secretariat |  | Possible but has legacy issues (eg. Issues not currently ‘linked’ at CoPC level |

Annex B

The ExPCC requests the assistance of ExMC WG13 with the following aspects:

* Promotion of
	+ IECEx Certified Persons Scheme
	+ IECEx Recognised Training Provider Program
	+ Is there a need?
	+ Are ExCBs doing enough?
	+ Is there potential for more promotion?
	+ How, who, when, …, etc ?
	+ How can IEC and the IECEx Secretariat assist?
	+ Objectives of promotion =
		- To achieve an increase in # of Certificate issued by XX%?
		- To increase the number of participating ExCBs?
		- To increase acceptance by employers in YY industry sectors in ZZ countries
		- To …..??

* Target Markets
	+ Industry sector(s)
	+ Geographic
	+ Company size, type etc

* Promotional Tools
	+ Social media has merit?
	+ Other tools …. ?
*
* Price of CoPC Assessments – are ExCBs competitive in the market?
	+ Focus on quantity &/or quality of Certificates and training services ….?

* Approach to co-existing with other Training and Certification Schemes and their providers

* Other matters, issues, ideas etc
	+ Include Units for non-electrical equipment
	+ Add Units for specific Standards
	+ ExPCC’s views on the expanded and more formalised use of “Assessment Centres” by accepted ExCBs (via IECEx 02 Scheme ATFs) to assist in reducing costs and travel by applicants
	+ The need for / value of standardising equipment, rigs, artefacts etc for practical assessment activities
	+ Need to ‘refresh & consolidate’ the Scheme by combining Units regarding Inspection activities
	+ To expand the Scheme to enable certification of organisational capability (for example in cybersecurity for Ex areas according to IEC 62443 series)

**Draft ExPCC Strategy Brief for ExMC WG13 Consideration**

**Vision**

The ExPCC subscribe to and support the IECEx vision

“To be recognized as the global centre of excellence in providing conformity assessment solutions to satisfy the needs of the Ex industry worldwide”

**IECEx ExPCC Mission Statement**

To assist employers and site operators to manage risk through facilitating and ensuring that every person entering or working in, or near, a hazardous area has the relevant, adequate and currently suitable skills and knowledge necessary to complete their work safely in the Ex industry so that the integrity of safety is maintained. The skills and knowledge are verified by some form of independently verified certification that provides a degree of confidence.

**Objectives:**

1. To ensure that the IECEx CoPC Scheme provides the quality and level(s) of competence required by market needs
2. To grow the IECEx CoPC and RTPP sustainably while maintain quality of outcomes
3. To ensure continued consistency of processes and assessment outcomes across all ExCBs
4. Establish Ex skills and knowledge as elements of technical education at all stages and levels
5. Achieve acceptance of IECEx CoPC certificates by regulators in all countries as sufficient evidence of competence
6. Achieve demand for IECEx CoPC certified personnel by all employers and site operators in Ex industries for their employees, subcontractors and service providers
7. Ensure that IECEx CoPC Scheme is a viable business proposition for ExCBs
8. To continue to develop the IECEx CoPC Scheme to meet market demand by
	1. Introducing different levels (eg. for Operatives, RPs etc) of certification within a Unit
	2. Developing different types of Certificate to meet market needs (especially where such needs are already defined eg. by classification systems, qualifications, “professional engineer” etc.)

 **We can provide value and solutions in industries that include (but are not limited to)**

* Automotive refuelling stations or petrol stations
* Oil refineries, rigs and processing plants
* Chemical processing plants
* Printing industries, paper and textiles
* Hospital operating theatres
* Aircraft refuelling and hangars
* Surface coating industries
* Underground coalmines
* Sewerage treatment plants
* Gas pipelines and distribution centers
* Grain handling and storage
* Woodworking areas
* Sugar refineries
* Metal surface grinding, especially aluminium dusts and particles

**QUESTIONS STILL TO BE ANSWERED**

**Is there a market for IECEx CoPC ? If yes, is there demand in this market for IECEx CoPC as a valued tool in managing risk and perhaps other purposes ?**

**Is it understood by employers that IECEx CoPC can provide a path to demonstrating that their employees are ‘competent’**

**What are the needs of the industries where IECEx CoPC can provide value and solutions ?**

**What is the size of market for certification of competence of persons (sector by sector for all the industries where IECEx CoPC can provide value and solutions)**

Oil and gas = 100K globally over next 5 years

**Where are we now, and what products/services we provide to meet market needs?**

**What strategic and operational constraints are imposed on us?**

**What strategies we need to put in place that will enable us to reach our vision and achieve our mission and objectives?**

**What action plans we need to implement in support of the strategies?**

**What funding will be required to successfully undertake all the activities necessary to fulfil our goals?**

**What resources and structure are required to support the vision, objectives and strategies?**

**What action/process is needed to assist in promoting the various services offered under the IECEx CoPC Scheme to make these services a preferred choice by the industries in which IECEx operates?**

**Annex C – IECEx Question Bank Implementation Plan**

The purpose of the IECEx CoPC Question Bank is to provide ExCBs with the ability to choose from a wide range of questions on a particular topic when preparing for a knowledge assessment. This facility and the regular revision of the assessment question set enables ExCBs to conduct a true test of broad knowledge.

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| --- | --- | --- | --- |
| **Task** | **WHAT** | **WHEN** | **HOW** |
| **#1** | **USE OF QUESTION BANK**All IECEx 05 Scheme to commence use of current compilation of Question Bank inputs from ExCBs (and any subsequent updates) for all knowledge assessments in accordance with IECEx OD 503. Use of own question & answer sets is to cease. | From 1 January 2020 all ExCBs to develop and use new assessment papers for all Units in their accepted scope.The assessment paper shall be updated after every assessment event IECEx Assessors will check and confirm compliance. | According to IECEx OD 506This method provides ExCBs with the flexibility to avoid use of questions or answer that they believe need removal, clarification or improvement in their assessments. |
| #2 | REVIEW & CORRECTION OF QUESTION BANK CONTENTContent of current compilation of Question Bank inputs from ExCBs to be reviewed and, where necessary, corrected in terms of criteria to be developed by ExPCC WG3 and approved by ExPCCNew additions to the compilation shall be reviewed by IECEx Assessors in accordance with IECEx OD 501 and then by ExPCC WG3 prior to inclusion in the compilation. | **IN PARALLEL with Task #1** and ASAP  | via a process similar to proposed by Trainor and after approval by ExPCC and definition of * Review criteria
* Deadline
* Required outputs
* Processes for any future updates or continued reviews

ANDOngoing by all ExCBs via use of the content to prepare for assessments and also after use in assessments |
| #3 | QUESTION BANK MANAGEMENT SOFTWARE SOURCING / DEVELOPMENT | **IN PARALLEL with Tasks #1 & #2** as originally planned and approved by the 2017 ExPCC meeting (with need for milestones to be updated) | By ExPCC WG3 ahG convened in 2016 with additional members of Mr van der Sneppen, Mr Thoren and Mr Amos |