



Union de Normalisation de la Mécanique

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Standardisation/linking European interest and the international work

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AM Platform

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CONTENT

- SASAM
- CEN/STAIR AM
- Standardization - International level
- Standardization - European level

➤ European research project

✓ within the 7th Framework program :

- ▶ coordinated by TNO (Netherlands)
- ▶ to drive the growth of AM to efficient and sustainable industrial processes by integrating and coordinating standardisation activities for Europe by creating and supporting a standardisation organisation in the field of AM.

- ▶ 18 months - closed in February 2014

✓ 18 partners :

- ▶ from Belgium, France, Germany, Netherlands, Norway, Spain, Sweden, Switzerland, UK
- ▶ manufacturers, users, clusters, laboratories, universities, standardisation bodies,

✓ website : www.sasam.eu

ref. G.A.II.30.4. project ref. NMP-SA-2012-319167

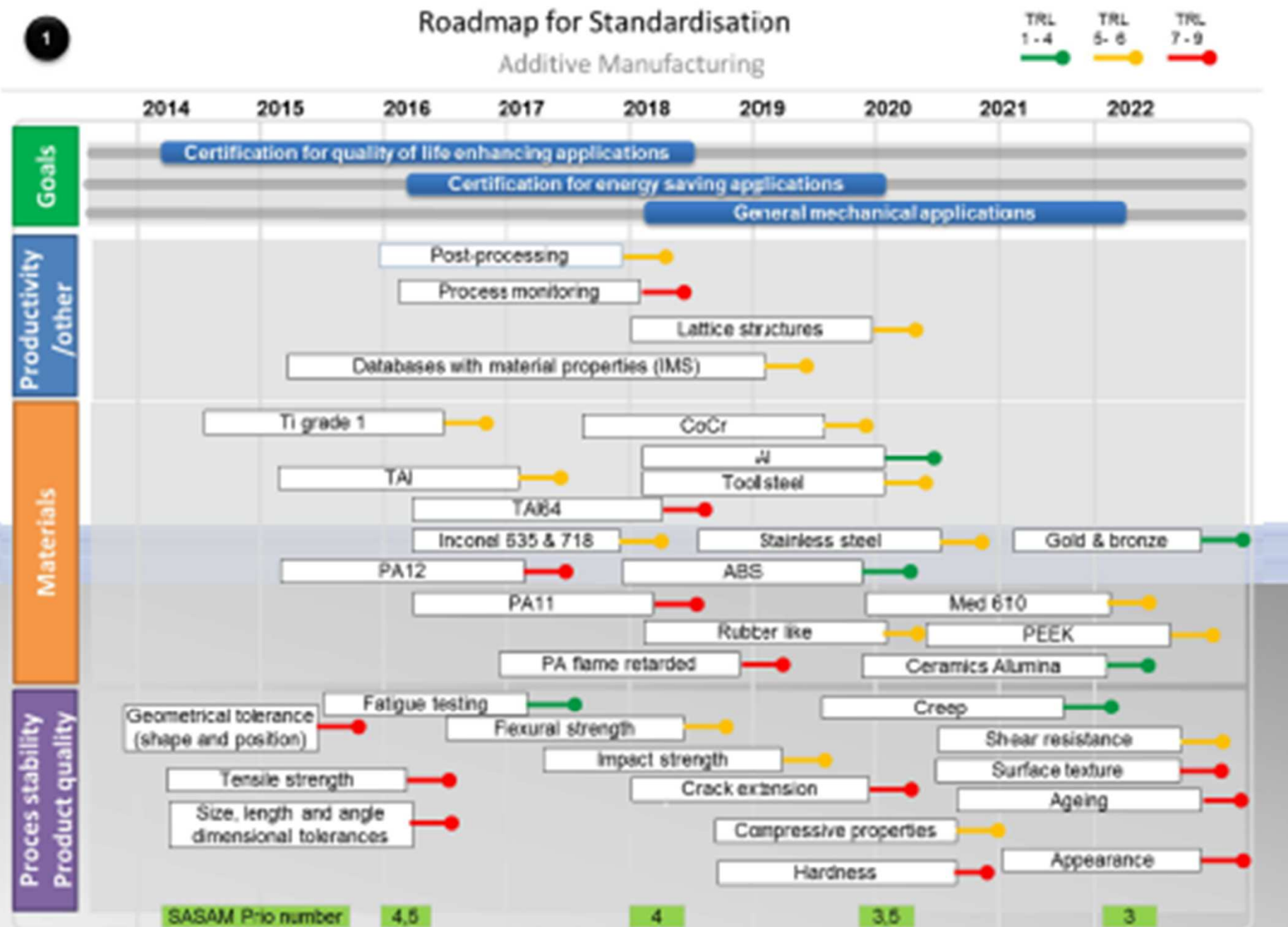
➤ Conclusions

✓ Priority for standardization

- ▶ Inventory about topics and priorities of standardisation to enable a consistent route forward to get AM standardisation in place.
- ▶ 102 respondents (more than 95% were from Europe) with an industrial share of 56 %.
- ▶ Extensive list of topics drafted based on which a prioritization was given.



Figure 13 AM standardisation roadmap indicating the topics and priority timing.



➤ CEN/STAIR Platform

- ▶ Within the European Committee for Standardization (CEN)
- ▶ Objective : to facilitate dialogue and communication on standardization policy in relation to research subjects, between the **research** and innovation communities in Europe and CEN and CENELEC members and **standardization** activities.”
- ▶ The concept was agreed on an experimental basis for a period of one year - Additive manufacturing was chosen as the pilot (SASAM project)

- The STAIR Platform complemented the SASAM project by:
 - ▶ involving a **complete range of stakeholders** interested in AM standards issues at European and international level
 - ▶ providing a base to consider and validate recommendations emerging from SASAM
 - ▶ enabling an initial consensus on specific proposals addressed at European or international level- with subsequent adoption through normal procedures
 - ▶ Ensure coherence between European activities under way or foreseen and work at international level, taking due account of the Vienna and Dresden agreements
 - ▶ facilitating the interface with other activities including EU research-related issues

➤ Main activity in 2013 (conclusions):

✓ Link with research projects:

- ▶ overview of research projects (FP 6 and 7) dealing with additive manufacturing) and their link to standardization :
 - ▶ identification of relevant projects,
 - ▶ contacts with their coordinators
 - ▶ Presentation of 4 projects : AMAZE, a-footprint, Mansys, Megafit

✓ Link with CE landscape vision 2025

- ▶ Standardization has been identified by EU Commission as one of the keys to facilitate dissemination of innovations.
- ▶ Industrial Landscape Vision 2025 : identifying the key elements and driving forces of the 2025 industrial system.
- ▶ Additive manufacturing chosen as case study to test the methodology

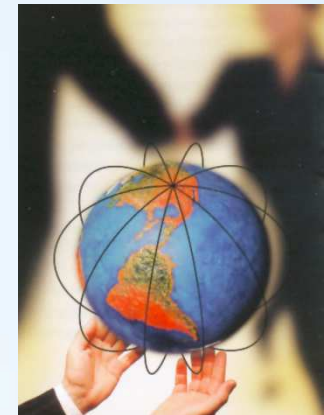


Proposal : to continue this activity within the AM Platform

Standardisation - international level

➤ Activity of ISO/TC 261

- ▶ **First meeting in july 2011** - German responsibility
- ▶ **Scope** : Standardization in the field of Additive Manufacturing (AM) concerning their processes, terms and definitions, process chains (Hard- and Software), test procedures, quality parameters, supply agreements and all kind of fundamentals.
- ▶ **18 Participating members** :
Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, republic of Korea, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, UK, USA



➤ Activity of ISO/TC 261

- ▶ 4 working groups :
 - WG 1 « Terminology » : Sweden
 - WG 2 « Methods, processes and materials » : Germany
 - WG 3 « Test methods » : France (M Bertrand - VIAMECA)
 - WG 4 « Data processing » : UK
- ▶ each working group deals with **one part of ISO 17296 series**
 « Additive manufacturing -- Rapid technologies (rapid prototyping) »

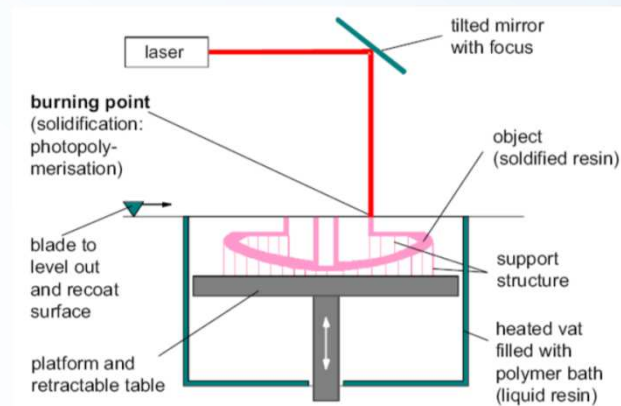


Figure 5 — Schematic diagram of Stereolithography

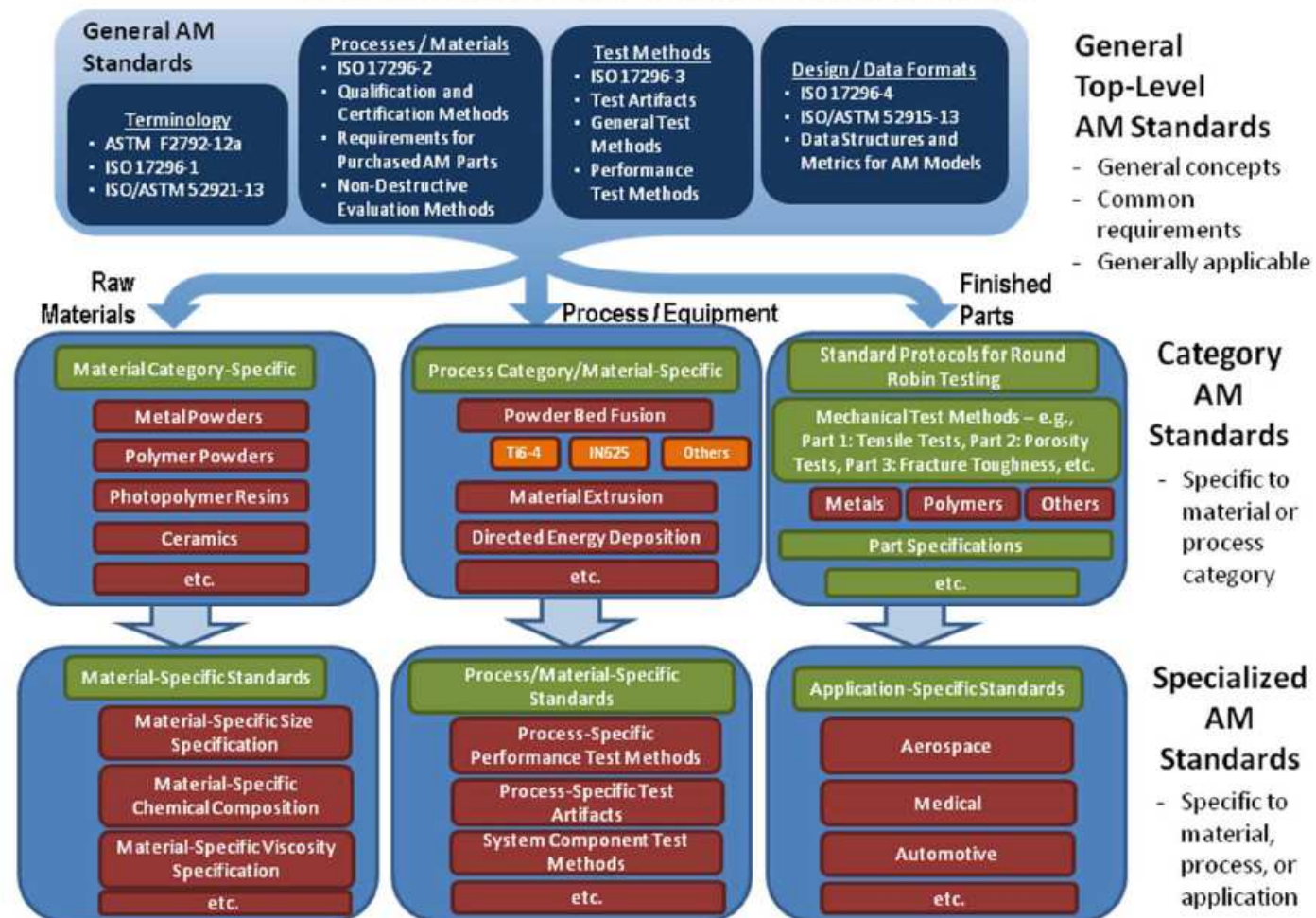
➤ ISO/ASTM Agreement

- ▶ ASTM (USA) develops standards within F42 committee
- ▶ Two possibilities of cooperation between ISO and ASTM
 - Fast Track Procedure : adoption of already published standards from each organization with the result of common ASTM/ISO-Standards on Additive Manufacturing,
 - Joint development of common ASTM/ISO-Standards on Additive Manufacturing.
- ▶ Two ASTM standards became ISO standards in 2013 : fast track adoption of ASTM F2915 (AMF file format) and ASTM F2921 (coordinate systems and test methodologies)
- ▶ Four joint working groups have been created in July 2013 : Terminology, requirements for purchased AM parts, standard test artifacts, design Guidelines

Standardisation - international level

- ISO/ASTM Agreement
- ▶ Joint development

Structure of AM Standards



Standardisation - European level

➤ Main Benefits of European standards

✓ Link to innovation

- ▶ Encourage innovation and research
- ▶ Disseminate and promote innovation in Europe

✓ The same standard applies in all the European countries

- ▶ NF EN XXX = BS EN XXX = DIN EN XXX = ...
- ▶ if an EN exists on one topic, purely national standards are not allowed

✓ Possibility to simultaneously develop standards at EN and ISO levels

- ▶ NF EN ISO YYY = BS EN ISO YYY = DIN EN ISO YYY = ...

Standardisation - European level

➤ Vienna agreement : agreement on technical cooperation between CEN and ISO

✓ Benefits

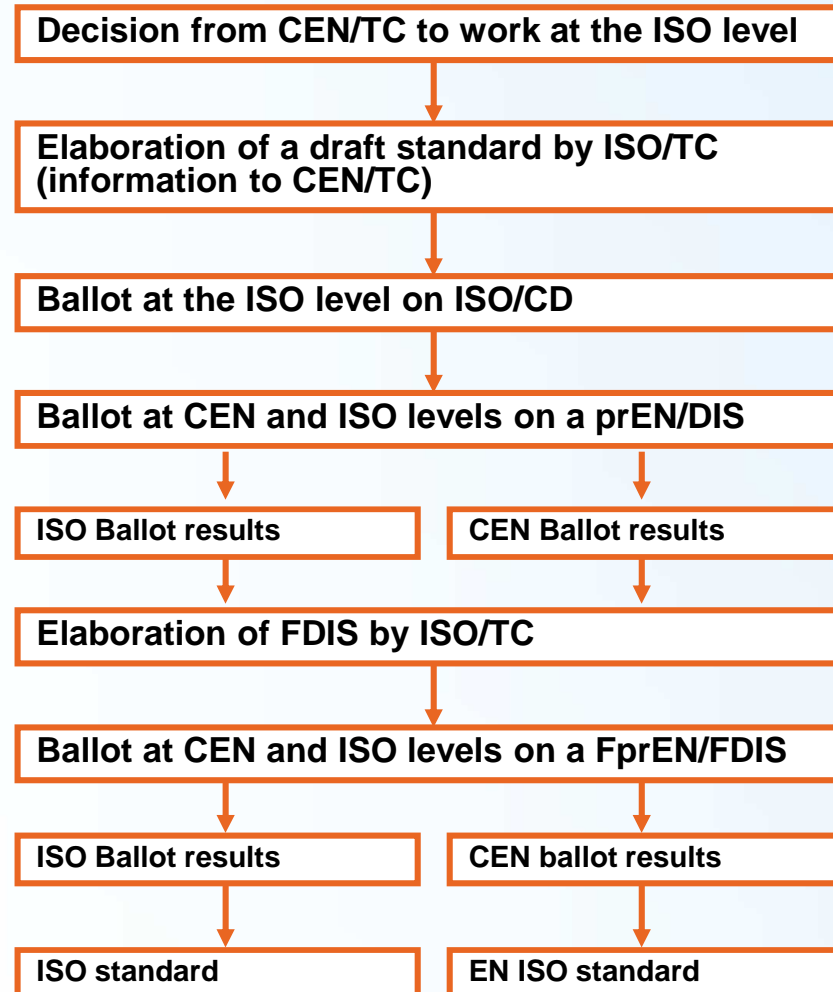
- ▶ increasing transparency of work
- ▶ avoidance of duplication of work and structures
- ▶ increasing the speed of elaboration

✓ Principles

- ▶ General exchange of information
- ▶ Cooperation to elaborate standards

Standardisation - European level

➤ Parallel procedure ISO and CEN (ISO lead)



Goal = one set of consistent standards - technical discussions at the international level



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Thank you for your attention
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