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Circular economy — Review of existing value networks

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Contents

Foreword	iv
Introduction.....	v
1 Scope	1
2 Normative references	1
3 Terms and definitions.....	1
4 Review of existing value networks	2
4.1 Method.....	2
4.1.1 Survey process	2
4.1.2 Preparing questionnaires.....	5
4.1.3 Collecting the cases of value networks.....	5
4.1.4 Selecting the examples	5
4.1.5 Selected examples.....	6
4.2 Examples.....	9
4.2.1 Example 1: Horizontal closed loop aluminium recycling system of Shinkansen (Japan)	9
4.2.2 Example 2: Improving the income levels of Indian farmers through better access to information (India)	12
4.2.3 Example 3: Case in the USA	14
4.2.4 Example 4: Effective industrial symbiosis (Denmark).....	16
4.2.5 Example 5: CIRCULÉIRE - The National Platform for Circular Manufacturing (Ireland) ...	19
4.2.6 Example 6: Omnicane's "zero waste" industrial ecosystem (Mauritius).....	22
4.2.7 Example 7: Eco-town business (Japan)	26
4.2.8 Example 8: Resources complex consortium (Japan).....	29
4.2.9 Example 9: Case in Spain.....	31
4.2.10 Example 10: Global case.....	34
4.2.11 Example 11: Aluminium recycling in the window and curtain walling industry (Germany)	37
4.2.12 Example 12: Close the Glass Loop - The EU ambition to collect increased amounts of glass more effectively	39
4.2.13 Example 13: Lopyanko - AGRY_GAYA'18 Project for sustainable organic silk (Bulgaria).	42
4.2.14 Example 14: An open-access circular supply chain for fashion (UK)	45
4.2.15 Example 15: Cargo Carousel System (Canada).....	47
4.2.16 Example 16: Case in Singapore	51
5 Discussion.....	53
5.1 Sectors of facilitators and participants	53
5.2 Common infrastructure of value network models	56
5.3 Transition from value chains to value networks	58
5.4 Key aspects for creating the value network	59
5.4.1 Motivations of the participants in the value network	59
5.4.2 Methodology for creating and maintaining the value network.....	62
Bibliography	65

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International ~~organisations~~ **organizations**, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with ~~the International~~ **the International** Electrotechnical Commission (IEC) on all matters of electrotechnical ~~standardisation~~ **standardization**.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO ~~documents~~ **document** should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 323, *Circular Economy* ~~Economy~~ **economy**.

~~A list of all parts in the ISO/TC323 series can be found on the ISO website.~~ [ISO/DTR 59032](http://www.iso.org/iso/dtr-59032)

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

0.1 The global economy can be characterized as “linear” as it is mainly based on extraction, production, use and disposal. This linear economy leads to resource depletion, biodiversity losses, waste and pollution causing serious damage to the capacity of ~~our~~the planet to continue to provide for the needs of future generations. Moreover, several planetary boundaries ~~are~~have already ~~been~~ reached or exceeded.

To meet ~~our~~ current and future human needs (welfare, housing, nutrition, healthcare, mobility, etc.), there is an increased understanding that a transition towards an economy that is more circular, based on a circular flow of resources, can create and share more value with society and stakeholders, while natural resources are managed and regenerated in a sustainable way, securing the quality and resilience of ecosystems.

Organizations recognize many potential reasons to engage in a circular economy, ~~— (e.g.,~~ delivering more competitive, and sustainable solutions; improved relationships with stakeholders; more effective and efficient ways to fulfil voluntary commitments or legal requirements; engaging in climate change mitigation or adaptation; managing resource scarcity risks; ~~;~~ increasing resilience in ~~the~~ environmental, social and economic systems; ~~]~~ while contributing to satisfying human needs.

The ISO 59000 ~~series~~family of ~~documents~~standards (see Figure 1) is designed to harmonize the understanding of the circular economy and to support its implementation and measurement.

~~The series~~These standards also ~~support~~support organizations, such as government, industry, and non-profit organizations, in contributing to the achievement of the United Nations (UN) Agenda 2030 for Sustainable Development.

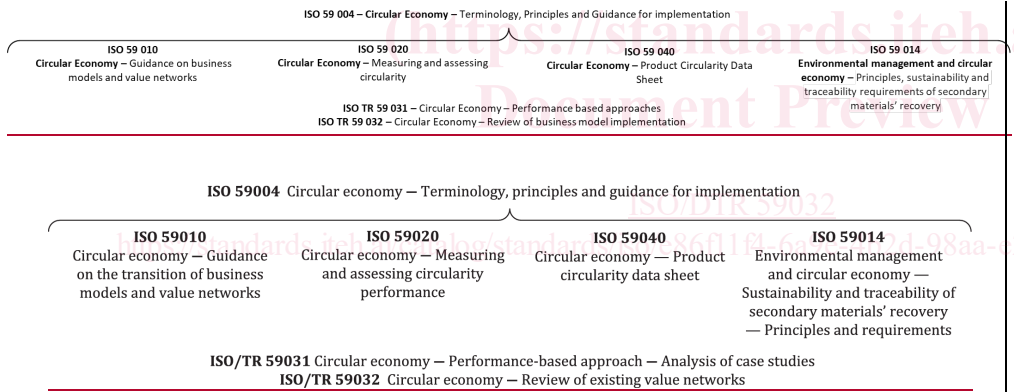


Figure 1: — ISO 59000 ~~series~~family of ~~documents~~standards

0.2 In this series, ISO 59004¹, ISO 59010² and ISO 59020³ are interconnected, as shown in Figure 2, and support organizations in implementing a transition towards a circular economy.

¹ Under preparation.

² Under preparation.

³ Under preparation.

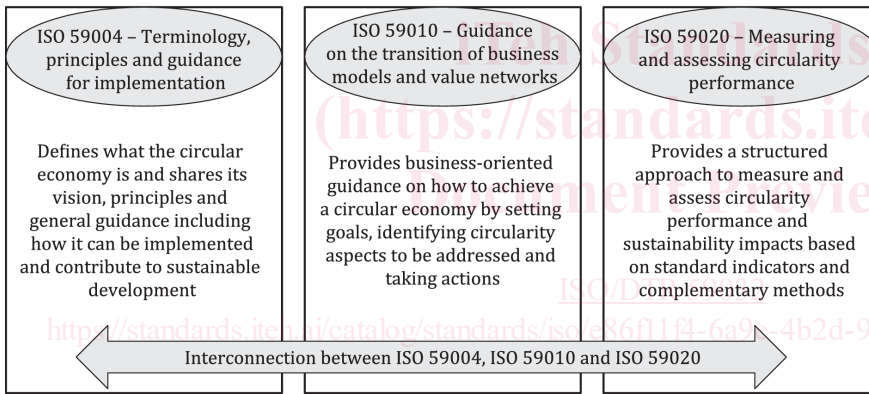
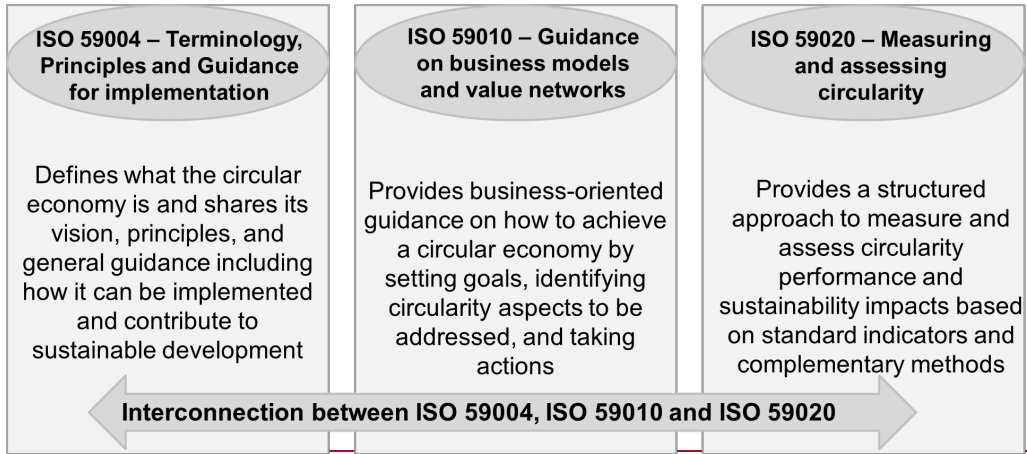


Figure 2: Relationship between ISO 59004, ISO 59010 and ISO 59020

0.3 ISO 59010 ~~is a technical report that~~ provides guidance on supporting an ~~organisation's~~organization's business model and processes from linear to circular by transforming an ~~organisation's~~organization's business ecosystem into a value network. The contents of this document support the users of ISO 59010 in providing further detail on the development of value networks in a circular economy. In the development of ISO 59010, a survey was conducted to review and analyse the examples of globally existing value networks. ~~An~~This document provides an analysis of the survey results ~~are presented in this document. This report. It~~ reviews examples of value networks to illustrate their characteristics and structures and how they can accelerate a circular economy transition process, and ~~so~~therefore supports ISO 59010.

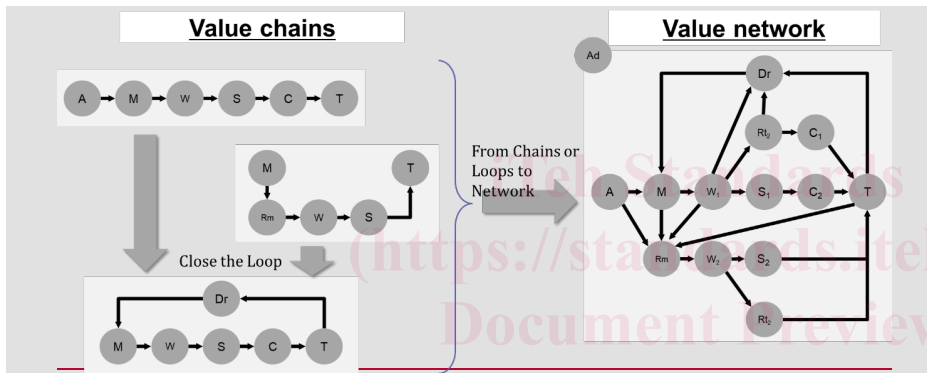
~~The report~~This document investigates suitable examples of value networks to promote circular economy transition. The characteristics and structure of the value networks reflect multiple ~~organisation~~organization cooperation. The multiple ~~organisations~~organizations work together to advance their businesses and accelerate

their circular economy transition process. A specific ~~organisation~~organization does not necessarily control the others. This ~~report will address~~document addresses the methods used to establish and organize a value network to meet the desired requirements.

This document ~~proposes directions for future standardisation in the field of value networks relevant to the circular economy.~~ The Technical Report collects and analyses existing relevant cases, ~~informative~~examples (IEs) of the creation of value networks, to demonstrate what is a value network in the context of the circular economy. A general image of the value network discussed in this document is shown in Figure 3.

The objectives of this document are:

- to provide useful information by analysing existing value networks;
- to enhance understanding of the success factors and enablers for creating value networks derived from examples.

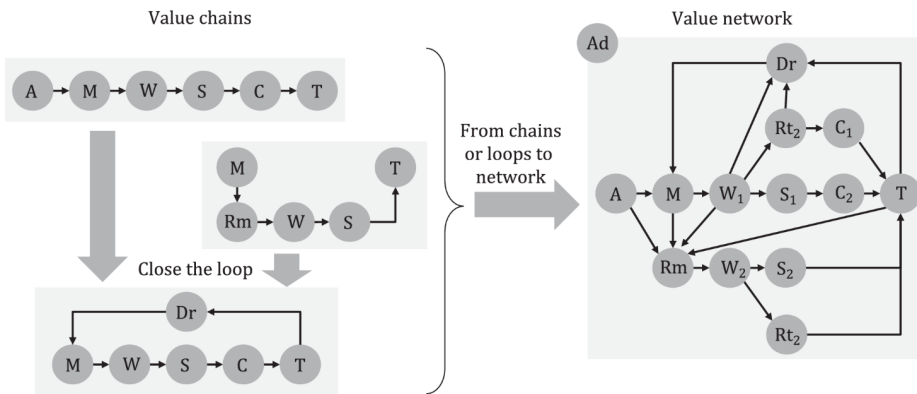


Key

- A: Raw materials acquisition
- M: Manufacturing
- W: Wholesaling
- S: Service
- C: Consumer
- T: Collection and take back
- Rm: Remanufacturing and reusing
- Rt: Retailing
- Dr: Disassembling and recycling
- Ad: Research, association and administration

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- Key**
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Figure 3 — General process from value chains to a value network

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Circular economy — Review of existing value networks

1 Scope

This document reviews the characteristics and structures of some existing value networks as ~~informative~~ examples in accelerating a circular economy transition process.

~~The objectives of this document are:~~

- ~~— to provide useful information for the development of future related standards and guidelines by analysing existing value networks;~~
- ~~— to enhance understanding of the success factors and enablers for creating value networks derived from informative examples (IEs).~~

ISO 59010 ~~is~~ gives guidance on a critical aspect in transitioning an ~~organisation's~~ organization's business model and processes from linear to circular and transforming an ~~organisation's~~ organization's business ecosystem into a value network. This document complements ~~the~~ ISO 59010 by providing further information on value networks.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the ~~following~~ terms and definitions ~~given in this section, which have been discussed in the ISO/TC323 and its WGs, and the following~~ apply.

ISO and IEC maintain ~~terminological~~ terminology databases for use in ~~standardisation~~ standardization at the following addresses:

- ISO Online browsing platform: ~~Available~~ available at <https://www.iso.org/obp>
- IEC Electropedia: available ~~from~~ at <https://www.electropedia.org/>

~~NOTE: Not all the definitions in this draft are not consistent with ISO-WD 59004.~~

3.1

circular economy

economic system that uses a systemic approach to maintain a circular flow of resources by regenerating, retaining or adding to their value, while contributing to sustainable development

Note 1 to entry: Resources can be considered concerning both stocks and flows.

~~[SOURCE: ISO 59004:—, 3.1.1, modified — “regenerating” replaced “recovering” in the definition. Note 2 to entry deleted.]~~

3.2

common infrastructure

systems shared among participants in a *value network* (3.6) for mutual benefit

Note 1 to entry: The system ~~shown above~~ indicates an ~~optimisation~~ optimization system, traceability system, information exchange system, branding, equal relationship, and internal ~~standardisation~~ standardization as a certification system.

3.3

governance

principles, policies and framework by which an ~~organisation~~ organization (3.4) is directed and controlled

[SOURCE: ISO 21505:2017, 3.1]

~~3.4—organisation~~

organization

person or group of people that has its own functions with responsibilities, authorities, and relationships to achieve its objectives.

Note 1 to entry: The concept of ~~organisation~~ organization includes, but is not limited to, sole-trader, company, corporation, firm, enterprise, authority, partnership, charity or institution, or part or combination thereof, whether incorporated or not, public or private (e.g. foundation, union, association, agency, municipality, region, country, intergovernmental agencies, etc.).

Note 2 to entry: A group of ~~organisations~~ organizations can also be considered as an ~~organisation~~ organization that has, alone or collectively, their own objectives.

[SOURCE: ISO 14001:2015, 59004:—, 3.4, modified — Examples in Note 1 to entry and a new Note 2 to entry have been added.]

3.5

value chain

set of ~~organisations~~ organizations (3.4) that together in an ~~organised~~ organized way provide a solution that results in a value for them

3.6

value network

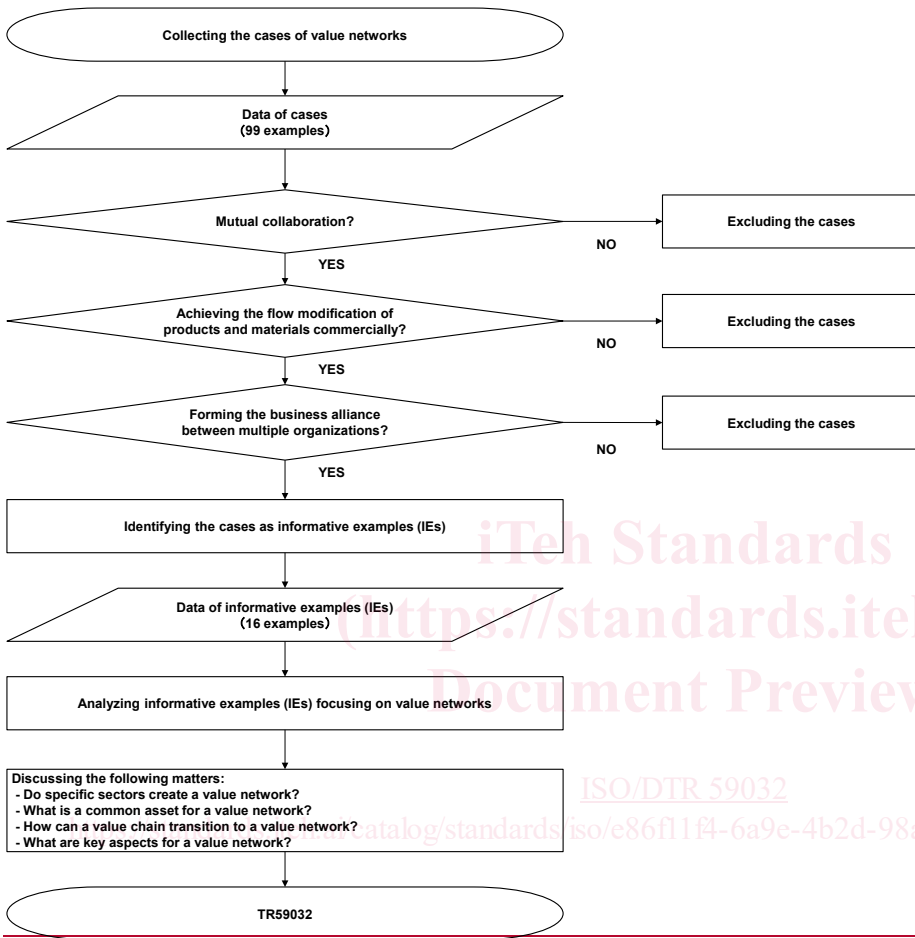
network of interlinked *value chains* (3.5) and interested parties

4 Review of existing value networks

4.1 Method

4.1.1 Survey process

The survey ~~for drafting this document~~ was conducted in accordance with the steps shown in Figure 4. The process of collecting the cases was based on different experts voluntarily accepting an invitation to submit examples. ~~Es are screened~~ The examples were selected based on the criteria shown in Figure 4.



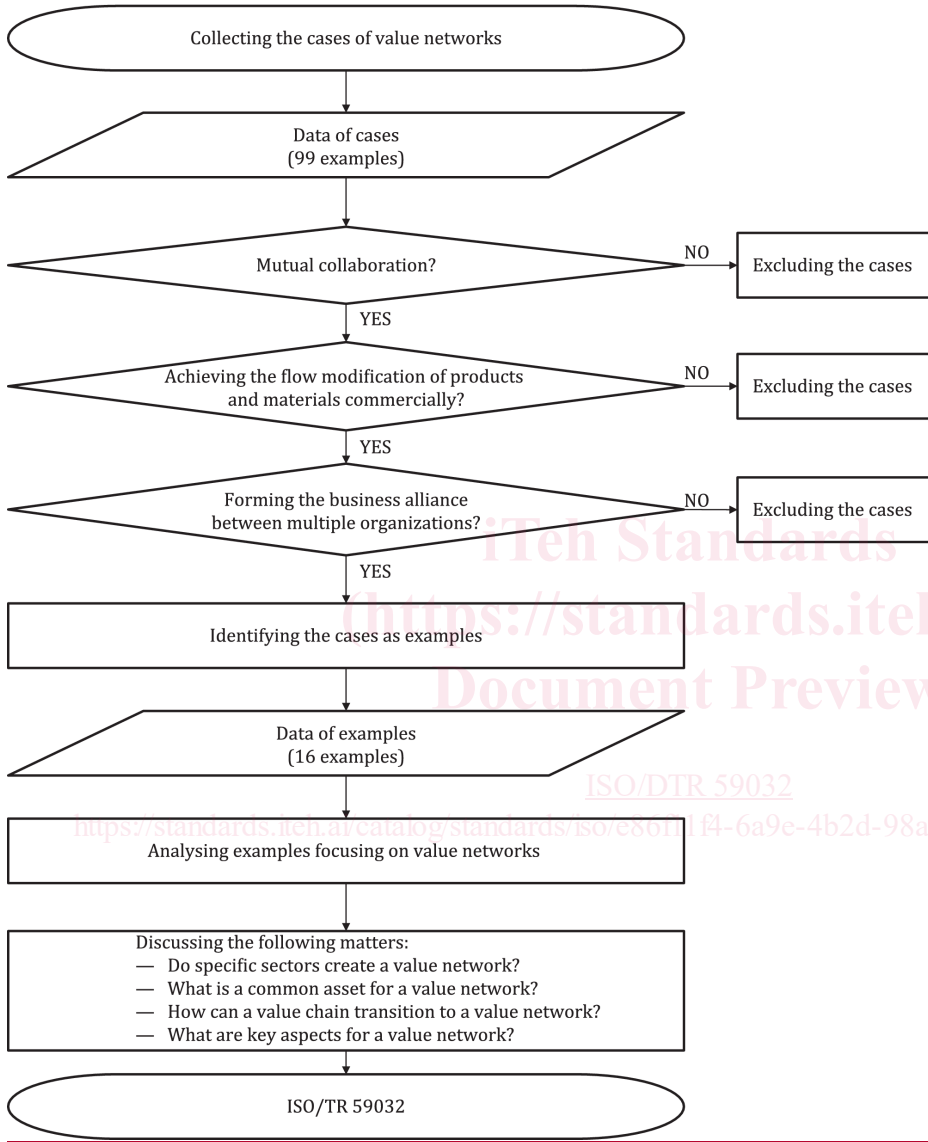


Figure 4 — Survey process

4.1.2 Preparing questionnaires

The survey was conducted by experts on existing value networks in each region, country, or organisation/organization to collect the following information:

1. Type) type of case;
2. Title) title and basic information;
3. Overview) overview of the implementation model;
4. Beneficial) beneficial or detrimental impacts (listing and highlighting critical aspects);
5. Relevance) relevance to sustainable/the Sustainable Development Goals (SDGs), including detrimental impacts;
6. Key) key aspects relevant to the "Circular Economy"/circular economy;
7. Implementation Methodology
8. Enablers) implementation methodology;
- h) enablers, barriers and concerns;
9. Relevant) relevant information specific to businesses or individual projects.

4.1.3 Collecting the cases of value networks

This document intends The aim was to cover a wide scope of various types of existing value networks. Geographical and sectoral balance is/was considered when collecting the existing cases of value networks. The voluntary members in the ISO/TC323/WG2. There were 99 cases collected ninety-nine cases might fulfil that fulfilled the questionnaire requirements for further analysis.

The collected cases are geographically diverse across countries or regions (Japan, Europe, the United States, Brazil, China, India, Canada, Mauritius and Singapore). The collected cases cover various sectors, including machinery and equipment, forest and bio-based industries, waste management, textiles, chemicals, food, drinks/drink, mining, metals, minerals, cement, construction, transport, furniture, glass, and steel.

4.1.4 Screening informative>Selecting the examples (IEs)

Sixteen informative examples (IEs) from the viewpoint of the following criteria are screened examples were selected from the collected value network cases, using the following criteria:

- a) Does the case have a mutually beneficial collaboration?
- b) Does the case achieve the flow modification of products and materials commercially and?
- c) Does the case form a business alliance between multiple organisations? Screened IEs organizations?

The selected examples achieve achieve commercial scale flow modification of products and materials commercially, and form the business alliance between multiple organisations/organizations. The status of the examples covers not only the aspects/aspects of the value network but also circular economy implementation and use case (see Figure 5).

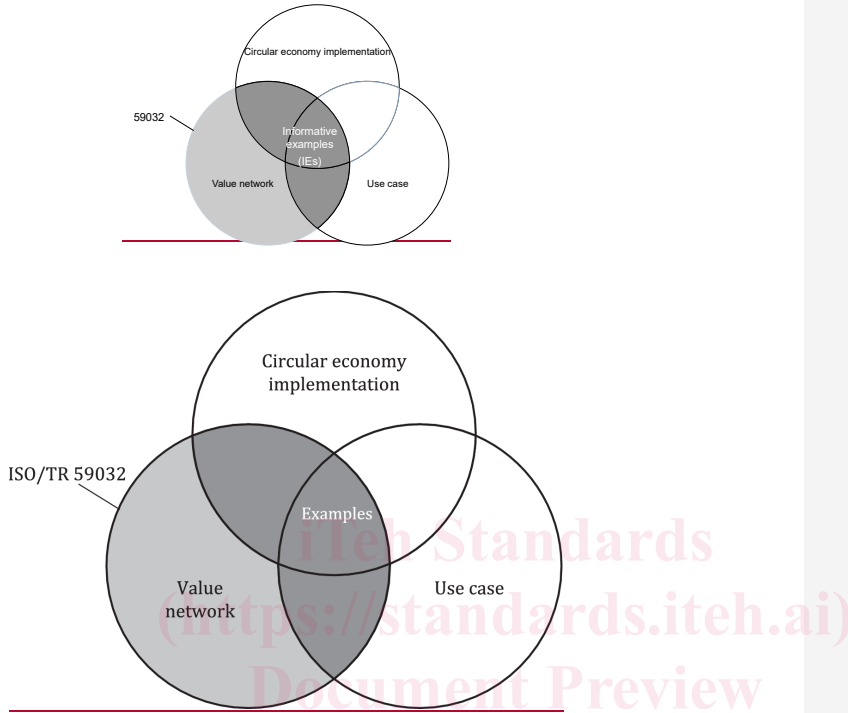


Figure 5 — Status of **informative examples (IEs) in this document**

Screened examples as informative the examples (IEs)
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4.1.5 The following Selected examples were screened as informative

The examples shown in Figure 6 and listed in Table 1 were selected as examples of value networks from the originally 99 worldwide examples collected ninety nine world-wide examples (Figure 6).