



ESSnet on Linking of Microdata to Analyse ICT Impact (ESSLait)
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Final Report on ESSLait Metadata Repository

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Ekaterina Denisova

For further information please contact:

Ekaterina Denisova, Statistics Norway, ekaterina.denisova@ssb.no

Eva Hagsten, Statistics Sweden, eva.hagsten@scb.se

Michael Polder, Statistics Netherlands, jm.polder@cbs.nl

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Objectives

The ESSLimit project built an extensive metadata repository on the sources underlying the microdata linking. A description is presented here of how the repository has been updated for the purpose of its successor, the ESSLait project, encompassing a discussion on possible additional variables and how to achieve reliable and comparable information. There is also a dialogue on how to deal with variables that change their definitions over time or suddenly disappear from the model questionnaires (or become biennial).

Achievements

The present report outlines the main results of metadata work in the lifetime of the ESSLait project. After the release of the mid-term report including an update of the metadata repository, a need for additional metadata inquiries was recognised. This is largely explained by the project structure with several activities being conducted at the same time where the requirements of a step-wise procedure cannot be fully foreseen.

Metadata exercises

The following exercises were performed in the project:

1. Update of data sources from the previous round with information on the 2010 data. The key sources remained the same: Business Register (BR), Production Survey (PS), Community Survey on ICT Usage and e-Commerce in Enterprises (EC) and Community Innovation Survey (CIS). Also, the project considered inclusion of data for 2011. Taking into account a relatively late release date of Structural Business Statistics (SBS) for 2011 the project decided to restrict the time series to 2010.
2. Discussion on inclusion of new variables for ICT usage: own account software (dummy, number of man-hours or monetary measure) and ICT investment and expenditure (monetary measure). Unfortunately, these variables have been surveyed on a voluntary basis. ICT investment and expenditure is collected by six project members, only two of them appear to have long time series, the rest four having figures from 2009. Hence, the decision was to leave these variables aside.
3. Analysis of comparability of variables and their definitions over time and across countries, with a particular focus on changes in the EC model questionnaire. Indeed, modifications in EC variables presented a challenge to calculation of ICT indicators defined in the ESSLimit project. Because of this a trade-off between the accuracy of ICT indicators and availability of longer time series had to be made. Interpolations of the 2010 values based on the 2009 and 2011 data and use of proxies were proposed as

solutions to filling the gaps. Both approaches are believed to affect the comparability of data. Interpolations would also create a bias towards big firms. To minimize negative effects on the comparability and representativeness of the EC data, a second best solution with the use of proxies was advocated. This implies that some time series end in 2009.

Data collection tool

Five metadata surveys have been distributed:

- mini-questionnaire on general availability of data for 2010-2011,
- metadata questionnaire on the Community Survey on ICT Usage and e-Commerce in Enterprises for 2010 and 2011 (EC),
- metadata questionnaire on the Community Innovation Survey for 2010 (CIS),
- two questionnaires on the Production Survey for 2010 (PS): the first one collecting data on all PS variables for 2010 and the second one on comparability of definitions of some PS variables.

Feedback from the project group indicated that a number of improvements to earlier metadata collection could be made, in particular to the design of the questionnaires. Nonetheless, it was decided to leave the general design unchanged. The rationale behind this approach was to ensure comparability of the answers for the whole period of the ICT Impacts, ESSLimit and ESSLait projects: 1999-2010. The questionnaires on EC and CIS contain a section with generic information and sections with variable-specific questions, similar to the questionnaires from ESSLimit. Also, the structure of the PS remains the same: a ReadMe section, a section on metadata guidance and variable-specific questions.

ICT Usage and e-Commerce in Enterprises (EC)

One of the early findings of the ESSLait project was that EC underwent extensive changes in contents regularly, most recently in 2010 and 2011 where variables either received new definitions or were dropped altogether. Dealing with these kinds of changes has been a challenge in the project work and several alternative remedies have been assessed, including interpolation of the 2010 values by using variables for 2009 and 2011. For this purpose the EC metadata survey was expanded to include questions on the 2011 variables. In later stages the idea of interpolation was rejected mainly due to comparability and representativeness considerations. Also, the EC metadata survey compiled information on ICT investment and expenditures and own software questions. Table 1 on p. 3 presents the answers to this survey. Availability of EC data by country for 2000-2010 is summarized in table I of Appendix.

Data on ICT expenditure/ investment have been optional to survey so far¹. Some project members have gained good experience in producing these statistics, also through participation in Eurostat pilot studies of ICT expenditure/ investment conducted for production years 2004 and 2009. Four project members reported availability of data starting from 2009. Only two project members have long time series of ICT expenditure/ investment- DK since 2003 and SE since 2005. Short time series and incomplete coverage by country and /or over time are

¹ Questions on ICT Investments/Expenditure are presented in table V in Appendix. They are taken from the Eurostat Methodological Manual for surveys on the ICT Investment/Expenditure, production year 2009. Question formulations in the previous surveys deviate from the 2009 model, though quite a few remain comparable over time.

the reasons to leave variables on ICT expenditure/ investment and own software in reserve for future research.

Table 1. Answers to EC Metadata Survey (Y=yes, N=no)

NSI	EC 2010	ICT expenditure/ investment	Own software from EC
AT	Y	N	N
DE	Y	N	N
DK	Y	Y, 2003-2011	Y, 2003-2011
FI	Y	N	Y, 2005-2011
FR	Y	Y, 2010	N
IE	Y	N	Y, 2004-2005
IT	Y	N	N
LU	Y	N	N
NL	Y	Y, 2009-2011	Y, 2000-2011
NO	Y	Y, 2009-2011	Y, 2004-2007
PL	Y	Y, 2009-2011	Y, 2003-2007, 2009
SE	Y	Y, 2005-2011	Y, 2002-2011
SI	Y	Y 2009, 2011	Y 2009, 2011
UK	Y	N	N

Note: With “Own software from EC” we refer to an optional module *Additional questions introduced in the national questionnaire* in EC surveys for years 2004-2008². From 2008 onwards, these questions are no longer included in the Eurostat quality report templates.

Changes in EC 2010 variables

The project members reported no deviations in collection of mandatory variables and some variations in collection of optional variables. A complete list of EC 2010 variables is available in table IV in Appendix. A comparative study of the Eurostat model questionnaires for 2009 and 2010 allows grouping the EC variables in the following way:

- Variables in EC 2010 with no changes compared to 2009,
- Variables collected in EC 2009 and dropped from EC 2010 and
- Completely new variables compared to EC 2009.

This report focuses on the parts of EC 2010 that suffered changes, that is variables from groups b) and c).

1. Intranet

Dummy on intranet INTRA is not collected in EC 2010. The time series of this variable extends only to 2009.

ESSLait name	Status	Description
INTRA	Dropped in EC 2010	Firm has intranet

2. Automated data exchange (ADE)

The first four variables in the list below ADESU, INVREC, INVSND and ADECU are dropped from EC 2010. INVSNDAP and INVRECAP appear in EC 2010 for the first time. Though comparability tests carried out by Eurostat show that INVSNDAP and INVRECAP cannot be regarded as perfect proxies for INVSND and INVREC, the project went for this solution in order to keep year 2010 in the analysis.

² The list of the variables on own software is available in table VI in Appendix.

ESSLait name	Status	Description
ADESU	Dropped in EC 2010	Use of ADE for sending orders to suppliers
INVREC	Dropped in EC 2010	Use of ADE for receiving e-invoices
INVSND	Dropped in EC 2010	Use of ADE for sending e-invoices
ADECU	Dropped in EC 2010	Use of ADE for receiving orders
INVSNDAP	New in EC 2010	Sending e-invoices in a standard structure suitable for automatic processing
INVRECAP	New in EC 2010	Receiving e-invoices in a standard structure suitable for automatic processing

Following the discussions at the Amsterdam Steering group and the Oslo launch meetings, new variables for ADE were introduced into the project analysis: ADENGOV and ADEGOV. The former is created for the purpose of the project to replace the missing ADE and is derived from three underlying variables: ADEPAY, ADEINFO and ADETDOC. All these variables as well as ADEGOV have been surveyed since 2007. Though ADEGOV and ADEPAY (unlike ADEINFO and ADETDOC) were optional in EC 2008 and EC 2009, they were provided by most project members for the whole time period 2007-2010³.

ESSLait name	Description
ADEPAY	Use of ADE for sending payment instructions to financial institutions
ADEINFO	Use of ADE for sending product information
ADETDOC	Use of ADE for sending transport documents
ADEGOV	Use of ADE for sending or receiving data to/from public authorities
ADENGOV	=(ADEPAY = 1) or (ADETDOC = 1) or (ADEINFO = 1)

3. Supply Chain Management (SCM), Enterprise Resource Planning (ERP) and Client Relationship Management (CRM) software

These are the major e-business systems variables that suddenly disappear from the 2010 model questionnaire. While SISAPU (sharing information for a number of business functions) was suggested as a proxy to missing ITERP, no good proxies for SCM and CRM were available in the EC 2010 data. The time series of these variables end in 2009. So does the time series of ICT intensity indicator, ICTi, calculated in the ESSLimit project and based on CRM, ERP, SCM and ADE. A solution to this is a new ICT intensity measure created in the ESSLait round, ICTi2, which builds on MOB, SISAPU, ADENGOV and ECOM⁴ and stretches to 2010.

ESSLait name	Status	Description
SISU	Dropped in EC 2010	Sharing Supply Chain Management (SCM) data with suppliers
SICU	Dropped in EC 2010	Sharing SCM data with customers
ITERP	Dropped in EC 2010	Enterprise Resource Planning
CRMSTR	Dropped in EC 2010	Use of CRM software to share of information with other business functions
CRMAN	Dropped in EC 2010	Use of CRM software to analyse information for marketing purposes

4. E-commerce variables

The e-commerce questions in the Eurostat model questionnaire were changed several times during the period studied in the project. Until production year 2007 the National Statistical

³ The information on these variables is taken from the cross-country ECSTAT table produced by the common code, version 4.1, and containing data for 12 project members. ADEGOV is missing for IE and UK in 2007-2010 and for FR in 2008-2009. ADENGOV was provided by all but IE.

⁴ MOB is a dummy for mobile access to Internet, ECOM is a dummy for use of e-sales and e-purchases. ECOM, SISAPU and other variables created for the purpose of the ESSLait project are presented in the section on Workpackage II- Impact Analysis in the ESSLait midterm report.

institutes (NSIs) had to report e-commerce via internet and EDI/other networks as two separate variables. In EC 2007- EC 2009 the model questionnaire contained one question on commerce via computer networks.

In EC 2010, the question on sales through the internet (or EDI), AESELL, is again split in two: sales via a website or sales via EDI-type messages. Both questions are obligatory and for 2010 AESELL is derived from AWSSELL and AXSELL. The same holds for percentage of sales via Internet (or EDI), AESVALPCT, which is based on AWSVALPCT and AXSVALPCT. The split of AEBUY, firms' orders through internet, is optional in EC 2010. Half of the project countries chose to include optional questions on AWBUY and AXBUY, while the other half stuck to the 2009 question on AEBUY. Apart from these splits, there are no changes in the formulations of the e-commerce questions in EC 2010, implying that it is possible to keep the same set of e-commerce variables as in the ESSLimit project. However, we would like to bring to notice the fact that even slight question modifications may affect the responses. For example, variations in percentage of sales via Internet AESVALPCT from 2009 to 2010 may be caused either by real changes in e-sales or by the change in data collection.

ESSLait name	Status	Description
AESELL	Dropped in EC 2010	Firm sells through internet (or EDI)
AESVALPCT	Dropped in EC 2010	% of sales through internet (or EDI)
AWBUY*	New in EC 2010	Firm orders via a website
AXBUY*	New in EC 2010	Firm orders via EDI-TYPE messages
AWSSELL	New in EC 2010	Firm sells via a website
AXSELL	New in EC 2010	Firm sells via EDI-type messages
AWSVALPCT	New in EC 2010	% of sales via a website
AXSVALPCT	New in EC 2010	% of sales via EDI-type messages

* Optional question

Production Survey (PS)

The Production Survey contains a number of firm-level economic variables. Some of them are collected via the SBS, others come from different sources including the Business Register, education statistics (human capital HK) and trade surveys (dummy for exporting firms EXPORT and monetary measure of export NX). The list of PS variables in the metadata survey has been kept unchanged since ESSLimit, with the exception of two new questions: the link between Business Register and Employer- Employee Register and a possibility of extending long panel data set from the ESSLimit project. Table 2 on p. 6 shows availability of the PS variables⁵.

The only disparity between the list of the variables in the PS metadata survey and the code is that variable AGE is replaced by BIRTH. This change follows from the need for harmonising the definition of AGE across countries. It is derived from BIRTH defined in Eurostat – OECD Manual on Business Demography Statistics as a firm's first year of economic activity.

⁵ Table VIII in Appendix presents a more detailed description of the PS variables. Table VII (ibid) contains a list of questions from the variable-specific section of the PS metadata survey.

Table 2. Availability of PS data based on 2010 Metadata Survey and Output from Code Version 4.1 (Y=yes, N=no)

ESSLait name	Description	AT	DE	DK	FI	FR	IE	IT	LU	NL	N O	PL	SE	SI	UK
NV	nominal value added (in national currency)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
NQ	nominal gross output (in national currency)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
E	full-time employment	N	Y	Y	Y	N	Y	Y	N	N	N	Y	Y	N	N
PAY	total wage bill (in national currency)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
NM	nominal expenditures on intermediates (in national currency)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
K	capital services measure (in national currency)	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y	Y	N	Y
HKPCT	pct workers with post upper secondary education	Y	N	Y	Y	N	Y	N	N	N	Y	N	Y	Y	Y
HKITPCT	pct workers with post upper secondary IT education	Y	N	Y	Y	N	Y	N	N	N	Y	N	Y	N	Y
HKNITPCT	pct workers with post upper secondary non-IT education	Y	N	Y	Y	N	Y	N	N	N	Y	N	Y	N	Y
EXPORT	firm exports of goods and services	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
NX	firm exports of goods and services (in national currency)	Y*	N	Y	Y*	Y	Y	Y*	Y	Y*	Y	Y	Y	Y	Y
Wgt_PS	sample weight on business survey	Y	N	N	N	N	N	N	N	Y	N	N	N	N	Y
EMP_BR	number of employees given in Business Register	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FRGN_OW N	dummy for foreign ownership	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y
MNC	dummy for multinational corporation	Y	N	Y	N	Y	N	N	N	Y	N	Y	Y	Y	N
AGE	age of firm in given year	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
BIRTH	year of birth (first year of activity)	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Link between Business Register and Employer-Employee Register	N	N	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	N
	Long panel data set (at least 16 years 1995-2010)	N	N	Y	Y	Y	N	N	N	Y	Y	N	Y	Y	N

Note: All the variables are available for 2001-2010 except in Germany and Ireland where the series start in 2002 and in Luxembourg and Slovenia where data are available from 2003. An asterisk (*) denotes firms with information on exports of goods only.

The most recent metadata collection in the project was initiated after the input quality sub-team called attention to comparability of definitions for several PS variables:

- NQ, gross output/sales/ turnover,
- NM, material inputs,
- NV, value added,
- E, full-time employment.

Indeed, production value and turnover which both may be used as inputs to NQ are calculated differently, according to Commission Regulation (EC) No 250/2009 of 11 March 2009. Goods for resale are subtracted from production value 12120 and included in turnover 12110. The project agreed on a consistent approach to treatment of goods for resale in calculating NQ, NM and NV. Either both are included in NQ and NM or excluded.

There are variations in inputs to the project's employment variable E. Half of the project countries use full-time equivalents (FTE) while the rest provide head counts of number of employees or persons employed. Use of other variables instead of FTE is explained by data quality considerations when the general recommendation is to use the most stable proxy over time. However, for productivity calculations FTE is a more desirable variable.

Use of harmonized definitions is presented in the table below. It shows that NV and Emp_BR are the most consistent variables.

Table 3. Comparability of Output and Employment Variables across Countries

Country	NQ	NM	NV	E	Emp_BR
AT	12110 Turnover	13110 Total purchases of goods and services	12150	Number of persons employed 16110	Number of employees
DE	12110 Turnover	13110 Total purchases of goods and services	12150	Number of employees in FTE 16140	Number of employees, number of persons employed if N employees is missing
DK	12110 Turnover	13110 Total purchases of goods and services	12150	Number of employees in FTE 16140	Number of employees in FTE
FI	12110 Turnover	13110 Total purchases of goods and services	12150	Number of employees in FTE 16140	Number of employees in FTE
FR	12110 Turnover	13110 Total purchases of goods and services	12150	Number of employees 16130	Number of employees
IE	12120 Production value	13110 Total purchases of goods and services	12150	Number of employees in FTE 16140	Number of employees
IT	12120 Production value	13110 Total purchases of goods and services -13120 Goods for resale	12150	Number of employees in FTE 16140	Number of employees
LU	12110 Turnover	13110 Total purchases of goods and services	12150	Number of employees 16130	Number of employees
NL	12110 Turnover	13110 Total purchases of goods and services	NQ-NM	Number of employees	Number of employees
NO	12120 Production value	13110 Total purchases of goods and services -13120 Goods for resale	12150	Number of persons employed 16110	Number of employees
PL	12120 Production value	NQ-NM	12150	Number of employees in FTE 16140	Number of employees in FTE
SE	12120 Production value	13110 Total purchases of goods and services -13120 Goods for resale	12150	Number of employees in FTE 16140	Number of employees
SI	12120 Production value	13110 Total purchases of goods and services	12150	Number of employees 16130	Number of employees from the Statistical Register of Employment
UK	Turnover	Materials incl. purchases of non-traded goods	NQ- NM-change in inventories	Number of persons employed	Number of persons employed

The returned PS metadata questionnaires have not revealed any significant changes in collection of PS variables since the previous round. The observations in the ESSLimit Interim Report on Metadata Collection hold true for the 2010 metadata as well. It seems appropriate to only mention information which is new compared to ESSLimit user guide⁶. It concerns data sources for three variables: dummies for foreign ownership and multinationals and value of exports. Table 4 on p. 8 provides updated information on these variables.

⁶ See Annex 3 in Annexes to the final report in ESSnet on Linking of Microdata on ICT Usage (Hagsten, E., Polder, M., Bartelsman, E. et al., 2012)

Table 4. PS Metadata Update for Foreign Ownership FRGN_OWN, Multinationals MNC and Export Intensity

FRGN_OWN	Dummy for Foreign Ownership
Definition	Foreign ownership refers to whether a firm is owned and controlled by a foreign entity.
Required Format	Boolean
Required range	0 – 1
How to derive (from ESSLIMIT)	<ul style="list-style-type: none"> i. This can be derived from firm level Foreign Direct Investment (FDI) data where information on inward FDI can be obtained. ii. FATS (Foreign Affiliates Statistics). Norway and Romania use this source. Eurostat has high level Inward FATS data for most countries; as such it might be worth searching your NSI for the source data at firm level. iii. Trade data could also be a resource.
ESSLait Update	iv. NL reported CIS as a data source for this variable.

MNC	Dummy if firm is multinational
Definition	A multinational here refers to a firm that engages in FDI. As such a foreign owned firm (i.e. FRGN_OWN=1) is a multinational, but not vice-versa. E.g. ESSO UK (foreign owned/multinational) vs BP (not foreign owned/multinational).
Required Format	Boolean
Required range	0 – 1
How to derive (from ESSLimit)	<ul style="list-style-type: none"> i. FATS (Foreign Affiliates Statistics) data can also be helpful here. Eurostat website shows that there is data on Inward and Outward FATS. From our definition above, it can be inferred that while foreign ownership relates to Inward FATS, Multinational relates to firms either Inward or Outward FATS, (i.e., Inward: FRGN_OWN=1 & MNC=1; Outward: MNC=1). ii. Trade data might also be a resource.
ESSLait Update	<ul style="list-style-type: none"> iii. NL reported CIS as a data source for this variable. iv. PL used SBS as a data source. v. SI derived MNC from FDI.

Export intensity	Export values relative to sales
Definition	What share of sales is exported
Required Format	Pct
Required range	0 – 1
How to derive (from ESSLimit)	This could be derived from trade surveys, business statistics or VAT registers with questions on export or export orders.
ESSLait Update	SBS is used as a data source by LU and UK (UK only for services)

Community Innovation Survey (CIS)

In the design of the CIS 2010 metadata survey, the census approach from the ESSLimit project was followed. The CIS 2010 metadata questionnaire is largely based on the 2008 metadata survey from ESSLimit. In addition to data on variables collected in both waves, CIS 2008 and CIS 2010, information on new variables is compiled. Variable descriptions are completely harmonised with question texts in the Guidelines for the Transmission of National

Data⁷. Availability of CIS data by country covering the whole period of study 2000-2010 is presented in table II of Appendix. Innovation data for DE is not available.

A comparison of the CIS 2008 and CIS 2010 model questionnaires reveals three types of changes⁸:

- a) Variables that are collected in both waves, but with differently formulated questions that affect comparability of some project variables, for example INPDTW and INPCSW (questions on who developed product and process innovations),
- b) Variables that are dropped from CIS 2010: MKTMET (new or significantly changed sales or distribution methods),
- c) Completely new variables compared to CIS 2008: INPDFC/ INPDFE/ INPDFW (product innovations that are first in the country/ in Europe/ in the world), EMPUD (percent of enterprise's employees with a university degree) and a module on creativity and skills.

Variables with changed definitions

Questions about who developed product and process innovations are present in both CIS 2008 and CIS 2010 but the way the questions are formulated makes them incomparable which the examples below demonstrate. First, in CIS 2010 a split in goods and services is introduced. Second, in 2010 firms are suddenly free to tick several options, while previously they were asked to choose one most representative answer. Hence, it was not feasible to provide good proxies for INPDTW (who developed new or significantly improved products) and INPSCW (who developed new or significantly improved processes) for 2010.

Extract from CIS 2008:

2.2 Who developed these product innovations?

Select the most appropriate option only

- | | |
|--|--------------------------|
| Mainly your enterprise or enterprise group | <input type="checkbox"/> |
| Mainly your enterprise together with other enterprises or institutions | <input type="checkbox"/> |
| Mainly other enterprises or institutions | <input type="checkbox"/> |

Extract from CIS 2010:

2.2 Who developed these product innovations?

Tick all that apply

	Goods innovations	Service innovations
Your enterprise by itself	<input type="checkbox"/>	<input type="checkbox"/>
Your enterprise together with other enterprises or institutions*	<input type="checkbox"/>	<input type="checkbox"/>
Your enterprise by adapting or modifying goods or services originally developed by other enterprises or institutions*	<input type="checkbox"/>	<input type="checkbox"/>
Other enterprises or institutions*	<input type="checkbox"/>	<input type="checkbox"/>

*: Include independent enterprises plus other parts of your enterprise group (subsidiaries, sister enterprises, head office, etc). Institutions include universities, research institutes, non-profits, etc.

⁷ See Eurostat (2013).

⁸ For the complete list of the CIS 2010 variables consult Table IX in Appendix.

New variables

The newly added variables are presented in Table 5 below. In general, NSIs' flexibility with regard to what questions to include in their national questionnaires may restrict the scope of analysis in a project like this with a group of several NSIs agreeing on a set of variables which remain stable from one survey year to another. Metadata on newly added questions show that none of these variables are collected by the whole project group.

Table 5. Availability of Completely New Variables in CIS 2010 (Y=yes, N=no)

Eurostat name	Question	AT	DK	FI	FR	IE	IT	LU	NL	NO	PL	SE	SI	UK
INPDFC	Were any of your product innovations during 2008-2010 <u>first in your country</u>	Y	N	Y	Y	N	Y	Y	N	Y	Y	Y	Y	N
INPDFE	Were any of your product innovations during 2008-2010 <u>first in Europe</u>	Y	N	Y	Y	N	Y	Y	N	Y	Y	Y	Y	N
INPDFW	Were any of your product innovations during 2008-2010 <u>world first</u>	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	N
SGALA	Graphic arts/ layout/ advertising	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
SDOS	Design of objects or services	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
SMED	Multimedia	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
SWDS	Web design	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
SSWD	Software development	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
SMKR	Market research	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
SENAP	Engineering / applied sciences	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
SMSDM	Mathematics / statistics / database management	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
EMPUD	% of employees in 2010 with a university degree	Y	N	N	N	N	Y	Y	Y	Y	Y	N	Y	Y

Conclusion

The main benefit of the metadata work in the ESSLimit and ESSLait projects is the creation of an extensive repository covering all data sources the project builds upon for the period of 2000-2010. The structure of the repository highlights also a possibility of complementary use of EC and CIS in future research. In addition to the metadata update the effort of the metadata team has been put into studying stability of variables in model questionnaires and comparability of definitions across countries.

The metadata work has also drawn attention to the strong fluctuations over time in the design of the EC questionnaire. The ICT field has developed quickly and partly unexpectedly; however, it is desirable to allow variables to wear out instead of suddenly removing them or making them biennial. Without a core of stable variables over time, it is impossible to analyse trends. Mixing annual and biennial variables in the same survey is also something that should be discouraged. As a comparison, the CIS is fully designed for biennial responses, and as such, works well. The EC does not. Increased consistency in the datasets over time would also go well in line with certain intentions of the MEETS programme, by making better use of already existing data.

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Appendix

Table I. Coverage for ICT Usage and e-Commerce in Enterprises (EC), by country and year

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
AT		x	x	x	x	x	x	x	x	x	x
DE			x	x	x	x	x	x	x	x	x
DK	x	x	x	x	x	x	x	x	x	x	x
FI		x	x	x	x	x	x	x	x	x	x
FR			x			x	x	x	x	x	x
IE			x	x	x	x	x	x	x	x	x
IT	x	x	x	x	x	x	x	x	x	x	x
LU		x	x	x	x	x	x	x	x	x	x
NL	x	x	x	x	x	x	x	x	x	x	x
NO	x	x	x	x	x	x	x	x	x	x	x
PL				x	x	x	x	x	x	x	x
SE		x	x	x	x	x	x	x	x	x	x
SI				x	x	x	x	x	x	x	x
UK	x	x	x	x	x	x	x	x	x	x	x

Table II. Coverage for Community Innovation Survey (CIS), by country and year

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
AT	x				x		x		x		x
DE											
DK							x		x		x
FI	x		x		x		x		x		x
FR					x				x		x
IE							x		x		x
IT	x				x		x		x		x
LU	x		x		x		x		x		x
NL	x		x		x		x		x		x
NO			x		x		x		x		x
PL	x				x		x		x		x
SE					x		x		x		x
SI			x		x		x		x		x
UK	x				x		x		x		x

Note: In case a certain question was included in the R&D survey, it might be provided directly from that survey.

Table III. Generic Section from the EC Metadata Survey

General Survey Information	
Year	
Variables	Further Info
Number of observations	Please state the number of valid survey responses for the particular survey for which data will be used
Sample size	Please give the total sample size of the survey, i.e., the total number of questionnaires sent out
Survey Frequency	How frequent is the question linked to this variable?
'End of Reference Period' (e.g. 31/12/2008)	If the survey assumes a point in time, when is this? For example in Austria the e-commerce survey refers to January of the survey year (Jan T)
Financial data reference period (e.g. January-December Year T)	If financial data is being surveyed, when is the reference date? For example in Denmark the e-commerce survey refers to the year previous to the survey year (T - 1)
Level of firm surveyed (e.g. Enterprise Level, Reporting Unit Level or Local Unit Level)?	What sampling frame is used, i.e. from what source was the sample drawn? In most cases this has been the Business Register
Sampling Frame (e.g. Business Register)	At what level is this survey aimed? This is particularly relevant for large enterprises where one business entity may receive more than one survey. Firm level could be 'Enterprise Level', 'Reporting Unit Level' or 'Local Unit Level'. For example the U.K.'s e-commerce survey is aimed at the 'Enterprise' level.
Scope of survey, by economic activity: sections C, D, E, F, G, H, I, J, L, N, divisions 69-74, groups 95.1, 65.1, 65.2, classes 64.19, 64.92, 66.12, 66.19	Indicate if some of these industries are <u>not</u> covered
Scope of survey, by enterprise size: enterprises with 10 employees or more	Indicate if there are deviations/ smaller enterprises are covered in addition
Industry Classification(e.g. SIC, NACE)	What type of industry classification is used to in the dataset (e.g. sic92, sic03, sic07, nace)?
Weighting scheme	How is the data weighted to whole economy level? E.g using a-weights, g-weights a combination of weights?

Table IV. Variables from EC2010 (Y- yes, N- no)

Not collected in EC 2010															
New variable in EC 2010 (Not collected in 2009)															
* - optional question according to Eurostat regulation															
Eurostat name	AT	DE	DK	FI	FR	IE	IT	LU	NL	NO	PL	SE	SI	UK	
CUSE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
EMPCUSEPCT*	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	
INTRA								Y							
EMPINTRAPCT														Y	
IACC	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
DSL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
BOTH	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MOBBB	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	
MOBBBM*	Y	Y	Y	Y	N	Y	N	N	Y	Y	Y	N	Y	Y	
MOBBBH*	Y	Y	Y	Y	N	Y	N	N	Y	Y	Y	N	Y	Y	
MOBOTH	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
DIALUP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
EMPIUSEPCT*	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
WEB	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
ADE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
ADESU															
INVREC															
INVSND								Y							
ADECU															
INVSNDAP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
INVRECAP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
ADEINFO	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
ADEODOC	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
ADEPAY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
ADEGOV	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
SISU															
SICU															
SISAINV	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
SISAACC	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
SISAPROD	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
SISADIST	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
SIPUINV	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
SIPUACC	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
ITERP															
CRMSTR															
CRMAN															
AEBUY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
AWBUY*	N	N	N	Y	N	Y	N	N	Y	Y	Y	N	Y	Y	
AXBUY*	N	N	N	Y	N	Y	N	N	Y	Y	Y	N	Y	Y	
AEBVALPCT*	N	N	N	N	Y	Y	N	N	Y	N	Y	N	Y	Y	
AEBCLS*	Y	N	N	Y	Y	N	Y	Y	N	Y	Y	Y	N	Y	
AESELL							Y								
AESVALPCT							Y							Y	
AWSELL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
AXSELL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
AWSVALPCT	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
AXSVALPCT	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Table V. ICT expenditure/investment

Have these figures ever been published? If yes, for which years?	
Question nr.	Text (Y=yes, N=no)
i1.	Purchases of IT goods (computers and peripheral equipment) and Communication goods (equipment), during YEAR
	a) Purchases of IT goods
	b) Purchases of Communication goods
i2.	Share (percentage) of purchased IT goods (computers and peripheral equipment) and Communication goods (equipment) included in the balance sheet (investment), during YEAR
	a) Purchases of IT goods included in the balance sheet (investment)
	b) Purchases of Communication goods included in the balance sheet (investment)
i3.	Purchases of other ICT goods (Consumer electronic equipment, Miscellaneous ICT components and goods, Manufacturing services for ICT equipment), during YEAR
i4.	Share (percentage) of purchased other ICT goods (Consumer electronic equipment, Miscellaneous ICT components and goods, Manufacturing services for ICT equipment) included in the balance sheet (investment), during YEAR
i5.	Purchases of software, pre-packaged and customised (Business and productivity software and licensing services), during YEAR
i6.	Share (percentage) of purchased software, pre-packaged and customised (Business and productivity software and licensing services) included in the balance sheet (investment), during YEAR
i7a	Labour input in own-account software, working hours or years FTE, during YEAR
i7.	Total cost for creation of own account software, during YEAR
i8.	Share (percentage) of total cost for creation of own account software included in the balance sheet (investment), during YEAR
i9.	Purchases of Information technology consultancy and service, Telecommunication services) and other ICT services, during YEAR
i9a.	Purchases of Telecommunication services, during YEAR
i10.	Share (percentage) of purchased Information technology consultancy and services, Telecommunication services and other ICT services included in the balance sheet (investment), during YEAR
i10a.	Share of purchased Telecommunication services included in the balance sheet, during YEAR
i11.	Purchases of Lease or rental services for ICT equipment, during YEAR
	a) Purchases of operating lease or rental services for ICT equipment
	b) Purchases of financial lease services for ICT equipment
i12.	Share of purchased Lease or rental services for ICT equipment included in the balance sheet (investment), during YEAR
	a) Share of purchased operating lease services for ICT equipment included in the balance sheet
	b) Share of Purchased financial lease services for ICT equipment included in the balance sheet

Table VI. Optional questions on own software in EC surveys

The questions originate from the <i>Community Survey on ICT Usage and e-Commerce in Enterprises</i> report templates for production years 2004-2008, section Additional questions introduced in the national questionnaire . From 2008, these questions were no longer included in the templates. Nevertheless, some countries might have kept them.
Question (Y=yes, N=no)
1. Does the enterprise have its own employees (exclude external consultants) who work with the development of software, e.g. system developers and programmers?
2. Estimate the number of man-labour years (a man-labour year is the work a full time employed person carries out in a year) for work on software development.
3. Distribute the number of man-labour years from the previous question on 3a. Software development for the enterprise's own usage, e.g. programs for financial control or administration
3b. Software development for external sales (including software which forms a part of the products your enterprise sells)
3c. Other, e.g. maintenance, support, repair, etc.

Table VII. List of Questions from the Variable-Specific Section in PS Metadata Survey

ESSLait Variable Name	List of variables which are relevant to the ICT impacts, ESSLimit and ESSLait projects. These are the same for all countries.
Project Variable Description	Description of variables listed in previous column
Quote of survey question relating to variable (in English)	Please identify which question in the survey that the specified variable is linked with. Translated into English. If multiple choice, please include the options given.
Question number	Please state the question number for the survey question quoted in the previous column.
Source Survey Name	What survey is the question linked to this variable found in? Please enter "derived variable" if not survey data, and provide a NOTE of how data are derived.
Format (and Units)	For example: Level, Percentage or Boolean. For Level and Percentage variables, please provide the UNITS. This is expected to be either count or currency, please confirm if units are in '000s, Millions (M), and the relevant currency (e.g. £, €). For Boolean variables, please confirm states represented by 0 and 1.
Range	Simply state the numerical range. For example, a Boolean variable might be 0 - 1. A percentage variable may be 0 - 100. Please indicate where level variables are non-positive.
Flow or stock?	Are data flows over periods of time, or snapshots at a point in time? (e.g. Turnover could be annual totals, while employment could be at a point in time).
Reference Period for Variable	When is the reference period? For example "CY 2000", "YE 2001", "15/12/00". (CY= Calendar Year; YE= Year Ending)
Level of firm the survey is aimed at	At what level is this survey aimed? This is particularly relevant for large enterprises where one business entity may receive more than one survey. Firm level could be 'Enterprise Level', 'Reporting Unit Level' or 'Local Unit Level'. For example the U.K's eCommerce survey is aimed at the 'Enterprise' level.
Sampling Frame (e.g. Business Register)	What sampling frame is used, i.e. from what source was the sample drawn? In most cases this has been the Business Register.
Additional metadata comments	Please use this space to identify any additional metadata concerns or comments.

Table VIII. Guidance on PS Variables

Variable Name	Variable Description	Additional Notes
e	Employment variable	Ideally, this refers to total full-time employees (including full-time equivalents for part-time workers). If full-time equivalents are not available, please give the closest figure that captures the total number of employees (head count) and indicate whether it is a point in time estimate or a period average.
Frgn_own	Dummy for foreign ownership	This should be a 'yes' or 'no' to whether the firm is owned and controlled by a foreign entity.
K	Capital stock measure	The capital stock measure refers to the stock (not flow) of productive capital which the firm has at the end of the referenced period. Might be survey based or could be derived. Survey estimates could include for instance book value or replacement value of assets such as structures, plant and machinery, vehicles, etc.
Mnc	Dummy if firm is multinational	This should be a 'yes' or 'no' to whether the firm has operations in other countries. A multinational here refers to a firm which engages in or receives Foreign Direct Investment. As such a foreign owned firm is a multinational, but not vice-versa. E.g. ESSO UK (foreign owned/multinational) vs BP (not foreign owned/multinational).
Nm	Intermediate purchases	Refers to the value of goods, materials and services bought by the firm in the reference period
Nq	Gross output / sales / turnover	What was the firm's Gross output/Sales/Turnover in the reference period?
Nv	Value added	If a question on value added exists, please input the values, otherwise this can be derived by the formula (NQ-NM), i.e., Gross output - Intermediate Purchases.
Nx	Exports of goods and services	Refers to nominal value of exports
Pay	Total employment expenditures or payroll	What was the firm's total employment costs for the referenced period?
Wgt_PS	Sample weight on business survey	Are weights available for the dataset and specifically can they be used to scale up the survey sample to the population total?
emp_br	Number of employees given in Business Register	Number of employees given in Business Register
hkpct	Share of employees with post upper secondary education	By post upper secondary education, we generally mean university or similar education with the duration of at least three years. 'hkpct' refers to employees with post upper secondary education, and these are covered by: i. National code SUN2000Niva >= 53 (i.e. 53, 54, 62, 64), or ii. ISCED97 levels: 5A and 6.
hkitpct	Share of employees with post upper secondary IT education	'hkitpct' refers to employees with post upper secondary IT education, and are covered by: i. The following sub-groups within 'hk': National code SUN2000Inr - 440,441, 449, 44, 46, 48, 52, 54, 58, or ii. with-in 'hk', ISCED97 narrow fields 44, 46, 48 and broad fields 5.
hknpct	Share of employees with non-IT post upper secondary education	'hknpct' refers to employees with post upper secondary non-IT education: These are covered by all other field definitions in the hk group apart from those in hkit.
export	Export dummy, exporter = 1 non-exporter = 0	Export dummy, exporter = 1 non-exporter = 0
age	Age of firm in year	Age of firm in year

Eurostat name	Question	AT	DK	FI	FR	IE	IT	LU	NL	NO	PL	SE	SI	UK
INPDFC	Were any of your product innovations during 2008-2010 <u>first in your country</u>	Y	N	Y	Y	N	Y	Y	N	Y	Y	Y	Y	N
INPDFE	Were any of your product innovations during 2008-2010 <u>first in Europe</u>	Y	N	Y	Y	N	Y	Y	N	Y	Y	Y	Y	N
INPDFW	Were any of your product innovations during 2008-2010 <u>world first</u>	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	N
INSPD	Introduced onto the market a new or significantly improved method of production	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
INPSLG	Introduced onto the market a new or significantly improved logistic, delivery or distribution system	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
INPSSU	Introduced onto the market a new or significantly improved supporting activities	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
INPCSW	Who mainly developed these processes? Tick all that apply	N	Y	Y	N	N	Y	N	Y	N	Y	N	Y	Y
INPSDV1	Process innovations- Your enterprise by itself	Y	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
INPSDV2	Process innovations- Your enterprise together with other enterprises or institutions	Y	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
INPSDV3	Process innovations- Your enterprise by adapting or modifying goods or services originally developed by other enterprises or institutions	Y	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	N
INPSDV4	Process innovations- Other enterprises or institutions	Y	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
INPSNM	Were any of your process innovations introduced between 2008 and 2010 new to your market	N	N	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
INABA	Abandoned or suspended before completion	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y
INONG	Still ongoing at the end of the 2010	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y
RRDIN	Engagement in intramural R&D	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
RDENG	Type of engagement in R&D	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N
RRDEX	Engagement in extramural R&D	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
RMAC	Engagement in acquisition of machinery	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ROEK	Engagement in acquisition of external knowledge	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
RTR	Engagement in training for innovative activities	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
RMAR	Engagement in market introduction of innovation	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
RDSG	Design	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
RPRE	Engagement in other preparation	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N
RRDINX	Expenditure in intramural R&D (in national currency)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
RRDEXX	Purchase of extramural R&D (in national currency)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Eurostat name	Question	AT	DK	FI	FR	IE	IT	LU	NL	NO	PL	SE	SI	UK
RMACX	Expenditure in acquisition of machinery (in national currency)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ROEKX	Expenditure in acquisition of external knowledge	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
RTOT	Total of these four innovation expenditure categories (in national currency)	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
FUNLOC	Public funding from local or regional authorities	N	N	Y	Y	N	Y	Y	Y	N	Y	N	Y	Y
FUNGMT	Public funding from central government	N	N	Y	Y	N	Y	Y	Y	N	Y	N	Y	Y
FUNEU	Public funding from the EU	N	N	Y	Y	N	Y	Y	Y	N	Y	N	Y	Y
FUNRTD	Funding from EU's 6th or 7th Framework Programme for RTD	N	N	Y	Y	N	Y	Y	Y	N	Y	N	Y	N
SENTG	Sources from within the enterprise or enterprise group	N	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y
SSUP	Sources from Suppliers of equipment, materials, etc.	N	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y
SCLI	Sources from Clients or customers	N	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y
SCOM	Sources from Competitors and other enterprises of same industry	N	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y
SINS	Sources from consultants, commercial labs or private R&D institutes	N	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y
SUNI	Sources from Universities or other higher education institutes	N	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y
SGMT	Sources from Government or public research institutes	N	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y
SCON	Sources from professional conferences, trade fairs, meetings	N	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y
SJOU	Sources from Scientific journals, trade/scientific publications	N	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y
SPRO	Sources from Professional and industry associations	N	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y
CO	Cooperation arrangements on innovation activities	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
PMOS	Most important co-operation partner	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
ORANGE	Increased range of goods or services	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
OREPL	Replace outdated products or processes	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
ONMOMS	Enter new markets or increase market share	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
OQUA	Improve quality of goods or services	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
OFLEX	Improve flexibility for producing goods or services	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
OCAP	Increase capacity for producing goods or services	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
OLBR	Reduce labour costs per unit output	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N
OHESY	Improve health or safety of your employees	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
ORGBUP	New business practices for organising work or procedures	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ORORED	Reduce time to respond to customer or supplier needs	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N
ORGWKP	New methods of workplace organisation	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
ORGEXR	New methods of organising external relations	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Eurostat name	Question	AT	DK	FI	FR	IE	IT	LU	NL	NO	PL	SE	SI	UK
OROABL	Improve ability to develop new products or processes	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N
OROQUA	Improve quality of your goods or services	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
ORORCO	Reduce costs per unit output	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
OROCIN	Improved communication or information sharing	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N
MKTDGP	Significant changes to the aesthetic design or packaging	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
MKTPDP	New media or techniques for product promotion	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
MKTPDL	New methods for product placement or sales channels	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
MKTPRI	New methods of pricing goods or services	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
MKTMET	2004-06 New or significantly changed sales or distribution methods		Y				Y							
OMKTS	Increase or maintain market share	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
OMKTCG	Introduce products to new customer groups	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N
OMKTGM	Introduce products to new geographic markets	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N
SGALA	Graphic arts/ layout/ advertising	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
SDOS	Design of objects or services	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
SMED	Multimedia	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
SWDS	Web design	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
SSWD	Software development	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
SMKR	Market research	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
SENAP	Engineering / applied sciences	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
SMSDM	Mathematics / statistics / database management	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
TURN08	Total turnover in 2008	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y
TURN10	Total turnover in 2010	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
EMP08	Total number of employees in 2008	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y
EMP10	Total number of employees in 2010	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
EMPUD	% of employees in 2010 with a university degree	Y	N	N	N	N	Y	Y	Y	Y	Y	N	Y	Y