



EUROPEAN COMMISSION
EUROSTAT

Directorate G: Business and trade statistics
Unit G-2: European Businesses

**Methodological changes of the Harmonised Data
Collection (HDC)
from CIS 2016 to CIS 2018**

Executive summary

This document provides information on the main methodological changes of the Harmonised Data Collection (HDC) CIS 2016 compared to the HDC CIS 2018. The CIS 2018 applies new definitions for innovation and innovation activity, following the recommendations of the revised Oslo Manual (OM 4). As a consequence, there will likely be a break in series for some indicators. This document outlines the methodological changes and indicates where breaks in series are most likely. Given however the nature of fluctuations in innovation related indicators, it is difficult to assess which part of the change in indicators is due to the break, and which reflects a real development. Such assessment will become more solid once the results of the CIS 2020 are available. The CIS 2020 HDC has a similar structure and flow of questions as the CIS 2018.

1. Introduction

Innovation is one of the drivers of growth and one of the factors that enable businesses to stay competitive. Policies that promote innovation, whether at EU, national, or regional level, need robust (statistical) information so that policy-makers may understand which factors stimulate and enhance innovation activities in enterprises, as well as the factors that hamper or prevent innovation.

The Community Innovation Survey (CIS) has been the reference for such information in the EU since 1992. It is widely used in European and national policy reports on innovation, including the European Innovation Scoreboard, as well as in academic literature and research papers on innovation. At each round of the biennial survey, the CIS has undergone a review, steered by the Eurostat STI Working Group and CIS Task Force, where the list of survey questions has been re-examined. This has resulted in a 'step-by-step evolution' of the survey, adjusting the questionnaire while ensuring the continuity of the statistics.

The Community Innovation Survey has undergone a substantial revision after the review of the main methodological 'Guidelines for Collecting, Reporting and Using Data on Innovation', the Oslo Manual. The 4th edition has been published at the end of 2018. The review of the CIS took account of the changes of concepts, improved quality of questions, and introduced design changes that will increase the value of the statistical output of the survey. This review is described in detail in the documents 'Revising the CIS' and 'Draft Harmonised Questionnaire of the CIS 2018' that were presented to the Working Group on Science, Technology and Innovation (STI WG) in November 2017.

This document provides information on the main methodological changes of the HDC CIS 2016 compared to the HDC CIS 2018. The CIS 2018 applies new definitions for innovation and innovation activity, following the recommendations of the revised Oslo Manual (OM 4). As a consequence, there will likely be a break in series for some indicators. This document outlines the methodological changes and indicates where breaks in series are most likely. Given the nature of fluctuations in innovation related indicators it is not possible to infer from a single CIS wave whether there is an actual break in series. To what extent a real break in series is identified the CIS TF suggest to wait for CIS 2020 results. The CIS 2020 HDC has a similar structure and flow of questions as the CIS 2018. This report will therefore be updated as soon as (preliminary) results of the CIS 2020 are available.

2. Methodological changes CIS 2018 compared to CIS 2016

a. Definition of innovation

Applying the definitions of innovation as proposed in the 4th edition of the Oslo Manual, questions on innovation have been changed in the CIS 2018 as compared to the CIS 2016 in the following ways:

- The CIS 2018 contains two questions on whether an enterprise has introduced innovations during the 3-year reference period, as compared to four questions in the CIS 2016. One question refers to **product innovation** and is basically the same as in CIS 2016. Another question refers to **business process innovation** and merges the CIS 2016 questions on process, marketing and organisational innovation. There is one element of prior marketing innovation that has been moved to product innovation - significant changes to product design. This shift is reflected by a change in the definition of product innovation that now also refers to changes

in design. For business process innovation, two elements have been included that were not explicitly mentioned in the CIS 2016 definitions of process, marketing or organisational innovation: new or improved methods related to developing products, services or processes, and new or improved methods in after sales services.

- The CIS 2018 definitions of product and business process innovation put more emphasis on including innovations related to **digitalisation**. As for product innovation, it is stressed that products include digital goods and services. The question on business process innovation includes a separate item on new or improved methods related to information processing and communication (which was part of an item 'supporting activities').
- For both product and business process innovation, the definitions used in the CIS 2018 do not use the term "significantly changed" anymore, but define innovation - in accordance to the Oslo Manual 2018 - as new or improved products or business processes that **differ significantly** from the products and business processes that have been used by the enterprise before.

b. Filters

The CIS 2018 reduced the use of filters as compared to the CIS 2016. While the CIS 2016 had a large 'innovation filter' in order to pass enterprises around innovation-related questions (innovation expenditure, innovation cooperation, public support to innovation, information sources for innovation) in case that did not report product or process innovation activities, the CIS 2018 contains only a small filter upfront the innovation expenditure question. Questions on cooperation, public support and information sources have been rephrased in a way that they are now relevant to all firms. For cooperation and public support, the questions have been extended in order to identify cooperation and public support related to innovation. This allows the production of variables that are comparable to the CIS 2016 variables on innovation cooperation and public support for innovation.

Another major change of the CIS 2018 is the fact that questions on innovation expenditure, cooperation on innovation and public support for innovation refer to all types of innovations, whereas in the CIS 2016, enterprises with only marketing or organisational innovation were not guided to these questions.

c. Organisation of questions

The proposed order of questions in the CIS 2018 has been changed as compared to the CIS 2016. A first part of the questionnaire examines activities that are relevant to all enterprises (sections 1 and 2). Questions related to innovation follow in section 3. General questions on the enterprise are part of the final section. By starting with activity questions relevant to all enterprises, the new organisations avoids a likely 'frustration effect' among non-innovative firms when having to tick 'no' to a large number of questions at the beginning of the questionnaire. Such a frustration effect may either lead to not responding at all (as the survey is regarded as irrelevant for the enterprise) or to false positives in case the enterprise feels the need to respond positively at least to some innovation questions ('satisficing effect'). Figures 1 and 2 give an overview of respectively the different flow of question in CIS 2016 and CIS 2018. Table 1 summarises the most important changes of CIS2018 compared to the CIS 2016.

Figure 1 Flow of questions in CIS 2016

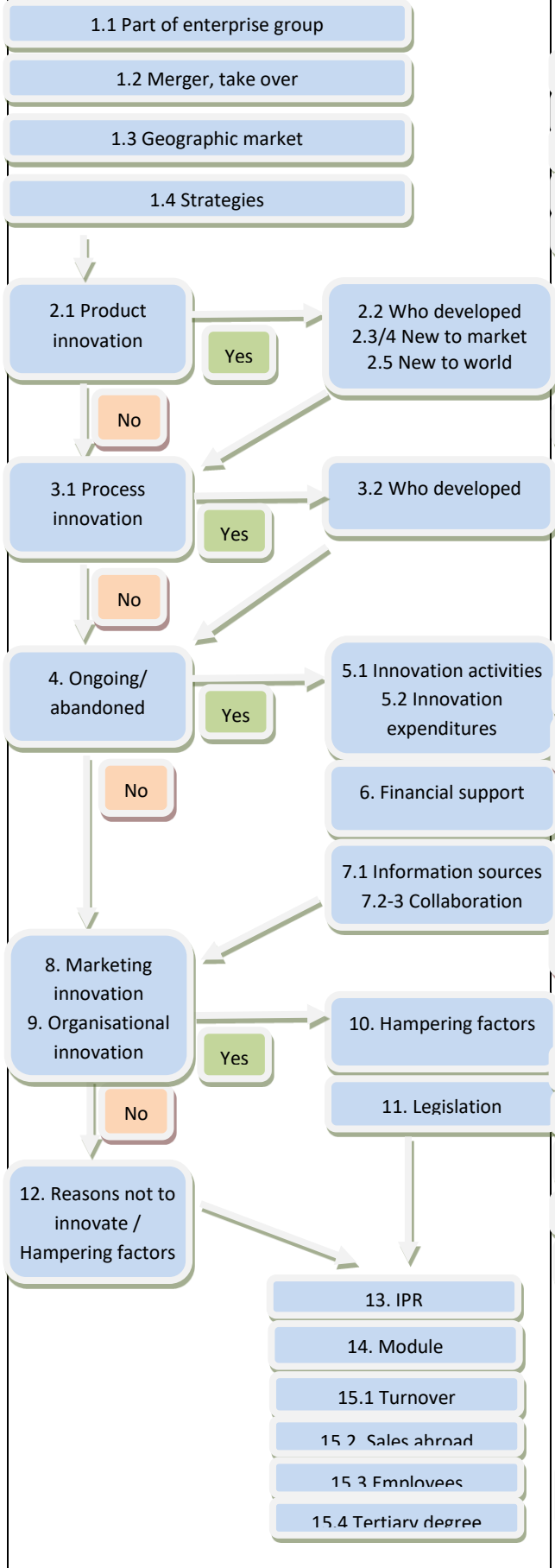


Figure 2 Flow of questions in CIS 2018

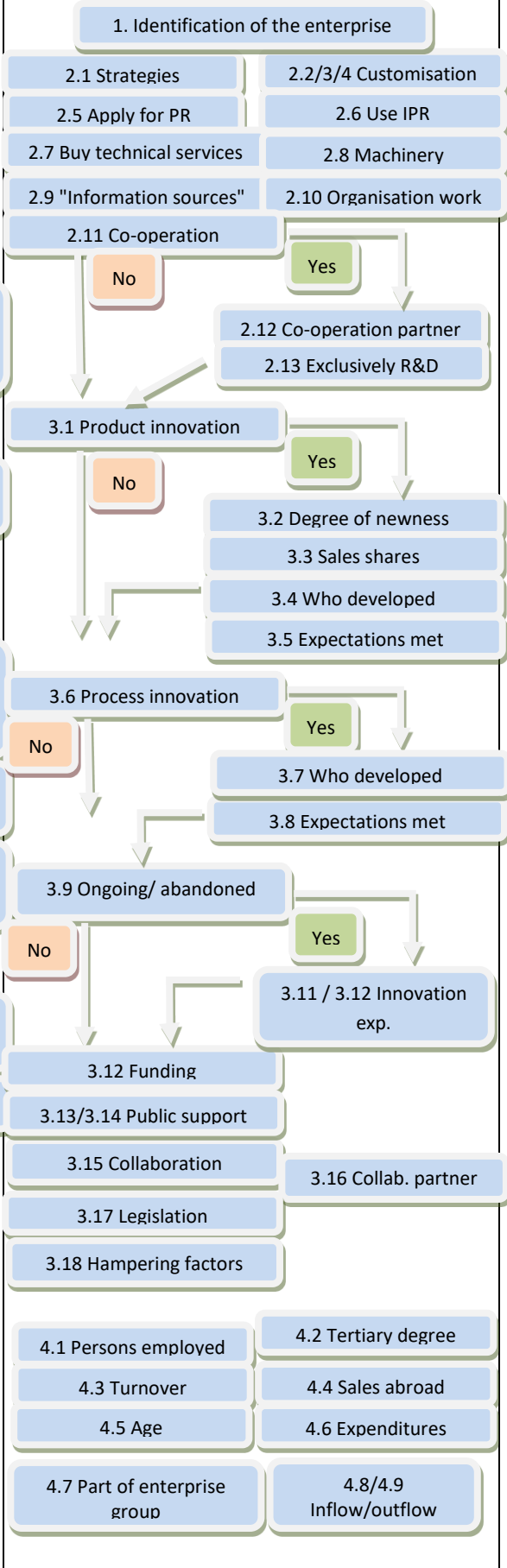


Table 1 Summary of changes moving from CIS 2016 to CIS 2018

<i>CIS 2016</i>		<i>CIS 2018</i>
2.1a. Goods	→	3.1a. Goods (incl. significant changes to the design, incl. digital goods)
2.1b. Services	→	3.1b. Services:(incl. digital services)
3.1a. Methods of manufacturing for producing goods or services	→	3.6a. Methods for producing goods or providing services (incl. development methods)
3.1b. Logistics, delivery or distribution methods	→	3.6b. Logistics, delivery or distribution methods
3.1c. Supporting activities for processes (incl. maintenance systems , operations for purchasing, accounting, or computing)	→	3.6c. Methods for information processing or communication
8.1a. Business practices for organising procedures	→	3.6d. Methods for accounting or other administrative operations
8.1c. Methods of organising external relations	→	3.6e. Business practices for organising procedures or external relations
8.1b. Methods of organising work responsibilities and decision making	→	3.6f. Methods of organising work responsibility, decision making or human resource management
9.1a. Aesthetic design or packaging	→	3.6g. Marketing methods for promotion, packaging, pricing, product placement or after sales services
9.1b. Media or techniques for product promotion	→	
9.1c. Methods for product placement or sales channels	→	
9.1d. Methods of pricing	→	

Note: **bold**: Elements that are newly emphasised or not emphasised anymore

d. Redesign of questions

Special care has been given to improve the questions related to expenditure. These questions have been reworked with a view to facilitate reporting and thereby increase the quality in terms of completeness and accuracy. The questions related to innovation expenditure have been augmented with some optional details about the type of expenditure. This should help the respondent to better identify the correct elements. Expenditure data with an enhanced quality can provide better information on the characteristics (profile) of the enterprise. This will enable the compilation of improved statistical indicators.

e. Break in series CIS 2016 to CIS 2018

The CIS 2018 applies new definitions for innovation and innovation activity, following the recommendations of the revised Oslo Manual (OM 4). As a consequence, there will be a break in series for some indicators (cf. the flowcharts above). The following table compares key variables in CIS 2016 with corresponding variables available from CIS 2018 and describes the deviation as well as approaches to minimise the deviation, if possible.

Description¹⁾	Variable	CIS 2016²⁾	CIS 2018²⁾	Deviation	Approach to minimise deviation
Innovation-active enterprises	INNO	2.1, 3.1, 4.1, 8.1, 9.1	3.9	incl. abandoned or ongoing organisational or marketing innovation activities	none
Product or process innovation active enterprises	INNOACT	2.1, 3.1, 4.1,	3.1, 3.6 a) to d), 3.9 b) and c)	incl. abandoned or ongoing organisational or marketing innovation activities, potentially excl. abandoned R&D activities aiming at product or process innovation	none
Innovative enterprises	INNOS	2.1, 3.1, 8.1, 9.1	3.1, 3.6	conceptually identical	-
Product innovative enterprises	INPDT	2.1	3.1	almost identical (2018 includes design changes)	none
Process innovative enterprises	INPCS	3.1	3.6 a) to d)	conceptually identical	-
Organisation innovative enterprises	INORG	8.1	3.6 e) and f)	conceptually identical	-
Marketing innovative enterprises	INMKT	9.1	3.6 g)	very close (2018 excludes design changes)	none
Enterprises with abandoned innovation activities	INABA	4.1 a)	3.9 c)	incl. abandoned organisational or marketing innovation activities, excl. abandoned R&D activities	none
Enterprises with ongoing innovation activities	INONG	4.1 b)	3.9 b)	incl. ongoing organisational or marketing innovation activities, excl. ongoing R&D activities	none
R&D performers	RRD	5.1 a) and b)	3.9 d)	conceptually identical	-
Total innovation expenditure	EXPTOT	5.2 f)	3.10 a)+b)+c)	incl. expenditure on organisational or marketing innovation activities	EXPTOT when INPDT or INPCS or INABA or INONG or RRD is "yes"

Description¹⁾	Variable	CIS 2016²⁾	CIS 2018²⁾	Deviation	Approach to minimise deviation
Share of turnover from new-to-market product innovation	NEWMAR_TURN	2.4	3.3	almost identical (2018 includes design changes)	none
Share of turnover from only new-to-firm product innovation	NEWFRM_TURN	2.4	3.3	almost identical (2018 includes design changes)	none
Enterprises with cooperation on innovation activities	CO_ALL	7.2	3.14 a) and b)	incl. cooperation on organisational or marketing innovation activities	CO_ALL when INPDT or INPCS or INABA or INONG or RRD is "yes"
Enterprises receiving public funding for innovation activities	FUNPUB	6.1	3.13 column B	incl. public funding for organisational or marketing innovation activities	FUNPUB when INPDT or INPCS or INABA or INONG or RRD is "yes"

1) Product, process, organisation and marketing innovation refer to OM 3 terminology.

2) Numbers of questions in the Harmonised Questionnaire CIS 2016 and the Harmonised Data Collection CIS 2018. Items within a question are identified by lowercase letters.