Part 66 and the future

Ian Williams

EAMTC
President

Agenda

- EAMTC
  - Who we are
  - How we work
  - Regulatory links
- Regulations
- Future
- Rulemaking Tasks

Members


eamtc
AIRFRANCE
AIRBUS
AIRBUS DEFENCE & SPACE
ATR TRAINING CENTER
AIRBUS HELICOPTERS
aviotrace SWISS training academy
AERO
AeroTrain
air astana www.airastana.com
AFMAé
Biman BANGLADESH AIRLINES
ASTech
AIR NEW ZEALAND AVIATION INSTITUTE
Condor
AEROCAMPUS AQUITAINE
AirEuropa
FINMECCANICA HELICOPTER DIVISION
مركز باس لتدريب هندسة الطائرات BAS Aircraft Engineering Training Centre
cargolux
airberlin academy technical training
UK-147-0072
Co-Guard GmbH
quality control management
CCM
DASSAULT FALCON
Aircraft Maintenance & Training Sch
CAE
Aviation Competence Centre First Class Education
IAI
ACK الكلية الأسترالية في الكويت Australian College of Kuwait
Austrian
DHL
EMBRAER
MINT Software Systems
DELTA
BOMBARDIER AIRCRAFT TRAINING
resource group
CATHAY PACIFI
tredu TAMPERE VOCATIONAL COLLEGE
KLM engineering & maintenance
EMBRAER
Virgin atlantic
IBERIA MAINTENANCE
CATTS
KSAO
SAVO VOCATIONAL COLLEGE
LINK & LEARN
my TECHNIC AIRCRAFT MRO SERVICES
LAPIN AMMATTIOPISTO
FINNAIR FLIGHT ACADEMY
ICELANDAIR TECHNICAL TRAINING
infoWERK medien & technik
FLTECHNICS TRAINING
HAECO
ETIHAD AIRWAYS
HOP! TRAINING by ICARE
AAA AIRCRAFT SERVICES
Training center "Aviator"
AeCAT
IAAG Institut Aéronautique Amaury de la Grange
Rolls-Royce
QATAR AIRWAYS القطرية
CROATIA AIRLINES A STAR ALLIANCE MEMBER
roc podium voor talent
Thomas Cook Airlines
FlightSafety international
sabena technics training TAT GROUP
SAS Technical Training
SAFRAN Snecma
Together ahead. RUAG
Luxair
SWISS
SriLankan Aviation COLLEGE
Lufthansa Technik More mobility for the world
Institiúid Teicneolaíochta Cheatharlach INSTITUTE of TECHNOLOGY CARLOW At the Heart of South Leinster
Lufthansa Technical Training
MEA
VTOC VakTechnischOpleidingsCentrum "Fokker"
OLYMPIC
superjet INTERNATIONAL An Alenia Aeronautica and Sukhoi Company
SVFB ASEA SAMA
NLR
IAT
TURKISH TECHNIC Technically Yours
SR Technics TRAINING SERVICES
PEGASUS AIRLINES
PILATUS
SOFIA FLIGHT TRAINING
swiss Swiss AviationTraining
ROGALAND FYLKESKOMMUNE
Lufthansa Technik Shannon
GMF AeroAsia GARUDA INDONESIA GROUP
TUI Thomson Airways
TÉC
widerøe TECHNICAL SERVICES

Who we are

- European Aviation Maintenance Training Committee
  - A pan-”EASA world” industry Foundation dedicated to maintenance training, registered in the Netherlands
  - Main objective:
    - Improve safety through training
    - Represent the training industry with EASA

Who we are

Other objectives:

- be recognised as the expert in training
- exchange information between members
- cooperate with other training related organisations
- improve training quality and thus its effectiveness
- inform members of new learning technologies
- act as an advisory body to members
- propose amendments towards EASA on behalf of the members
- discuss Notices of Proposed Amendments (NPA's) with EASA

How we work

General Assembly

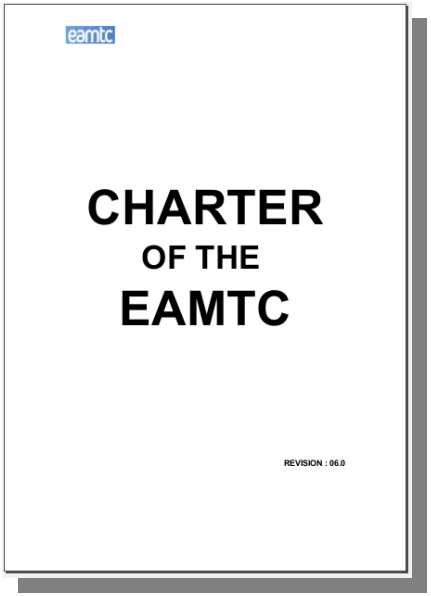
- Decision making meeting of members (2 x p.a.)
- Instructor seminar (1 x p.a.)

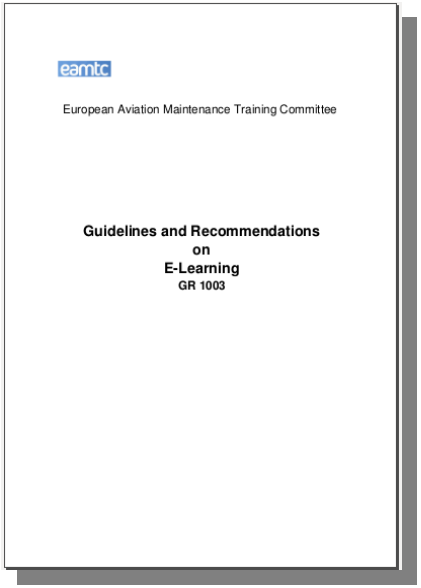
Executive Committee

- Central body to run day-to-day business
- Subject to direction and control of the General Assembly

Issues of concern to Members

- Working Groups
  - General Assembly formulates the assignment
  - Report at each General Assembly meeting
    - Guidelines & Recommendations
    - Position Paper





Regulatory links

EASA at EAMTC:

- General Assembly meetings
  - Regulatory updates
  - Standardisation updates
  - Q & A
  - Exchange of views
- Instructor seminars

EAMTC at EASA

- SSCC - SAB
  - Sub-committees (STeB)
    - Engineering & Maintenance
    - Design & Manufacturing
- Proposal of member participants for EASA WGs etc

Regulations - “hard / soft law”

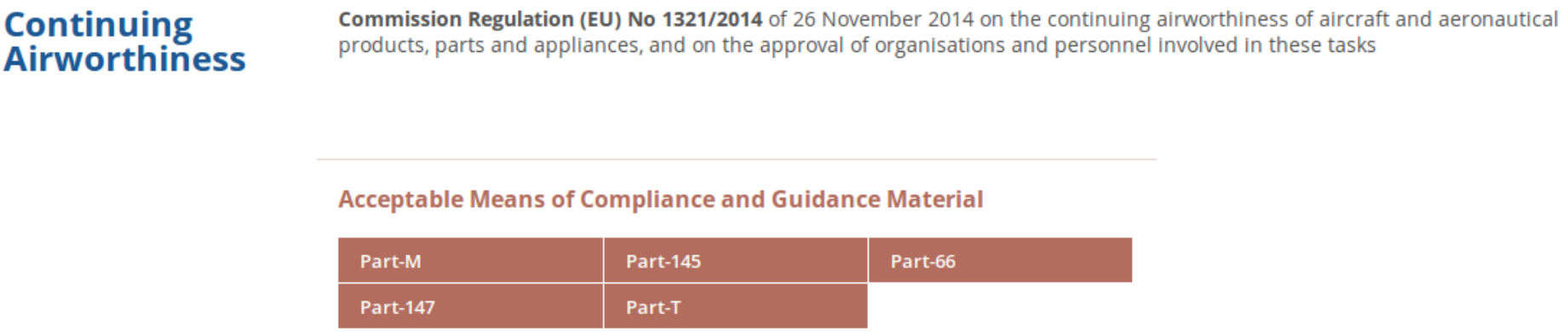
- Regulations/Implementing Regulations (‘hard law’)
  - Agency publishes an Opinion, decision-making is transferred to the European Commission (outside EASA's mandate)
- Acceptable Means of Compliance and Guidance Materials (‘soft law’)
- Certification Specifications (‘soft law’)
  - “soft law” introduced via the publication of an “Agency Decision”

Regulations

Basic Regulation – Implementing Regulations – Continuing Airworthiness

Commission Regulation (EU) No 1321/2014 of 26 November 2014 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks

The Regulation (EC) No 2042/2003 is repealed



Ref: https://www.easa.europa.eu/regulations

Regulations

Continuing Airworthiness

Commission Regulation (EU) No 1321/2014 of 26 November 2014 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks

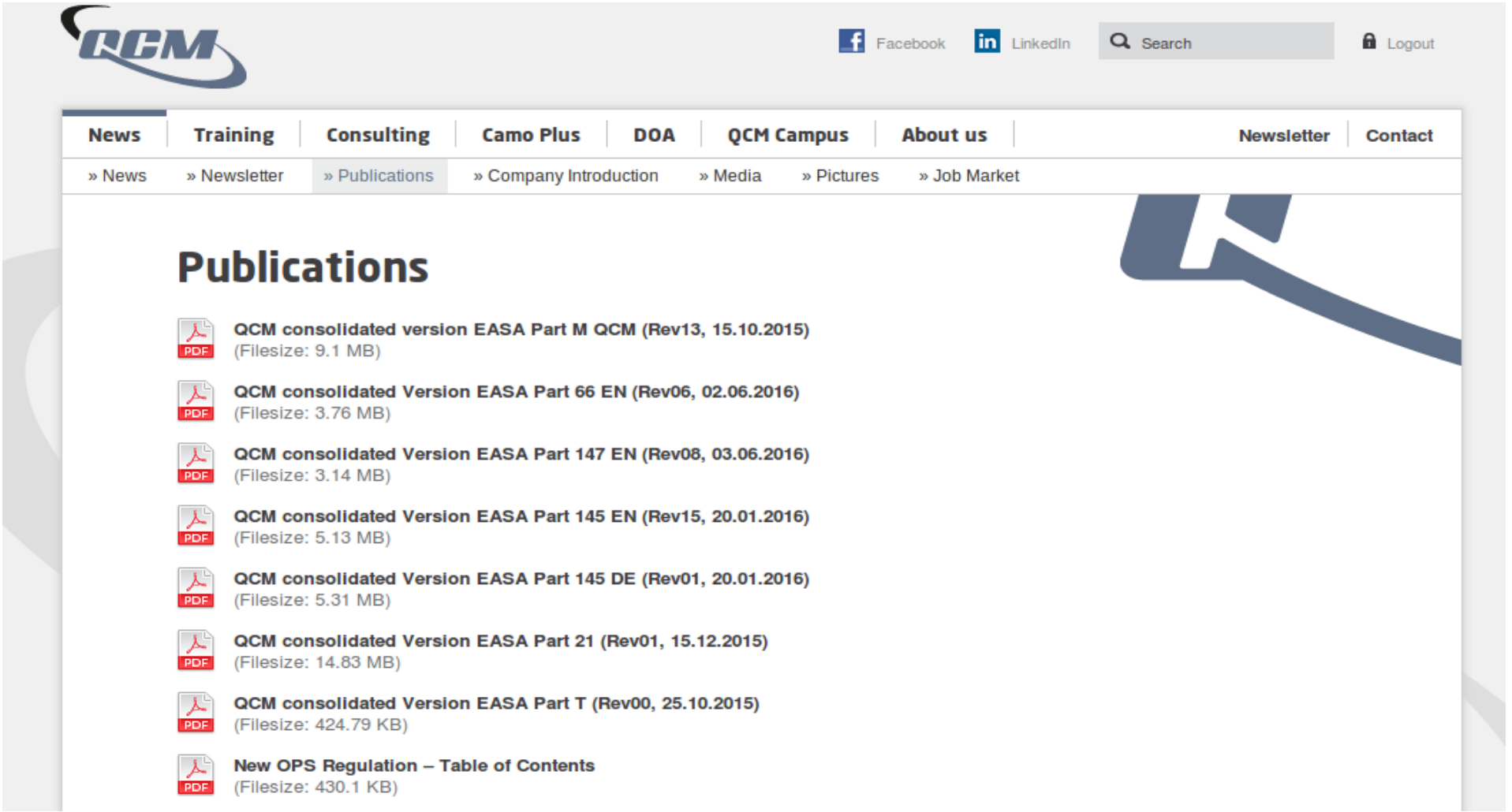
Acceptable Means of Compliance and Guidance Material

Part-T	Part-M	Part-145
Part-66	Part-147	

12/07/2016	**AMC/GM to Part-66 - Issue 2, Amendment 1**
17/12/2015	**AMC and GM to Part-66 - Issue 2**
17/07/2015	**Part 66 / AMC - Amendment 14** *AMC to Part-66 - Amendment 14*
10/09/2013	**Part-66 / AMC Amendment 13** *Aircraft type ratings for Part-66 aircraft maintenance licence*
19/04/2012	**Part-M/-145/-66/-147 / AMC Amendment 7** *AMC & GM to Part-M, Part-145, Part-66 and Part-147*
19/04/2012	**Part-66 / AMC Amendment 12 / GM Amendment 2** *AMC & GM to Part-M, Part-145, Part-66 and Part-147*
24/11/2011	**Part-66 / AMC Amendment 11** *Aircraft type ratings for Part-66 aircraft maintenance licence*

Ref: https://www.easa.europa.eu/regulations

Regulations - QCM site



Regulations - A/C groups

- 1. Group 1: complex motor-powered aircraft as well as multiple engine helicopters, aeroplanes with maximum certified operating altitude exceeding FL290, aircraft equipped with fly-by-wire systems and other aircraft requiring an aircraft type rating when defined so by the Agency.
- 2. Group 2: aircraft other than those in Group 1 belonging to the following subgroups:
  - sub-group 2a: single turbo-propeller engine aeroplanes
  - sub-group 2b: single turbine engine helicopters
  - sub-group 2c: single piston engine helicopters.
- 3. Group 3: piston engine aeroplanes other than those in Group 1.

Regulations - Licence categories

- Include:
  - Category A
  - Category B1
  - Category B2
  - Category B3
  - Category C

Graphic: https://www.easa.europa.eu/

Regulations - Licences

- Categories A and B1 are subdivided for combinations of aeroplanes, helicopters, turbine and piston engines:
  - A1 and B1.1 Aeroplanes Turbine
  - A2 and B1.2 Aeroplanes Piston
  - A3 and B1.3 Helicopters Turbine
  - A4 and B1.4 Helicopters Piston
- Category B3 is applicable to piston-engine non-pressurised aeroplanes of 2 000 kg MTOM and below

Regulations - Update

- EASA Committee of 17/18 February 2016, Member States agreed on:
  - New B2L and L Part-66 licences (ref. Opinion 05/2015)
  - Limitation of Part 147 privileges for stand-alone basic exams (ref. Opinion 07/2015)
- Amendments expected to be adopted by the Commission after summer, timetable:
  - B2L licence: 6 months after adoption. L licence: 01 Oct 2018 (obligation for NAAs to start issuing them) and 01 Oct 2019 (obligation for all certifying staff to have it).
  - Limitation of the Part 147 privileges for stand-alone basic exams - immediately after adoption

Regulations - Update

- B2L licence:
  - For avionics and electrical systems. For aircraft other than those in the group of complex aircraft (Group 1). Based on “system ratings”. Progressive (eventually leading to a full B2, if so wished).

- The L licence, for:
  - Airframe, power-plant, mechanical and electrical systems, radio, ELT, transponders and limited avionics.
  - For sailplanes, powered-sailplanes, balloons, airships and ELA 1 a/c
  - No training required. Exam by NAA, Part -147 or anywhere agreed with NAA. It will replace at a certain point the current national qualifications.

Regulations - coming soon

- The outcome of RMT.0281 (NPA 2104-22) New training methods, new teaching technologies
  - Opinion 2016
  - Positive regulatory step
    - ...“future-proof”?....technology, accelerating rate of change...

Future Licensing

- ...in the context of...
  - Technology...and the accelerating rate of change of its introduction / use
    - On the a/c, in their operation, maintenance & training
  - Diverging / different needs of the different a/c groups?
  - Time needed to change the regulations

Evolution?

… future licensing for Group 1 a/c?

Airframe

Engine

Electrical

Instruments

Radio & Radar

Automatic Pilots

Compass compensation

B1

B2

?

Pre-EASA in one MS

Part 66 Licence - two main routes

Decreasing demand

Part 147 approved course (incl exam & assessment)

Module exams only (self-starter)

Is it OK for the a/c to be maintained by someone without basic training?

Increasing demand

Exam fraud...

EASA Basic

1st TR: Time ; TR course ; OJT

EASA TR

Training / today / future

Training / licensing linked to:

- Safety
- Regulation
- Breadth of aviation
- A/c evolution
- Technology
- etc

1783 1903 1930 2005 Future

Pictures: Wikipedia

Training / today / future

- … will require innovative solutions focused on new, digital technology to match the learning requirements of the new generation
- ... providers will be more focused on enabling operators to gain optimal advantage of the advanced features of the latest generation of a/c

From boeing.com

Future technicians

- must be able to:
  - Integrate knowledge, know-how, sensory observation
  - Interpret factual, graphic and textual data
- need:
  - data processing skills, contextualised decision making skills involving specific situational awareness, common sense, hand skills, communicational language etc.

- 3 main areas identified:
  - Technical skills (those that are technology driven)
  - Non-technical skills (skills at the individual and / or team level but not technology driven)
  - Cultural issues (issues that are at the organisational level)

Future technicians

- Along with K and S, attitude and behaviour considered most important
  - should be integrated into training
    - safety risks, which may have been reduced by HF efforts to date, may be further reduced

Green Paper - Knowledge and Skill Requirements for future Aircraft Maintenance Technicians 2011

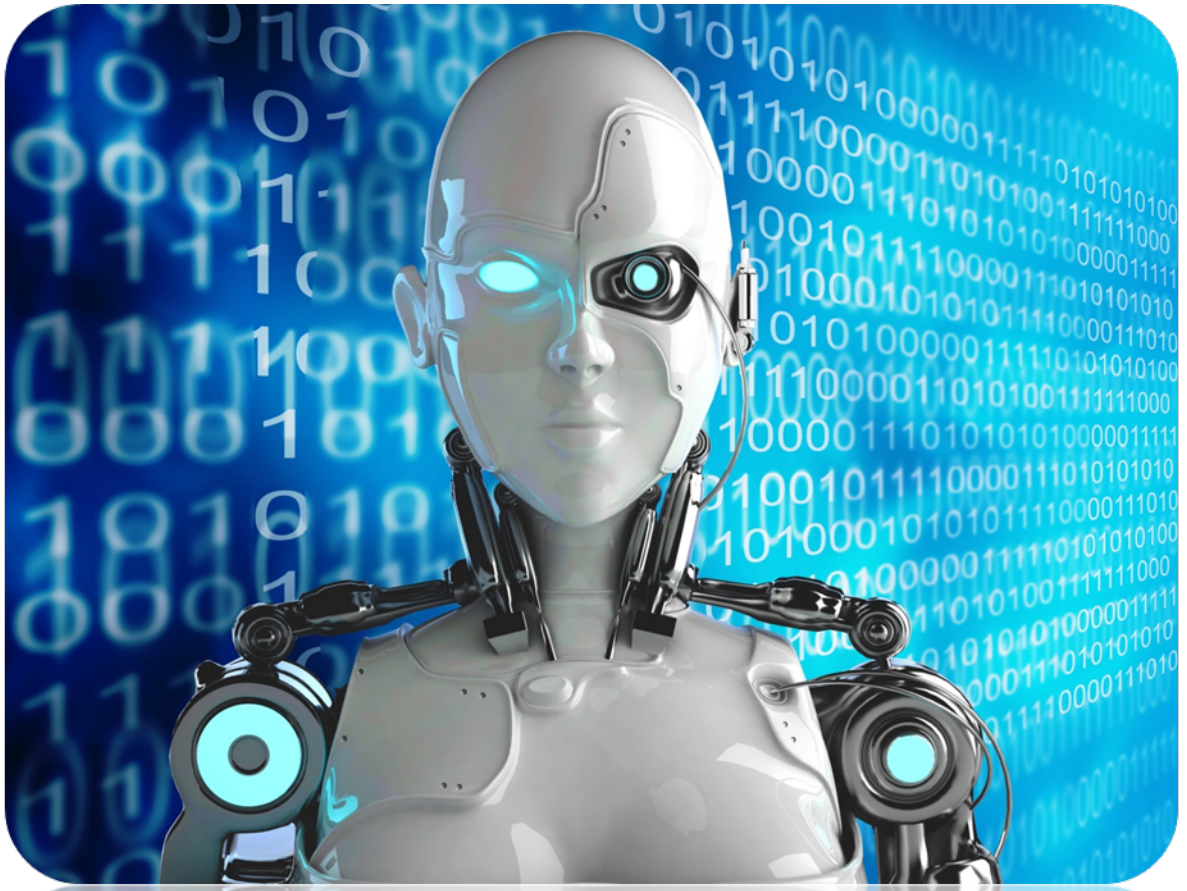
Future technicians

- Language - a key transversal skill which underpins the successful acquisition and implementation of other skills: technicians use language:
  - ‘actively’ and ‘creatively’, in decision-making, troubleshooting, data seeking, report writing, communication with flight crew and other team members, understanding training commentaries, note taking, clarification strategies etc.
- Technical documentation;
  - ensure knowledge of documentary conventions (revisions, effectivity, titles, cross-references, upper and lower case etc.) to ensure effective interpretation

Green Paper - Knowledge and Skill Requirements for future Aircraft Maintenance Technicians 2011

Future

- Human performance
- Improved design
- Automation
- Trend to de-skill



Industry 4.0 / 4th Industrial revolution

- Cyber-physical systems monitor processes, create a virtual copy and make decentralized decisions
- Connects machines, work and systems to create intelligent networks that control each other autonomously
- “...will become increasingly networked until everything is linked with everything else”
- Includes “digitally enabled interactive collaborative learning”

Industry 4.0 / for training

- Provide learning content at the workplace
  - knowledge / skill transfer when needed
  - helps eliminate detachment of learning and doing
- Enabled by digital mobile devices, anytime, anywhere
- learning paradigm shift from being mostly out of - to in the working environment
- Rapidly evolving in other industries

BMW augmented reality

https://www.youtube.com/watch?v=P9KPJlA5yds

VR training tools becoming simple by use of source data

http://www.vroomtraining.com/

Industry 4.0 / for training

- Possible applications for basic and type training
- Current Part 66 qualification levels and standards may no longer apply
- Certification of learning applications to replace current Part 147 course-based certification standards will have to be defined

Consider

- Foreseen, on-board wireless signals for safety-related applications such as:
  - backup for engine controls
  - landing-gear system monitoring
  - Ice detection on aircraft surfaces
  - Alerts for defective airspeed sensors
  - Monitoring composite structure integrity
- Developments in training technologies

Rulemaking Tasks

- RMT.0255 Misc of Part 66 – ToR 2106; Opinion 2018
- RMT.0544 Review of Part 147 ToR 2016; Opinion 2018

Thank you

www.eamtc.org

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