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STANDARD STATISTICAL CLASSIFICATIONS: BASIC PRINCIPLES[11]

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[1] This paper is based on four papers presented at the Third Meeting of the Expert Group on International Economic and Social Classifications (New York, 1-3 December 1997):
"Methodological Issues in the Development, Use, Maintenance and Revision of Statistical Classifications", by Eivind Hoffmann of the Bureau of Statistics, International Labour Office (ESA/STAT/AC.60/16);
"International Standard Classifications: A Draft Statement of Best Practices", by Mary Chamie of the United Nations Statistics Division (ESA/STAT/AC.60/15); "Basic principles for the development of correspondence tables: linking the CPC Version 1.0 to COICOP", by Norbert Rainer of the Austrian Central Statistical Office (ESA/.STAT/AC.60/17); and "Best Practices in Classifications", by Niels Langkjaer of Eurostat (ESA/STAT/AC.60/18).
This paper also incorporates the remarks made by experts at the fourth meeting of the Expert Group on International Economic and Social Classification (New York, 2-4 November 1998).

CONTENTS

Standard Statistical Classifications: Basic Principles

SUMMARY

This report describes best practices for the development, use, maintenance and revision of international standard statistical classifications (ISC); and the corresponding derived or related national (NSC) and multinational statistical classifications. Attention is drawn to the need to: (1) state goals and problems clearly; (2) identify the actors involved in the development and use of classifications (producers and users of statistics); (3) identify the injunctions which follow from legislation and government policies; (4) describe how the structure and details of the classification are used when producing and presenting statistics; (5) understand the use of statistics produced with the classification; (6) establish monitoring mechanisms for proper feedback from classifications users about problems in its use; (7) maintain a time table to draft, update or revise the classification; (8) coordinate the process with work on other classifications; and (9) set standards for dissemination of the classification and its related updates and revisions. The principles and standards of research methodology and statistics should be applied when the classifications are designed, tested, used, updated and revised. Clarity in terminology, concepts, definitions and structure are required for satisfactory results.

National (NSC) and international statistical classifications (ISC) are mutually dependent. The existence of an ISC which reflects the best practices and understanding of its subject matter area will facilitate greatly the work to revise or develop corresponding NSCs. In order to be able to serve this function the ISC will depend on the experiences gained from the development and use of NSCs. This is why a presentation of basic principles for standard statistical classifications has to cover both NSCs and ISCs.

Introduction

A. Classification standards and methods

1 *Classifications* group and organize information meaningfully and systematically into a standard format that is useful for determining the similarity of ideas, events, objects or persons. The preparation of a classification means the creation of an exhaustive and structured set of mutually exclusive and well-described categories, often presented as a hierarchy that is reflected by the numeric or alphabetical codes assigned to them.

2 Classifications may be constructed to support the implementation of regulatory policies such as customs regulations or criminal legislation. They are also used to standardize concepts of public services such as job placement, education, welfare or public health and to describe social, economic or natural phenomena. When in general use these classifications are called *standard classifications*; and standard *statistical classifications* represent a subset used to organize and present statistics. When adopting or adapting a standard classification for statistical use, further methodological work may be required.

3 A *statistical classification* is a classification having *a set of discrete categories, which may be assigned to a specific variable registered in a statistical survey or in an administrative file, and used in the production and presentation of statistics*. Thus the categories "male" and "female" constitute a classification for the variable "sex", which can be observed for humans as well as for many other living organisms.

A.1. National statistical policy

4 National custodians of classifications The responsibility for the collection and dissemination of official statistics normally rests with a country's national statistical authorities. This responsibility normally also includes the development and use of *national statistical classifications (NSCs)*. Thus the statistical agency will act as the *custodian* of the NSCs, responsible for planning activities to train users of the classification, for updating and/or revising the classification, as well as for ensuring that the necessary funds can be made available for this work. The custodian of a classification has to hold the necessary expertise in the relevant subject matter areas and develop a network of technical advisers who are both producers and users of statistics. The network necessary for preparation of a new classification or for revision, is often organised through a national coordinating committee.

A.2. International statistical policy

5 International standard classifications are developed and adopted by international institutions to ensure correct implementation of agreements and to standardize national and international communication.

6 International custodians of classifications *International statistical classifications* (ISCs) are products of international agreements among national authorities responsible for statistics in the respective areas. In accordance with the established practices for the division of responsibilities among international agencies in the area of statistics, the ISCs require approval by the United Nations Statistical Commission (UNSC) or another competent intergovernmental board, such as that of the World Customs Organization (WCO), the World Health Organization (WHO), the International Monetary Fund (IMF), or the International Labour Organization (ILO), depending on the subject matter area. ISCs may serve as models for the development of corresponding national, multinational and regional statistical classifications (NSC), and should, as far as possible, reflect what is considered "best practice" in the substantive areas they cover. Therefore ISC's are international *reference* classifications. Custodians of ISCs are usually international agencies.[2]

A3. Principles of statistical classifications

7 Statistical classifications are developed or revised on the basis of established practices and principles, i.e.:

a. The objectives and statistical priorities to be served must be clearly stated;

b. The organization responsible for the preparation and maintenance of a classification (the custodian) should be clearly identified and responsibilities stated;

c. A time table for the work must be well publicised and allow substantive experts who are users and producers of statistics, to contribute to the process at appropriate moments;

d. A well-defined classification structure must be prepared. Depending on descriptive and analytical needs, aggregated categories of statistical classifications may be organized in a hierarchy representing different levels of detail for measurement of the variable.

e. Descriptive definitions or exhaustive listings of the contents of the defined categories are needed. Listings will not be needed for aggregate groups when the codes are constructed to make transparent where the correspondent groups are located in the hierarchical structure.

f. Instructions are needed on effective use of classifications for data collection and analysis;

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[2] See "Preamble: Family of International Economic and Social Classifications" for definitions of the types of statistical classifications and for a description of the roles agencies hav for the maintaining, updating and revising statistical classifications (ESA/STAT/AC.63/18), a paper prepared by Mary Chamie, UNSD for the Fourth Meeting of the Expert Group on International Economic and Social Classifications, New York, 2-4 November 1998.

g. Guidance and training materials are a necessary part of the development process for a new or revised classification.

Sufficient resources will not necessarily be available to fully adhere to all principles for the development and implementation of statistical classifications at the national and international level. Guidance on how to set relative priorities between the principles may therefore be needed. These priorities may vary between classifications, over time and between countries.

A.4. Use of statistical classifications for policy decisions and implementation

8 Legal importance and policy relevance are factors affecting the development and use of many classifications. For example, there is a strong link between the *Harmonized System (HS)* and customs regulations and agreements[3]. There is also a strong link between the classification of diseases and death in the *International Statistical Classification of Diseases and Related Health Problems (ICD),* and the formulation of prevention and treatment programmes[4]. The categories of the ICD may also be used to determine the scope of insurance schemes or may be used to identify people who qualify for services or compensation. For example, a cause of death classified as suicide may be compensated differently by insurance programmes than a death classified as accidental, although the immediate cause of death may be the same.

9 The categories specified for a classification must be regularly evaluated for possible legal and policy implications, even when the classification has been designed to serve as a descriptive tool only. Classifications which are to be applied to people, for example, must consider issues of human rights. Possible positive and negative implications of classifications and their use must be monitored. For example, during the development of the *International Classification of Impairments, Disabilities and Handicaps (ICIDH)*[5], some persons with disabilities and their families reported feeling that they had been improperly singled out for blame, or for discrimination, through the use of the classification. This problem of interpretation and use resulted in some national disability surveys being postponed until the language of the classifications and the concepts upholding them could be modified to meet the needs of changing policy and modified interpretations of disability states.

10 Regular hearings should be conducted and opportunities offered for discussions with major users of classifications, so that their needs are well understood and appropriately reflected when developing, using and up-dating classifications. Representatives of institutions or groups of

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[3] World Customs Organization *The Harmonized Description and Coding System, 1996 version (Brussels, 1996),* WCO Sales No. 101.

[4] World Health Organization *The International Statistical Classification of Diseases and Related Health Problems, tenth revision* [ISBN 92 4 115 4419.8 (Vol. 2), 21.X (Vol 3)]. Geneva, 1993.

[5] World Health Organization *International Classification of Impairments, Disabilities and Handicaps* (ISBN 92 4 154126 1 Order number 11 500 88), Geneva, 1980.

people who will be classified may be asked to participate in hearings on the classification, so that their perspectives are heard on the classification and its use for statistics and other purposes.

11 Classifications developed primarily or exclusively for the production and presentation of statistics may be utilized also for other purposes. When they are used e.g. for legal purposes, cautionary notes are required. **If a legal text or a contract refers to a statistical classification, or groups defined therein, those who prepared the text should be fully responsible for the practical consequences. It should be their task, and not that of the custodian of the statistical classification, to explain and answer for its use in the legal context**

B. The meaning and means of harmonization

12 The objective of harmonization of statistics is to make it possible to combine or compare data that have been collected for different populations, for different periods and/or by different data collection methods or statistical units. This can be made possible through the use of the same or mutually consistent and harmonized standards and classifications across different data sets. If this has not been done, or is not possible, then one may attempt to achieve a reasonable degree of comparability across different standards and classifications by making the explanation of differences and similarities part of the analysis which involves such data sets.

13 Harmonization of statistical classifications should be a function of the specific descriptive and analytical objectives which it is intended to serve. It involves the establishment of mutually consistent categories for the same or for closely related variables, where some of the dividing lines between categories in the different classifications can be approximately the same. For example, those wanting to calculate unemployment rates for different age groups may find that the definition of the *age* variable is different in the two sets of statistics (one using *year of birth* and the other using *age at last birthday*), and that the age groups used for the statistics on *unemployed* are different from those used for the *total labour force*.

14 Harmonization of statistical classifications will require a process of reconciliation of the different classifications and statistical standards into a common framework, maximising the correspondence between them. This includes the use of common concepts and terminology, as well as the establishment of coordinated and agreed tables of correspondence between the categories of the different classifications, or through the identification of common detailed building blocks for these categories.

15 In the case where different classifications cover the same variable, harmonization requires a clear understanding of the basis for and the nature of the differences, as well as whether and how these correspond to different user needs. To move towards one common, reconciled classification will normally require a certain amount of adjustment relative to all the relevant existing classifications; and/or giving priority to some statistical applications or users , while explaining how others can be served even by a classification which is less tailor-made to their needs.

16 When working toward harmonization of different statistical classifications, those responsible for the classifications involved should work together in the revision of the respective classifications, or collaborate through a regular exchange of information, so that the work may result in an established system of reference, derived and related classifications. Duplication of effort can be reduced through coordination and cross-participation in advisory committees or working groups.

17 Harmonization of classifications requires regular exchange of information between the custodians of the relevant classifications. Without such exchange, different interpretations of similar concepts and categories will occur.

18 A classification should not be amended without taking into account the possible effects on other statistical classifications. Amendments may also affect analysis that depends upon using the classification over time. A standardized procedure is needed for announcing plans for change, with sufficient time for the custodians and users of other classifications and of the relevant statistics, to determine the implications for themselves.

B.1. Reference, derived and related classifications

19 In the process of harmonization, statistical classifications may be described as reference, derived or related. **Reference** classifications are those that have achieved broad acceptance and official agreement and are approved and recommended as models for the development or revision of corresponding classifications, both with respect to the structure and with respect to the character and definition of the categories. International statistical classifications are reference classifications when they are a product of international agreements through approval by the UN Statistical Commission or another competent intergovernmental board, such as those of the WCO, the WHO, the IMF, UNESCO or the ILO, depending upon the subject matter area. The *Harmonized Commodity Description and Coding System (HS), the International Standard Industrial Classification of All Economic Activities (ISIC)*[6], the *Central Product Classification (CPC)*[7], the *International Standard Classification of Education (ISCED)*[8], and the *International Standard Classification of Occupations (ISCO)*[9] are reference classifications and are recognized

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[6] United Nations. *International Standard Industrial Classification of Economic Activities, Third Revision*, Statistical Papers, Series M, No. 34, Rev. 3 (United Nations publication, Sales No. E.58.XVII.7).

[7] United Nations. *Central Product Classification (CPC) version 1.0* , Statistical Papers, Series M, No. 77, Ver. 1.0 (United Nations publication, Sales No. E.98.XVII.5).

[8] United Nations, Educational, Scientific and Cultural Organization: *International Standard Classification of Education (ISCED 1997).* Paris. November 1997.

[9] International Labour Organization: *International Standard Classification of Occupations (ISCO-88)* (ISBN92 2 306438-4). Geneva, 1990.

as such in the family of international economic and social classifications adopted at the Second Meeting of the Expert Group on International Classifications[10] .

20 **Derived** classifications are based upon the corresponding reference classifications. The groups in the derived classifications have been obtained by re-arrangement and/or sub-divisions of items from one or more reference classifications. Examples of derived classifications include the *General Industrial Classification of Economic activities within the European Communities (NACE)*[11], which is based upon ISIC; and ISCO-88(COM) developed for Eurostat on the basis of ISCO-88[12].

21 **Related** classifications are classifications that provide a set of organized categories for the same variable(s) as the corresponding reference classification, but for which the categories may only partially refer to those defined in the reference classifications, or that may only be associated with the reference classification at specific levels of the structure. For example, the *North American Industry Classification System (NAICS)* stated as one of its goals, to be related to ISIC, by being compatible with it at the 2-digit level[13].

22 National adaptations of ISCs may be derived or related. NSCs that are *derived* from ISCs will use the same structure, yet in defining detailed categories will go beyond the existing ISC structure. They may also truncate part of the ISC structure in areas which are not relevant for the NSC. This is what NACE has done on the basis of ISIC. NSCs that are *related* to the corresponding ISC, might follow part of its structure, but would diverge from it in some respects, like NAICS by only following ISIC at the two-digit level.

23 Procedures for revision and updating of statistical classifications should encourage the resolution of problems of incomplete correspondence to other reference classifications, and offer opportunities for increased harmonization.

B.2. Correspondence and links across classifications

24 The extent of correspondence and harmonization possible between different classifications depends on the degree to which the various categories are the same, and on the

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[10] United Nations “International Economic and Social Classifications, Report of the Secretary-General to the Statistical Commission, 29th session, 10-14 February 1997" (E/CN.3/1997/4).

[11] Eurostat. *NACE Rev. 1.: Statistical Classification of Economic Activities in the European Community* (ISBN 92-826-8767-8) Luxembourg,,1996.

[12]Eurostat: *ISCO-88(COM)*. Luxembourg 1995. (Mimeographed).

[13] Economic Classification Policy Committee (1996): Federal Register, Part III, Office of Management and Budget, July 5 1996.

conceptual links which can be established between them. For example the four international statistical *classifications of expenditure according to purpose*, i.e., COFOG, COPNI, COICOP and COPP are all concerned with the same type of variables, namely *expenditures according to purpose*[14].

25 However, their scopes are different, if partly overlapping, because each scope has been defined in terms of the purpose of the expenditures made by a particular type of institutional unit, as defined in the *System of National Accounts (SNA)*, namely: government; non-profit institutions serving households; households and producers respectively.

26 Together the scopes are intended to cover all possible types of units having economic transactions, and therefore also the purpose of all transactions considered as 'economic' according to the total scope of the SNA. The differences in scope have led to some differences in the defined sets of categories for "purpose", as these have been tailored to suit the analytical and descriptive objectives for the different scopes. For example, all these classifications identify education and training as one type of purpose of expenditure; however, the goods and services actually bought are different to a large extent. In the case of household consumption the expenditures are for purchasing of educational services for individual household members; in the case of government, it would be stated in terms of expenditures (outlays) for educational services at the institutional level.

27 *Education and training* is also the defined scope for ISCED[15], but there the definition is formulated without any reference to the scope of SNA, as "all organized and systematic activities designed to bring about learning", which means that the statistical units of the classification are *educational programmes*. Correspondence between e.g. COFOG describing government *expenditures* on education, and ISCED describing educational *programmes*, requires: (i) that the set of expenditures classified by COFOG can be nested within the ISCED scope of educational programmes; (ii) that links between the units of COFOG (economic transactions) and ISCED (activities or programmes) can be defined and identified; and (iii) that the set of categories defined for sub-dividing the education and training expenditures in COFOG is compatible with the distinctions made in ISCED for educational activities.

28 Similarly ISIC, Rev.3 has a tabulation category H *Education* covering all *economic activities of education*, which may have a scope compatible with the classifications of expenditure according to purpose[16], as it is also bounded by the SNA, and which may be nested within the

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[14] Commission of the European Communities, International Monetary Fund, Organisation for Economic Cooperation and Development, United Nations and World Bank, *System of National Accounts, 1993* (United Nations publication, Sales No. E.94.XVII.4).

[15] UNESCO (1997) *International Standard Classification of Education* COM/ST/ISCED, Paris 1976

[16] Households can have expenditures which can be classified by COICOP as being for education. However, most households will not be producing units according to SNA criteria. This means that the

scope of ISCED. But as no references are made to ISCED in the ISIC, rev.3 definition for this category or its classes, this is not necessarily the case.

29 ISCO-88 has categories for jobs for which conducting education of various types are the main tasks, but with only indirect, i.e. terminological, references to ISCED categories when defining their scope. However, ISCO-88 makes explicit reference to the ISCED value set of educational categories when defining *skill levels*, a major organizational feature of its structure.

B3. Building blocks

30 Building blocks are the most elementary units of a statistical classification, i.e. the characteristics that are identified with most detailed codes which may be assigned for a variable, and may be used alone or in combination to describe a category in a classification, or to compare classifications.

31 Harmonization through methods of correspondence and linking will mean to increase the degree of resolution to a level where it will be possible to establish direct links between the detailed groups (the "building blocks") of the classifications. Such building blocks may have to be created as sub-divisions of their existing most detailed level.

32 Whenever possible, similar coding of categories should be used across reference and derived classifications. But this should not become an obstacle for development of variations. NACE Rev. 1, for example, has the same codes for divisions as ISIC Rev.3. But, because of the needs of the European Community, they have elaborated additional categories, or detail, beyond that available in ISIC Rev. 3 at the lower levels. Most important, however, is that the most detailed categories of NACE can be combined so as to reconstruct the detailed levels of ISIC.

B.4. Mapping national classifications to international standards

33 National classifications may be mapped into international classifications for the following reasons:

a. To make comparisons between national circumstances and circumstances of other countries;

b. To communicate information with persons or institutions in other countries[17].

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combined scope of the purpose classifications will be larger than the scope of ISIC, even after the defined scopes of categories have been coordinated.

[17] E. Hoffmann: "Mapping a national classification of occupations into ISCO-88: outline of a strategy". Chapter 23 in Chernyshev, I.,ed.: *Labour Statistics for a Market Economy* . Central European University Press. Budapest, 1994.

Linking to a common reference classification

34 When only two countries are involved, the need for comparable information can be satisfied most effectively by directly linking their national classifications. However, as soon as more than two countries are involved, pairwise linking becomes inefficient. Even if most comparisons are expected to be pairwise, it may be more efficient to use the indirect route of linking to a common international reference classification in order to avoid having to establish many pairwise links.

Linking at the detailed level

35 Mapping one classification into another, at the most detailed level, is equivalent to determining for each group in the first classification the most appropriate corresponding group in the other. The first step when establishing links should always be to give to the most detailed groups of one classification the code of the most detailed appropriate group in the other. This means that, when needed, the groups of one classification can be aggregated to most of the relevant aggregate groups of the other. In establishing links between ISCO-88 and the earlier version ISCO-68 this was done by giving the codes of both versions to each entry in their joint index of occupational titles. This double coding provides the basis for one-to-one links between those groups in the two versions for which this is appropriate. In a large number of cases this will be for detailed groups in both versions, but in some cases even the detailed categories in one have to be split to ensure that all units classified to that group will be correctly classified to the other version, because of the different similarity criteria used.

Achieving international comparison

36 When international classifications differ from the national classification, international comparison may be achieved by regrouping statistics obtained under national classifications to the international standard classification. In order to do this, all the elements required for such a rearrangement need to be obtainable from national statistics.

37 Quite often the problem is that when statistics are not available for groups defined at the most detailed level of an NSC, it is still necessary to establish links from the national statistics to statistics organized according to the corresponding ISC. In other cases, neither the structures nor the detailed levels can be directly linked. In both cases the first step in a linking process would be to look at the structure of the most detailed NSC groups for which data are available in terms of their component international groups. On this basis one should determine how one or the sum of several such NSC groups could be used as a reasonably close approximation to the ISC group for which statistics are needed[18]. In terms of closeness of approximation, this procedure evidently will give results which are much less satisfactory than those resulting from aggregating statistics directly from detailed national groups in a way which corresponds exactly to those defined in the ISC.

[18] See *Hoffmann (1994), op.cit* for more detailed explanations tailored to classifications of occupation.

C. The role of coordination

38 Coordination of national and international work on classifications is conducted through the formation and action of committees and joint meetings, as well as through the implementation of well-publicized timetables and hearings to facilitate the participation by a wide range of producers and users of statistics in the preparation, design, implementation and monitoring of statistical classifications.

C.1. Role of committees, task forces and commissions

39 A broad range of interdisciplinary consultations should take place prior to any initial drafting of a statistical classification. The initial draft is usually prepared by a small team, sometimes assisted by a drafting committee comprised of 5-10 members or by individual experts on specific subject matter aspects. This small team, or task force, in the custodian organisation may also be supported by correspondents, hired consultants and an advisory committee. The drafting committee and/or an advisory committee will usually have specialists covering statistics, terminology, standards, policy and relevant subject matters, e.g. medicine for ICD, customs officers and the various industries and products for HS.

40 In the process of developing the proposal for development of a classification, and when setting up the team preparing the classification, it is essential to define precisely the role of various actors. For example in the case of an international statistical classification, the United Nations, its specialized agencies, inter-secretariat working groups, Member States, task forces, collaborating centres, nongovernmental and/or scientific organizations may be asked to contribute in ways which should be clearly described.

41 When the work programmes of statistical offices are reviewed, either nationally or internationally, it is essential that there be an integrated presentation and discussion of the work with classifications to facilitate the regular exchange of information, regarding their preparation, implementation and revision, and to encourage harmonization.

42 Committees submit their proposals for the development of classifications to the responsible agencies for official review and approval. In the case of international classifications, proposals may be brought to the United Nations Statistical Commission either as a point of information, when the custodian is an international body such as WHO, ILO or UNESCO, or they may be submitted to the Statistical Commission for approval, prior to being published and circulated world-wide.

C.2. Role of national statistical offices in the development and use of international statistical classifications (ISC)

43 The experiences of national statistical offices are important as basis for the development and implementation of international statistical classifications. Effective national practices provide the foundation for ISCs. Thus, if there is a reasonable agreement on 'best practice' among the national statistical institutions (NSIs) with relevant experience, it is best to adopt the corresponding general principles and common definitions for the ISC, as well as for the NSCs for which the ISC will serve as a model. This limits the need to create complex correspondences between national and international classifications to those warranted by specific national circumstances [19].

44 Once developed (or revised) the ISC may be used as model for the development or revision of the corresponding NSCs. This may mean that the developers and custodians of the NSCs will further elaborate categories of the ISC by subdividing them into as many sub-categories as seem relevant for the national situation and needs for detailed statistics. This can be done by extending the relevant international code. In order to preserve comparability, the more detailed categories should be delineated so that they may be aggregated back to the original code that was subdivided.

45 Few NSCs will have equal need to use all categories of an ISC. Categories of ISCs may therefore be contracted or combined into fewer, less detailed classes for national purposes, e.g. when the detailed categories are not important or do not exist, or due to fewer specialization requirements. However, in order to make a national classification convertible to the international, the categories at the most detailed level of an NSC should coincide with, or be subdivisions of, categories found in the corresponding ISC.

46 Where a national classification category has been created as a combination of two or more categories of the ISC, these should belong to the same aggregate group in the ISC.

47 **When translating the group titles and the terminology of an international standard classification into a national language, it is important to remember that it is the concepts, rather than the words themselves, that are being translated. Translation of classifications should never be simply a direct transfer of the words of the ISC to the other language[20].** The translation requires a comparison, or transfer of the concepts systems themselves, between the different languages, and this will require that both language and subject matter experts are involved in the translation, in particular as it may require the creation of new terms in the national

[19] United Nations (1978). *The Harmonization of Statistical Classifications,* Report of a meeting of an Expert Group, 29 May 1975, ST/ESA/STAT/78, para. 15.

[20] Suonuuti Heidi (1997) *Guide to Terminology*, NORTERM Publication No. 8.

language, or the specification of more precise meanings for existing terms. Such innovations should always be as consistent as possible with the existing conventions for the national language.

C.3. Setting presentation standards for classifications comparisons

48 The use of standardized conventions for drafting descriptions, for layouts and for coding structures will help in comparing classifications. Priority would be given to editorial standards for preparing the titles of categories, for the representation of the "not elsewhere classified (nec)" and "not further specified" categories, and for writing notes that explain what is included and what is excluded from any classification category. Such explanatory notes should also document the reasons for choices made in the interpretation for specific cases of the general principles.

49 Standard executive summaries stating the purpose, scope, basic structure and primary measurement units of the classification, as well as its current revision status, are usefully published as part of the classification itself, and expedites the use of classifications by a diverse set of researchers. An illustrative example of an executive summary in an established format is provided in Annex 1 of this report.

D. Uses of classifications

50 Statistical classifications are used for a variety of purposes, such as:

a. The collection of information and/or organisation of information already collected;

b. Aggregating and disaggregating data sets meaningfully for purposes of complex analysis, including the construction of indexes; e.g.the use of COICOP for describing the basket of individual goods and services purchased by households and used for standardizing estimates in the calculation of the Consumer Price Index;

c. The construction of a classification for a different variable on the basis of the classifications for two or more component variables; e.g. *the socio-economic status classifications* which typically have categories defined by reference to categories found in classifications for occupation, status in employment, industry, size of enterprise and/or educational attainment.

d. Presenting statistical information;

e. Reference classifications are used as models for the development or revision of related classifications, e.g., ISCs for NSCs, both with respect to the structure and with respect to the character and definition of the categories.

51 The basic categories of classifications may be aggregated according to alternative frameworks or sets of similarity criteria, e.g. to facilitate other forms of analysis than those given priority by the standard structure. This can be done by adding alternative similarity dimensions or criteria to the descriptions of the most detailed categories. For example, in economic statistics, an output of economic activity, or a product, might be described as either a service or as a good, depending upon the analytic framework used for the analysis. Thus it would be useful to keep the description of the product independent of a particular distinction between a good or a service. Products could then be differently arranged according to the requirements of different theoretical frameworks or analyses, and through regrouping of the codes into groups of goods and services based upon the criteria for making this distinction, which may differ between analytical frameworks. A product might then be described as a good in one framework, and as a service in another. Under such conditions, the product compositions of the groups *goods* and *services* will be the same for classifications using the same framework, and their statistics would be comparable; but across frameworks they would not.

E. Methodological issues when developing a classification

52 Three types of methodological issues must be addressed when developing a statistical classification, or when adapting an international statistical classification for national use: (a) issues related to the identification of users' requirements; (b) conceptual issues; and © issues related to the collection of the information necessary to develop the classification.

E.1. Determining users' requirements

53 This involves determining both *who* the users are and *how* they will be using the classification, or the statistics produced with its help. (i) Aiming to answer *how*, one may find that some users need statistics according to the classification to determine who and how many will be impacted by policies or programmes being considered; others need these statistics to implement policies; and others want to monitor the consequences of policies and programmes. (ii) Aiming to answer *who are the users* may require instigating a search. One search method is to advertise in one form or another that one wants to receive relevant comments from users of statistics who are using the classification[21]; another is to contact institutions or individuals who, because of their responsibilities are likely to be using the classification in a reflected way[22]; and a third way is to say that one need not concern oneself with other users than those which already

[21]This method is used in the development and revision of statistical classifications in the United States, see e.g. the *Federal Register Notice* of July 1, 1997 concerning the revision of the *Standard Occupational Classification (SOC).*

[22] This seems to be the main method used by the international statistical agencies when working on ISCs.

have made themselves known, or who were acknowledged in the development of the NSC/ISC. The last approach is the least preferable because it may result in overlooking important users whose needs become apparent at a later stage when their input cannot be so readily accommodated by classifications committees.

E.1.a. Determine what different users would like the classification to do

54 This involves determining users' requirements with respect to both the detailed and the broad distinctions which needs to be made among the categories to be described with the help of the classification. One method is to ask a sample of different users to provide specifications; another is to ask them to provide comments to alternative models or drafts for the classification structure. The latter strategy is normally the most effective.

E.1.b. Balancing users' requirements

55 Different users' requirements may have to be balanced against each other or a choice may have to be made between them when they are contradictory. Some differences in users' requirements can be accommodated when constructing the classification, e.g. by making more detailed distinctions than required by any of the users, from which different broader categories can be constructed. Other differences cannot be resolved, and a choice may have to be made to give priority to the needs of some users over those of others. In either case it is necessary to explain to users the implications of the solutions reached and the choices made.

E.2. Definitions, concepts and linkages

56 The scope of a classification is described by defining the boundary of the total set of categories defined, e.g. the scope of both ISIC and ISCO is given by the definition of the economic production boundary in the *System of National Accounts (SNA-93)*. Extending the scope of a classification requires extending the conceptual boundary. In the case of ISIC and ISCO, this would require expanding the scope to activities and occupations that are outside the currently defined production boundary of the SNA. It is important to note that as long as new cases can be accommodated by being placed within existing categories, or by adding more detailed subcategories to existing categories; then the set of defined categories of the classification has not changed; the content of the categories has just been further elaborated.

E.2.a. Conceptual issues

57 There are formal steps that must be taken in order to prepare a standard classification so that it may be a statistical classification used in surveys and registries. The **main conceptual issues** when developing a statistical classification are:

(i) Selecting the main variables of the classification

58 What are the *main variables* for which the set of categories in the classification should be valid? The variable *occupation*, to which ISCO-88[23] is to be applied, is defined as *the main tasks and duties of work performed*. ISIC, rev.3[24] applies to the variable *main productive economic activity* of a unit (establishment, enterprise or household), as indicated by the principal production process of that economic activity. ISCED[25] is said to apply to the variable *content of organized and sustained communication designed to bring about learning.*

(ii) Identifying main statistical units of the classification

59 What are the *main statistical units* for which the main variable(s) can be described? By *the main statistical units* we mean the observable units which can be assigned to one unique category of the classification without reference to any other observable unit. *Jobs* are the statistical units for ISCO-88, where a *job* is defined as "a set of tasks and duties executed, or meant to be executed, by one person".

60 ISIC, rev.3 classifies *economic activities of an establishment, enterprise or kind of activity unit*, where an economic activity is defined as "a process resulting in a homogenous set of products, which involves an input of resources and a production process".

61 The main statistical units of the international classification of education, ISCED, are *courses* and *programmes*, where a *course* is defined as a "planned series of learning experiences in a particular range of subject matter or skills offered by a sponsoring agency and undertaken by one or more students" and a *programme* is defined as "a selection of one or more courses or a combination of courses with an expressed or implied aim such as qualification for more advanced study, qualification for an occupation or a range of occupations, or solely an increase in knowledge or understanding".

(iii) Rules for linking different statistical units to classifications

62 Analysts often want to apply the same classification to different types of statistical units.

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[23] The *International Standard Classification of Occupations (ISCO-88)* . International Labour Office. Geneva, 1990.

[24] See *International Standard Industrial Classification of All Economic Activities (ISIC, rev. 3)* . Studies in Methods, Series M, No. 4, Rev.3. United Nations. New York, 1990.

[25] See *International Standard Classification of Education (ISCED)* . COM/ST/ISCED. UNESCO. Paris March 1976

For example, one may wish to categorize persons according to the main economic activity of the establishment for which they are employed. In such cases it is necessary to have *rules for linking the statistical units being studied to the main statistical unit of the classification which one would like to apply*. In the case of classifying persons by industry, e.g. ISIC, a link has to be established between each person and a job, e.g. the 'main job' held during the reference period, which can then be linked to an establishment which is one of the main statistical units for ISIC. Similarly a person can be classified by ISCED only by applying for, attending, having graduated from or teaching a course.

E.3. Collecting necessary information to construct the classification

63 A necessary aspect of classification development is to *collect the information which describes the defined categories* and the dividing lines between them. For an occupational classification one should in principle collect information about the main tasks of jobs for the whole range of work situations which can be found in establishments of different sizes and in different industries, e.g. what are the tasks of a "welder" in an oil pipeline company and how do the tasks compare with those of a "welder" in a ship-yard, a nuclear power station or on a highway construction site? If one wants to be able to apply different similarity criteria to define alternative aggregated sets of classification categories, then the corresponding information must be included in the descriptive definitions as well.

64 Those constructing a classification, to a large extent, must rely on subject matter experts and other secondary sources for most of the information needed. However, some field investigations should be undertaken for new areas and to spot-check secondary information, in particular where it can be suspected that it may be out of date. This applies in particular in areas where the information needed is collected only every five or ten years, which is often the case for the study of occupations, industry and education in most countries and internationally. The ICD[26] can, however, draw upon a large number of research activities and clinical experiences within a well defined field with a long tradition of exchange of information and communication.

F. Setting the structure

65 Many classifications have structures which define some groups of categories as subdivisions of others. The term *classification structure* refers to the arrangement of the content of a classification. The strategy of the structure is to arrange the content in such a way that aggregations of the most detailed categories in the set are based upon similarity criteria that are meaningful for statistical and analytic comparisons. The classification structure should make it possible to identify relevant individual categories uniquely and separately, yet still be able to

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[26] See *International Statistical Classification of Diseases and Related Health Problems: Tenth revision (ICD-10)*; Volume 1; World Health Organization, Geneva 1992. A list of nine collaborating centres for classification of diseases can be found on pp. 7-8.

present statistics for meaningful broader groupings. The preparation of explicit statements of similarity criteria used for aggregation, and explanations of the basis for drawing distinctions between groups, are important instructions needed for updating the classification and for understanding how to classify cases not explicitly dealt with when defining the scope of the different groups.

F.1. Rules for identifying same detailed categories

66 Rules are required for identifying when the statistical units can be classified to the same category of a classification, and when they should be classified to different categories. For example, in ISCO-88 the rule is that *when the main tasks and duties of a set of jobs are characterized by a high degree of similarity*, then these jobs should be classified (coded) to the same detailed category. These tasks and duties define an *occupation*, which is the designation for the most detailed element in the set of categories of this classification.

67 For ISIC, rev. 3., it is a rule that when an *economic activity* of an establishment is characteristized by a common *production process resulting in a homogeneous set of products,* then it should be classified (coded) to the same detailed class.

68 The most detailed categories in ISCED are those educational units which are homogeneous with respect to level and subject matter content of the communication taking place.

F.2. Similarity criteria used to define higher level categories

69 Similarity criteria are required to define higher level categories (aggregated groups of categories) in hierarchical classifications. In ISCO-88 the main similarity criteria are the *skill level* and *skill specializations* needed to carry out the tasks and duties of the jobs, where *skill level* is as the main criterion to delineate the most aggregate categories, while *skill specialization* is used to delineate the more detailed categories within the aggregate categories.

70 The international education classification, ISCED, uses essentially the same approach by defining broad distinctions in terms of *level of instruction*, i.e. reflecting the complexity of material being communicated, while *field of study* is used to define more detailed categories.

71 The international economic activity classification, ISIC, Rev.3, uses (a) the inputs, the process and the technology of production; (b) the character of the goods and services produced; and (c) the uses to which the goods and services are put, as main criteria employed in the delineation of aggregate groups.

F.3. Preparing explanatory notes

72 The objective of explanatory notes are to explain the boundaries of each of the categories of the classification through definitional descriptions and/or listing of what they include and

exclude. Simplicity and clarity of language is imperative. Documentation of "case law" is needed to clarify where the boundaries should be drawn in practice, because neither listings nor statements of principles, can be completely unambiguous in practice.

73 Explanatory notes require careful editing and wording. They may be modified through updating of language, editorial corrections, and amendments prepared through a process of interpretation and rulings by the custodian. Such changes should take place as needed and be widely disseminated. The nature of changes and the reasons for introducing them require careful explanation and documentation. During the regular process of updating and amending the explanatory notes of classifications, proposals for revisions should also be collected and retained for consideration in connection with a revision process.

74 The objectives, rules, principles and methods of description of the structure, its categories and concepts, of classifications must be adhered to when creating a derived or related classification. If they are not, deviations from the rules, e.g. for reasons of convenience or continuity with earlier practice, should be proposed and widely discussed. Placement of new items into the classification must be announced and widely disseminated.

F.4. Preparing classification indexes

75 Alphabetic indexes often make it easier to locate the placement into the classification's categories of particular units, given their relevant characteristics. Such indexes may be comprised of text or key words from the headings and explanatory notes of a classification, as well as upon direct experience in the interpretation and use of the classification in surveys and administrative registrations.

F.5. Developing correspondence tables

76 Methodological procedures have been developed for systematic comparisons between classifications, and one of the most prominent is that of correspondence tables. Correspondence tables systematically explain where, and to what extent, concepts and categories in one classification, may be found in other classifications, or in earlier versions of the same classification. This is the process of linking classifications. Correspondence tables are one of the important topics for the development and harmonisation of international classifications. Some basic principles are summarised below.

Level of detail

77 The level of detail upon which agreement/links shall be reached should be determined initially. The elaboration of correspondence tables should always start at the lowest hierarchical level of the classifications being linked. If possible the links should be created through the coding to both classifications of a joint alphabetical index.

Terminology

78 The terminology used in the two different classifications for the same variable need to be carefully analysed to determine whether differences are real, versus purely linguistic.

Explanatory notes

79 Explanatory notes should always be sufficient to allow for understanding the differences between two linked classifications, and the nature of the links established. The quality of correspondence tables depends heavily on the quality of the definitions and descriptions provided in the explanatory notes of the relevant classifications.

Structural links

80 At times, opportunities for correspondences between the categories of different classifications are difficult or not possible to establish, owing to significant structural differences in the defined value sets that do not allow for common correspondences at a similar hierarchical level in the structure. In some circumstances, an approximate or truncated correspondence may be made by aggregating subclasses of one classification to different structural levels of the other classification.

81 In cases where an element of one classification should be linked to more than one element in the other, precise descriptions should be given of the components that were partialed out. It is not enough to label them as “ex-case” or “part of”.

82 Correspondence tables are produced through the systematic comparison of one classification (**A**) to another (**B**) to determine how a statistical unit classified to a detailed category in **A** should be classified to the most detailed category possible in **B**. It will be necessary to create two correspondence tables, one from **A** to **B** and one from **B** to **A**, unless there is a one-to-one correspondence between all detailed categories in the two classifications,

83 Correspondence tables should be constructed by the custodians of the involved classifications, in order to ensure that decisions reached are based on detailed knowledge of all the classifications that are being linked. Users should be consulted on the principles for resolving ambiguities and on any priority rules with inexact matches. Correspondence tables drafted by an expert should be reviewed similarly, as he/she might have an understanding and interpretation of the classifications in questions which do not correspond precisely to that of other users.

84 Correspondence tables between generations of the same classification or between closely related classifications should preferably be elaborated during the process of the design and elaboration of the specific classifications, and not after the design process is finished. Experience shows that the linkage exercise can contribute to the design process. The tables should be available at the same time a new or revised classification is being published, and should be part of the publications of the classifications in question. This may be done in print form and/or by EDP-

facilities (diskette, on-line). The correspondence tables should be presented in a form that is *technically correct* and *easy to understand* for users. This will normally require separate tables for the two directions.

85 It may not always be easy to apply all the proposed principles in practice. One reason for this is that there may be several custodians involved, each of them responsible for one or another specific classifications. Other problems might occur because of conflicts in the timing of producing and revising classifications.

G. Designing classifications databases

86 Classification databases facilitate the linking of a classification to other, related or derived classifications. They also facilitate the documentation and rapid retrieval of decisions reached in the updating and maintenance process and help to connect them to corrected versions of the classification. In order to take full advantage of the capabilities of modern database management systems, classifications may be moved from purely text-oriented documents to structures more suitable for database management. Computers and computerized classifications databases support the process of recording observations on the contents of groups, proposals for changes and decisions of rulings, and exchanging them with others in a systematic and organized manner. Correspondence with other classifications may also be more easily traced using database techniques.

87 Early attention by the custodians of classification to standardized structured formats for presentation of statistical classifications, increases the opportunity for presenting classifications in relational database format. For example, when numeric or alphabetic codes of the primary classification are logically structured, and when the explanatory notes are presented as separate text notes describing the categories of the classification, then it is possible to organize a classification as a database, rather than simply as a text file. As descriptions of the categories of the classification takes on additional characteristics, e.g. correspondences with other classifications, these characteristics may also be added as additional and related variables in the database. When links have been established between classifications, e.g. between different classifications or between a structure and the corresponding definitions and descriptions, then appropriate relational data base software can be used to pull together, as required, corresponding information from the various bodies of descriptive definitions.

H. Preparation of handbooks, training, technical cooperation

88 Classifications require instruction and training in their use. Owing to the diverse audience of users, the logic, principles and best use of classifications must be taught and explained at different levels of detail and complexity to different client groups: statisticians, researchers, policy specialists, educators, lawyers, and the public-at-large. Technical advisory activities and training seminars are important follow-up activities to the implementation and use of statistical classifications. Technical cooperation programmes for the development of national statistical classifications based on an ISC, will require instructional materials such as training manuals and handbooks, presenting principles and recommendations, for exchange and use in training

programmes for the custodians of corresponding national classifications and for other users of the ISCs. Plans for the preparation of educational and training materials should be included in the overall plan prepared for the design, implementation, maintenance and use of classifications.

I. Implementation, testing and adaptation of the classification

89 In the text below, references to *using the classification* means to register consistently and correctly for each unit being observed the characteristic of the variable so that the unit is placed into the most appropriate category of the classification. The analytical use of statistics based on the classification is beyond the scope of this text, even though this will be the most frequent usage of the classification.

I.1. From theory to practice: how to identify the information to be collected when using a classification

90 It must be determined *who will do the coding*: the respondent, an interviewer, an office coder or an expert, and the kind of coding tools which will be available to the coder. The choice of coding strategy has significant consequences both for the degree of resolution which can be obtained when identifying a category in the classification, and for the reliability of the coding, as well as for the cost of using the classification in the context of particular data collection methods. Some classifications are designed for expert use only, e.g. the ICD which has been designed for use by medical practioners and qualified nurses. Even for such classifications there may be elements which may be needed for use in other contexts than those originally envisaged by those designing the classification, e.g. when reporting on work-related accidents[27], or when a person's health status is described by a family member to a non-specialist interviewer in a health survey.

91 With respondent coding the respondent is presented with a set of categories from the classification and asked to indicate the one which best applies to him/her. With interviewer coding, it is the interviewer who determines the correct category, on the basis of the information received from the respondent. An office coder (and sometimes an expert coder) must determine the correct code from information written down by the respondent or the interviewer. Some classifications are designed for the situation where an expert examines the entity to be classified to get the information needed to determine the correct category, e.g. ICD.

92 At this point, one must address, *what question(s) to ask the respondent*? This will partly depend on the choice of coder (see above). Respondents who code themselves need to be told on what basis they should choose one of the possible response categories. These response categories need not be categories of the classification, as testing may demonstrate that more reliable

[27] See Annexes E, F and G to ILO: *Statistics of occupational injuries* . Report III to the 16th International Conference of Labour Statisticians. Geneva, 6-15 October 1998. ILO, Geneva , 1998.

information can be obtained by using several questions with response categories which need to be combined to generate the corresponding categories of the classification. Even when using categories of the classification, more reliable responses may result if the labels are chosen to correspond to every-day language rather than the technical language used in the classifications, as the technical terms' more precise meaning may not be understood correctly by a significant proportion of the respondents.

93 With interviewer or expert coding, the formulation of the question(s) should aim at extracting from the respondent the information which the coders need in order to identify the correct category for this respondent. For example, for *occupation* it seems that to ask questions to determine an occupational title and main tasks and duties is the best way to determine the correct code. However, the word *occupation* should be avoided, as the term is unlikely to be understood in the intended way. "What kind of work do you do? What are your main tasks and duties?" seem to work well in many languages to capture the information needed for effective and reliable coding. For some classifications designed for expert coding the “questions” will consist of guidelines on what the expert should look for to determine the correct values, e.g. the symptoms specified for the various categories in ICD. It is significant that the custodians of ICD consider the rules for its correct use to be part of the classification itself and organize courses for medical doctors and nurses in its correct use.

94 Interviewers (observers) should be instructed about the *type of response elements which will be needed to ensure high quality coding*. The office coders, as well as the experts, also need to know how to select such elements from the response, whether written or oral, and how to use them for effective, accurate and consistent coding. The coding process should retain as much as possible of the information provided by the respondents or observed by the expert. For example the ILO recommends that when coding *occupation* one should code to the most detailed category which can be identified from the information provided, and that title, task and other information should be used according to clearly specified rules. These features must be incorporated into computer systems for automatic and computer assisted coding.

I.2. Developing appropriate coding tools

95 Development of coding-assisting tools are needed. For many classifications the most important tools will be a coding index which should be designed to reflect the type of responses which are available to the coders, and the rules for using the index. The development of tools for automated or computer assisted coding should incorporate the rules to be used for accurate and effective coding.

I.3. Developing appropriate control procedures

96 Procedures are needed to monitor the quality of the results of the coding process, and to provide feedback both to the coders and to those responsible for the classification and the coding tools.

J. Maintenance and updating of classifications

97 **Maintenanc**e of a classification means to ensure *correction of errors* made in: (a) the construction of the classification; (b) the explanatory notes; and (c) the associated coding tools. **Up-dating** is the process of *modifying the descriptive definitions* of the categories as well as *introducing new, more detailed* categories and new coding tools. For example, updating might include adding previously unknown or genuinely new types of primary units (e.g. for ISCO-88: types of jobs; for ICIDH: types of abilities)[28].

98 Maintenance and up-dating are ongoing activities of the custodian of a classification. Good feed-back mechanisms of custodians to users, and vice versa, are important elements of maintenance and updating.

J.1. Setting criteria for identifying significant effects

99 What are the significant effects of maintenance and updating of classifications to *statistical comparability?* Few clear criteria have been developed which can be used to single out how modifications in classification impact on comparability of statistics independently of other factors in the data collection process. If carried out on a continuous basis, the effect of updating should be minor on most of the statistical results. Over time, however, the accumulated effect of updating may be significant for the comparability of certain types of results, and may cancel out for others. Documentation is required on a regular basis that explains changes made in the updating process and stating the timing of the decisions reached.

J.2. Methods for correcting and/or smoothing the effects of maintenance and updating

100 Detailed and accessible documentation is required to correct or smooth the effects of maintenance and up-dating. Aggregation to internalize the effect of modifications will be one possibility when detailed results are not needed. Double coding for a limited data set or for a limited period to establish conversion factors has been used in many cases, but the validity of their use depends on their stability over time and for sub-groups within the groups for which they have been calculated. The indexes for computer assisted and automatic coding systems can be constructed to provide double coding on a permanent basis.

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[28] It seems that many of the revisions to the ICD represented mainly an updating of the existing classification, see ICD-10, Vol. 2, chapter 6. The distinction between revision and updating is clearly recognized in ICD-10 which was designed to represent "a thorough rethinking of its structure and an effort to devise a stable and flexible classification, which should not require fundamental revision for many years to come. ... It has also become clear that the established ten-year interval between revisions was too short. Work on the revision process had to start before the current version of the ICD had been in use long enough to be thoroughly evaluated" (p. 151).

J.3. Consultations with users in updates, amendments and rulings

101 Regular coordinating mechanisms must include opportunities for users to provide information necessary for maintenance and updating of classifications through formal correspondence, meetings, and through exchange of information on the Internet. Users, for example, need opportunities to inform custodians of problems and issues related to the actual implementation in surveys and registry systems of classifications. Exceptions made by users in the application of the classifications must be communicated to the classifications' custodians. In addition, regular inclusion of users on classification committees, and their participation in committee hearings, is essential in order to keep the committees fully aware of the actual implementation problems of data collection and analysis.[29]

102 Custodians of classifications systems may consider using a cyber platform on the Internet to enable more active participation of users in all the major classification debates. Addresses of custodians of classifications should be made readily available, and hyper links between them maintained.

K. Conducting revisions

103 Revising an international statistical classification involves a complete review of users' needs as well as of the conceptual basis and the users' tools, i.e. all the solutions arrived at for the issues outlined above concerning the development and implementation of the classification. Such reviews should only be undertaken at long intervals, such as every 15-20 years, or if there is compelling evidence that revisions are necessary. This evidence may come from national users or from international developments. The activities involved in revising a classification are essentially the same as those needed to develop it. Only the additional methodological issues involved are discussed below.

K.1. Determining whether new solutions are better

104 *When* is a revision necessary? How does one *determine whether proposed new solutions are better* than current practices? For both types of issues it would seem that they can best be settled through discussions among subject matter experts and discussions between the custodians of reference, derived and related classifications and the users of the resulting statistics. The best way to organize such discussions will probably differ between classifications, but will involve a mix of technical expertise in the custodian's secretariat and the solicitation of external views and

[29] Linked web-sites have been established between some of the custodians of international classifications, e.g. between the web-sites of the United Nations Statistics Division and the ILO Bureau of Statistics. Such links should facilitate interactive communication with users about the classifications. There is also a web-site for ISCO-88(COM) at the *Institute of Employment Research, University of Warwick* , United Kingdom, which is linked to the ILO site, and a web-site has been established by the *U.S. Bureau of Labor Statistics* for information on and comments to the draft for a new U.S. *Standard Occupational Classification* .

suggestions, made easier to get and use with the help of modern computer and telecommunications technology, and meetings for face to face interaction.

K.2. Implementing a revised classification in on-going statistical programmes

105 How does one *implement a revised classification* in on-going statistical programmes, given the need for comparability with past statistics? The observations made above concerning updating and maintaining classifications also apply to the implementation of revisions. However, problems of establishing links between the revised classification and its predecessor at various levels of aggregation will be much more serious, in particular if double coding of common indexes cannot easily be carried out, i.e. if the coding index is not maintained with both old and new codes[30].

106 In this regard, it is essential that the classifications custodian prepare training material and organize training activities for those who will be using the revised classification.

Concluding remarks

107 With some classifications the resolution of some of the organizational and methodological issues outlined above will be trivial or self-evident. However, the custodian organization responsible for a classification should feel an obligation to ensure that these issues are addressed in a systematic way. In particular the custodian should provide guidance on: (I) how users of the classification may deal with those aspects which will influence the quality of the statistics using the classification; and (ii) how the quality of the statistics will be influenced by the way the problems have been resolved in particular contexts. This is necessary to obtain statistics of high (or, at least, known) quality with the resources available.

108 It is also clear that good international and national practices with respect to these issues will contribute significantly to ensure compatibility and comparability of the statistics using the respective classifications, nationally as well as internationally.

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[30] Suggestions for a strategy which can also be used for mapping between two national classifications is presented in E. Hoffmann: "Mapping a national classification of occupations into ISCO-88: outline of a strategy". Chapter 23 in Chernyshev, I.,ed.: *Labour Statistics for a Market Economy* . Central European University Press. Budapest, 1994.

Annex 1. Illustrative example of an executive summary of a classification

UNITED NATIONS INVENTORY OF INTERNATIONAL STATISTICAL CLASSIFICATIONS

Abbreviation in English: …… Arabic: …….. Chinese: ……..
French: …… Russian: ……. Spanish: …… .....

Original language Title: ……

Language *(specify)* Title: ……

Language *(specify)* Title: ……..

Available in: English: Arabic: Chinese: French: Russian: Spanish:

Other language availability *(Please explain):* ……....

…….....

Purpose of classification: ……..

……...

…….....

REVISION STATUS

Year first published: …….. Year of last revision: ……....

Years between revisions: …… Latest revision number: ……....

Remarks: ……

…….....

AVAILABLE INDEXES

Alphabetic index: …….. Numeric index available: …….....

Other *(Please explain):* ……

RELATIONSHIPS WITH OTHER STATISTICAL CLASSIFICATIONS

Correspondence between revisions *(Please describe):* ……

……..

Correspondence with international classifications: ……

……..

Correspondence with multinational/regional: ……..

……..

Relationships – Conceptual, structural or other pertinent:

…….....

…….....

…….....

Classification unit: ……..…….....

CLASSIFICATION STRUCTURE

Structure level 1: **Structure level 4:**

Structure level 2: **Structure level 5:**

Structure level 3:

Remarks: ……..…….....

. ……

WHOM TO CONTACT FOR MORE INFORMATION

Agency/Office: ……..…….....

Responsible person (Name): ……..……..... **Title: ……**

Telephone: …… **Fax: ……..**

Email: …… **Agency/Office**
Website Address: ……..…….....

Contact person (Name): …… **Title: ……**

Unit: ……

Telephone: …….. **Fax: ……..**

Email: …… **Classification Website Address: ……**

Address: ……

SOURCES ***(Please list all publications that apply to this version of classification)***

Title:
Author:
Sales number:
Publication Series:
Year published:

Availability in machine-readable format ***(Please explain):*** **……..**

……

UNITED NATIONS INVENTORY OF INTERNATIONAL STATISTICAL CLASSIFICATIONS: An Example

Abbreviation in English: ***CPC*** **Arabic: CPC** **Chinese: CPC**

French: ***CPC*** **Russian: CPC** **Spanish: CPC**

English Title: ***Central Product Classification (CPC) Version 1.0***

Available in English: ***Yes*** **Arabic: No Chinese:** ***No*** **French:** ***No*** **Russian:** ***No*** **Spanish:** ***No***

Other language availability (Please explain): ***CPC Version 1.0 is currently being translated into all official UN languages***

Purpose of classification: ***A classification of products based on the physical characteristics of goods or on the nature of the services rendered. CPC provides a framework for international comparison of the various kinds of statistics dealing with goods, services and assets. It covers categories for all products (goods and services) which can be subjects of domestic and international transactions or which can be put into stocks. CPC covers products that are an output of economic activities, including transportable and non-transportable goods and services, and land and intangible assets which arise from legal and accounting actions such as patents, licenses, trademarks and copyrights. CPC also includes a major part of intangible assets, namely all constructions and civil engineering works.***

REVISION STATUS

Year first published: 1991 **Year of last revision: 1997**

Years between revisions: 8 **Latest revision number: 1.0**

Remarks: ***CPC Version 1.0 will be subject to further updates and revisions which will be conducted at regular and frequent intervals.***

AVAILABLE INDEXES

Alphabetic index: CPC Version 1.0, Sections 5-9 ***Numeric index available: Detailed Structure of CPC Version 1.0***

Other (Please explain): ***For Sections 0-4 of CPC Version 1.0, users may consult the alphabetical indexes developed by the Harmonized System.***

RELATIONSHIPS WITH OTHER STATISTICAL CLASSIFICATIONS

Correspondence between revisions: ***Correspondence tables with Provisional CPC***

Correspondence with international classifications: Correspondence tables available with HS96, ISIC Rev. 3, SITC Rev. 3, draft COICOP, BPM5 classification of services (draft correspondence table) and the extended BOP classification of services (draft correspondence table **).**

Correspondence with multinational/regional*: not ascertained*

Relationships – Conceptual, structural or other pertinent:
The Harmonized Commodity Description and Coding System, 1996 edition (HS96), World Customs Organization, (Brussels, 1996): CPC uses the headings and subheadings of the HS as building blocks in Sections 0-4 where each CPC subclass is an aggregate of one or more headings or subheadings of the HS.

International Standard Classification of All Economic Activities (ISIC Rev.3), United Nations, ST/ESA/STAT/ SER. M/4/Rev.3, New York, 1990: Each subclass of CPC consists of goods and services that are predominantly produced in one specific class or classes of ISIC Revision 3.

Standard International Trade Classification (SITC Rev.3), United Nations, ST/ESA/STAT/SER.M/34/Rev.3., New York, 1986:
All of its five-digit codes are equal to or an exact part of a single subclass of CPC Sections 0-4.

Classification by Broad Economic Categories Defined in Terms of SITC Rev.3 (BEC), United Nations, ST/ESA/STAT/SER.M/53/Rev.3, New York,1989: BEC is related to CPC through its close correlation with SITC. It is generally possible to rearrange whole CPC subclasses into BEC categories through the correspondence between CPC and SITC Rev.3 and between SITC and BEC.

System of National Accounts, 1993 (SNA), annex V (Classifications and accounts): CPC provides the product dimension to many of the SNA tables. As a result, SNA takes CPC into consideration in the development of the classifications of expenditures by purpose. This will be reflected in the forthcoming United Nations publication relating to SNA classifications of expenditure by purpose, including the Classification of Individual Consumption by Purpose (COICOP), the Classification of the Functions of the Government (COFOG), the Classification of the Purposes of the Non-profit Institutions Serving Households (COPNI) and the Classification of Outlays of Producers by Purpose (COPP). In particular, correspondences between COICOP and CPC have been elaborated.

The Statistical Classification of Products by Activity (CPA) in the European Economic Community , European Council Regulation No. 3696/93, October 1993: The CPA can be linked to CPC at the detailed level.

Balance of Payments Classification of International Transactions in Services, Balance of Payments Manual, fifth ed., Appendix III., International Monetary Fund, Washington D.C., 1993: With respect to the extended Balance of Payments Classification of International Transactions in Services, the content of each balance of payments component has been described through its detailed relationship with the CPC. The draft Manual on statistics of international trade-in-services proposed by the United Nations Inter-agency Task Force on Statistics of international trade-in-services will contain a classification of trade in services that is an extension of and is consistent with that prescribed for international trade in services in the fifth edition of the IMF Balance of Payments Manual.

Classification unit: ***Goods, services and certain assets***

CLASSIFICATION STRUCTURE

Structure level 1: *Sections* (N: one-digit code)

Structure level 2: *Divisions* (N: 2-digit codes)

Structure level 3: *Groups* (N: 3-digit codes)

Structure level 4: *Classes* (N: 4-digit codes)

Structure level 5: *Subclasses* (N: 5-digit codes)

Remarks: ***Hierarchical structure of Provisional CPC consists of "Sections" (10), "Divisions" (71), "Groups" (294),"Classes" (1,162) and "Subclasses" (2,093)***

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SOURCES (Please list all publications that apply to this version of classification)

Title: Central Product Classification (CPC) Version 1.0
Author: United Nations publication
Sales number: E.98.XVII.5
Publication Series: Ref: ST/ESA/STAT/SER.M/77/Ver.1.0
Year published: 1998

Availability in machine-readable format (Please explain): *CPC Version 1.0 in English available in machine-readable format.*