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**Updated Sector Paper on
Industry ISIC 61
TELECOMMUNICATIONS**

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1.0 Introduction

This updated sector paper aims to share international best practice to inform countries seeking to develop or revise turnover statistics and price deflators for telecommunication services. The paper summarizes practices and challenges encountered by various countries associated with classification, collection of turnover data and developing producer price indices of telecommunication services and provides a framework of the recommended development options.

This sector was first discussed on the 4th meeting of the Voorburg Group in 1989, where Statistics Canada considered the CPC product classification for telecommunication services. Audiovisual services were further revisited in 1990 and in 1992 where Canada, France, Finland and Sweden presented their experience on the model survey for audiovisual services. Telecommunication services, including audiovisual services, were discussed several times from 1993 onwards. More recently, telecommunication services were discussed in detail on the 23rd Group Meeting where Austria, Germany and France shared their experience on prices and Canada, Norway and The Netherlands reviewed turnover statistics. These led to a sector paper, presented by INSEE at the 24th Voorburg Group meeting. This paper builds on that sector paper, describing changes in this fast moving industry, and drawing on the telecommunications chapter in the updated OECD-Eurostat Methodological Guide for Developing Producer Price Indices for Services, which is due to be published later in 2012.

2.0 Industry overview

A strong case can be made that the telecommunication sector has been a major contributor to national economies. The Office for Communication (OfCom) reports that the revenue generated from telecommunication services continue to grow across 17 countries¹. Indeed, the revenue from telecommunication services stood at £864bn over the 17 countries involved in 2010 (the latest year for which revenue data are available) and was 13.5% higher than the £762bn reported in the previous report in 2006. This section considers recent industry trends and market developments in the Telecommunication sector.

At the same time, the telecommunication sector has experienced fast-paced changes both in terms of the volume of users as well as the technologies employed. According to the United Nations' International Telecommunication Union (2011), around 30% of the world's population (over 2 billion people) were internet users by the end of 2010, compared to just 6% at the end of 2000, and around 1.2 billion of these accessed the internet via mobile networks, using technologies which were barely nascent ten years previously. The sections below present the key changes in industry trends and market status.

2.1 Industry trends

Traditionally, due to the strict regulation coupled with the high start-up costs and increased level of investment in R&D, the market structure for telecommunications service providers tended to be

¹ The report compares the telecommunication services in the UK and 16 comparator countries - France, Germany, Italy, the US, Canada, Japan, Australia, Spain, the Netherlands, Sweden, Ireland, Poland, Brazil, Russia, India and China.

close to a natural monopoly or oligopoly market. However, increasing government deregulation over recent years in tandem with further regulation of existing suppliers and lowering entry requirements have stimulated strong competition amongst business telecommunication service providers, with an increasing trend amongst suppliers to offer better and different services to the user community. As a result, the telecommunication industry landscape has been susceptible to rapid changes associated with:

- Regulation, such as the EU Electronic Communication Framework which aims to ensure effective competition and consumer protection as well as constituting the basis for a consistent regulatory environment across the communications markets of all Member States.
- Technology, including fibre optic cables and the introduction of next-generation core networks (NGNs).
- Consumer's movement to new services, such as the substitute of fixed broadband by mobile broadband.

Another noteworthy development in the industry is the wide expansion of social networking and the fact that until recently, social networking sites have mainly been accessed via a computer (laptop/desktop PC) but with the growth of smartphones and the introduction of other devices such as tablet computers, consumers can now access social networking sites in a variety of ways and in more places than ever before.

2.2 Market changes

Business telecommunication services change rapidly in their specifications with frequent migrations of corporate usage. The most evident development in the industry is the market convergence which brings together information technology, telecommunication, and media, formerly operating in separate markets, and has led to the blurring of traditional boundaries. It is projected that this trend towards horizontal integration of markets and services could lead to strengthening of market power, as there may be relatively few companies in a country that can provide a combined video, voice and data offering (OECD, 2008).

Another issue linked to convergence is that bundling of services, where bundling refers to the sale of a number of services combined in a single price package, usually excluding the possibility that customers can obtain a single service without taking or paying for the other services in the bundle. Bundling of services can help generate economies for the supplier through, for example, reduction in service marketing charges, customer acquisition costs, billing charges, etc. For the client, bundling often has the advantage in that prices are lower compared to having to subscribe to each service individually, however customers may not want all the services offered in a bundle (OECD, 2008). The greatest savings, compared to purchasing standalone services, were available in France, where a 'quad-play' bundle including voice, broadband, TV and phone offered the lowest prices for a basket of services typical of a family (Ofcom, 2011)

In addition, tariff complexity (e.g. benefits associated with specific tariffs are available only to certain types of consumers, for example some operators are offering business-specific roaming tariffs that are considerably cheaper than consumer offerings) make the pricing in the telecoms services difficult to measure. Adding to this complexity is the variation in installation and hardware costs which might be embedded to the ultimate price of the telecommunications services (OfCom, 2011).

Given the above factors, it is advisable that countries that have developed an SPPI for telecommunication services review the index frequently to allow for shifting consumers' trends and to account for the fact that aggregation structure and pricing methods might become obsolete over time. The price-index community has therefore put forward the following recommendations to address future developments of a business telecommunications SPPI:

- To move to re-weight the service products on a more frequent basis to capture rapid changes in service consumption. For example, in fixed-wire services, there is a strong, current trend in the provision of corporate, broadband internet-connection services which might affect the structure of SPPI telecommunications services.
- To research methods of capturing the price of bundled service products (with discounts) which is increasing as an industry practice to corporate customers. This is likely to increase as convergence of the telecommunications with media and IT activity increases.
- To use a standard method of quality adjustment of business telecommunications in order to capture the improved transmission of data and speech through improved technology. For example, in wireless services a future trend is identified towards third-generation (3G) communications, which will offer the ability to transmit data at a greater rate than before and support a greater diversity of service.

3.0 Classification

As a result of a several-year long harmonization process there is a great degree of consistency across the four main international industrial classifications ISIC (Rev.4), NACE (Rev. 2), NAICS (v. 2007) and ANZSIC (v.2006, Rev.1). However, unlike the industry classification comparison, product classifications are not harmonised to the same degree. Industry and products classifications are discussed in more detail in the sections below.

3.1 Industry classification

The most broadly used classifications are the international classification system of economic activities ISIC (Rev.4) and NACE (Rev. 2). These classification systems used by EU countries for division 61 are identical. Under section "J" (Information and communication) in the hierarchy, the division 61 "Telecommunications" includes the activities of providing telecommunications and related service activities, i.e. transmitting voice, data, text, sound and video. The transmission facilities that carry out these activities may be based on a single technology or a combination of technologies. The commonality of activities classified in this division is the transmission of content, without being involved in its creation. The breakdown in this division is based on the type of infrastructure operated. In the case of transmission of television signals this may include the

bundling of complete programming channels (produced in division 60) into programme packages for distribution.

According to the NAICS (v.2012) classification, the description of the 517 “Telecommunications” class is identical. The first three groups are comprised of establishments that operate transmission facilities and infrastructure that they own and/or lease, and provide telecommunication services using those facilities. The distinction among the first three industry groups is the type of infrastructure operated (i.e. wired, wireless, or satellite). The fourth industry group is comprised of establishment that provide support activities, telecommunications reselling services, or many of the same services provided by establishments in the first three industry groups, but do not operate as telecommunications carriers. Establishments primarily engaged as independent contractors in providing these services may be classified in other sectors (e.g. construction, administrative and support services, food service and drinking places) depending on the primary activity. NACE (Rev 2) is the same as ISIC (Rev.4) and NAICS (v.2012); however ANZSIC does not separate out satellite telecommunication activities from other telecommunication activities.

This table below provides a synopsis of the four main industrial classifications for Telecommunication services. A detailed description of industry classification is included in Appendix 2.

Table 1: Main industrial classifications for Telecommunication services

ISIC (Rev. 4)	NACE (Rev. 2)	NAICS (v. 2012)	ANZSIC (v. 2006/Rev. 1)	Class (Group)
6110	6110	5171	5801	Wired telecommunication activities
6120	6120	5172	5802	Wireless telecommunication activities
6130	6130	5174	5809	Satellite telecommunication activities
6190	6190	5179		Other telecommunication activities

3.2 Product Classification

Unlike the industry classification comparison, product classifications are not harmonised to the same degree. The Central Product Classification (CPC Rev. 2) is the main product classification system applicable for this industry and the relevant categories are namely:

- 841 “Telephony and other telecommunications services”,
- 842 “Internet communication services”
- 8463 “Broadcasting, programming and programme distribution services”

Other groups in this division include on-line content, news agency services and library and archive services but they fall out of scope for the purpose of this paper. There are also 15 different subclasses for the telecommunications services with a breakdown according to technical criteria.

Another classification commonly used is the European statistical Classification of Products by Activity (CPA 2008). There is a direct link between this classification of products and the NACE industry classification (the coding rules for the first four digits are the same as those for the NACE Rev. 2); and there are 24 CPA 2008 items for the telecommunication services. The CPC Rev. 2 and the CPA 2008 are comparable, but CPA is more detailed. NAPCS (2007) is complimentary to NAICS including more than 50 sub-items; however some of the items, such as installation of services for telecommunication networks and maintenance and repair services for telecommunication equipments, fall out of scope of this paper. Please see Appendix 3 for a more in-depth overview of product classification.

4.0 Turnover Statistics

4.1 Data availability and collection

The timing and frequency of price collection for telecommunications services will depend on a number of factors that the statistical agency will need to assess when developing the index. An important consideration will be the proposed pricing method and the availability of this data from those who will be providing it. Turnover data can be collected either by survey or administrative sources. In the former case, the precise turnover detail can be defined and collected with the desired periodicity (monthly, quarterly, or annually). Depending on the uses of the information (e.g. for current economic intelligence or for benchmarking purposes), the choice of using a survey instrument depends on factors such as i) the resources available, ii) the ability for the respondent to answer the question and iii) the burden that one wants to impose to the respondents. If resources are not a limiting factor, the sample can vary in size (random or census) and in complexity (industries and product details).

Alternatively, turnover data can be collected through administrative sources and can be accessed through either those enterprises within the industry or from a third party, such as trade associations or regulators. With respect to data quality, administrative data can be quite volatile, and may contain many outliers and erroneous values. For example, turnover revenues may include bundled items and other revenues that do not relate to the service category under examination. The great advantage is that it does not impose additional burden on respondent.

In terms of periodicity, annual data is the minimum requirement for the purpose of benchmarking the economy. Where resources permit, sub-annual data provides more timely information on the industry which is essential for calculating a quarterly GDP and providing current economic information.

4.2 Data issues

As with other industries one of the main challenges is the definition of turnover. In principle, the value of invoiced sales of goods and services supplied to third parties during the reference period should be collected. Therefore particular care needs to be taken when using administrative data. For example, when using tax declaration for tax purposes, any revenues generated from non-turnover producing activities, such as sales of fixed assets

should be excluded. In addition, when selecting a sample for a turnover survey it is important to ensure that turnover is broken down by primary and other activities as there could be substantial over/under coverage in the frame and estimates.

4.3 Recommended approaches

The options for developing turnover statistics, in terms of practices as well as the minimum requirements for a turnover series to be produced, are presented in the table below.

Table 2. Options for Developing Turnover Statistics

Category	Data source	Level of detail collected	Frequency	Advantages and disadvantages
Best	Survey/Census	Industry turnover and product turnover	Sub-annual (monthly or quarterly)	Advantages • Provide detailed information for the national accounts on a timely manner • Provides benchmarking and current economic analysis • Allows the construction of I-O tables Disadvantages • Most expensive • Highest respondent burden • Response rates might be low
Good	Survey/Census	Industry detail only	Sub-annual	Advantages • Provide detailed information for the national accounts on a timely manner • Provides benchmarking and current economic analysis Disadvantages • Expensive • High respondent burden • Response rates might be low
Minimum	Administrative (e.g industry association data) or a combination of administrative and survey	Industry detail only	Annual/sub-annual	Advantages • Least expensive • Little or no respondent burden • Large coverage Disadvantages • Data coverage and definition can be imprecise • Least timely

5.0 SPPI development

5.1 Data availability and sources

Similar to turnover information, pricing information from a variety of sources can be used to construct an index for the telecommunication industry including administrative data, survey data, prices collected from the internet and prices collected for the CPI. If a statistical agency chooses to take a survey approach, the timing and frequency of data collection will need to be evaluated against the availability of data and potential burden on those who will be providing the data. Likewise, if administrative data is to be collected from an industry regulator, an appropriate frequency for price delivery needs to be negotiated that allows adequate time for data cleaning, analysis and derivation of the price index. An alternative to conducting a price survey or using administrative sources is to use data that is readily available from the internet. Although much data is available on-line, they might not be fit for purpose. Indeed, these data often do not represent actual transaction prices but rather list prices, implying that any discounts offered might not be captured. Another concern about the using internet pricing is the lack of control about the information and the structure of this information posted on-line. The websites of those service providers can be changed at any time and in many ways without any notice. This entails a potential risk for regular index production.

5.2 Target coverage

A key issue that needs to be taken into account is the desired scope of the index. Households and business customers (including government) are both substantial clients of telecommunications service providers. As such, an ideal survey would be produced on a business-to-all basis, capturing separate price data for both sectors, that is produce separate price indices for both business-to-households and business-to-business. With this in mind the statistical agency may decide to make use of additional data such as the Consumer Price Index (CPI) or Harmonized Index of Consumer Prices (CPIH) as proxies of the business-to-consumer component of a business to all index. A suitable weighting structure could then be applied to weight together both the SPPI and CPI components to produce a business-to-all index. It should be noted that taxes, such as VAT, are included in the prices collected for a CPI. The statistical agency will need to balance the conceptual requirements of the 'ideal survey' against the cost and burden of collecting the data before accepting such concessions.

In terms of sampling design, the ideal survey for telecommunications would use the Probability Proportional to Size (PPS) method. Options for stratified sampling, using turnover as the stratification criterion, may also be applied to improve efficiency of the sample through reducing variance. If telecommunications is recognised to be led by a small number of dominant suppliers, a mixture of purposive and random sampling may also be considered. This could ensure that the largest companies are always included in the sample, with the remaining companies sampled randomly. Due to the rapid rate of technological development in this industry, the frequency of sample update may be more periodic than for other industries. It may be necessary to update the sample on an annual basis to ensure the survey remains representative of the technological changes which are taking place. However, some countries may choose to re-sample on a less frequent basis (such as every five years) or to carry out continuous or ad-hoc maintenance of the telecommunications sample.

5.3 Pricing methods used

The main pricing methods used in this industry are:

- **Component pricing, including bill method and rate method**

The component pricing with fixed service structure (bill method) assumes that a set of representative telephone bills and prices is available throughout the lifetime of a business telecoms index. The bills in a base year could be used to define the set of services used in a base year and generate the weighting pattern and the respondent is asked to provide the price updates on the bill and the associated discount information. This approach is valid if the price changes are the only movement in the index and there is no change in the service use.

The other alternative within component pricing is the 'rate method'. The concession with the rate method is that respondents no longer have to re-evaluate bills for individual service components, but instead provide updated tariffs or rates for a completely specified service (with the price determining characteristics held constant over time).

- **Unit values:**

The unit value is a method implemented by obtaining a unit value price at the lowest level of aggregation, which is the ratio of revenues to quantity for a homogeneous group of products. To achieve a unit value, the revenue of a specified service is divided by the appropriate quantity for the service (i.e. minutes) provided that services are homogeneous. The yielded unit value is multiplied by its base weight and aggregated within categories. In effect, the unit value method can be considered to be the component pricing method on a 'per minute' basis. As with rate information, the telecommunication enterprises record the value and volume measures for their own analytical purposes.

- **Direct use of prices of repeated services:**

This method can only be applied when services can be directly observed and measured in successive periods i.e. unit price, list price and transaction price. Prices can be collected either via a traditional survey approach or by utilizing the internet. A key point with using this method is that the product specification identified in the initial collection period needs to be as detailed as possible to ensure the price determining characteristics are captured and held constant going forward. This is especially important in the telecommunications industry where a typical service being measured will likely include a bundle of options (such as a fixed amount of talk time, download limits etc.).

- **Use of CPI proxies:**

In many countries, sections of the telecommunications industry are covered by the Consumer Price Index (such as wired, wireless activities including services via Internet etc.). Therefore, assuming there are resource constraints in producing a business-to-all SPPI, the CPI should provide the statistical agency with a useful proxy for the measurement of output prices.

The statistical agency should consider any potential adjustments that may be required before the end use of CPI items in an output index. Particularly the price data may need to be adjusted to

account for a difference in periodicity (CPI prices will tend to be collected on a monthly basis whilst SPPI will tend to be collected quarterly) or any changes in taxes that are included in an input price (for example changes in VAT). It's important to note that there will be a potential bias in this method if the discounting to customers differs between the consumer and business sectors.

5.4 Weights

The weighting and aggregation of a price index is constrained by the availability of reliable data (such as turnover) with which a statistical agency can reasonably create a representative weighting structure. As discussed previously in the paper, there are potentially two main sources of data for reweighting a telecommunications price index. A statistical agency could choose to collect the information directly from the respondent (which is likely to prove burdensome, expensive and untimely) or alternatively a regular source of such data maybe available from the industry regulator (again, this source of data is unlikely to be timely).

For an industry such as the telecommunications industry, where it is recommended that weights are updated on an annual basis, identifying a timely supply of data may prove to be problematic. In reality, a statistical agency is unlikely to be able to update the weighting structure as frequently as recommended. Therefore a decision is required that balances the quality of the price index against the availability of data. This may lead to a telecommunications price index that is reweighted more frequently than the standard approach of every five years, but less frequently than the recommended approach of annually.

5.5 Main issues with price measurement

There are several issues that are particularly pertinent with regards to the SPPI development for the Telecommunication industry, including the scope of the index, bundling and quality adjustment. These issues along with the suggestions on how to address them are discussed below.

- **Business to Business vs Business to all:** As discussed above, one of the most important questions in terms of the scope of the index is whether to calculate Business to Business (B2B) or Business to All (B2All) price indices. Across countries, turnover share generated from services provided to households is higher than that generated from businesses although it varies largely from country to country e.g. in France and Norway, two thirds of the market is due to households, while in Spain approximately half of the market of households represents the turnover (ITU, 2011). According to the European STS Regulation for SPPIs, B2B type of indices were specified, however for deflation of total output, especially for national accounts B2All indices are required. For this reason Eurostat introduced transmission of both SPPI indicators. As a result, a number of countries compile both B2B and B2All index while others produce a B2C (Business to Consumer) index. In other OECD countries, the B2All approach is most common to meet national accounts requirements and international recommendations. The choice of one or the other practice depends on the service activities, the pricing methods used and on the availability of data in business accounts.

- **Bundling:** When measuring the price of a bundle of services, two main alternatives are available to the price index compiler: 1) break down the bundle into separate services and price these separately or 2) price bundled services together as a group. Under the first option, it is important to specify and price each component separately but also to measure the financial or other benefits provided to customers who subscribe bundled services. Financial benefits are relatively easy to be reflected in pricing bundled services; however, pricing the other benefits is complicated. In addition, breaking down the bundles and pricing each sub-component separately will translate into a heavy calculation and response burden. One suggestion to minimize the burden could be to let respondents choose the service bundles that are most representative of their business in terms of revenues and then price the sub-components of these bundles separately.

For the second option, only the prices of the bundled services and their corresponding service specifications are required. Since the underlying services are not priced under this approach, the response and calculation burden is reduced. Keeping the bundles constant over time is a significant concern and two solutions to deal with this issue are apparent: 1) quality adjustment; 2) update the selected bundled services regularly. It should be noted that quality adjustment is also required when pricing the service components of the bundle separately (option 1).

- **Quality adjustment:** Given that telecommunication industry is constantly changing, one of the most challenging aspects is to ensure constant quality is maintained for the price data collected. It is therefore imperative that a statistical agency takes the necessary steps to ensure that the initial price specification is as detailed as possible so that price determining characteristics are identified and fixed and any change in quality is both identified and treated appropriately. Therefore, the statistical agency could ask the respondent a question on the price questionnaire to identify if there has been any change in the service specification since the previous questionnaire. Alternatively the statistical agency could choose to assess movements in price and use this as a potential indicator of changes in service specification. Changes in the price should be further validated with the respondent, to capture the new specification and identify the change in price which is attributable to the change in service. This information can then be used to make an appropriate quality adjustment to the price data. A statistical agency should therefore monitor 'too stable' prices (that is, service prices which have not shown any price change for a number of periods) to ensure that the specification is still representative and the respondent is providing accurate and meaningful price information each period.

A final quality consideration for a telecommunications price index is how and when to introduce new services and omit old services from the index. When using a base-year Laspeyres index, introduction of a new service and weight generation can be difficult, with turnover data sometimes not available for the base year. Equally, non inclusion of new services or continuation of old services can create a bias in the index which can increase with time. The unit value method can partially reduce the need for a quality adjustment methodology as the use of average, weighted prices can accommodate migrations between services within product

classes. However, it is recommended that a statistical agency considers rebasing the product and industry weights on an annual basis.

5.6 Recommended Approaches

The recommended approach in developing a Telecommunication SPPI is summarized in the table below.

Table 3. Options for Developing Telecommunications SPPI

Category	Pricing method	Data type in the survey	Quality and Accuracy
Best	Direct use of repeated services	Transaction prices or prices estimated by the respondent	Advantages: • It can easily identify any potential changes in quality • Low response burden/low cost Disadvantages: • Product specification in the initial collection period needs to be quite detailed to ensure price characteristics are captured
Good	Unit value	Revenue and amount sold	Advantages: • More flexible towards market changes than other methods • It captures price change when services are bundled together • Low response burden/less expensive Disadvantages: • Revenues need to be well-defined to facilitate comparability • Can only be applied if homogeneity is satisfied • Breakdown of data must be kept up to date (quality changes, bundling etc)
	Component pricing – Rate method	Tariff data	Advantages: • Detailed service specification are held constant over a period of time, which allows time-consistent comparison Disadvantages: • High response burden but less expensive than the bill method • Assumes no change in the industry

Minimum	CPI proxy	CPI series/ administrative data	Advantages: • Covers business to all services • Lowest cost • Lowest response burden Disadvantages: • Conceptually different to business to business price indices • Discounts specific to business to business market might not be captured
	Component pricing – Bill method	Bill data	Advantages: • Detailed service specifications allow time-consistent comparisons Disadvantages: • Most expensive with high response burden • The use of one service on the bill may affect the discount of another service on the bill (particularly with bundled services) which would require informed (and unlikely) respondent knowledge

6.0 Summary of main conclusions

Business telecommunications is a very dynamic service industry, which is susceptible to both rapid changes in regulation, technology and customer behaviour. There is a global movement towards communications convergence, which may result in the horizontal integration of telecommunication services with IT services (telephone, computer and television). Another characteristic that has become intrinsic in the telecommunications services is bundling of services where consumers buy multiple products combined in one package. As such, accurately capturing current price changes is particularly challenging for this industry.

In terms of turnover, data can be collected via a survey or through administrative sources depending on the resources of statistical agency in tandem the respondents' burden that will impose. The optimal frequency for the data to be collected is sub-annually and, where possible, data should be collected at industry as well as product level. Particular care should be placed on the definition of turnover to ensure that any revenues generated from non-turnover producing activities are omitted from calculations.

Similar to the turnover figures, prices can be collected from a range of sources, namely surveys, administrative data, using CPI data as a proxy as well as information readily available on the internet. In all cases, an assessment needs to be undertaken to ensure data are fit for purpose, allowing adequate time the data cleaning. There a number of pricing methods used in this industry including component pricing, unit values, direct use of prices of repeated services and CPI proxies. Provided that the prices for telecommunication products can be directly observed and measured, the most appropriate pricing method for telecommunication services is the direct use of prices (unit price, list

price and transaction price). Alternatively, the unit value method or the rate method can be used or a combination of both. The bill method was judged to be the least preferred option for the reasons given in section 5. In selecting the most appropriate pricing method, statistical agencies are required to consider the scope of the index, the handling of bundling services as well as any quality issues.

Finally, due to the constantly changing of the nature of the industry, it is recommended that the service products are reweighted on a more frequent basis, methods that capture the price of bundled services accurately are researched periodically and a suitable quality adjustment method is used.

7.0 References

Camus, B. (2009), "Sector Paper on Industry ISIC 61 Telecommunications", 24th Voorburg group meeting on Services Statistics, Oslo, Norway, 2009, available at:

<http://www.voorburggroup.org/Documents/2009%20Oslo/Papers/2009%20-%2002.pdf>

OECD/Eurostat (2012) Methodological Guide for Developing Producer Price Indices for Services, to be published

OECD (2008), Convergence and next generation networks, available at:

<http://www.oecd.org/sti/40761101.pdf>

Ofcom (2011) International Communications Market Report 2011, available at:

<http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr11/icmr/ICMR2011.pdf>

International Telecommunication Union (2011), Measuring the Information Society 2011,

<http://www.itu.int/net/pressoffice/backgrounders/general/pdf/5.pdf>

Appendix 1 – Overview of international progress

The survey method is the predominant option across the countries that currently produce price indexes for the telecommunications industry as 22 of 25 collect price data through a survey. The majority of the countries employ the direct use of repeated services to collect data whereas only 2 use the unit value. Table A1 presents the pricing method used by the countries which publish a Telecommunications SPPI.

Table A1 - Summary of the Pricing Method for Telecommunications SPPI

Price Method	Number of countries using the method	List of countries using the method
Transaction	9	AUS, DEU, FIN, HKG, JPN, KOR, NOR (probably), CHN, and USA
Unit Price	4	AUT, CAN, ESP, and FRA
Transactions + model pricing	1	CHE
list	4	CZE, POL, SVK, and SVN
Unit value	2	GBR and DNK
List or transaction	4	MEX, NZL, SWE, and ITA
Model/Unit value/list	1	NLD
Total	25	/

The experience of a number of countries in developing a Telecommunications SPPI is provided in more detail below:

In Austria, the data source for the calculation of unit values is the Austrian Regulatory authority for Telecommunications and Broadcasting (RTR). This regulatory authority is obliged to collect quarterly revenue and volume data in the different field of telecommunications. Similarly, in France data are collected through a regulation authority (ARCEP, “Autorité de Régulation des Communications Electroniques et des Postes”) that provides quarterly surveys data by final- customer type. Likewise, in the UK turnover and volume data for the whole market is sourced from the UK communications regulator (Ofcom) providing full coverage.

Similarly, in Germany turnover data is collected through a survey as the regulation authority is prohibited by law to provide the data to the Statistical office.

In Hungary, data for business-to-business transactions are collected via questionnaires which are completed by market-leader companies. The general methodology was developed with the active contribution of respondents and an individual questionnaire for each respondent is produced taking into account the services provided. The survey started in 2007 for fixed line telephony and mobile services, then in 2010 was expanded to include the providers of satellite and other telecommunication services (as a pilot). For the majority of services, the unit value or a combination of unit value and component pricing for well specified services is used to capture price data. For satellite and other telecommunication activities, the contract pricing approach (e.g. for reselling network capacity) and direct use of prices of repeated services are used. Price indices for business-

to-business services are computed and transmitted to Eurostat whilst business-to-all services are under development. For calculation of a business-to-all index, Hungary proposes to use re-processed Consumer Price Index data to capture the business-to-consumer component. The special part of the structured business statistics survey (SBS, Annex VIII) has been expanded so that turnover of sales to consumers along with total turnover is collected.

Japan compiles price indices on telecommunication services including wired/wireless telecommunications and interconnection services for network providers. Indices are focused on business-to-business transactions. For wired telecommunications: "Fixed telephone services," "Leased circuits," "Internet connection services," and "Wide Area Network services", Japan mainly uses the direct use of prices of repeated services and the unit values. For wireless telecommunications: "Cellular phone services and PHS services," Japan uses the model pricing. For interconnection services for network providers: "Access Charges," Japan uses the direct use of prices of repeated services.

In The Netherlands turnover is collected through a mix model combining administrative data and statistical surveys. Statistical surveys are conducted for enterprises with 10 or more employees while tax data is used for the enterprises with less than 10 employees. Data are obtained on a quarterly and annual basis in order to address the European regulation on Short-Term Statistics (STS) and Structural Business Statistics (SBS).

In Norway, the number of enterprises have decreased by 7.5 per cent from 2008-2010 whereas the turnover has increased by 3.4 per cent the same period. From 2009 to 2010, the telecommunication industry has particularly many changes within NACE 61.1 and NACE 61.2, where enterprises move from wired to wireless telecommunication. The result is that turnover in one year may not necessarily be directly comparable to subsequent years on 3 digit level. The effect of this is greater in figures for enterprises than for local KAUs.

Turnover data is based on data from administrative registers for annual data and from Value Added Tax for quarterly data. The turnover is defined as the sum of remuneration for rendering services to customers, sales of merchandise and gross income from other activities; rental income and commissions are included, while special taxes, public grants and profit on the disposal of fixed assets are not. In the telecommunication industry

The UK index for business telecommunications comprises fixed line and mobile telephony services. Fixed line activity is dominated by a single service provider with other suppliers using the infrastructure of the main supplier. UK mobile services are supplied by a small number of evenly sized businesses with their own networks. Other mobile suppliers provide virtual networks by securing airtime from one of the major providers. The UK telecommunication SPPI has not been reviewed or updated in recent years. The index is based on a unit-value method. It is compiled from the aggregation of unit-values defined as the ratio of revenue to volume for each homogeneous group of products. Turnover and volume data for the whole market is sourced from the UK

communications regulator (Ofcom) providing full coverage. The unit-value approach provides a proxy estimate suitable for the telecommunications industry. In addition to minimising bias, it solves the problem of service bundles and escalating tariffs by negating the need to constantly adjust for quality.

Appendix 2 – Overview of industry classification

Industry classification: explanatory notes of ISIC Rev 4

The class 6110 includes:

- operating, maintaining or providing access to facilities for the transmission of voice, data, text, sound and video using a wired telecommunications infrastructure, including:
 - operating and maintaining switching and transmission facilities to provide point-to-point communications via landlines, microwave or a combination of landlines and satellite linkups
 - operating of cable distribution systems (e.g. for distribution of data and television signals)
 - furnishing telegraph and other non-vocal communications using own facilities

The transmission facilities that carry out these activities, may be based on a single technology or a combination of technologies.

This class also includes:

- purchasing access and network capacity from owners and operators of networks and providing telecommunications services using this capacity to businesses and households
- provision of Internet access by the operator of the wired infrastructure

This class excludes:

- *telecommunications resellers, see 6190*

The class 6120 includes:

- operating, maintaining or providing access to facilities for the transmission of voice, data, text, sound, and video using a wireless telecommunications infrastructure
- maintaining and operating paging as well as cellular and other wireless telecommunications networks

The transmission facilities provide omni-directional transmission via airwaves and may be based on a single technology or a combination of technologies.

This class also includes:

- purchasing access and network capacity from owners and operators of networks and providing wireless telecommunications services (except satellite) using this capacity to businesses and households
- provision of Internet access by the operator of the wireless infrastructure

This class excludes:

- *telecommunications resellers, see 6190*

The class 6130 includes:

- operating, maintaining or providing access to facilities for the transmission of voice, data, text, sound and video using a satellite telecommunications infrastructure
- delivery of visual, aural or textual programming received from cable networks, local television stations or radio networks to consumers via direct-to-home satellite systems (The units classified here do not generally originate programming material.)

This class also includes:

- provision of Internet access by the operator of the satellite infrastructure

This class excludes:

- *telecommunications resellers, see 6190*

The class 6190 includes:

- provision of specialized telecommunications applications, such as satellite tracking, communications telemetry, and radar station operations
- operation of satellite terminal stations and associated facilities operationally connected with one or more terrestrial communications systems and capable of transmitting telecommunications to or receiving telecommunications from satellite systems
- provision of Internet access over networks between the client and the ISP not owned or controlled by the ISP, such as dial-up Internet access etc.
- provision of telephone and Internet access in facilities open to the public
- provision of telecommunications services over existing telecom connections:
 - VoIP (Voice Over Internet Protocol) provision
- telecommunications resellers (i.e. purchasing and reselling network capacity without providing additional services)

This class excludes:

- *provision of Internet access by operators of telecommunications infrastructure, see 6110, 6120, 6130*

Industry classification: explanatory notes of NAICS 2007

5171 Wired Telecommunications Carriers

51711 Wired Telecommunications Carriers

517110 Wired Telecommunications Carriers US

This industry comprises establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies. Establishments in this industry use the wired telecommunications network facilities that they operate to provide a variety of services, such as wired telephony services, including VoIP services; wired (cable) audio and video programming distribution; and wired broadband Internet services. By exception, establishments providing satellite television distribution services using facilities and infrastructure that they operate are included in this industry.

Illustrative Examples:

Broadband Internet service providers, wired (e.g. cable, DSL)

Local telephone carriers, wired

Cable television distribution services

Long-distance telephone carriers, wired

Closed circuit television (CCTV) services

VoIP service providers, using own operated wired telecommunications infrastructure

Direct-to-home satellite system (DTH) services

Telecommunications carriers, wired

Satellite television distribution systems

Multichannel multipoint distribution services (MMDS)

Cross-References. Establishments primarily engaged in--

Producing and distributing a channel of television programming for cable or satellite television systems--are classified in Industry 515210, Cable and Other Subscription Programming;

Operating coin-operated pay telephones--are classified in Industry 812990, All Other Personal Services;

Operating and maintaining wireless telecommunications networks--are classified in Industry 517210, Wireless Telecommunications Carriers (except Satellite);

Producing and distributing radio programs for cable or satellite radio systems--are classified in U.S. Industry 515111, Radio Networks;

Reselling telecommunications services (except satellite telecommunications), without operating a network--are classified in U.S. Industry 517911, Telecommunications Resellers;

Publishing telephone directories--are classified in Industry 511140, Directory and Mailing List Publishers;

Reselling satellite telecommunications services--are classified in Industry 517410, Satellite Telecommunications;

Providing Internet access services via client-supplied telecommunications connections (e.g. dial up ISP's)--are classified in U.S. Industry 517919, All Other Telecommunications;

Providing voice over Internet protocol (VoIP) services via client-supplied telecommunications connections--are classified in U.S. Industry 517919, All Other Telecommunications;

Providing limited Internet connectivity at locations known as Internet cafes, in combination with other services such as facsimile services, training, rental of on-site personal computers, games rooms, or food services--are classified in U.S. Industry 561439, Other Business Service Centers (including Copy Shops) or Subsector 722, Food Services and Drinking Places, depending on the primary activity.

5172 Wireless Telecommunications Carriers (except Satellite)

51721 Wireless Telecommunications Carriers (except Satellite)

517210 Wireless Telecommunications Carriers (except Satellite)

This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves. Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular phone services, paging services, wireless Internet access, and wireless video services.

Illustrative Examples:

Cellular telephone services

Wireless Internet service providers, except satellite

Paging services, except satellite

Wireless telephone communications carriers, except satellite

Cross-References. Establishments primarily engaged in--

Operating and maintaining wired telecommunications networks--are classified in Industry 517110, Wired Telecommunications Carriers;

Operating and maintaining satellite networks--are classified in Industry 517410, Satellite Telecommunications;

Providing satellite television distribution services--are classified in Industry 517110, Wired Telecommunications Carriers; and

Operating as mobile virtual network operations (MVNO)--are classified in U.S. Industry 517911,

Telecommunications Resellers.

5174 Satellite Telecommunications

51741 Satellite Telecommunications

517410 Satellite Telecommunications

This industry comprises establishments primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications.

Cross-References.

Establishments primarily engaged in providing direct-to-home satellite television services to individual households or consumers are classified in Industry 517110, Wired Telecommunications Carriers.

5179 Other Telecommunications

51791 Other Telecommunications

This industry comprises establishments primarily engaged in (1) purchasing access and network capacity from owners and operators of telecommunications networks and reselling wired and wireless telecommunications services (except satellite) to businesses and households; (2) providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation; (3) providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems; or (4) providing Internet access services or Voice over Internet protocol (VoIP) services via client-supplied telecommunications connections. Establishments in this industry do not operate as telecommunications carriers. Mobile virtual network operators (MVNO) are included in this industry.

517911 Telecommunications Resellers US

This U.S. industry comprises establishments engaged in purchasing access and network capacity from owners and operators of telecommunications networks and reselling wired and wireless telecommunications services (except satellite) to businesses and households. Establishments in this industry resell telecommunications; they do not operate transmission facilities and infrastructure. Mobile virtual network operators (MVNOs) are included in this industry.

Cross-References. Establishments primarily engaged in--

Operating and maintaining wired telecommunications networks--are classified in Industry 517110,

Wired Telecommunications Carriers;

Operating and maintaining wireless telecommunications networks--are classified in Industry

517210, Wireless Telecommunications Carriers (except Satellite); and

Reselling satellite telecommunications services--are classified in Industry 517410, Satellite Telecommunications.

517919 All Other Telecommunications US

This U.S. industry comprises establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.

Illustrative Examples:

Dial-up Internet service providers

VoIP service providers, using client-supplied telecommunications connections

Internet service providers using client-supplied telecommunications connections (e.g., dial-up ISPs)

Satellite tracking stations

Cross-References. Establishments primarily engaged in--

Providing wired broadband Internet services via own operated telecommunications infrastructure-- are classified in Industry 517110, Wired Telecommunications Carriers;

Providing wired VoIP services via own operated telecommunications infrastructure--are classified in Industry 517110, Wired Telecommunications Carriers;

Providing expert advice in the field of information technology or in integrating communication and computer systems--are classified in Industry 54151, Computer Systems Design and Related Services; and

Providing satellite telecommunications services--are classified in Industry 517410

Industry classification: explanatory notes of ANZSIC 2007

Division J INFORMATION MEDIA AND TELECOMMUNICATIONS

Subdivision 58 TELECOMMUNICATIONS SERVICES

Group 580 TELECOMMUNICATIONS SERVICES

Class 5801 Wired Telecommunications Network Operation

This class consists of units mainly engaged in operating, maintaining or providing access to facilities for the transmission of voice, data, text, sound and video using wired telecommunications networks. Units operate fixed (wired) telecommunications infrastructure, but may also utilise other types of technologies in order to deliver services.

Primary activities

- International telephone network operation (wired)
- Local telephone network operation (wired)
- Long distance telephone network operation (wired)
- Telecommunications network operation (wired)
- Voice Over Internet Protocol (VoIP) Provision (Wired telecommunication-based)

Exclusions/References

Units mainly engaged in

- operating and maintaining switching and transmission facilities that provide omni-directional or point-to point communications via wireless telecommunication networks are included in Class 5802 Other Telecommunications Network Operation;
- reselling telecommunications without operating a network are included in Class 5809 Other Telecommunications Services;
- producing and broadcasting television programs for pay or subscription television networks or stations are included in Class 5622 Cable and Other Subscription Broadcasting;
- publishing telephone directories are included in Class 5414 Directory and Mailing List Publishing; and
- maintaining and installing telecommunications infrastructure are included in Class 3109 Other Heavy and Civil Engineering Construction

Class 5802 Other Telecommunications Network Operations

This class consists of units mainly engaged in operating and maintaining switching and transmission facilities that provide omni-directional or point-to point communications via wireless telecommunication networks.

Transmission facilities may be based on a single technology or a combination of technologies, including communications via airwaves and through satellite systems.

Primary activities

- Mobile telecommunications network operation
- Satellite telecommunications network operation
- Voice Over Internet Protocol (VoIP) Provision (Wireless telecommunications-based)
- Wireless telecommunications network operation

Exclusions/References

Units mainly engaged in

- operating, maintaining or providing access to facilities for the transmission of voice, data, text, sound and video using wired telecommunications networks are included in Class 5801 Wired Telecommunications Network Operation;
- reselling telecommunications without operating a network are included in Class 5809 Other Telecommunications Services;
- broadcasting television programs for pay or subscription television networks or stations are included in Class 5622 Cable and Other Subscription Broadcasting; and
- maintaining and installing telecommunications infrastructure are included in Class 3109 Other Heavy and Civil Engineering Construction.

Class 5809 Other Telecommunications Services

This class consists of units mainly engaged in providing a range of other telecommunication services such as paging services and other specialised telecommunications applications. Also included in this class are units of telecommunications resellers purchasing access and network capacity from telecommunication carriers.

Primary activities

- Paging service
- Satellite earth station operation
- Telecommunications reselling (including satellite systems)

Exclusions/References

Units mainly engaged in

- operating and maintaining transmission networks to provide point-to-point communications are included in Class 5801 Wired Telecommunications Network Operation;
- broadcasting television programs for cable systems are included in Class 5622 Cable and Other Subscription Broadcasting;
- maintaining and installing telecommunications infrastructure are included in Class 3109 Other Heavy and Civil Engineering Construction.

Appendix 3 – Overview of product classification

CPC Version 2 – Explanatory notes

84 Telecommunications, broadcasting and information supply services

841 Telephony and other telecommunications services

8411 Carrier services

84110 Carrier services

This subclass includes:

- operating of wired or wireless facilities to originate, terminate or transit calls for other telecommunications service providers
- charging for interconnection, settlement or termination of domestic or international calls
- charging long-distance carriers for calls originating at a pay phone or within another carriers local network
- charging for jointly used facilities such as pole attachments
- charging for the exclusive use of circuits

317

This subclass does not include:

- carriage of Internet traffic by one ISP for another ISP, cf. 84210

8412 Fixed telephony services

This class includes:

- provision of access to the public switched telephone network for the transmission and switching of voice, data, and video where the call is made from a fixed customer location
- call management services for use from a fixed customer location for a fee separate from the access fee

84121 Fixed telephony services - access and use

This subclass includes:

- provision of access to and use of the public switched telephone network for the transmission and switching of voice, data, and video from a fixed customer location or from public and semipublic coin and card operated phones
- inbound and outbound telephony to and from national and international destinations
- provision of Short Message Service (SMS) and Multimedia Messaging Service (MMS)
- calling features bundled with the access service

This subclass does not include:

- provision of private line services, cf. 84140
- provision of a local loop to other telecommunications service providers, cf. 84110
- renting of terminal equipment, cf. 73125
- provision of calling features for a separate fee, cf. 84122

84122 Fixed telephony services - calling features

This subclass includes:

- provision of call management services (calling features) for use from a fixed customer location for a fee, separate from the access fee. This service is made possible by specialized software and

database applications linked to telecommunications networks. It includes features such as:

- call waiting, call forwarding, caller identification, three-way calling, call display, call return, call screen, call blocking, automatic call-back, call answer, voice mail and voice menus

8413 Mobile telecommunications services

This class includes:

- provision of access to, and use of, switched or non-switched networks for the transmission of voice, data and video where the call originates from or terminates in a portable handset or device, such as cellular and satellite phones, pagers and mobile radios, for example:

- PCS (Personal Communications Services)
- ESMR (Enhanced Specialized Mobile Radio)
- WLAN (Wireless Local Area Network)

- call management services for use from a mobile device for a fee separate from the fee for mobile access

84131 Mobile telecommunications services - access and use

This subclass includes:

- provision of access to, and use of, switched or non-switched networks for the transmission of voice, data, and video where the call originates from or terminates in a portable handset or device, such as cellular, PCS (Personal Communications Services), ESMR (Enhanced Specialized Mobile Radio), and satellite phones; pagers; and mobile radios

318

- calling features bundled with the access service
- wireless telephony and wireless data transmission services

This subclass does not include:

- provision of satellite facilities to originate, terminate or transit calls for another telecommunications service provider, cf. 84110
- provision of calling features for a separate fee, cf. 84132
- provision of satellite facilities for the exclusive use of the customer, cf. 84140
- provision of satellite facilities on a pay-as-you-use basis for the transmission of data to and from fixed locations, cf. 84150
- provision of a connection to the Internet compatible with mobile devices, cf. 8422

84132 Mobile telecommunications services - calling features

This subclass includes:

- provision of call management services (calling features) for use with a portable handset or device for a fee separate from the access fee. This service is made possible by specialized software and database applications linked to telecommunications networks. It includes features such as:

- call waiting, call forwarding, caller identification, three-way calling, call display, call return, call screen, call blocking, automatic call-back, call answer, voice mail and voice menus

8414 Private network services

84140 Private network services

This subclass includes:

- provision of wired or wireless telecommunication links between specified points for the exclusive use of the client

This subclass does not include:

- provision of private links by a telecommunication carrier to a telecommunication service provider, cf. 84110

8415 Data transmission services

84150 Data transmission services

This subclass includes:

- provision of access to wired or wireless facilities and services specifically designed for the efficient transmission of data on a pay-as-you-use basis

This subclass does not include:

- provision of wired or wireless telecommunication links between specified points for the exclusive use of the client, cf. 84140

8419 Other telecommunications services

84190 Other telecommunications services

This subclass includes:

- provision of telecommunications services not elsewhere classified, such as telegraph, telex and audio conferencing bridging services

842 Internet telecommunications services

This group includes:

- carrying of electronic signals (traffic) over the Internet
- providing access to the Internet
- providing telecommunications services on the Internet and similar distributed computer networks that rely on, but are not part of, the normal telecommunications network

8421 Internet backbone services

84210 Internet backbone services

This subclass includes:

- carrier services of Internet traffic by one ISP for another ISP (generally known in the industry as peering and transit charges)

8422 Internet access services

This class includes:

- provision of a direct connection to the Internet, both wired and wireless. The Internet Service Provider (ISP) may also provide free services along with Internet access such as e-mail, space for the customer's web page, tools for simple web page design, chat, security software (virus protection, spyware protection, firewall) and technical support. This service may also include remote access or other types of Internet access and package upgrades such as international roaming and extra e-mail boxes, usually for additional costs to customers.

84221 Narrowband Internet access services

This subclass includes:

- provision of a direct narrowband connection to the Internet, whether wired or wireless. The

Internet Service Provider (ISP) may also provide free services along with Internet access such as e-mail, space for the customer's web page, tools for simple web page design, chat, security software (virus protection, spyware protection, firewall) and technical support. This service may also include remote access or other types of Internet access and package upgrades such as international roaming and extra e-mail boxes, usually at additional cost to customers.

84222 Broadband Internet access services

This subclass includes:

- provision of a direct broadband connection to the Internet, whether wired or wireless. The Internet Service Provider (ISP) may also provide free services along with Internet access such as e-mail, space for the customer's web page, tools for simple web page design, chat, security software (virus protection, spyware protection, firewall) and technical support. This service may also include remote access or other types of Internet access and package upgrades such as international roaming and extra e-mail boxes, usually at additional cost to customers.

8429 Other Internet telecommunications services

84290 Other Internet telecommunications services

This subclass includes:

- provision of telecommunications services over the Internet other than Internet access, such as:
 - fax, telephony, audio conferencing and video conferencing over the Internet

CPA 2008 - Structure and explanatory notes

61.10.1 Data and message transmitting services

This subcategory includes:

- provision of access to and use of the public switched telephone network for the transmission and switching of voice, data, and video from a fixed customer location or from public and semi-public coin and card operated phones
- inbound and outbound telephony to and from national and international destinations
- calling features bundled with the access service

This subcategory excludes:

- provision of fixed telephony calling features for a separate fee, see 61.10.12
- provision of fixed telephony private line services, see 61.10.13
- provision of a local loop to other wired telecommunications service providers, see 61.10.20
- rental of terminal equipment, see 77.39.14

61.10.11 Fixed telephony services - access and use

This subcategory includes:

- provision of call management services for use from a fixed customer location for a fee, separate from the access fee

This service is made possible by specialised software and database applications linked to telecommunications networks. It includes features such as:

- call waiting, call forwarding, caller identification, three-way calling, call display, call return, call screen, call blocking, automatic call-back, call answer, voice mail and voice menus

61.10.12 Fixed telephony services - calling features

This subcategory includes:

- provision of wired telecommunication link(s) between specified points for the exclusive use of the client

This subcategory excludes:

- provision of private links by a telecommunication carrier to a wired telecommunication service provider, see 61.10.20

61.10.13 Private network services for wired telecommunications systems

61.10.2 Carrier services for wired telecommunications

This subcategory includes:

- provision by a telecommunication carrier of wired facilities to originate, terminate, or transit calls for another telecommunications service provider
- charging for interconnection, settlement or termination of domestic or international calls
- charging long-distance carriers for calls originating at a pay phone or within another carriers local network
- charging for jointly used facilities such as pole attachment
- charging for the exclusive use of circuits

This subcategory excludes:

- carriage of wired Internet traffic by one ISP for another ISP, see 61.10.41

61.10.20 Carrier services for wired telecommunications

61.10.3 Data transmission services over wired telecommunications networks

This subcategory includes:

- provision of access to wired facilities and services specifically designed for the efficient transmission of data on a pay-as-you-use basis

This subcategory excludes:

- provision of wired telecommunication link(s) between specified points for the exclusive use of the client, see 61.10.13

61.10.30 Data transmission services over wired telecommunications networks

61.10.4 Wired Internet telecommunications services

16

This subcategory includes:

- carrier services of Internet traffic by one ISP for another ISP (generally known in the industry as peering and transit charges)

61.10.41 Internet backbone services

This subcategory includes:

- provision of a direct wired connection to the Internet at speeds below 256 Kbps. The Internet Service Provider (ISP) may also provide free services along with Internet access such as E-mail, space for the customer's web page, tools for simple web page design, chat, and technical support

This service may also include remote access or other types of Internet access and package upgrades such as international roaming and extra E-mail boxes, usually for additional costs to customers.

61.10.42 Narrow-band Internet access services over wired networks

This subcategory includes:

- provision of a direct wired connection to the Internet at speeds 256 Kbps and higher. The Internet Service Provider (ISP) may also provide free services along with Internet access such as E-mail, space for the customer's web page, tools for simple web page design, chat, and technical support.

This service may also include remote access or other types of Internet access and package upgrades such as international roaming and extra E-mail boxes, usually for additional costs to customers.

61.10.43 Broad-band Internet access services over wired networks

This subcategory includes:

- provision of wired telecommunications services over the Internet other than Internet access

This includes services such as fax, telephony, audio conferencing and video conferencing over the Internet.

61.10.49 Other wired Internet telecommunications services

61.10.5 Home programme distribution services over wired infrastructure

This subcategory includes:

- providing subscriber access to a basic range of programming services via wired infrastructure generally for a monthly fee

This package contains the minimum number of channels available to subscribers, as defined by each cable operator, and must be purchased to obtain any higher-level programming package. Charges for initial connection to the network, or for reconnection to the network, are included here.

61.10.51 Home programme distribution services over wired infrastructure, basic programming package

This subcategory includes:

- providing subscriber programming services via wired infrastructure in addition to those included in the basic package for a fee separate from, and in addition to, the basic monthly fee

This programming service can be provided in bundles determined by the cable operator or by the subscriber.

61.10.52 Home programme distribution services over wired infrastructure, discretionary programming package

This subcategory includes:

- providing subscribers the ability to view a specific program (movie or event) via wired infrastructure from his home for a fee separate from, and in addition to, the monthly fee for basic or discretionary programming packages

61.10.53 Home programme distribution services over wired infrastructure, pay-per-view

61.20.1 Mobile telecommunications services and private network services for wireless telecommunications systems

This subcategory includes:

- provision of access to, and use of, switched or non-switched networks for the transmission of voice, data, and video where the call originates from or terminates into a portable handset or device, such as cellular, PCS (Personal Communications Services), ESMR (Enhanced Specialised Mobile Radio), and satellite phones; pagers; and mobile radios
- calling features bundled with the access service
- provision of Short Message Service (SMS) and Multimedia Messaging Service (MMS)

This subcategory excludes:

17

- provision of mobile calling features for a separate fee, see 61.20.12
- provision of wireless facilities for the exclusive use of the customer, see 61.20.13
- provision of wireless facilities to originate, terminate or transit calls for another telecommunications service provider, see 61.20.20
- provision of wireless facilities on a pay-as-you-use basis for the transmission of data to and from fixed locations, see 61.20.30
- provision of a connection to the Internet compatible with mobile devices, see 61.20.4

61.20.11 Mobile telecommunications services - access and use

This subcategory includes:

- provision of call management services for use with a portable handset or device for a fee separate from the access fee. This service is made possible by specialised software and database applications linked to telecommunications networks

It includes features such as:

- call waiting, call forwarding, caller identification, three-way calling, call display, call return, call screen, call blocking, automatic call-back, call answer, voice mail and voice menus

61.20.12 Mobile telecommunications services - calling features

This subcategory includes:

- provision of wireless telecommunication link(s) between specified points for the exclusive use of the client

This subcategory excludes:

- provision of private links by a wireless telecommunication carrier to a telecommunication service provider, see 61.20.20

61.20.13 Private network services for wireless telecommunications systems

61.20.2 Carrier services for wireless telecommunications

This subcategory includes:

- provision by a telecommunication carrier of wireless facilities to originate, terminate, or transit calls for another telecommunications service provider
- charging for interconnection, settlement or termination of domestic or international calls
- charging long-distance carriers for calls originating at a pay phone or within another carriers local network
- charging for jointly used facilities such as pole attachments
- charging for the exclusive use of circuits

This subcategory excludes:

- carriage of wireless Internet traffic by one ISP for another ISP, see 61.20.4

61.20.20 Carrier services for wireless telecommunications

61.20.3 Data transmission services over wireless telecommunications networks

This subcategory includes:

- provision of access to wireless facilities and services specifically designed for the efficient transmission of data on a pay-as-you-use basis

This subcategory excludes:

- provision of wireless telecommunication link(s) between specified points for the exclusive use of the client, see 61.20.13

61.20.30 Data transmission services over wireless telecommunications networks

61.20.4 Wireless Internet telecommunications services

This subcategory includes:

- provision of a direct wireless connection to the Internet at speeds below 256 Kbps. The Internet Service Provider (ISP) may also provide free services along with Internet access such as E-mail, space for the customer's web page, tools for simple web page design, chat, and technical support.

This service may also include remote access or other types of Internet access and package upgrades such as international roaming and extra E-mail boxes, usually for additional costs to customers.

61.20.41 Narrow-band Internet access services over wireless networks

This subcategory includes:

- provision of a direct wireless connection to the Internet at speeds 256 Kbps and higher. The Internet Service Provider (ISP) may also provide free services along with Internet access such as E-mail, space for the customer's web page, tools for simple web page design, chat, and technical support.

This service may also include remote access or other types of Internet access and package upgrades

18 such as international roaming and extra E-mail boxes, usually for additional costs to customers.

61.20.42 Broad-band Internet access services over wireless networks

This subcategory includes:

- provision of wireless telecommunications services over the Internet other than Internet access
- This includes services such as fax, telephony, audio conferencing and video conferencing over the Internet.

61.20.49 Other wireless Internet telecommunications services

61.20.5 Home programme distribution services over wireless networks

61.20.50 Home programme distribution services over wireless networks

61.30.1 Satellite telecommunications services, except home programme distribution services via satellite

This subcategory includes:

- operating, maintaining or providing access to facilities for the transmission of voice, data, text, sound and video using satellite telecommunications infrastructure

This subcategory also includes:

- provision of Internet access by the operator of the satellite infrastructure

61.30.10 Satellite telecommunications services, except home programme distribution services via satellite

61.30.2 Home programme distribution services via satellite

This subcategory includes:

- providing subscriber access to a basic range of programming services via satellite generally for a monthly fee. This package contains the minimum number of channels available to subscribers, as defined by each satellite operator, and must be purchased to obtain any higher-level programming package. Charges for initial connection or for reconnection are included here.
- providing subscriber programming services via satellite in addition to those included in the basic package for a fee separate from, and in addition to, the basic monthly fee. This programming service can be provided in bundles determined by the cable, satellite or MDS operator, in bundles determined by the subscriber, or a la carte.
- providing subscribers the ability to view a specific program (movie or event) via satellite from his home for a fee separate from, and in addition to, the monthly fee for basic or discretionary programming packages

61.30.20 Home programme distribution services via satellite

61.90.1 Other telecommunications services

This subcategory includes:

- provision of specialised telecommunications applications, such as satellite tracking, communications telemetry, and radar station operations
- operation of satellite terminal stations and associated facilities operationally connected with one or more terrestrial communications systems and capable of transmitting telecommunications to or receiving telecommunications from satellite systems

- provision of Internet access over networks between the client and the ISP not owned or controlled by the ISP, such as dial-up Internet access etc.
- provision of telephone and Internet access in facilities open to the public
- provision of telecommunications services over existing telecom connections:
 - VOIP (Voice Over Internet Protocol) provision
- provision of network capacity without providing additional services
- provision of telecommunications services n.e.c., such as telegraph, telex and audio conferencing bridging services

61.90.10 Other telecommunications services

NAPCS Product List for NAICS 517: Telecom Products

Please note the list is too lengthy to be included in this paper. More details can be found in the link below:

https://www.census.gov/eos/www/napcs/finalized/web_517_final_reformatted_edited_US060509.pdf