



**NSAI**  
Standards

S.R. CEN-CWA  
S.R. CWA 16768:2014

# Framework for Sustainable Value Creation in Manufacturing Network

**S.R. CWA 16768:2014**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):*

*NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.*

*This document is based on:*

CWA 16768:2014

*Published:*

2014-05-28

*This document was published  
under the authority of the NSAI  
and comes into effect on:*

2014-07-01

ICS number:

13.020.20

NOTE: If blank see CEN/CENELEC cover page

NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

**CEN**

**CWA 16768**

**WORKSHOP**

May 2014

**AGREEMENT**

---

ICS 13.020.20

English version

## Framework for Sustainable Value Creation in Manufacturing Network

This CEN Workshop Agreement has been drafted and approved by a Workshop of representatives of interested parties, the constitution of which is indicated in the foreword of this Workshop Agreement.

The formal process followed by the Workshop in the development of this Workshop Agreement has been endorsed by the National Members of CEN but neither the National Members of CEN nor the CEN-CENELEC Management Centre can be held accountable for the technical content of this CEN Workshop Agreement or possible conflicts with standards or legislation.

This CEN Workshop Agreement can in no way be held as being an official standard developed by CEN and its Members.

This CEN Workshop Agreement is publicly available as a reference document from the CEN Members National Standard Bodies.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Contents

	Page
Foreword.....	4
1 Scope .....	6
2 Terms and definitions .....	6
3 List of abbreviations.....	12
4 Sustainability governance in manufacturing networks and the governance model .....	12
4.1 Introduction .....	12
4.2 Methodology and tools .....	13
4.3 Recommendation for use.....	14
5 Sustainable business modelling .....	14
5.1 Introduction .....	14
5.2 Methodology and tools .....	14
5.2.1 General.....	14
5.2.2 Sustainable business modelling process .....	14
5.2.3 Toolset .....	16
5.3 Recommendation for use.....	20
6 Sustainable solutions development .....	20
6.1 Introduction .....	20
6.2 Methodology and tools .....	21
6.2.1 General.....	21
6.2.2 Development Process as a Multi-Disciplinary Challenge.....	21
6.2.3 General Development Framework.....	25
6.3 Recommendation for use.....	26
7 Sustainability Performance Management .....	27
7.1 Introduction .....	27
7.2 Methodology and tools .....	27
7.2.1 Sustainability Performance Framework .....	27
7.2.2 Measurement Approach .....	29
7.3 Recommendation of use .....	29
Annex A (informative) Tools that may be used in the development framework.....	30
Bibliography.....	39

**Figures:**

Figure 1 — Model for sustainability governance in manufacturing networks .....	13
Figure 2 — SBM process .....	15
Figure 3 — Corporate sustainability continuum .....	17
Figure 4 — Value mapping tool .....	18
Figure 5 — Business model canvas .....	20
Figure 6 — Requirement towards sustainable solutions and gap analysis of current methodologies .....	22
Figure 7 — Interdisciplinary approach over the whole life cycle .....	22
Figure 8 — Interdisciplinary approach with different dimensions .....	23
Figure 9 — Example of Stage-Gate-Model for all development dimensions .....	24
Figure 10 — Interfaces between dimensions .....	25
Figure 11 — Development Framework for Sustainable Solutions .....	26
Figure 12 — Sustainability Performance Framework [36] .....	28
Figure 13 — Recommended Measurement Approach .....	29

**Tables:**

Table 1 — Explanation .....	16
Table 2 — Sustainable business model element archetypes .....	19
Table 3 — Concept of detailed description of the stage-gate model .....	24

**CWA 16768:2014 (E)****Foreword**

This CEN Workshop Agreement has been drafted and approved by a Workshop of representatives of interested parties on 2013-12-10, the constitution of which was supported by CEN following the public call for participation made on 2013-05-13.

A list of the individuals and organisations which supported the technical consensus represented by the CEN Workshop Agreement is available to purchasers from the CEN-CENELEC Management Centre. The following organisations officially took part to the development of this CWA:

- Center for Industrial asset management, University of Stavanger
- CLAAS Selbstfahrende Erntemaschinen GmbH
- Elcon Solutions Oy
- FIDIA S.p.A.
- Institute for Industrial Management at RWTH Aachen University (FIR)
- POLIMI, Politecnico di Milano
- Riversimple
- University of Cambridge
- VTT Technical Research Centre of Finland

Furthermore for the accompaniment of the development process of this CWA was also acknowledged

- CEN European Committee for Standardization (CEN-CENELEC Management Centre)
- DIN German Institute for Standardization: Secretariat

The formal process followed by the Workshop in the development of the CEN Workshop Agreement has been endorsed by the National Members of CEN but neither the National Members of CEN nor the CEN-CENELEC Management Centre can be held accountable for the technical content of the CEN Workshop Agreement or possible conflict with standards or legislation. This CEN Workshop Agreement can in no way be held as being an official standard development by CEN and its members.

The final review/endorsement round for this CWA was started on 2012-12-04 and was successfully closed on 2013-12-10. The final text of this CWA was submitted to CEN for publication on 2013-12-13.

This CEN Workshop Agreement has been coordinated and prepared by the following authors and contributors:

- Teuvo Uusitalo (VTT Technical Research Centre of Finland; Chairman of the CEN Workshop 72)
- Jakob E. Beer (Center for Industrial asset management, University of Stavanger)
- Prof. Steve Evans (Institute for Manufacturing, University of Cambridge)
- Kari Frankenhaeuser (ELCON, Elcon Solutions Oy)

- Maria Holgado Granados (POLIMI, Politecnico di Milano)
- Christian Grefrath (FIR, Institute for Industrial Management at RWTH Aachen University)
- Dr. Hans-Peter Grothaus (CLAAS Selbstfahrende Erntemaschinen GmbH)
- Prof. Jayantha P. Liyanage (Center for Industrial asset management, University of Stavanger)
- Marco Macchi (POLIMI, Politecnico di Milano)
- Katariina Palomäki (VTT Technical Research Centre of Finland)
- Dr. Padmakshi Rana (Institute for Manufacturing, University of Cambridge)
- Daniele Panarese from FIDIA
- Juha Raukola (ELCON, Elcon Solutions Oy)
- Markku Reunanen (VTT Technical Research Centre of Finland)
- Christian Schäperkötter (CLAAS Selbstfahrende Erntemaschinen GmbH)
- Nico Sergent (Riversimple)
- Samuel W. Short (Institute for Manufacturing, University of Cambridge)
- Katri Valkokari (VTT Technical Research Centre of Finland)
- Dirk Wagner (FIR, Institute for Industrial Management at RWTH Aachen University)

This CEN Workshop Agreement is publicly available as a reference document from the National Members of CEN: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

Comments or suggestions from the users of the CEN Workshop Agreement are welcome and should be addressed to the CEN-CENELEC Management Centre.

**CWA 16768:2014 (E)****1 Scope**

The current trans-national manufacturing product and service delivery solutions cannot be sustained in the emerging eco-sensitive business environments, where growing trade volumes and commercial operational patterns impose significant environmental and social challenges on companies and society. More specifically, increase in international trade and transport of raw materials, energy, intermediate products and services, wider range of stakeholders engaging with industry, resource limitations and emphasis on social responsibilities of companies has raised the need for businesses to integrate sustainability more fully into their purpose and processes. The challenges related to sustainability include social and environmental concerns such as labour practices, community involvement, waste and packaging, climate change and partnerships, further propagated by demand, global competition, consumer preferences and behaviour.

Manufacturing includes production and wider industrial activities across the value network that involves interdependencies and relationships amongst stakeholders. The European "Vision for 2020" report calls for understanding manufacturing as a network of complex and development-oriented relations. Hence, the constant evolution of manufacturing networks - coordination and cooperation between the capabilities and configurations - become vital for growth. External (macroeconomic stability, trade policies) and internal forces (process innovations, cost benefits, competition, corporate culture, organisational structure) have both led companies to change production systems and locations to maximize benefits. The expansion of manufacturing operations/activities and the changing business environment, which affects the wider society and environment, highlight the requirement for manufacturers to look for new approaches to manage sustainability impacts effectively – from sourcing and production, to distribution, product logistical support and afterlife.

The increasing demands for sustainability have created new challenges as well as emerging opportunities for society and business. In the current manufacturing setting, much of the opportunity to address novel challenges rests on the ability to manage complex value networks for sustainable value creation. Sustainable value creation is the key contribution of business to sustainability, i.e. to create long-term sustainable (social, environmental and economic) value. However, individual businesses, alone, will not be able to deliver sustainable value and the changes required at the value network level. Collaboration among stakeholders across the network to deliver sustainable value is necessary to develop common approaches for sustainable production and services.

Companies have begun to look for new approaches to understand and manage sustainability at the value network level. If the network partners are not capable of managing the future challenges around regulation, reporting and compliance assurance, scarcity of resources, then the ability to manage business risks and opportunities could be dramatically affected with serious impact to the business. Companies need to be proactive in thinking about the opportunities that the sustainable economy will present. This will need firms to develop new products and markets and optimise their value networks for sustainability.

Thus the CEN Workshop Agreement (CWA) "Framework for Sustainable Value Creation in Manufacturing Networks" covers Good-practices for developing business models, governance models, sustainable solutions and performance management for existing and new sustainable production and service networks.

**2 Terms and definitions**

For the purposes of this document, the following terms and definitions apply.

**NOTE** Definitions often attempt to be very precise, thus they may capture the concept in question rather narrowly. By reading several definitions for the same concept, a richer understanding of the concept may be obtained. In the definitions below, the preferred definition is stated, but in some cases alternative definitions are included as notes.

**2.1 accountability**  
state of being answerable for decisions and activities to the organisation's governing bodies, legal authorities and, more broadly, its stakeholders

[SOURCE: ISO 26000:2010-11, Guidance on social responsibility] [1]



This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- Looking for additional Standards? Visit Intertek Inform Infostore
  - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-