Industry´s (ELDIG) views on EDA´s Harmonisation of Ammunition Qualification Activities,

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ELDIG

"*Non est ponenda pluralitas sine necessitate*"

Free translation:

"Do not make things unnecessarily complicated"

William Ockham
1285-1350

ELDIG rationale

ELDIG European Land Defence Industry Group

- Organises the European land industries as a sector group of ASD
- Consists of approximately 20 member companies
- Developed a Position Paper
- Form a consensus across the European Land Industries in questions of a pre-competitive nature e.g Standards, R&T and test resources
- Respond to European Institutions through ASD
- Contracted by EDA for a number of studies in which we have appeared as a group (PGA, FLS….)

Wide range of systems for Land Forces

Reconnaissance and command systems

Simulation and training

Future soldier

Armoured tracked vehicles

Armoured wheeled vehicles

Weapons and ammunitions

Problem

- Standardization and Harmonization have been keywords for many years
  - from a top-level perspective this is considered to be easily achieved
  - from a user and expert's perspective it is much harder;
  - progress is still slow national experts at the working level have to sign the safety certificates!

- Ammunition qualification is directly linked with safety, which is highly regulated on the European and the national level
  - qualification also demonstrates function, reliability and performance

- Qualification is a considerable factor in procurement cost

- **The lack of harmonization in ammunition qualification**
  - **increases procurement costs to nations due to duplicate testing**
  - **puts the EU defense industry at an disadvantage**

Qualification requirements

The qualification can be divided into three areas:

Security (safety) tests

=> is the ammunition doing its 'work; in a secure and safe way

Functionality tests

=> is the ammunition doing its 'work' with a good performance

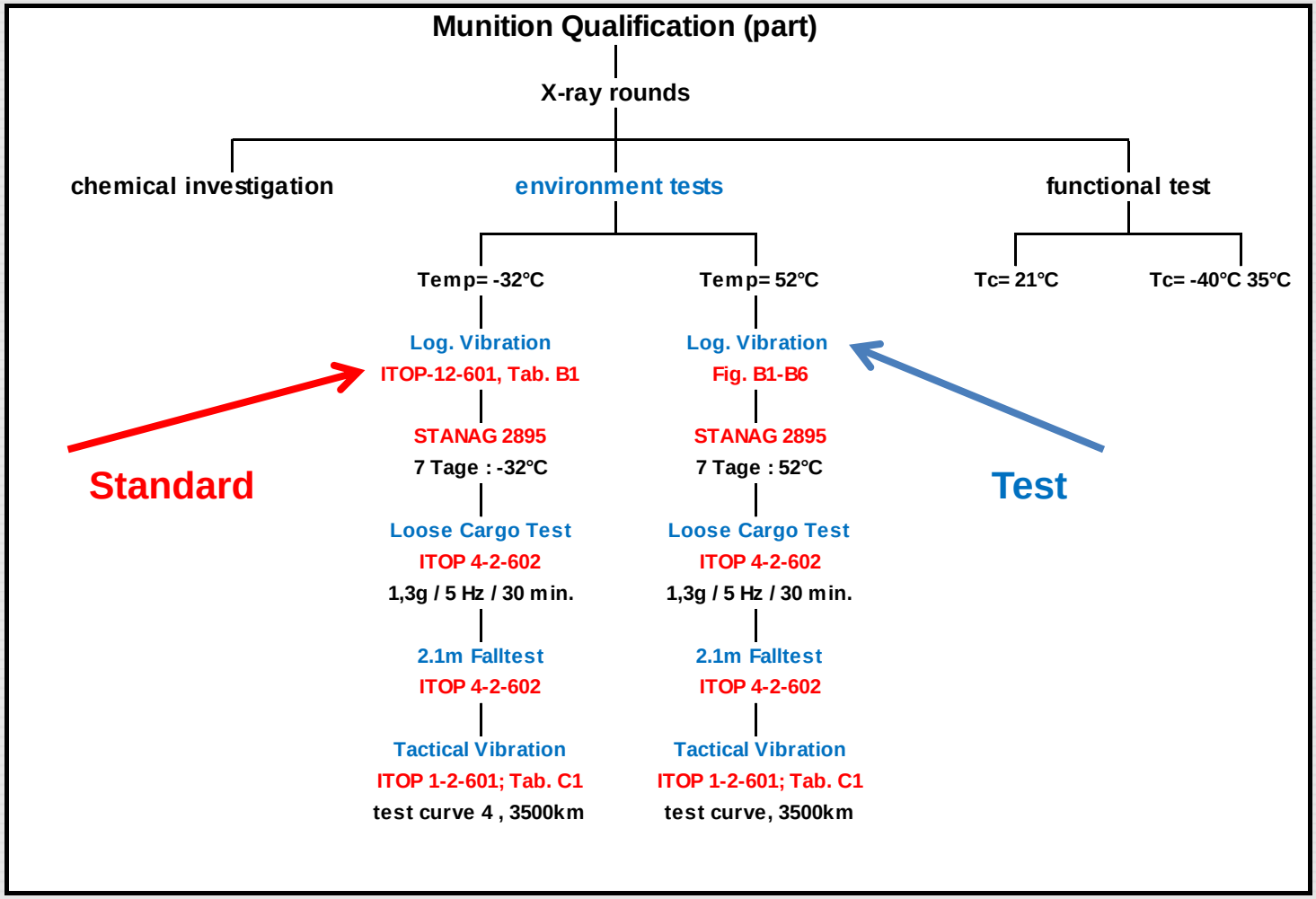
Risk analysis

=> is the ammunition doing its 'work' right under different, sometimes even unexpected conditions

The important step is to develop a qualification plan. The following plan is extremely shortened:

	INITIAL INSPECTION	
	SEALING TEST	
HOT STREAM to 71°C		COLD STREAM to -46°C
TRANSPORT SHOCK		TRANSPORT SHOCK
LOGISTICS TRANSPORT VIBRATION		LOGISTICS TRANSPORT VIBRATION
	Visually inspect and x-ray all rounds	
Safety Drop		Safety Drop
GUNFIRE SHOCK		GUNFIRE SHOCK
	FINAL INSPECTION AND SEALING TEST	
	CHEMICAL AND PHYSICAL ANALYSIS	
	FUNCTIONAL TESTS	

Standard define the tests

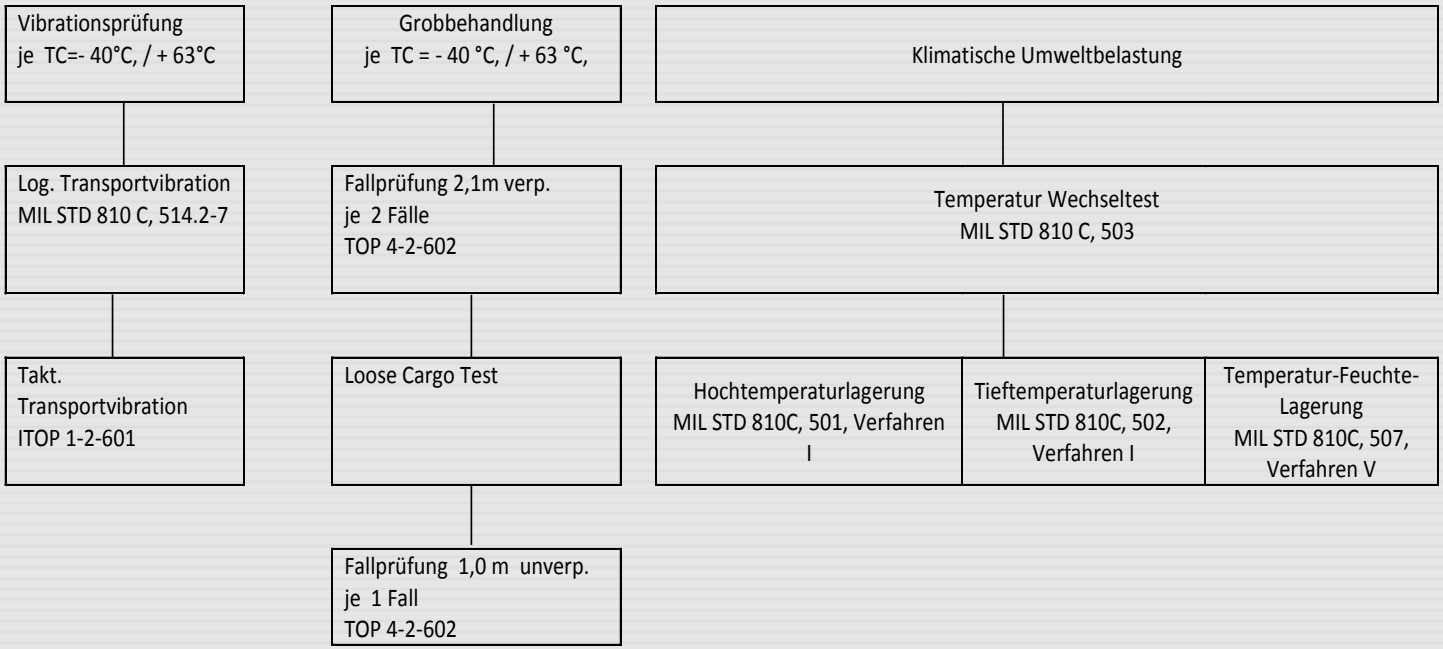


The number of tests has multiplied.

Example:

Environmental tests – tank munitions WTD – 91

1988

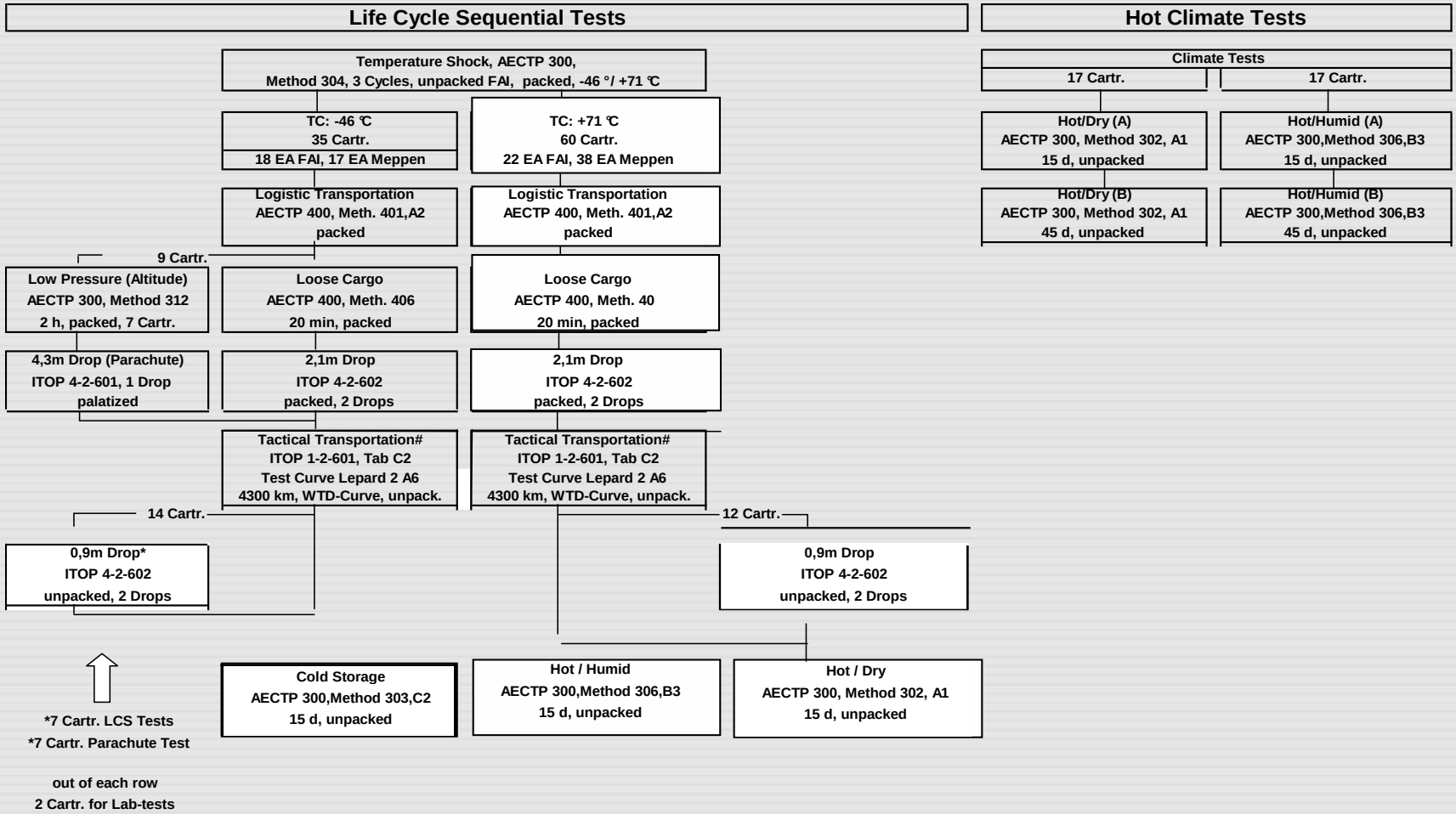


Environmental tests – tank munitions WTD – 91

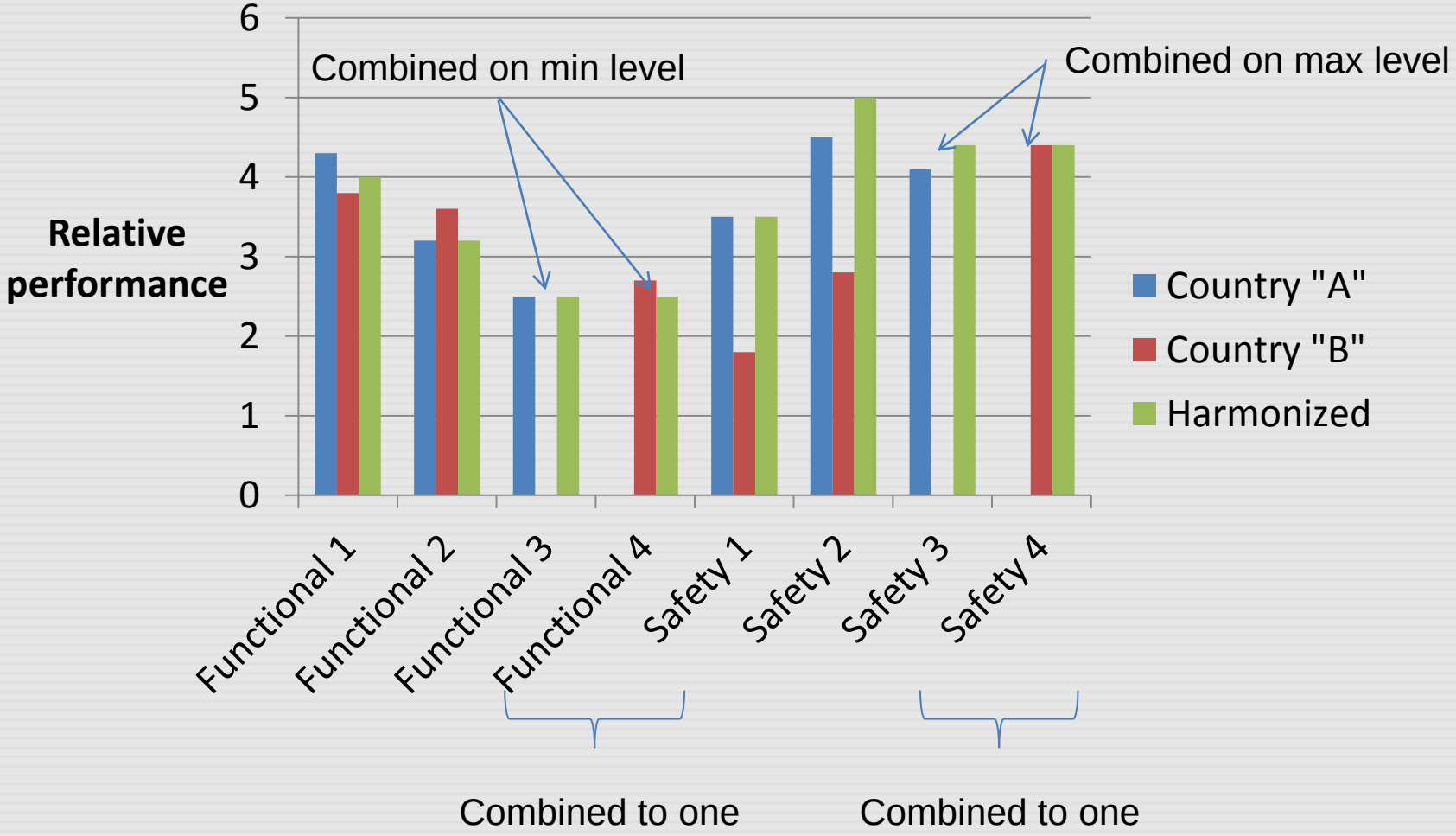
1996

- Rauhe Handhabung
  je Tc= -40C, / + 63 °C
  - 2,1 m Falltest verp
  - Loose-Cargo-Test
  - 0,9 m Falltest unverp.
- Kumulative Umweltprüfung
  - Temp. Schock-Test
    MIL-STD 810E-503
    - Takt. Transportvibration
      TC =+63 °C
      ITOP 1-2-601
      - Temperatur-Feuchte Lagerung
        MIL-STD 810E-507
        - Salzspühtest
          TC =+35 °C
          MIL-STD 810E-509
  - Salzspühtest
    TC =+35 °C
    MIL-STD 810E-509
    - Temperatur-Feuchte Lagerung
      MIL-STD 810E-507
      - Log.-Transportvibration
        TC =-40°C
        ITOP 1-2-601
        - Takt. Transportvibration
          TC =-40 °C
          ITOP 1-2-601
  - Langzeitlagerung
    22 Tg., TC =+63 °C

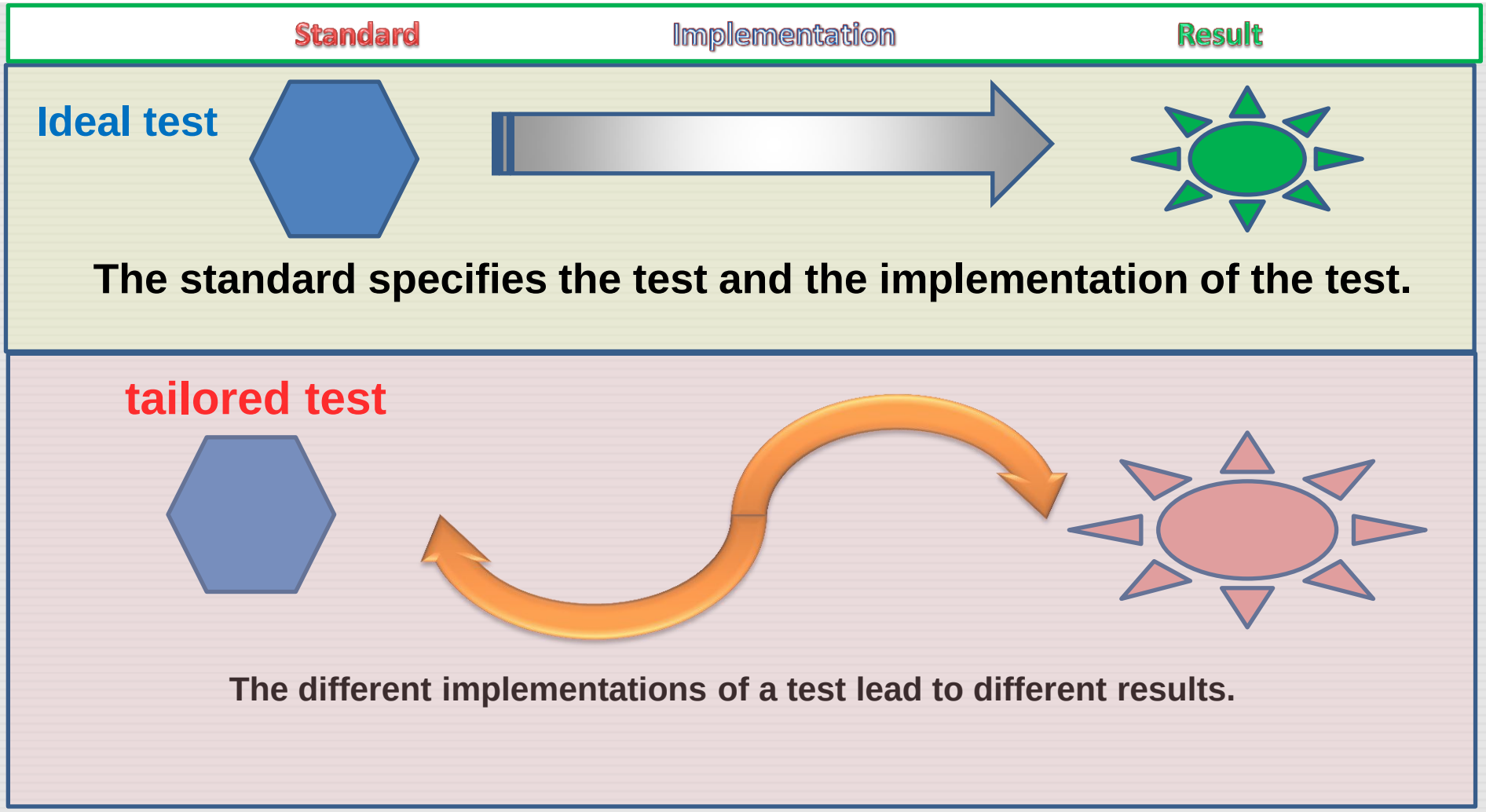
Environmental tests – tank munitions WTD – 91 2012



Harmonization of requirements
Some examples



Standard and Implementation



Summary

- An large number of standards, both national and transversal, exist across the land systems domain.
- Harmonization of requirements and standardised procedures can make significant contributions to cost reductions.
- This is valid for both legacy and new systems but is

  Of particular importance in new types of products such as UGV's and PGA systems where radically different methods needs to be utilized.
- Industry is willing to assist to find efficient procedures for this and have included a recommendation in the EDA Future Land System Study.

Thank you for your attention!