European Union initiative towards defence standards

From national to international standards

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présenté par
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• 2000
  – European Commissioner Liikanen: 'Towards an European market for defence procurement'
  – Survey: Key constraint: plethora of national standards
  – CEN is the European Institute for standards, and a working group BT/WG125, for defence existed
  – A 'workshop' structure appeared to be the best platform: under CEN, no national representatives but stakeholders can participate directly
  – Thus 'Workshop 10; Standardization for Defence Procurement'
    • Chairman: Jean-Michel Bardot, Vice-President EADS
    • Secretariat: Marie-Joëlle Antoine, AFNOR
  – Strong support from DG Industry
• 2002: Business plan
• 2003: Handbook: collection of all standards used within the EU, >15.000!
Economical reason for doing this:

- Improve competitiveness European defense industry
  - No national players anymore!
- Testing is expensive
- More efficiency needed
  - more standards = personnel needs to learn more standards
  - more standards = more paperwork
  - more standards = more test equipment
- More and more commercial items are used
  - tested according to civil standards
- MoD’s: More value for money
- Industry: Larger market, lower costs
- Political: Improve European strength
Example: same radar, 6 countries, 5 standards

France: GAM

Germany: VG

Netherlands: MIL

United Kingdom: Def-Stan

Denmark: STANAG

Italy: MIL/STANAG
2004

- 8 expert groups were created on subjects which were considered as the most important
  - NBC detectors
  - Energetic materials
  - Fuels and lubricants
  - Batteries
  - Packaging
  - Electrical and mechanical interfaces
    - Electromagnetic environmental effects (28 members: largest group)
  - Environmental testing

- Electromagnetic Environmental Effects: Expert Group 7
  - 28 members
    - 9 countries: Finland, France, Germany, Italy, Netherlands, Poland, Sweden, Switzerland, United Kingdom
    - 11 MoDs + 1 NATO
    - 16 (professional) Industry (THALES, Intellect(BAe), MBDA, SAAB, Ericsson, Diehl, Vaisala, Esju, Vectronix AG, Carlo Gavazzi Space, Galileo Avionica)
2004: Selection of relevant standards

- Relevant EG7 standards in initial handbook: 230 standards

- Adding missing standards: 420 standards (SW, PO, etc.)
  Still: >1000 EMI standards not in the handbook could be added....

- Phenomenae covered (requirement, test, guidelines):
  - EMI, Radiation hazards (personnel, ordnance, fuel), Lightning, Nuclear and lightning EMP, DC magnetic field, power quality, HIRF
  - Power supply issues: to Expert Group 15
  - Spectrum control, TEMPEST, HPM, UWB, I-EMI
Plethora of (Military) EEE Standards

Best standard????

European Defence Standards Reference Sys
2004: Comparing the standards: constraints & solutions

• Too many standards, therefore:
  – Requirements and testing are considered as most important
  – Standards enabling 'free trade' are important
  – Platform level (system), guidelines, management, classified standards (TEMPEST) etc. marked, but not discussed in detail

• Is it possible to use IEC as reference?
  – IEC not structured and too limited (now), therefore STANAG as reference, then IEC (a migration to basic IEC standards as the test standard could be possible, on very long term)

• Maturity STANAGs not sufficient (2004) and progress was slow
  – Push NATO via participating MoDs

• STANAGs rarely used for the basic EMC requirements, except for Lightning, ESD, etc; acceptance level was low
  – Push Industry
ENGINEERING PRACTICE STUDY
March 2, 2001

Results Of Detailed Comparisons Of Individual EMC Requirements And Test Procedures Delineated In Major National And International Commercial Standards With Military Standard MIL-STD-461E

Study Conducted By:
DoD/Industry Electromagnetic Environmental Effects Standards Committee (Chaired by DISA/Joint Spectrum Center and American Standards Committee C63 on EMC)

has mandated greater use of performance 'fit' acquisition process. As a result, the military and civilian requirements and to the area of electromagnetic environmental standards Committee (DIESC) was established to be addressed and established and harmonization of existing E3 standards. The comparison is well

EUROPEAN EFENCE TANDARDS REFERENCE SYSTEM, Page 9
## Comparison

(Appendix in EG 7 report)

<table>
<thead>
<tr>
<th>NATO AECTP 500</th>
<th>France</th>
<th>Germany</th>
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<td>KRS-03</td>
<td>PRS-03</td>
<td>NE</td>
<td>national adaptions</td>
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</table>

**NE:** No Equivalent  
**NC:** Not Comparable (IEC)

EUROPEAN DEFENCE STANDARDS REFERENCE SYSTEM, Page 10
## Comparison Appendix in EG 7 r

Comparison of STANAG 4239/4235; AOP 24; AECTP 500; EN61000-4-2; and VG 95378/11

Other standards (e.g. IEC, MIL) are not considered, because of their limited use.

<table>
<thead>
<tr>
<th>Standard/Procedure</th>
<th>STANAG 4239 Munition Test Procedure</th>
<th>AOP 24 Test Procedure</th>
<th>AECTP 500 NSC12</th>
<th>EN 61000-4-2 (IEC) Testing and Measurement technique – ESD Test</th>
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<tbody>
<tr>
<td>VG 95378/11</td>
<td>Prove of immunity to disturbance towards EED against ESD</td>
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<tr>
<td>Voltage</td>
<td>25 kV</td>
<td>25 kV; 300 kV, see table 2</td>
<td>2, 4, 6, 8, 15 kV</td>
<td>2, 4, 6, 8, 15, XkV</td>
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<td>Capacitor</td>
<td>500 pF ± 5%; 1000 pF ± 5%</td>
<td>150 pF ± 10%</td>
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<tr>
<td>Discharge Resistor</td>
<td>5 k0 ± 5%</td>
<td>500 0; 5 k0 ± 5%, 1 0 0</td>
<td>330 0 ± 10%</td>
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<td>Discharge inductance</td>
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<td>Measure adapter</td>
<td>2 0 ± 2 %</td>
<td>1 0</td>
<td>2 0 ± 2 %</td>
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<td>Test</td>
<td>Pin to case and both pins shortened and to case</td>
<td>Air and contact discharge</td>
<td>Air and contact discharge</td>
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<tr>
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<td>Record bridge resistance</td>
<td>Record bridge resistance, before and after</td>
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<td>Number of Samples/ EED</td>
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<td>See AOP 24</td>
<td>See AOP 24</td>
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<td>Number of Test pulses/ Test sequences</td>
<td>5 per Connection</td>
<td>20</td>
<td>20</td>
<td>10</td>
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<td>Data Acquisition</td>
<td>75 MHz</td>
<td>100 MHz</td>
<td>1 GHZ</td>
<td>1 GHZ</td>
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<tr>
<td>Calibration</td>
<td>before, during, after</td>
<td>before and after</td>
<td>before and after</td>
<td>Before periodic</td>
</tr>
</tbody>
</table>

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*Note: The data is subject to periodic recalibration.*
2004: Comparing the standards

- bandwidth
- detector
- polarization
- distance
etcetera
2005: Recommendation

The E3 Expert Group (EG7) concluded

• that no one standard (read: national standard) is better or worse than another in achieving the end goal,
• there are sufficient similarities to STANAG 4370, AECTP to adopt this as the fundamental replacement standard,
• differences between standards are not sufficient to prevent the use of STANAG 4370 AECTPs,
• there is sufficient agreement on NATO-, IEC- and EN produced standards to make worthwhile agreement to use a number of standards as replacement of existing National Standards.

– Approach:
  • STANAG (NATO) standards are the reference

– Recommendation and guidance
  – Apply (EN, IEC, RTCA DO 160, STANAG etc)
  – Guide (use it as a book on your bookshelf, not in contracts) – No (do not use anymore)
  – Future (if AECTP is complete, this standard can be skipped)
2005 status standards

- 95 E3 standards should not be used anymore
- 75 E3 standard can be used as a guide, but not in contracts anymore
- 27 E3 standards can be replaced by STANAG 4370 AECTP
- 129 E3 standards remained:
  - 49 International civil standards (38 IEC, 8 EN, 3 ISO)
  - 1 aerospace (Eurocae – RTCA)
  - 20 NATO/STANAG, most will be replaced by AECTP250 in the future
  - 59 National defence standards left
    - 33 Germany
    - 14 Poland
    - 7 United Kingdom
    - 3 France
    - 2 United States

![Pie chart showing the distribution of standards by category.](chart.png)
2005 status standards

as civil as possible and as military as necessary

Phase 1 reduction

IEC  EN, ETSI  ISO III  RTCA  NATO  III GE  PL  UK  FR  US(MIL)
2005: Recommendations on use of E3 standards

- **Recommendation report:**
  - **Rationale**
  - **Recommendations for users**
    - Use STANAGs for military environments
    - Use IEC, RTCA etc. for other
      (but still 70 national standards listed in the European handbook)
  - **Recommendations for standardisation process**
    - European Defence Agency (or DG Enterprise) should continue activity to create and maintain
      - Forum, combining industry and MoDs
      - Push towards improvement STANAGs (now! (=2005))
      - Push towards improvement IEC (will reduce costs)
      - Push towards replacement of national standards by STANAG/IEC
      - Take into account new technologies and risks (UWB, spectrum management, Intentional EMI etc.)
Two important EU actions, 1

• ‘Interpretative Communication on the application of Article 296 of the Treaty in the field of defence procurement’, 7 December 2006:

  EMC Directive is also applicable to military equipment

• CLC/TR 50538 - Guide to EMC Directive conformity of equipment designed for military purposes (2010)
Two important EU actions, 2

- ‘EU Directive 2009/81/EC
  ‘On the coordination of procedures for the award of certain works contracts, supply contracts and service contracts by contracting authorities or entities in the fields of defence and security, and amending Directives 2004/17/EC and 2004/18/EC’

- Preference is given to international standards, above national standards
3. Without prejudice to either compulsory national technical rules (including those related to product safety) or the technical requirements to be met by the Member State under international standardisation agreements in order to guarantee the interoperability required by those agreements, and provided they are compatible with Community law, technical specifications shall be drawn up:

(a) either by reference to technical specifications defined in Annex III and, in order of preference, to:

- national civil standards transposing European standards,
- European technical approvals,
- common civil technical specifications,
- national civil standards transposing international standards,
- other international civil standards,
- other technical reference systems established by the European standardisation bodies, or, where these do not exist, other national civil standards, national technical approvals or national technical specifications relating to the design, calculation and execution of the works and use of the products,
- civil technical specifications stemming from industry and widely recognised by it, or,
- the national 'defence standards' defined in point 3 of Annex III and defence materiel specifications similar to those standards.

Every reference shall be followed by the expression 'or equivalent';
Selection of standards and standard-like documents for defence products and services - Order of preference

This European Standard was approved by CEN on 11 February 2012.
2009-2010: Phase 3: upgrade

- Several other Expert Groups did not deliver complete reports
- Expert Group 7 (EMC) had many recommendations
  ‘future upgrades are necessary’

Upgrade in 2010, Phase 3

- Members Expert Group 7
  - 9 countries (FR, UK, GE, NL, SW, FI, PO, IT, TU)
  - 35 members, + 1 secretary –
    14 MoD’s
    – 21 industry

- Review of data base in detail
  - updates of standards (gaps, updates)
  - reduction of number national standards

But: many new or upgraded national standards!! From 329 to 420 And: NATO STANAG 4370 AECTP is mature!
Risks, difficulties

- Still focus on national standards by some Experts

- Solution:
  - Improve the STANAG 4370 AECTP
    - System level testing
    - Better rationale in some standards (as in VG)
  - Use the category: Future

- The category ‘Future’, although initially not allowed, was accepted, because after upgrade of the AECTP these standards could be also removed from the list of preferred standards
Phase 3 reduction, 2010

100
32
66
210

Apply (use)
Future
Not (obsolete, replaced, withdrawn)
Guide
Other EG

18
8
2
2
2

STANAG
SDIP
EUROCAE
ISO
EN/IEC

59
2
4
4

STANAG
United Kingdom
France
Germany
Results CEN WS10, Phase 3, 2012

- Database delivered, for implementation in the European Defence Standards Reference (EDSTAR) (earlier: European Handbook for Defence Procurement)
  EDSTAR is hosted and maintained by EDA
- Report delivered, giving guidance
  1. Introduction
  2. Scope and limitations
  3. Standards for electromagnetic environmental effects
  4. Reduction Process
  5. Recommendations for best practice
  6. Recommendations for standardisation process
  7. Conclusions
Conclusion CEN WS10, Phase 3, 2010

• Guidance on standards:
  
  – Military Environment: STANAG 4370 AECTP series

  – Other environments:
    • Aerospace: EUROCAE (~RTCA)
    • Space: ESA ECSS-E-ST-20-07C
    • Civil: IEC/EN
    • Telecommunication: ETSI
    • Automotive: ISO/EN
    • Etc.

Environment: intended operational environment!
Task, Phase 4, 2015

• The Joint Maintenance Committee for EDSTAR recommended to start the review process of the Best Practice Standards referenced in EDSTAR database as soon as possible, with a deadline (i.e. results expected) in September 2016 at the latest.

• The clear mission is
  – to produce Change Requests if minor changes are identified and/or
  – reactivation of the entire EG if further developments are needed.

• The aim is either
  – to reconfirm the references or
  – to reduce the EDSTAR database
Phase 4: 2015

- Check if current standard in database are up to date
- Check if the AECTP is of sufficient quality so that we can drastically reduce the “F” in the EDSTAR database
- If not, what should be done to update the AECTP
2016

- Publication of AECTP 500 in January 2016
- Now: does this new version cover everything, so we can now change the “Future” parts?
Welcome to the European Defence Standards Reference System (EDSTAR) containing references to “Best practice” standards and “standard-like” specifications. The “Best practice” standards are standards which have been selected by consensus by industry and governmental organisations to be the best applicable standards for defence purposes.

Who are the main users/customers that are supposed to use EDSTAR? They mainly belong to the following two categories:

a) For members of Project Teams in national governmental procurement authorities or in multinational Project Teams / procurement agencies etc.

EDSTAR provides support in order to select the most appropriate standards and “standard-like” documents (“Best Practice Standards”) when deciding upon technical specifications.

b) For members of Project Teams in defence industries

EDSTAR also provides support in order to assist with the selection of the most appropriate standards and “standard-like” documents (“Best Practice Standards”) when drafting specifications for their sub-contractors.

Beside references to the Best Practice Standards, EDSTAR also provides detailed “Best Practice Recommendations” for the application of the recommended standards in a number of Technical Domains.

Users are invited to provide their suggestions for improving EDSTAR’s functionality and website as well as suggestions for the inclusion of new Technical Domains. For any suggestion, please use the Change Request Form which can be downloaded from the Library and send your Change Requests by email to edstar@eda.europa.eu.

Only users from the Ministry of Defence administrations of EDA participating Member States can register at https://www.eda.afnor.org to download standard documents referenced in EDSTAR and to get access to a general standard search engine.