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Some Concepts For Information Economy Measurement: ICT and content sectors

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SESSION 4 - Controversies on the New Economy

ABSTRACT

This contribution first aims at clarifying the notion of "Information and Communication Technology" (ICT). It then describes the nature of an "ICT product" as that of a tool used to handle information by electronic means. Therefore, the "ICT sector" could simply be defined as the group of industries primarily engaged in producing ICT products.

The paper also aims at defining "content" as an organised message intended for human beings. Then it defines "content product" as an open to public content that is published over a communication medium. In this definition corpus the content sector is the group of industries that are primarily engaged in the publishing and/or the electronic distribution of content products.

Using a service description matrix, it verifies the definition and classification consistencies. In view of classification revisions, it presents a proposal relating to a detailed classification of content industries.

From this conceptual work it suggests CPC and ISIC classifications now must clearly mark the limits between ICT and content products, between ICT and content industries. For this purpose it is important: - not to confuse electronic tools used to handle information and information subject to electronic handling - not to confuse information as an electronic signal and information as a message - not to confuse a message and what the message is about;

- to remember the value of a content product does not lie in its tangible qualities but in its information, educational, cultural and entertainment content - i.e. to remember "content" is the central characteristics of a "content product", not the medium on which content is available.

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I. INTRODUCTION

1. The rapid growth and development of the information and communication technologies has led to their wider diffusion and application, and consequently increased their economic and social impact across countries. So, the widening use of ICT and the upsurge of the Internet have interacted to accelerate the natural evolution of the economy and society during the last decade. But the burgeoning use of the Internet also led to a new perception of these ongoing transformations. Now, it is widely acknowledged that tomorrow's economy will be, to a great extent an "information economy" and society will be increasingly an "information society". That is, information will contribute a great part of the value added of most goods and services and information intensive activities will increasingly characterise households and citizens.
2. In symbiosis with the UN recognised Voorburg group, the OECD Working Party for Indicators on Information Society (WPIIS) has discussed and developed all sorts of concepts and indicators relating to the supply chain for information economy. Some proved not being successful or not feasible, others emerged as promising. With this additional experience, statisticians now have a better view of "information economy" outline and features. For example, they now have sufficient background to conduct revision of economic activity classifications that integrate industry transformations resulting from the ICT rapid growth.
3. In this context, national accountants face new challenges such as: measuring ICT impacts on the overall economy or measuring the development of information economy. But, before measuring objects, it would be common sense to define what they are, i.e. to set up operational and internationally agreed definitions of objects subject to measurement.
4. The purpose of this paper is to present some promising definitions and concepts related to the scope and measuring of "information economy". It actually focuses on defining concepts such as "technology convergence", "Information and Communication Technology" (ICT), "ICT product", "ICT sector", "content", "content product" and "content sector". From discussions on definitions related to ICT and content, it also suggests principles and guidelines to be followed in the coming revisions of CPC and ISIC¹.

II. SOME EMERGING CONCEPTS

5. **The convergence concept.** Convergence arises from the widening adoption of digital technologies by electronic industries during the 1980's. While transforming any electronic information into standardised packets of binary signals, digital techniques brought possibility to process sounds, images, texts and computer software by use of the same electronic means. With the adoption of digital techniques, it was then possible to build wide bridges between different electronic applications that were previously isolated from one another.
6. **The ICT product concept.** So, to understand the very notion of ICT, convergence is the word. Since that technical swing towards digital technologies, all electronic applications could be seen as different products of one unified technology i.e. "Information and Communication Technology". One early example of ICT convergence is the crossing of photocopy machine and telephone, leading to the creation of fax. But the most spectacular achievement in this area is convergence of computer and telephone that resulted in the upsurge of the Internet.
7. **The ICT sector concept.** This is how, the ever widening use of digital technology triggered a powerful momentum, leading to some technical convergence of industries such as: electronic equipment (components, instruments, control systems, radio-TV equipment), computer (hardware

¹ Note this paper is a synthesis of two companion papers presented at the last Voorburg Group meeting in Örebro (see bibliography). It uses material from documents previously presented to WPIIS with Fred Gault and Daniel April from Statistics Canada.

and software), telecommunication (equipment and services). Once this new evolution became visible, it then gave ground to a new perception according which, industries primarily engaged in the production of ICT products now represent a rather homogeneous group of close industries. At that stage, observers were ready to develop the concept of "ICT sector".

But convergence is not the word for every development in information economy. Regrettably, convergence is often seen where it doesn't occur. To support this view, let us remark ICT convergence is a technical convergence which primarily impacts production processes in a very limited number of industries. In addition, such a technical convergence doesn't mechanically imply market convergence for products that have been produced using converging technologies; nor does it imply convergence of the whole business centred over each such product. So, while convergence of computing and telecommunication activities is not questionable, convergence of those with content activities has not been observed yet. Producing, publishing and distributing television programs is not the same profession as producing and selling telephony services.

8. **The content product concept.** Up to recent years, a book was a book, a music record was a music record and a movie was a movie. But, thanks to the development of ICT applications, the text and images of a book now can be published over a variety of media such as printed book, cassette, CD-ROM, e-book, floppy disk or the publisher's web site. The same also applies to music recordings, image banks, films information banks, that are now available on all kinds of media (electronic and non electronic).

This is how the widening use of ICTs and the Internet highlighted there is a special category of products, the value of which does not lie in their tangible qualities but in their information, educational, cultural or entertainment content. For example, unlike other goods, the core value of a newspaper copy does not derive from its physical qualities but from its content. This means the central characteristics of such a "content product" is its "content", whereas medium on which content is available is a peripheral characteristics that corresponds to content packaging.

9. **The content sector concept.** In the meantime, a new perception developed according which, content publishing activities now share strong and common features that justify to group related industries in one homogeneous sector, distinct from the goods-producing and the service-producing sectors. It is the same new perception which led North American statisticians to propose a new industry structure for information, when building the NAICS. Actually, the content notion even appeared earlier: when CPC defined "on-line information provision services" (see annex 2). However, it would not be relevant to refer to convergence of content industries because there is no evidence of such process in this group of industries at present.

10. **The information economy concept.** Technical inventions and mass diffusion of new products constitute one most powerful factor of the overall economic and social transformation. Bearing in mind the development of information society would be initiated and fuelled by the supply of new ICT and content products, economic activities focusing on these products look more and more of special interest. In line with the approach followed by the OECD Working Party On Indicators for Information Society, it is therefore suggested to consider the scope of "Information economy" corresponds to that of ICT products and content products.

Or else: the information economy industry base corresponds to the addition of ICT and content sectors. This leads to describe the information economy supply side along the following framework:

ICT Sector + Content Sector = Information Economy Sector :

ICT manufacturing + ICT services = ICT sector ;

ICT manufacturing + ICT services + content sector = information economy sector ;

ICT services + content sector = NAICS information sector.

III DEFINING ICT PRODUCTS AND ICT SECTOR

11. Ideally, the scope of IC technologies should be defined as that of ICT products and an ICT industry should be defined as an industry primarily engaged in the production of an ICT product. For practical reasons the OECD experts group could not rapidly extract a list of such products from the ageing CPC. Therefore the group decided to approximate ICT scope in defining the "ICT sector" as the list of (ISIC REV/3) industries that support the electronic display, processing, storage and transmission of information.

The actual list was endorsed by the OECD in September 1998 (see annex 1). So defined, the ICT sector gathers three groups of industries:

- electronic equipment manufacturing (components, radio-TV equipment, instruments, control systems);
- telecommunications (services and equipment manufacturing);
- computers (hardware manufacturing, software and services).

12. Since then, much material and experience have been accumulated. Today we are in sight of CPC and ISIC revisions and we now have sufficient background to achieve more rigorous definitions of ICT products, ICT industries and ICT sector. Here is a possible set of definitions.

13. For ICT product definition, two alternative but non exclusive wordings can be proposed :

1 - An ICT product is an instrument that supports the electronic display, processing, storage and transmission of information.

2 - An ICT product is an instrument that enables the user to make use of electricity as an information vector.

Both definitions highlight the intrinsic nature of an ICT product is that of an electronic tool with which it is possible to handle a special kind of **object**, information. This difference in nature between a **tool** and the **material handled with the tool** explains why the ICT sector does not include content industries such as: the press, book publishing, music record production, cinema, video cassette recording, radio and TV services, etc. Content industries do not produce tools to used to handle information but contents that may be subject to electronic handling.

For example television industry produces programmes (contents) that are electronically transmitted and displayed using ICT instruments (transmitters and TV sets); similarly, the on-line version of a newspaper is not an electronic instrument used to handle information, but a content stored in a computer hard disk and transmitted by telecommunication channels.

14. From such definitions of an ICT product it is quite natural to derive the following definitions:

An ICT industry is an industry that gathers businesses that are primarily engaged in the production of ICT products.

Similarly a review of the ICT sector definition could lead to the following wording:

The ICT sector is the group of industries that are primarily engaged in the production or the distribution of ICT products.

15. **Remarks.** E-commerce has been identified by the OECD as a new form of sale which has some common features with mail-order sale and with sale from automated vending machines (see annex 2). As such, e-commerce is not an ICT product, nor is it an ICT industry.
16. Next CPC version will have to set a comprehensive list of ICT product items that only gather ICT products and cover the whole scope of ICT products. Similarly, next ISIC version will have to define purest possible ICT industries.

IV. DEFINING CONTENT

17. The first difficulty while defining information economy concepts, is the many meanings given to the word "information". Despite its permanent use, its meaning varies according to user and situation. For a telecommunication engineer at work, "information" is any electronic signal that circulates through a telecommunication channel; an electronics technician has the same understanding of this word. For a computer engineer, "information" may also mean "bit", unless it means data or ANSI symbol.

In daily life situations, "information" can be understood as : - content of an information service - knowledge - facts - explanation - communication campaign - intelligence - a piece of information - news - commercial information - notification - propaganda - advertisement - announcement – inquiry – advice and so on. Unfortunately, behind these many expressions there are still two basic and exclusive meanings given to this word. Information may either be understood as an electronic signal or as a message. Therefore the word "information" still raises an issue, since it is a very ambiguous and misleading word to use. This is why using the concept of content may bring some clarification and terminology improvement.

18. Basically, content may be a text, a sound (music or a speaking person), an image (fixed or animated), any combination or series of these. It can formally be defined as follows :

content is an organised message intended for human beings.

For example, content may be the text of a novel or a speech, a photograph or a painting, music, information stored in a database, a film scenario, a lesson in mathematics, text and images of a weather forecast web site - medical or legal advice, a talk, news, a balance sheet, a technical study and so on.

In terms, the very notion of message assumes content is somewhat organised, it is legible and it makes sense to human beings. On contrary, a meaningless series of letters, sentences without syntax, a blurred image on a TV screen or the noise of car engine are not messages but shapeless sequences of signals.

19. Let's remark that, up to the invention of writing content only was oral content. This means, during prehistory content was perishable, not stored on a physical medium and therefore not memorised.
20. This definition of content also highlights it is important to bear in mind the crucial difference between a message and what the message is about. For example, a television report on a war event is acceptable as content since it consists of comments, interviews sounds and images destined to viewers; still, a war event is not content. Similarly, an horse race programme or article clearly are contents whereas the corresponding horse race entertainment isn't. Therefore, this basic difference between a message and its subject explains why live sports events and circus entertainment do not lie in the scope of content; only reports, films and broadcasting about those can be identified as content.
21. So content corresponds to one of both basic and exclusive meanings given to the word "information": - a message. Despite that restriction, content still remains a broad concept. In addition, content so far is an abstract concept which is not subject to measurement. The problem is statisticians are required to provide a tangible content definition.

V. DEFINING CONTENT PRODUCTS

22. A "content product" corresponds to content delivering items such as: a printed book, a film, an album on CD, an encyclopaedia on CD or on-line, a tutorial on CD or on-line, a play on television, a radio programme, an on-line/ on-print mail order catalogue, a newspaper copy or its electronic version, an on-line weather forecast information service, a video game on CD or on-line, a music or film download service, an open to public on-line database service... It can be formally defined as follows:

A content product is an open to public content that is published over a communication medium.

Actually, this compact definition reflects a "content product" must meet six nested criteria to be qualified as such. But, besides providing an operational definition for a "content product", these criteria can also be used to sort and classify all types of objects included in the information society domain. These characteristics of a "content product" are now to be presented.

23. It is an organised message intended for human beings.

This first characteristics simply means common sense that is, a content product must have content. Incidentally, this criterion also reflects the dividing line between information as an electronic signal and information as a message.

24. This basic feature of a content product confirms computer software are ICT products, not content products. First they are intended for a machine, not for a human being. Secondly, they correspond to organised sets of binary electronic signals not to organised messages.

Thus, despite their similar physical features, a software CD-ROM and an encyclopaedia CD-ROM are objects of different nature. In the first case, the digital disk is used to store a software (an ICT product), in the second case, the digital disk is used to store text and pictures of an encyclopaedia (a content).

More generally, this criterion separates ICT products from other information economy products. It separates electronic tools used to handle information from products, the value of which, "lies in their information, cultural, educational and entertainment content".

25. Its content must be combined with a medium.

This characteristics reflects the dividing line between oral content and memorised content. It means a content product must be stored on a physical medium to be qualified as such. As a fact, content must be stored on a physical medium to be a non perishable content and become a tangible item. For example, the text of a novel becomes a manuscript when written on paper or entered in a PC; a music work is a memorised and long-lived content only if it is written on a score, recorded on a CD or stored on a web site. Similarly, a film scenario becomes tangible item when inlayed on a plastic film or recorded on a video cassette.

On the opposite, a face to face conversation, the performance of a play in a theatre, a concert, a tutorial in a classroom setting, a telephone conversation, a medical consultation in a doctor's office and a speech at a political rally are live events that deliver oral and short-lived messages. As such they cannot be recognised as content products. So to say, these live events correspond to contents without physical medium.

26. It results from an organised production activity.

Here the dividing line is between produced and non produced content items. This characteristics reflects a trivial observation: as any other product, a content product must be produced. Nevertheless, in the context of content this observation operates a real distinction because there are two major sources of content creation. Some content items result from human spontaneous activity (spontaneous content), others from an implicit or explicit production activity, resulting in value creation (produced content). For example, a recorded speech, a child drawing, a private letter, a garage band recording, a family photograph, a non-professional video or an email all correspond to message items that are not produced. As such these items are not identified outputs and cannot be recognised as content products.

On contrary, a piece of art, a manuscript, a financial report and a radio programme are all message items that are derived from some kind of organised economic activity. Hence, this characteristics means a content product must belong to the economic sphere to be qualified as such. However, non produced content items (letters, emails...) still have sizeable economic and social impacts. Their measurement is not to be implemented by means of business statistics but by means of social surveys or ICT usage surveys.

27. Its diffusion is not restricted to a limited list of privileged recipients.

This characteristics reflects the dividing line between restricted diffusion and open to public contents. As a fact, some messages are intended for one person or a short list of duly named individuals; others are open to public messages that are intended for anyone interested. A

technical study, a bank statement, a legal advice memorandum, a meeting minutes document produced by a stenotypist, a consultant report and a police report are all intended for the only agent who has ordered them. At least such content items subject to restricted diffusion are not meant to be published by the agent who has produced them.

On the opposite, the daily print of a newspaper, an online database service, a painting exhibited in a museum, a music download service, a film on video tape or DVD, a telephone directory available on-line, a television programme, a language method on books and cassettes deliver an open to public content which is meant to be published. Hence, this criterion means a content product must deliver an open to public content to be qualified as such.

28. Its content is a standardised message disseminated by means of a communication medium.

This characteristics reflects the dividing line between unique and series products, between unique and large scale diffusion contents. In the world of physical objects, there are prototypes, custom made or handmade unique pieces, as well as standardised products produced in large quantities. This distinction also applies to the domain of content. A novel manuscript or an original score of a music composition are both original message products, that in terms, correspond to prototypes. Mona Lisa, a consultant's report, a non distributed film, most of photographs and satellite images and all other unpublished content products are produced in only one copy or a very small number.

A printed book, a newspaper copy, a CD-ROM tutorial, a music record, a television programme or the download copy of a film are standardised products that deliver exactly identical content to the largest possible number of recipients. But, the large diffusion of a content requires to combine it with a special type of medium, that is a communication medium. As shown by books, magazines, records, films, audio/video cassettes, cinemas, magnetic or digital compact disks and Internet sites, "communication media" are particularly suitable to disseminate open to public contents and achieve mass diffusion. Finally, this criteria means a content product is a standardised product designed for large scale diffusion of content.

29. A content product must be published.

This criterion simply means an unpublished content product is like an unborn baby. But, besides this common sense remark, it also means the large scale release of a content product requires an ultimate business process: publishing. Here the word "publishing" is understood in a broader meaning that includes content distribution to public, other than trade. The reason for this is business processes similar to traditional publishing may have different names and different modalities in different content industries. Actually, the combination of a content with a communication medium is not a natural operation going along with content creation.

As regards original content items (writing a letter, an e-mail, a novel, or a report, painting, picture taking, film scenario or music composing), combining content with medium is a natural operation which is jointly conducted with content creation. By contrast, the large scale combination of an open to public content with a communication medium is a neither easy nor spontaneous operation (book printing and publishing, album recording and producing, production - scheduling - distribution of TV programme). This requires the intervention of a special agent, the publisher. In addition, beyond technical aspects, combining a content with a communication medium requires the publisher to take on other publishing business processes such as content editing, marketing of the content product, legal and commercial risks.

REMARKS

30. As above defined, content products are standardised crude products, the only utility of which is the delivery of an "open to public" content and nothing else. Broader services offering content delivery as one possibility in a larger functionality package are to be identified as value-added services not as content products.

31. An on line bank statement looks as the combination of a message intended for a human being combined with an electronic communication medium. Yet it is not a content product because it is not meant to be published. A bank statement is intended to the only owner of the bank account, its content is not open to public. The actual nature of such a bank statement delivery service is

therefore that of a customised bank service which is provided through the Internet or a computerised-telephone.

32. A private Internet letter or an organisation email restricted to personnel is not a content product. Despite being stored on an electronic communication medium, these messages still are intended for an explicitly limited list of names. Secondly, these emails are not intended to be published. Thirdly, both private letters and internal notices are not identified as economic outputs, they correspond to "spontaneous contents" resulting from human beings' private or professional activity. So the increasing use of emails can be interpreted as an ICT impact on the Economy and Society, occurring through emerging new practices and uses. Information society statisticians are well advised to measure the development of email practices, but not by means of production statistics.

33. Paradoxically, advertising services provided by advertising agencies are not content products. While there is no doubt advertising material such as films, recorded messages and advertising posters are content products, these also are components of a custom made service purchased by an advertiser from an advertising agency. In other words, these advertising materials only are inputs integrated into a broader service supplied by the agency, which actually is a "communication consultant" delivering its service to a specific advertiser.

At that stage, it may be useful to remember the advertiser holds the crucial part in an advertising campaign. The advertiser is the agent who orders the whole campaign, takes the initiative, bears its commercial risk and purchases any advertising agency service as an input integrated in its own product.

34. A telephone conversation is not a content product. First, the conversation is a spontaneous content that has not been produced. Secondly the content of a telephone conversation is not an open to public content and it is generally not meant to be published by the telephone company or by anyone of both telephone users. Thirdly, even if telephone users use this instrument to convey content, the service they buy from the telephone company is a telecommunication service that is : a duplex communication service between two identified users that are connected by means of a switched telecommunication network.

Similarly contents conveyed through the Internet is not a content product. Internet access provision is nothing but telecommunication service even if users use the Internet to convey content. This means telecommunication operators are not content publishers; they are not primarily engaged in the publishing of content products.

35. Let's remind the value of a content products to the consumer does not lie in their tangible qualities but in their information, educational, cultural or entertainment content. This means content is the central characteristics of a content product, whereas medium on which content is available is a peripheral characteristic. So to say, medium represents content packaging. This is why it is not justified to gather services available over the Internet in a "telecommunication service" category. The reason is: services available over the Internet medium have totally different functionality.

For example, an on-line version of a newspaper, a music download web site, an on-line travel agency, a virtual market place, on-line video games, chats or email meet completely different needs and therefore are services of totally different nature. Hence there is no reason to group producers of such services in one telecommunication industry should it be named "Internet services".

For similar reasons, a computer software, an encyclopaedia, a tutorial, a video game or a music album on CD are products of different natures. Their storage on the CD-ROM is not sufficient to justify the opposite. Symmetrically, a television programme available on cable, satellite or traditional medium still is a television programme.

VI. From content products to content sector

36. Before defining the content sector, i.e. the group of enterprises primarily concerned, it is reminded that, from now, only the content products which fulfil the six preceding criteria, in other words, the content products published and disseminated on a mass medium, will be taken into consideration.
37. The examples of such products shown on the "content mapping" can be grouped into two categories: a content product widely disseminated can come as the identical reproduction of a given master copy; then, the consumer will have access to an **individual** copy of the content, a book or a disk, for example; the second one comes as the diffusion of a **unique** radio or television programme to a large number of listeners or viewers.
38. To gather within the same group all actors involved in these two distribution modes, the word "publish" used in the sixth criterion must be understood in a broader meaning. Making content available to public which means: - publishing and/or distributing it, when it is an individual content product; - producing and/or disseminating it, when it is a broadcast programme.
39. Within the overall content processing from author to consumer, there are two crucial business processes: **publishing and distribution**. Other supporting activities along this processing chain such as master reproducing and television programme transmission only are technical processes.
40. These crucial functions are **complementary**. Both contribute to the selection of content to be later delivered to public. The publisher selects what may be of interest to public from the vast amount of created content or informational raw materials. In many cases, the distributor also makes selections from published content. The first one is in close relation with creators and authors, the second one with clientele, readership or audience. The publisher takes a financial risk when marketing product but this risk is often shared with the distributor through various contractual arrangements. Of course, the same agent may take the publishing and distribution activities in charge.

A broad definition

41. Based on the previous notions, the broader definition of the content sector is "the group of ISIC industries primarily engaged in **the publishing and/or the distribution** of content products".
42. Texts "publishing" are carried out by a traditional publisher, "publishing" of disks, movies and audio-visual programmes or data banks by a producer. A common feature to these various professions is that « *they set interface between content creators and an uncertain market demanding continued novelties* »². The "publishing" process does not consist in the sole combination of the original content with a dissemination medium that would result in a ready-to-consume plain product. The "publisher" always faces a specific commercial risk: for example, the production of a film that has been financed but never shown.
43. Similarly, in the content sector, « distribution » does not only mean trade. So, « distribution » of a content product can be carried out by a book-shop, a record-shop, a cinema theatre, a radio-TV station, a news agency, a database publisher... a videocassettes renting shop or a library.

In terms, the above-mentioned Lacroix and Tremblay article stipulates that content consumption « *is more a matter of **access and sharing** than of material **appropriation*** ».

Beyond purchase of content products, diffusion of programmes, distribution of films, content can also be accessed by means of renting and lending.

² From "The institutionalization of Cultural Commodification : Logics and Strategies". LACROIX and TREMBLAY - Current Sociology Volume 45 Number 4. October 1997.

44. The list of industries that correspond to the above definition is in annex.

The content sector definition

45. It is often acknowledged that the major phenomenon induced by the dramatic development of electronic communication lies in **new forms of distribution and delivery**. Content products are on the front line in so far as they can be put in electronic format and conveyed through networks without incurring the logistic costs of physical distribution. Thus, a special attention has to be paid to distribution and delivery modes.

46. Crossing the distribution mode and the delivery mode leads to a typology of content products allowing for customer's use. In the table hereafter, the distribution mode is broken down according with "trade" which results for the customer in a possibility of replay without restriction, "rent" which provides him with a restricted possibility of replay, the duration of which being limited in time. "Viewing" or "listening" excludes the replay except though free private copy. A main difference between "trade", "rent" on one side, and "viewing" or "listening" on the other one, is that the first are services **on demand** from consumer, the latter being **scheduled** by the service provider. In the former case, the consumer can choose from a **catalogue**; in the latter, its ability to choose is restricted by the provider **programming**.

The delivery may be "physical" which implies a physical move of the provider, the consumer, or the product through post mailing for example; it is "electronic" when the delivery of the product is on line or broadcast.

Distribution services according to their nature and their delivery mode

Distribution mode/ <i>Delivery mode</i>	On demand		On supply
	Sale	Rent & exhibition	Scheduled Exhibition
<i>Physical</i>	Purchase in a store	Video cassette renting...	Cinema
<i>Electronic</i>	Commercial permanent download	PPV, VOD, Commercial temporary download or streaming	TV channels & Radio stations

47. A doubled line divides "on demand" and "on supply" scheduled services: a cinema TV channel which only broadcasts movies is not a VOD or a PPV service; the first one is an alternative to another TV programme while the second can be considered as a form of renting.

Once more, here is the duality between the distribution of individual copies to consumers and the simultaneous diffusion of the same programme to a large number of receivers.

48. Then the content sector can be defined as "the group of ISIC industries primarily engaged in **the publishing and/or the electronic distribution** of content products."

This economic definition implies that the "electronic/non electronic" or "digital/non digital" format is not a main characteristics of the content product, but only a characteristics of its delivery mode.

The exclusion of trade

49. The discrepancy between the broad definition of the content sector and the narrow one stated above, corresponds to the exclusion of usual trade activities from the latter. This remark suggests a look at classification rules.

If content is recorded on a physical medium, in electronic form or not, digitalized form or not, **it is a good** and its distribution is in most cases a trade activity³. But, when content is directly distributed by means of an electronic medium, whether delivered on-line or broadcast, it becomes **a non-physical product**, i.e. a service. Then, a basic rule of classification is **trade** only deals with goods.

A corollary is that distribution of a service product is not classified within trade industry but close to the industry from which the distributed service originates: this is why cinema exhibition has never been classified as a trade but as a service adjacent to cinema production.

Consequently, distributing CDs or cassettes is trade, distributing subscriptions to a pay-TV channel or to an information service is a distribution service which have to be respectively classified in the audio-visual sector and in the database sector.

In conclusion, the proposal of grouping industries primarily engaged in publishing services together with their distributors is consistent with present classification principles.

50. The list of industries that correspond to the above definition is in annex.

VII. The Content Sector and the Information Sector

The Content Sector and classification revision

51. Having in mind the future classification revision, the following list is a first attempt to update and reorganize the list of "industries primarily engaged in **the publishing and/or the electronic distribution** of content products" which has been proposed above.

XX Content sector

XXX Publishing Industries

- XXXX Newspaper Publishers (including newspaper on line publishing)
- XXXX Periodical Publishers (including on line publishing)
- XXXX Book Publishers (including on line publishing)
- XXXX Other Publishers (including the corresponding on line publishing)

XXX Video Games Production (including animated pictures production)

XXX Motion Picture and Video Industries

- XXXX Motion Picture and Video Production
- XXXX Motion Picture and Video Distribution
- XXXX Supporting industries
- XXXX Motion Picture and Video Exhibition

XXX Sound Recording Industries and Radio Services

- XXXX Record Production
- XXXX Music Publishers (including on line publishing)
- XXXX Sound Recording Studios
- XXXX Radio Broadcasting
- XXXX On line Music Providing

³ With some exceptions, as is in France, the case of press products which are "disseminated" and not commercialized.

XXX Broadcasting and Distribution of audio-visual services
XXXX Television Broadcasting
XXXX Channel publishing
XXXX Distribution of audio-visual services (scheduled and on demand services)

XXX Information services
XXXX On line Information Providing
XXXX News Agencies

XXX Supporting industries
XXXX Printing
XXXX Reproduction of Recorded Media
XXXX Photo Laboratories

52. Among the seven proposed sub-sectors, only one, video games production, provides contents of a new kind, often called "interactive" or "multimedia" content. All others are mainly concerned by the impact of new technologies on their processes. As far as content is concerned, the most important impact is the possibility of combination with various dissemination media, which implies the creation of new distribution classes.
53. New content products have been systematically filed according to the type of content delivered and not according to the type of supporting medium. Here is a fundamental issue: whether electronic or not, digitalized or not, on line or not, a newspaper, a magazine... remains a newspaper, a magazine... In a similar way, a radio station or a TV channel either broadcast on satellite, cable... or delivered on line remains a radio or a TV service.
54. At present, many new content product markets are far from having reached the critical size for justifying the creation of a corresponding industry. In terms of revision, the consequence is that it is sufficient to update explanatory notes of the industrial classification and update product classification.
55. Sound recording industries were joined together with Radio Services. The reality is that music is the first content provider of radio broadcasters and, symmetrically, that radio broadcasting is the first distributor of music, in terms of volume. Such a grouping strayed away from gathering together music and cinema as it can be suggested by the integrated structure of the Majors. But the economy of radio has no links with the economy of the other components of the audio-visual sector (television, cinema and video). Also markets are quite different: the music market can be considered now as globalized at a world level though the other audio-visual markets are far from being so with, in many countries, a significant independent production industry.

The NAICS Information Sector

56. It was in 1997, at the Voorburg Group meeting in Copenhagen, that the US Census Bureau presented the reasons and the principles leading to the creation of an information sector in the new North American Industry Classification System (NAICS).⁴
57. Among the reasons⁵ for such an innovation, it was stated that *"the unique characteristics of information and cultural products, and of the processes involved in their production and distribution, justify the creation of an Information sector, distinct from the goods-producing and service-producing sectors"*.
58. One of these characteristics is that *"the value of these products to the consumer does not lie in their tangible qualities but in their information, educational, cultural or entertainment **content**"*.

⁴ Measuring the Information Sector in Census Bureau Programs - Thomas E. Zabelsky - U.S. Bureau of the Census (Copenhagen; 1997).

⁵ NAICS Structure - Agreement Number 18 - Part VIII--Proposed New Industry Structure for Information (1995).

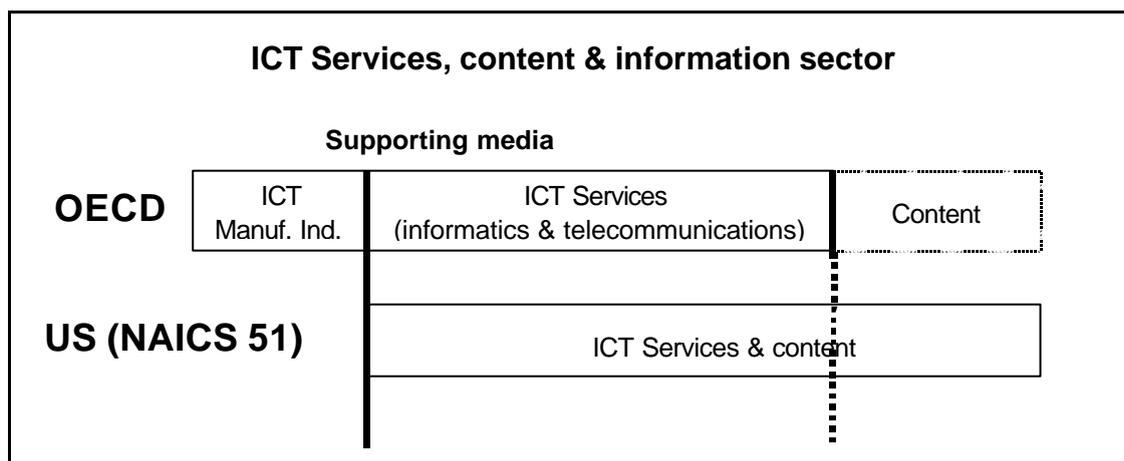
Then the information sector is defined as the grouping of *"three types of establishments: those engaged in producing, manipulating and distributing information and cultural products; those that provide the means to transmit or distribute these products as well as data or communications; and those that process data or transactions"*.

59. The so defined sector groups publishing including software publishing, motion picture and sound recording, broadcasting and telecommunications, information services (news agencies, libraries and archives) and data and transaction processing. A new "Internet publishing and broadcasting" sub-sector will be created when revising NAICS (2002).

60. Though motivations and arguments developed by information sector authors are very similar to the rationale stated in favour of the creation of a content sector, the definitions in terms of industry list are quite different: so, the main sub-sector within NAICS division 51 is telecommunications, which is primarily engaged in the provision of switched duplex services. The commercial value of telecommunication services to user lies in their connection provisions not in conveyed content.

With regard to the WPIIS content/medium approach, telecommunication services actually correspond to electronic medium, not to content: this is why telecommunication industry has been included in ICT sector.

Nevertheless, the chart below shows matching possibilities since content services and ICT services add up to the NAICS information sector.



61. Though bridges can be built between these two approaches at the highest aggregated level, some real issues are raised at lower levels:

- are video games and CD-ROM encyclopaedia to be identified as software (ICT services) or as interactive content products?

- is a cable TV distributor primarily engaged in the distribution of telecommunication services (ICT services) or in the provision of audio-visual services (content products)?

- is any database producer a content publisher?

62. Answers to these questions may differ whether it is considered that technology, i.e. infrastructure, or content prevails.

Conclusion

63. The WPIIS work, approach and findings relied upon the analysis according which economic activity focuses on products and needs they fulfil. While new products appear, new uses and new markets develop. When a new market become sizeable market, ground is there for business specialisation, involving the development of a specific activity with specific qualifications, i.e. a specific industry.

So this analysis confirms **the determinant factor that brings an industry into being is the market** not production factor combination. This means an industry classification is to be designed in reference with the market not production process. **Hence it is still justified to articulate future industry classifications on product classifications.** Naturally, building an industry classification in reference with the market requires to recognise the core business activity of each industry identified by the classification. In support to this approach, let us remark most business associations generally gather businesses operating on the same market. NACE and other industry classifications are economic classifications, not technical or social classifications.

Bibliography

Measuring the Information Sector in Census Bureau Programs - Thomas E. Zabelsky - U.S. Bureau of the Census (Copenhagen; 1997.)

Towards Indicators of Electronic Content: A Discussion Paper. Fred Gault, Jean-Marie Nivlet. August 1999.

The Content Sector: Outline and Features. F. Gault, J.M. Nivlet, D. April, M. Aufrant. DSTI/ICCP/IIS (2001)5 - 9-Apr-2001.

Content is not king. Andrew ODLYZKO. http://firstmonday.org/issues/issue6_2/odlyzko/index.html

International Standard Industrial Classification of all Economic Activities. United Nations. Statistical papers Series M n° 4, Rev.3. New-York, 1990.

Central Product Classification (CPC) Version 1.0. United Nations. Statistical papers Series M n° 77, Ver. 1.0. New-York, 1998.

Some Grass Roots Concepts to Describe and Measure Information Economy Marc Aufrant - Voorburg Group on Services Statistics - 16th meeting - Örebro - 17-21 September, 2001.

Industry Classification Revision and the Content Sector. Jean-Marie Nivlet - Voorburg Group on Services Statistics - 16th meeting - Örebro - 17-21 September, 2001.

The institutionalization of Cultural Commodification : Logics and Strategies". Lacroix and Tremblay - Current Sociology Volume 45 Number 4. October 1997.

ANNEX 1
Definition of the ICT Sector using ISIC, Revision 3
(United Nations 1990).

Manufacturing

- 3000 Manufacture of office, accounting and computing machinery
- 3130 Manufacture of insulated wire and cable
- 3210 Manufacture of electronic valves and tubes and other electronic components
- 3220 Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy
- 3230 Manufacture of television and radio receivers, sound or video recording or reproducing apparatus, and associated goods
- 3312 Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment
- 3313 Manufacture of industrial process control equipment

Services -- goods related

- 5150 Wholesale of machinery, equipment and supplies⁶
- 7123 Renting of office machinery and equipment (including computers)

Services -- intangible

- 6420 Telecommunications⁷
- 7200 Computer and related activities

⁶. Where available, countries should only include those subsectors of this industry that directly provide ICT wholesaling services. This will avoid the inclusion of extraneous wholesaling activity. For example, using the NACE nomenclature, only NACE categories 5143, 5164 and 5165 should be included.

⁷. In those instances where countries include telecommunication activities as part of radio and television activities (ISIC 9213), radio and television activities (9213) should be included in this definition. Otherwise, it should not be included.

ANNEX 2 Some International Definitions

CPC explanatory note on 843 On-line information provision services

This subclass includes:

- database services
- provision of information on web-sites
- provision of on-line data retrieval services from databases and other information, to all or limited number of users
- provision of on-line information by content providers

This subclass does not include:

- provision of telecommunication net-services such as internet access services, necessary to access the databases or information holdings of information content providers, cf. 842
- on-line access to web-sites, cf. 842
- services involving document searches, cf. 845
- internet sales, cf. 623

OECD e-commerce transaction definition (broad definition)

An electronic transaction is the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organisations, conducted over computer-mediated networks. The goods and services are ordered over those networks, but the payment and the ultimate delivery of the good or service may be conducted on or off-line.

OECD Internet transaction definition (narrow definition)

An Internet transaction is the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organisations, conducted over the Internet. The goods and services are ordered over those networks, but the payment and the ultimate delivery of the good or service may be conducted on or off-line.

ANNEX 3

Narrow and broad definitions of the content sector in terms of ISIC Rev.3 classes

ISIC	Industry	Explanatory note (extract)
2211	Publishing of books, brochures, musical books and other publications	
2212	Publishing of newspapers, journals and periodicals	
2213	Publishing of recorded media	
2219	Other publishing	
2221	Printing (?)	
2230	Reproduction of recorded media (?)	
7240	Data base activities	
7494	Photographic activities (?)	
9211	Motion picture and video production and distribution	
9212	Motion picture projection	
9213	Radio and television activities	
9220	News agency activities	
	TRADE	
5139	Wholesale of other household goods (p)	Books, magazines, newspapers
5233	Retail sale of household appliances, articles and equipment (p)	Records, music scores and tapes
5239	Other retail sale in specialized stores (p)	Books, magazines, newspapers
5251	Retail sale via mail order houses (p)	
7499	Other business activities n.e.c. (p)	Press distribution
7130	Renting of personal and household goods n.e.c. (p)	Books, journals and magazines, video tapes and records
9231	Library and archives activities	Lending of books, maps, periodicals, films, records, tapes

(p): partial

Content mapping

