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Working Party on National Accounts

SUMMARY OF RESPONSES OF THE ADVISORY GROUP: SURVEY ON DIGITAL ECONOMY
TYPOLOGY

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SUMMARY OF RESPONSES OF THE ADVISORY GROUP: SURVEY ON DIGITAL ECONOMY TYPOLOGY

Introduction

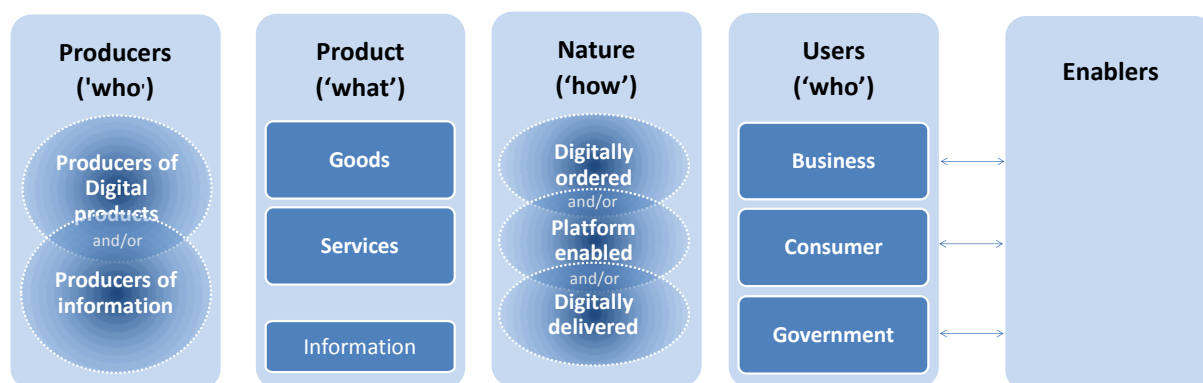
1. The survey was intended as a first step to begin a dialogue between national accounts statisticians, as well as relevant experts, to develop a framework of digital economy transactions that could provide the basis for the development of satellite accounting systems for macro-economic statistics. The scope of the framework as laid out in the questionnaire was set deliberately broad to elicit feedback. The secretariat also took the opportunity to find out more about country practices with regards to digital intermediaries, data gaps, and what countries think should be highlighted when trying to better articulate the digital transformation taking place in the economy. The questionnaire was launched on 15 June 2017 and the secretariat has received 19 replies from task force (TF) members to date¹. This note begins with a brief summary of the responses to the survey. Annex 1 provides a more detailed description of the conceptual framework discussed in the questionnaire and Annex 2 provides a summary of responses by question.

Conceptual framework for measuring digital economy

2. Figure 1 depicts dimensions of the digital economy under specific categories that lend themselves to the development of more elaborate macroeconomic accounts, together with sub-components : the nature of the transaction ('how'), the product ('what') and the partners involved ('who (producers and users)'). The first column represents the producer of the product. The second dimension, 'product', introduces information, or data, as a separate product to consider in addition to goods and services. The third column on the nature of the transaction, determines which modes of delivery were used. The fourth column looks at the users involved; which is shown for simplicity below as three categories, but in principle could be defined using the institutional sector classification of the SNA. The last potential dimension of the digital economy, for use within the framework of the national accounts, is the "enablers" of digitalisation which can be understood as complementary drivers of digital transformation.

¹ Country responses were incorporated up to the 31 August 2017.

Figure 1. Dimensions of the digital economy



3. The majority of responses (15 out of 18 TF members) agreed with the broad multi-dimensional scope proposed in figure 1. Some thought that the framework was too broad to be useful in defining a satellite account. In general TF members did not think anything was missing from the proposed framework except for further disaggregation of the dimensions shown which could be accommodated in this more aggregated view. In addition many TF members (10 out of 16) felt that the typology developed in figure 1 could provide a breakdown of the most relevant transactions. Noting that further refinement may be necessary before it is ready to be utilised for statistical purposes, such as more clarity on enablers, users and producers that fit as sub-sectors, and well-defined boundaries around the nature of digital transactions.

4. One TF member said that the framework could benefit from the inclusion of an additional category specifying what is within the production boundary and what is not; indeed, such a column had been included in an earlier manifestation of thinking around the frameworks.

What's part of the digital economy?

5. In terms of defining what should be included in the digital economy. Many respondents stated that they would **not** record the full value of products that are digitally ordered as being part of the 'digital' economy (12 responses). Many of those responding that they would include the full value indicated that really only the margin adds to the digital economy but the full value may be useful in certain cases. Opinion is somewhat mixed on whether all products that are platform enabled should be part of the 'digital economy'. (Responses: 11 include all platform enabled products; 7 do not include all platform enabled products). Despite the divergence in responses almost all respondents thought that the margin (or intermediation fee) should be part of the digital economy. The majority of TF members thought that all products that are digitally delivered should be part of a 'digital products' category in a future satellite account. (Responses: 14 would include all digitally delivered products; 4 would not include all digitally delivered products).

6. Regarding which products would be included in a simple system that defined products on the basis of a product classification some TF members did not provide lists but provided rationale on what should be included such as the US "*The only determinant of digital products is the feasibility of digitization such as data and information.*" Also, Canada thought that one way to determine the products would be to ask whether those products would cease to exist without digitisation (e.g., Internet advertising). Some TF members identified products that are considered enablers (e.g., computers, mobile phones, etc.) while some restricted their response to only "pure" digital products, i.e., products that would not exist without computers or the Internet. While other TF members pointed to the list of products (ICT products and Content and Media products) from the OECD Guide to Measuring the Information Society 2011.

7. Regarding which industries would be included in a simple system of “digital industries” many TF members pointed to industries such as telecommunication or the ICT sector more generally. Again, the OECD Guide to Measuring the Information Society was mentioned as a possible guide as to what should be included. Other TF members felt that digitalisation probably affects all (almost all) the industries. Some still went on to identify a subset of industries that are most affected but others thought it was not meaningful to separate “digital industries” and if some sort of definition is needed, then they should be classified perhaps as “enablers of digitalisation” rather than digital industries which might be misleading.

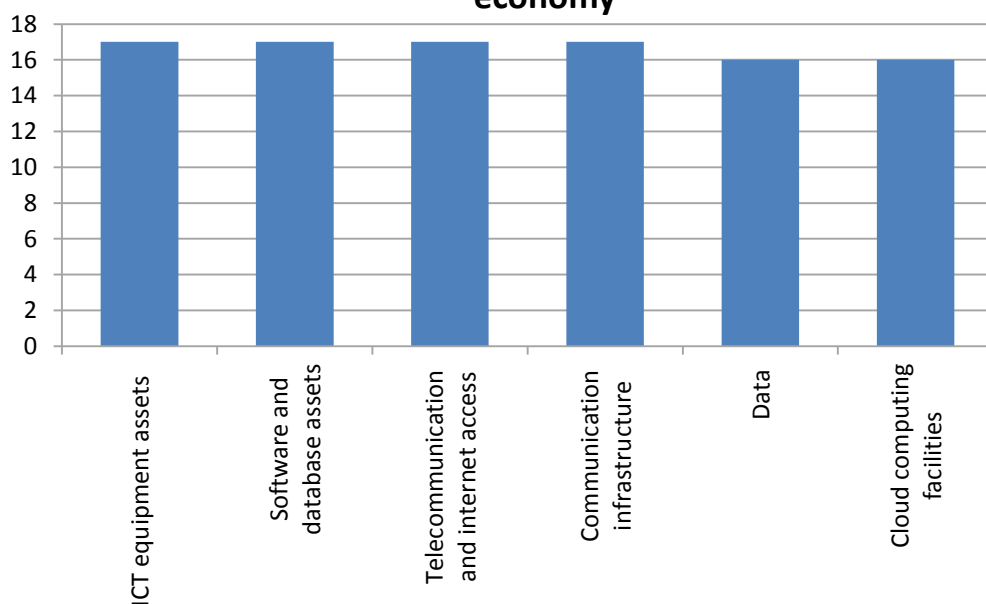
Current classifications

8. The current classification system does not allow for the identification of ‘digital products’ based on the ‘how’ dimension shown in figure 1 and TF members were mixed on whether the current classification system should include further breakouts. (Response Yes-8; No-9) For TF members responding ‘no’ much of the reluctance was due to not being able to gather the needed data. For example, Finland responded *“In theory classification system could include further breakouts but in practice it would be very challenging. Even now we are not able to gather all the data needed to compile product values and corresponding prices at a very detailed level. Therefore, we have to use more aggregated levels.”*

Enablers

9. TF members in general would include the following enablers seen in the figure 2 below. Other enablers were mentioned. For more information see annex 2 for a more detailed list.

Figure. 2 What to include as enablers of digital economy



Digital intermediation

10. As to whether transactions facilitated by digital intermediaries are recorded gross or net most TF members stated that it depends and that it (probably) varies by type of activity. Some TF members stated that in practice it varies depending on the business operating modes (e.g., do they only receive the intermediation service fee, or do they receive the full fee and deduct costs). It should be noted that it

appears that TF members sometimes had different interpretations of the question asked. See annex 2 for further details.

11. TF members indicated mixed responses on where digital intermediaries are classified (8 TF members said they are classified with the providers of the services whereas 7 TF members indicated that classification is not that straightforward). Some specified that industry classification depends on how the transaction is arranged whereas others said it did not matter (or that they didn't know). In general, countries find that the digital intermediary is often resident abroad and that they have difficulty obtaining the relevant information. A major issue is that surveys, in general, are only (and can only be) provided to resident units. Thus some countries are considering alternative sources such as credit card information, household surveys, and administrative sources were mentioned as potential data sources.

Price measurement

12. In practice only a few countries appear to be taking into account the change in the offered contents in a streaming service as a change in quality when measuring price changes. Sometimes this is due to the fact that this type of service is not included in the national price index (e.g. CPI), no data availability to make a quality adjustment, or that the country simply prices the monthly subscription fee. Four countries appear to take into account accommodations booked over the Internet through digital platforms in their CPI and three countries appear to take into account transportation services.

Identifying data gaps

All national statistical offices responding felt that the conceptual framework of the SNA was sound. However, most countries have data gaps. Countries mentioned that the estimates of income of self-employed data may not be exhaustive (although many countries make adjustments to try to arrive at estimates that are exhaustive, thus these adjustments may need to be revisited). In addition, the digital intermediary activity may not be separately identifiable.

The most important data gaps identified by countries relate to services provided by non-resident digital platforms and as such imports. Many countries noted that these transactions are not currently reflected in the trade data because they do not collect information from non-resident service providers and the consumers (households or businesses) of the final service while most likely reporting the expenditures are likely not able to identify that it was imported when responding to household/business surveys. Particular areas of challenge concern imports of digitally delivered services either directly by households (e.g. apps, games, music, etc.) or implicitly through direct providers of services (such as taxi services).

Another important data gap is the measurement of prices, either through not including these types of transactions in price indices or inadequate quality adjustment.

Quantification

13. Most TF members responded that they do not have adequate information to highlight the digital economy. However, some did note that they have information on e-commerce. Countries provided a range of suggested indicators listed in annex 2. Noting that the OECD Measuring the Digital Economy publication illustrates a range of indicators.

14. Most countries thought it would not be possible to develop indicators on computerised/digital inputs, robots, artificial intelligence (AI) in the production process mainly due to lack of data availability. Many countries plan on undertaking further research, in particular on digital platforms and potential data sources. Some TF members are planning on conducting studies highlighting the digital economy. In addition, research on price measurement issues will also be researched.

ANNEX 1. CONCEPTUAL FRAMEWORK DISCUSSED IN THE QUESTIONNAIRE

Background

1. Digitisation is the encoding of information or procedures into binary bits – i.e., 1s and 0s that can be read and manipulated by computers.² It can take many forms such as the translation of analogue measurements to data in binary form to enable computer calculations; encoding business and industrial processes; use of voice over Internet protocol (VOIP) instead of analogue telephony; and the use of social networks as alternative to face-to-face interaction. Collectively, the changes produced by different forms of digitisation, the resulting applications, systems, platforms, and the effects on economic and social activity constitute “digital transformation” - or digitalisation.

2. The fundamental distinction of digital information is the ability of digital code to perform functions and to manipulate any form of (digital) information. The use of software to transform data into ‘big data’ has allowed data to become a valuable asset for businesses (even if the data within the database is not considered a produced asset within the national accounts framework).

3. Thus, digitisation impacts not only the way businesses operate (e.g., automation of industrial production), but also on the way in which households and enterprises engage with each other (e.g., digital intermediation).

4. However, while there is broad understanding that digitisation is a process that involves the encoding of information into binary bits, there is much less understanding concerning a working statistical definition of the digital economy within macro-economic statistics. This in large part reflects its multi-dimensional nature and indeed the particular application to which the phenomenon of the digital economy is necessarily applied. For example, while there may be broad unanimity that a digital book is a digital product, and its whole value reflects the digital economy from a consumption perspective, it is much less clear that the same value would necessarily be seen from a production perspective. Certainly any costs involved in digitalising the book (expected to be marginal) and intermediation (e-commerce distribution) could be argued as within scope, but it would be harder to argue that the value of royalty payments to the author should also be included - although not impossible as the related revenue stream to the author is made possible by digitisation. Such distinctions matter, not only because they may create a different view of the contribution of digital transformation to economic activity but also because it does not necessarily follow that classifications based on digital products and digital industries should necessarily align.

5. What should be included within the boundary of the “digital economy” therefore appears to depend on what lenses you are looking through and what questions you want to answer.

6. In much the same way, delineations based on modes of delivery are also not necessarily a panacea. For example, should the whole value of a (non-digital) good purchased via e-commerce be included in the digital economy, or only the e-commerce distribution margin (excluding, or not, physical distribution costs, such as transportation and related intermediate costs, such as warehousing and insurance)? The answer, again, to some extent, depends on the underpinning question.

7. From a national accounts perspective the issue appears, at first look, not to be very contentious. From the purchasers’ perspective, consumption will record a market price transaction that includes the value of the non-digital good (including any consumption taxes or subsidies), while from the output side,

² OECD (2017), Vectors of Digital Transformation, DSTI/CDEP/GD(2017)4.

output will be recorded in the distribution sector and also in the sector producing the good (unless imported). But, and this is partly why there are criticisms that current estimates of GDP, are not able to capture digital transformation, the digital economy component will be largely invisible (with the possible exception that output by ‘e-tailers’ may be visible within very detailed classification systems). The accounts would not for example be able to show that a certain percentage of consumption (and on what) was facilitated by e-channels. This is not, of course, the purpose of the SNA but it is an area of growing policy interest – among many others – and so is of relevance when considering what should be in scope for a satellite account for the digital economy.

8. Given its multidimensional nature and indeed the multidimensional nature of the policy questions, it makes sense to approach the issue of the construction of a satellite account in a way that embodies this multidimensionality: in other words through a categorisation of transactions, mechanisms and actors that is broad enough to provide a view – whatever the perspective. This necessarily suggests a framework or satellite account that provides the basis to respond to the following range of questions:

What is a digital product?

Who are digital producers?

Who are digital users?

What are the enablers of digitalisation?

What is the impact of digitalisation on measures of consumer welfare?

What proportion of sales/consumption are digitally ordered?

What proportion of sales/consumption are digitally delivered?

What is the value of data?

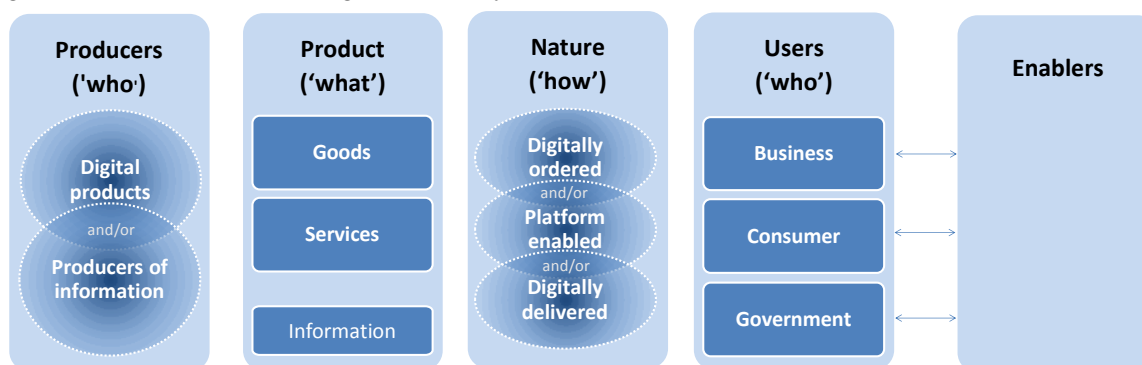
9. One such framework that could be built on is that used to measure, categorise and identify digital trade. This framework was presented at the March 2017 meeting of the OECD Working Party on Trade in Goods and Services and may serve as a starting point for framing our discussion.

Conceptual framework

10. In the accompanying document “Measuring Digital Trade: Towards a Conceptual Framework”³, a total of three dimensions of digital trade are identified: the nature of the transaction (‘how’), the product (‘what’) and the partners involved (‘who (producers and users)’). Although the emphasis in the digital trade framework was on the international dimension, the coverage of activities lends itself to use within a national framework through the addition of a new category, identifying producers, and an additional category referring to “enablers” such as infrastructure, ICT-equipment, software, etc. Figure 1 depicts these dimensions as well as their underlying components. The first column represents the producer of the product. The second dimension, ‘product’, introduces information, or data, as a separate product to consider in addition to goods and services. The third column on the nature of the transaction, determines which modes of delivery were used. The fourth column looks at the users involved; which is shown for simplicity below as three categories, but in principle could be defined using the institutional sector classification of the SNA. The last potential dimension of the digital economy, for use within the framework of the national accounts, is the “enablers” of digitalisation which can be understood as complementary drivers of digital transformation.

³ OECD (2017), Measuring Digital Trade: Towards a Conceptual Framework, STD/CSSP/WPTGS(2017)3.

Figure 1. Dimensions of the digital economy



Digital Nature of Transactions

11. Leaving aside the nature of “enablers”, whose scope is perhaps broader than the 4 central components of the framework, the perhaps defining feature and principles of the framework could revolve around the digital nature of the transaction (i.e. the ‘how’), that distinguishes between those transactions that should be considered ‘digital’ and those that should not. It is important to emphasise however, that this is not a question with a simple binary answer. Many digital transactions have a variety of potentially overlapping characteristics, reflecting the ordering process, the role of intermediaries, and the final delivery of the good or service concerned.

Digitally ordered

12. The first dimension that helps identify digital economy involves those transactions that are *digitally ordered*, that is, transactions in goods and services that reflect e-commerce, which in turn is generally defined as follows:

“An ecommerce transaction is the sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders. The goods or services are ordered by those methods, but the payment and ultimate delivery of the goods or services do not have to be conducted online. An ecommerce transaction can be between enterprises, households, individuals, governments, and other public or private organizations. To be included are orders made over the web, extranet or Electronic data interchange. To be excluded are orders made by phone, fax or manually typed email.”⁴

Platform enabled

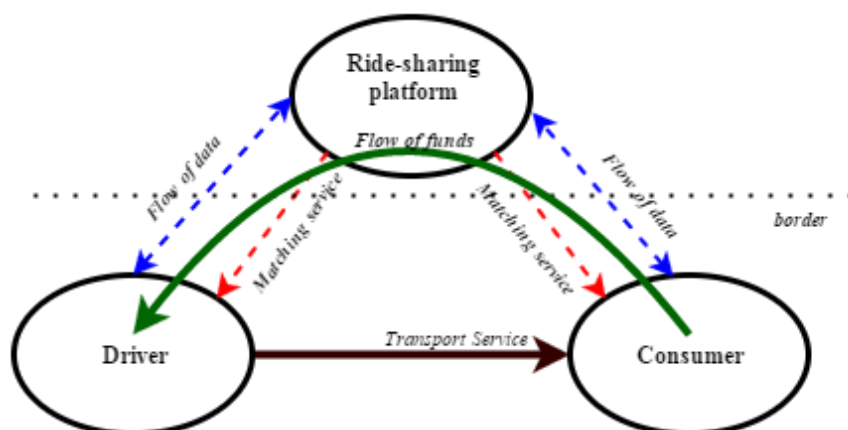
13. An important characteristic of digitalisation is peer-to-peer services intermediated by digital intermediary platforms (“sharing economy”, “gig economy”, “collaborative economy”) such as Airbnb, Uber, eBay, that facilitate transactions in goods and services.

14. Figure 2 illustrates a type of transaction that is facilitated by a digital platform. Here, it can be useful to unpack the example of a ride-sharing type of service (e.g., Uber) transaction. At its most basic, this involves the purchase of a transport service. In the “physical world”, a taxi would have to pass in front of a customer who would pay for the ride in cash or by credit card. The ride-sharing application adds a

⁴ OECD, [Guide to Measuring the Information Society](#), 2011. The OECD started to develop definitions and statistical guidelines for measuring ecommerce transactions in 1998. Those guidelines, as well as the OECD definition of the ICT sector and Content and Media sector, and model surveys of ICT use and ecommerce for the [business](#) and [household](#) sectors, are periodically reviewed and revised to reflect policy needs in this area.

digital dimension which enables the transaction by matching the car driver and the customer and managing payment and insurance cover. There may be an additional complication that the ride-sharing platform is resident in another country, thus potentially bringing a cross border dimension to the transaction as well.

Figure 2: Transactions involved in ride-sharing service



Digitally delivered

15. The third dimension is referred to as *digitally delivered*; in other words, it captures those services and data flows that are delivered digitally as downloadable products. Examples include software, e-books, data and database services. Goods, as physical items, are not very likely to be digitally delivered *en masse*. However, 3D printing may possibly result in a (future) category of transactions that could be classified under digitally delivered goods, if these transactions are deemed to be fundamentally different from trade in services (of 3D blueprints) transactions.

The product involved: goods, services and data

16. Traditionally national accounts statistics identify transactions that involve either goods or services (although within national accounts there is an increasing blurring between what is considered a good versus a service, think of knowledge capturing products that have some characteristics that are similar to goods (SNA 6.22)). Figure 1 introduces a third category, i.e. the importance of information or data, recognising that the underlying value of data (or knowledge) is not, explicitly, recorded within the SNA but is recorded indirectly, embodied in the value of the associated goods and services produced. Note that aspects of data are also included within the category of enablers, when these are used as 'assets', albeit non-produced in the current SNA.

17. Perhaps the biggest measurement challenge for digital transactions concerns such data flows. In many cases, data flows do not result in a monetary transaction per se, but they may support one (such as generating advertising revenue). For example, a social networking site such as Facebook offers "free" services to users who, in exchange, provide their data. There is no monetary transaction between Facebook and the user (and in terms of existing international standards, no transaction); however, the data collected by Facebook is the basis of the revenue that company receives from advertisers. While the advertising revenue monetary flow is captured in the statistics, the data flows upon which they depend are not. It is clear that this raises issues concerning consumer surpluses and indeed at the international level who is ultimately financing those surpluses. For example free digital products (such as Facebook) are in general available to all, but the funding model (advertising) does not discriminate between countries in that targeted advertising in developed countries may be subsidising the free products received in less developed countries. In other words advertisers (and ultimately consumers through paying higher prices) in one country may be indirectly generating consumer surpluses in another.

18. In a similar manner, and because they are free, the national accounting system does not in general impute transactions related to the use of public goods (such as open-source or free software). Again this raises issues concerning the measurement of consumer surpluses or a shifting from assets that are purchased to assets that are freely available for business use. The issue may also be important for policy making, such as anti-dumping and competition policies or tax policy, if the freely available software is designed to gain market share with a view to the introduction of subsequent priced models.

Actors

19. The first and fourth dimension looks at the actors involved (i.e., the producers of the products and the users of the products). The producers are broken down into producers of the ‘digital’ products (however we choose to define what the digital products are) and producers of information (i.e., data). The producers of digital products and producers of information may have overlapping characteristics. This could lead us to identify what industries (or further breakouts of industries) would be considered as being part of the digital economy.

20. Some questions to help determine what activities should be included are:

- Are the producers that perform ‘traditional’ activities such as providing transportation services or housing services part of the digital economy, if they utilise digital platforms to help sell their services? Is this different than, for example, hotels allowing customers to make reservations on-line?
- Is the free video content (financed by advertising) provided by YouTube part of the digital economy? Is a paid subscription to a streaming video/music service (such as Netflix or Spotify) part of the digital economy?

21. In addition, it is felt that digitalisation is blurring the boundaries between home and work and it has led to a call to rethink what is included within the production boundary of the national accounts. Within a satellite accounting framework the role of producer could be expanded to include these activities. Thus, the products within the conceptual framework could be further expanded to include the free digital products in order to estimate a value (to consumers) of these products.

22. As for users of the products, this is shown for simplicity as consisting of three categories, but in principle could be defined using the institutional sector classification of the SNA, with additional breakdowns possible for the size and sector of businesses, as a means of providing important information on the role (and take-up) of digitalised tools by SMEs for example.

“Enablers” of digitalisation

23. The typology described in figure 1 puts the primary focus on the nature of the transaction to define what is included within the digital economy, but to enable these transactions, information and communication technology products (computers, mobile phones, software, etc.), the Internet, and the communication infrastructure (spectrum, data centres) is needed as well. Therefore, an important complement required to understand the digital economy is to look at the products that enable digitalisation and can be understood as complementary drivers of digital transformation. What should be included under ‘enablers’ is an open question for now. It could for example go beyond a simple asset classification (produced and non-produced), such as information and communication technology (ICT) assets⁵ and data. For example the scope could encompass enablers such as cloud computing, which would not be considered

⁵ The OECD defines the ICT assets category to include ICT equipment (computer, electronic, and optical products, CPA 26) and computer software and databases.

as investment by the company that purchases those services. But if the firms providing these services are within scope of digital producers and cloud-computing services are included under digital products, then it may be possible to have a more narrow definition of enablers that aligns more closely with underlying assets, including those used for 'free' by consumers and firms – for example the internet could be considered an enabler.

24. Furthermore, the combination of new sensors and control devices, data analytics, cloud computing and the Internet of Things (IoT) is enabling increasingly intelligent and autonomous machines and systems. The use of robots (increasingly embedding artificial intelligence and machine learning) are widespread in manufacturing industries, but also in construction, mining and agriculture. This has led to the 'smart factory' (also sometimes referred to as industry 4.0). Perhaps the digitalisation of the production process can be considered as part of the enablers of digitalisation or perhaps an additional dimension needs to be added.

Summary

25. As you can see, we are not yet putting forward what should or should not be included in a satellite account for the digital economy within a macro-economic framework. The scope has been set deliberately broad at this stage. Building and capitalising on existing standards in the area⁶ we would first like to solicit your feedback on what in your opinion should be included. In this respect deliberations should necessarily focus on two key issues: (1) how can we better highlight what is already included within the current framework of national accounts; and (2) what additional measures should be included in a potential satellite account.

⁶ The OECD provides various indicators in [Measuring the Digital Economy](#), 2014.

ANNEX 2. SUMMARY OF RESPONSES BY QUESTION

Q1. Do you agree with the broad multi-dimensional scope proposed above as the basis of defining what should be included within the digital economy from a macro-economic perspective?

Responses: Agree: 15; Disagree: 3

The majority of responses (15 out of 18 TF members) agreed with the broad multi-dimensional scope proposed in figure 1. However, some of the TF members that agreed with the broad conceptual basis provided additional comments for improving the framework. Of those that disagreed some thought that the framework was too broad to be useful in defining a satellite account. For example Italy responded “In principle, the framework includes all relevant dimensions in an appropriate fashion. However: On conceptual grounds, we wonder whether “traditional” products should be considered “digital” when digitally intermediated/sold, as this might quickly end up including a large chunk of the economy under this encompassing definition, as if we were to measure the “electrical” or the “telephone” economy. On practical grounds, measurement issues might render this approach hard to implement in a meaningful way in terms of coverage and, hence, comparability.”

At least one TF member queried whether the digital economy is distinct from the information economy or just included in it.

Below are some specific comments on each of the dimensions.

Comments on the producers column

- A breakdown of the producer’s category between households and business would be useful as this distinction would facilitate a lot of policy discussions around changing labour markets, taxation, public safety etc. However, it was noted that current collection systems do not easily allow data on households as producers to be captured.
- A further precision of who would be regarded as digital producers is needed as it is not clear.

Enablers

- The enablers should be further discussed. They hold some key features regarding infrastructure, technology and inputs allowing the digital economy to operate and expand, which are not directly related to national accounts.
- In some sense, also education and skills of the work force are enablers, and depending on the type of analysis, they may have to be included.
- This category should include, ICT equipment, software and telecommunication, website hosting, website design.
- Enablers also includes physical goods (like mobile phones, computers) and these should be included too in the framework. Possibly ‘the how dimension’ limits the analysis a bit especially for enablers.

Comment from secretariat. It was not intended that the enablers would be limited to those products that were chosen based on the “how” dimension. That category would be chosen based on what products or

industries we feel enable the digital transformation to work. So, it would indeed include smartphones, computers, etc.

Comments on the How column

- The 'How' (Nature) for identifying digital economy transactions is probably the most important central component, also within this, the subcategory of 'Platform enabled' to be the most important in identifying 'purely' digital economy transactions. Broadening the scope of transactions by using 'ordering online', while fitting into the scope you have provided here, may be too broad to include as direct digital economy activity.

Missing dimensions

Should an explicit "where" dimension be included?

Below are some general comments from TF members regarding the nature of the digital economy and a potential satellite account.

The United States noted that a satellite account focused on specific dimensions of digitalisation and how it affects economies would be more informative than a satellite account that's too broad in scope. Priorities for a potential satellite account would be measuring and understanding new types of flows between sectors (i.e., households, business, government, and non-profits), the impact of social media (e.g., Facebook) and digital platforms (e.g., Uber). In addition, information on e-commerce trade margins would be important for a satellite account.

New Zealand suggests that when defining the digital economy there should be a delineation of direct vs indirect contribution of digitisation to the economy. Direct contribution is where the use of digital mediums is the reason for the activity and accounts for all or most of the value of the activity. Indirect contribution is simply activity facilitated by digital mediums where the product or service is carried out physically (non-digitally). Simply ordering through a website should not equate the total cost of the product or service to the digital economy, rather the total value is an indirect contribution from the digital economy (e.g.: ordering a plane ticket online or buying clothes from a local brick and mortar store via their website). The direct activity, if not directly charged a fee by the ordering system could be measured by the amount which is spent on or paid to the digital ordering service provider (website host or others).

The reason for separately identifying direct and indirect in the satellite account is to meet varying needs by policy makers and customers who may be interested in the total purchases through digital mediums to better understand structural changes in purchasing behaviours and the turnover or contribution to the GDP by the digital intermediaries themselves.

The Netherlands, like New Zealand, is advocating an approach with different views of the digital economy.

The Netherlands noted that digitalisation is everywhere and has impact on (almost) all industries in a country (like the internet does). They noted that it would possibly be useful to specify a general framework including characteristic digital products/industries as well as activities facilitated by digitalisation. Characteristic digital products and industries can be highlighted in such a framework (layer one). Activities which are facilitated by digitalisation are included in layer 2 and can also be highlighted. The statistics for these two layers should be interpreted differently.

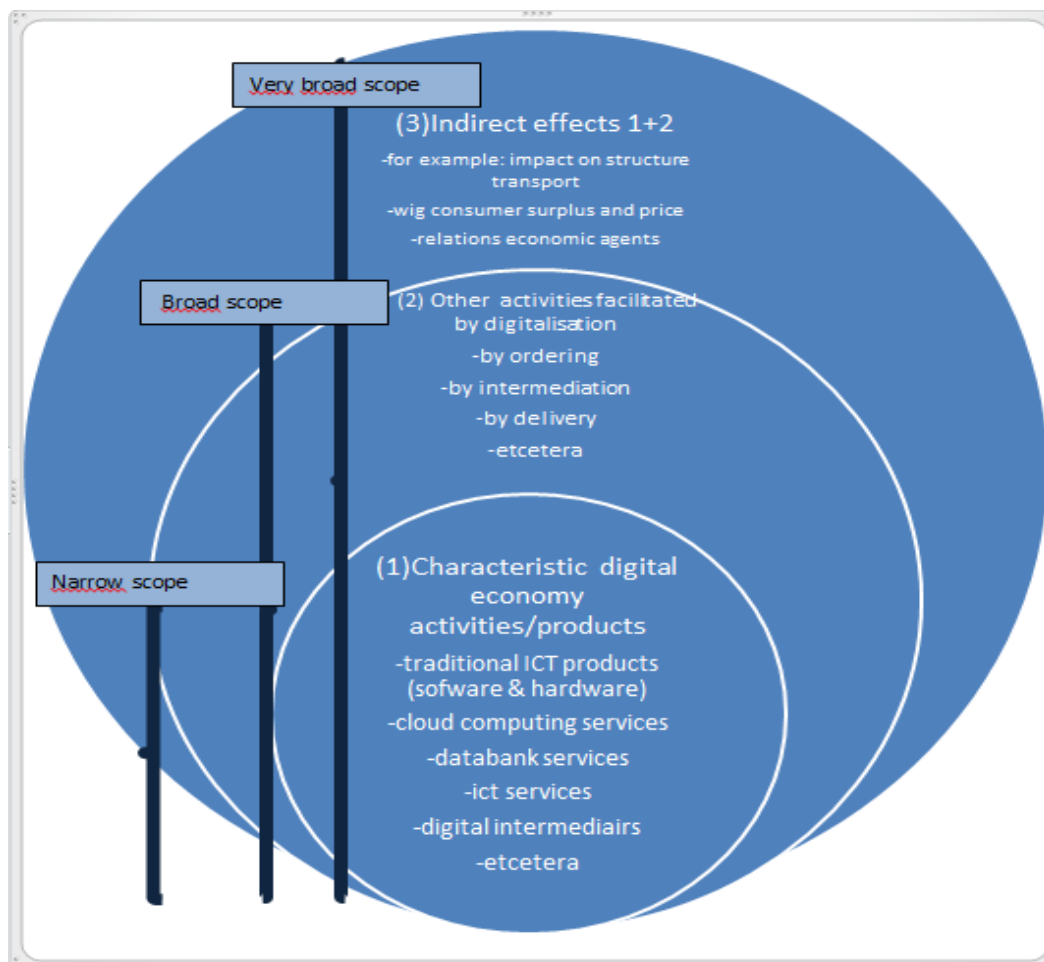
Precisely because digitalisation is everywhere, the concept of the "digital economy" may not lend itself to one single scope. "Digital economy" is more a catch-all phrase and does not lend itself to a precise

definition. There is a parallel with previous generic innovations such as steam and electricity which had similar pervasive effects on the economy. Our whole economy is to a very large extent already a digital economy, just as it is an “electrical economy.” This does not mean that it is not useful to look at digital products or digital means of production or at the changes in society due to digitalisation; quite the contrary! Some researchers want to focus on the hard core supply side of the digital economy and other researchers want to zoom into the user side of the digital economy (impact on other non-hard-core industries) and some researchers are interested in indirect effects of digitalisation (for example structural changes in the economy). In economic terms, digitalisation is reflected in structural changes in economy and society, in the relations between economic agents, and in an increasing difference between the price of a product and the consumer surplus that is connected to the use of that product. When describing the digital economy, these structural changes are perhaps more important than the conceptual framework seems to suggest, and they should definitely receive more attention.

For every research question you possibly want to use a different scope. A possible useful framework could be the following (in development):

Economic figures, for example turnover, for scope 1 should be interpreted differently than those for scope 2 and 3. Some digital products are ‘free’ to consume and are thus not accounted for in traditional accounting systems. Still a lot of people spend time using these free products (and enjoy themselves).

Maybe this phenomena should be monitored as well in a satellite account (possible in layer 4?).



Source: NL response

Problems with obtaining the data

Italy

In detail, we agree that data collection might require enhancements in order to target some of the above aspects. Useful improvements might include information on ICT expenditure by companies (including current expenditure items together with investment), or finer classifications of activities. We deem that producing estimates of the value of e-commerce sales (i.e. digitally ordered products) and of digitally delivered products (whether or not digitally ordered) would be useful but we also observe that it currently poses serious issues, especially because most transactions with end users are intermediated by international platforms. As these items represent an essential part of the proposed framework, we wonder whether the development of a satellite account might be the appropriate approach.

2. Do you think that we would miss aspects of the digital economy if we used the conceptual framework shown in figure 1?

Responses: No aspects missing: 11; Aspects missing: 7

Eleven TF members thought that figure 1 did not miss any aspects of the digital economy whereas seven responded that figure 1 missed certain aspects.

TF members responding “yes” argued for further disaggregation of dimensions (e.g., into industry and cross-border (international) dimensions, employment, compensation of employees, unit labour costs).

Others mentioned an expansion of the list of items mentioned in the enablers section (discussed above in question 1).

On TF member responded that the digital economy is evolving and new aspects may emerge in 3-5 years. The risk is including too many aspects that would not necessarily be informative—many areas of the economy are affected by digital technologies and

Eurostat responded that, in general, the framework is a good starting point. However, it does not explicitly separate the digital and the non-digital economy, and many borderline cases can only be treated by examining both views. In general terms, the digital economy has at least three characteristics that set it apart from non-digital economy:

- **Reach/Distance:** traditional businesses are limited in their market reach to the local market or, through an extensive network of agents, to the global market; this is in contrast to the digital economy where the internet, for example, has allowed SMEs easily to reach clients around the globe without local presence,
- **Convenience:** The digitalisation has allowed customers order products at any time during the day – also outside office hours – without physical displacement and with a much larger selection than in the local shop; this also applies to B2B relationships,
- **Change of businesses and business models:** Many enterprises thriving in the digital economy either simplify the chain from production to consumer (for example selling directly to consumers, avoiding the retail sector), or develop new products that most often depend on the internet infrastructure.

In addition, the framework should enable researchers and economist to analyse substitution effects arising from the increasing digitalisation. Hence, the characteristics that set the digital economy apart from non-digital economy need to be incorporated into the framework.

3. Table 1 provides a series of examples (with a focus on international transactions but the same logic can be applied to domestic transactions). Could you also classify all domestic digital transactions (similar to what is seen in table 1) using the typology developed in figure 1?

Table 1. Examples of digital trade by category

How?			What	Who	Description
Digitally ordered?	Platform enabled?	Digitally Delivered			
Y	N	N	Good	B2B	An enterprise in country A purchases a good online, directly at the supplier of the products located in country B, via the supplier’s web-shop or EDI. For example, a component used in the production.
Y	N	N	Good	B2C	A consumer in country A purchases a good (e.g. clothes) online (for final consumption), directly at the web-shop of the supplier of this product located in country B.
Y	Y	N	Good	B2B	An enterprise in country A purchases goods, from a supplier in country B, via an online platform which may be located in country A, country B or elsewhere. For example, the ordering of office furniture via eBay.
Y	Y	N	Good	B2C	A consumer in country A purchases a good online from a supplier in country B, via an online platform, which may be located in country A, country B or elsewhere, for final consumption, for example ordering a book on Amazon.
Y	N	N	Service	B2B	An enterprise in country A purchases a service online, directly at the supplier, but the service is delivered physically (for example a transportation service).
Y	N	N	Service	B2C	A consumer in country A purchases a service online, directly at the supplier in country B, and the service is delivered physically (for example, a hotel reservation made over the Internet directly at the hotel).
Y	Y	N	Service	B2B	An enterprise in country A purchases a service online from a supplier in country B, via an online platform, which may be located in country A, B or elsewhere. The service is subsequently physically delivered (for example standardised maintenance or repair services).
Y	Y	N	Service	B2C	A consumer in country A purchases a service from a supplier in country B, via an online platform; the services is subsequently physically delivered, for example, tourist ordering a ride-sharing service (Uber).
Y	N	Y	Service	B2B	An enterprise in country A purchases a service online, directly at the supplier, which is subsequently also delivered digitally (for example, standardised maintenance or repair services)
Y	N	Y	Service	B2C	.A consumer in country A purchases a service online, directly at the supplier from country B, which is subsequently also delivered digitally, for example an insurance policy

Y	Y	Y	Service	B2B	An enterprise in country A purchases a service from a supplier in country B via an online platform, which may be located in country A, B or elsewhere. The service is delivered digitally. For example, a firm orders a logo design via a platform for graphical designers.
Y	Y	Y	Service	B2C	A consumer in country A purchases a service from a supplier in country B, via an online platform, which may be located in country A, B or elsewhere. The service is delivered digitally. For example, music streaming subscriptions
N	N	Y	Service	B2B	An enterprise in country A places an <i>offline</i> order for a service at a supplier in country B, the service is subsequently digitally delivered. For example bespoke consultancy services, BPO services.
N	N	Y	Service	B2C	A consumer in country A purchases a service <i>offline</i> at a supplier in country B, but the service is digitally delivered. For example educational services with online lectures.
Y	Y	N	Service	C2C	A consumer in country A purchases a service from another consumer in country B, via an online platform, located in country A, B or elsewhere. The service is physically delivered. For example accommodation sharing (Airbnb)
Y	Y	N	Good	C2C	A consumer in country A purchases a good from another consumer in country B, via an online platform, located in country A, B or elsewhere. For example second hand goods transactions via online market places.
...

Responses: Yes: 13; No: 5

The majority of the TF members could, at least in theory, use Table 1 to classify all domestic digital transactions. However, two of the countries that responded “no” appeared to respond to the question based on data availability rather than a criticism of the digital transactions table. Data availability was also a concern for some of the countries that responded “yes”.

As was noted, the table currently does not cover B2G transactions. Also, missing from the table are the information dimension and the enablers dimension which should be further articulated when covering domestic transactions.

A few TF members questioned some of the descriptions and recording of what type of transaction. For example, New Zealand thought the use of terminology in the descriptions was vague in places. In many descriptions you used examples where consumers purchased a ‘service’ from a supplier. This ambiguity highlights the need to unbundle what exactly is being purchased from intermediaries. In the example (eighth down on table 1.) the service purchased from Uber was a ride-sharing service. The jury is still out on whether Uber is classified as a provider of taxi services or acts as some sort of management company. In order to better classify these transactions we need to unbundle the transaction into what is actually being provided by each party. This is likely more important from the production perspective than from the consumption perspective, however both can benefit from a delineation of the components of the service being offered.

Yes, with comments

Canada- yes- Just one comment here, we had a lengthy debate but ultimately felt that Airbnb is B2B. Technically these are unincorporated self-employed businesses and according to the SNA treatment of owner occupied dwellings, home owners are businesses renting to themselves and all others.

Finland- yes - public services should also be noted (not covered under B2G?)


“No” responses

(Israel and NL say no but seem to be solely based on data availability rather than conceptual basis)

UK- No.

The key question is not whether this list is exhaustive but rather as digital practices become more embedded, do we think anything will be excluded from this scope. The example three from bottom - A consumer in country A purchases a service offline at a supplier in country B, but the service is digitally delivered, for example educational services with online lectures. The key phrase here is ‘digitally delivered’. So as more goods link to the internet (internet of things etc), or there is greater digital elements in the supply chain (I order a widget from Firm A, who sources this from Firm B via a platform, etc). Do we run the risk that eventually we have a 100% digital economy? It is a good challenge to try and define this from the other way round to say what does not count as digital.

See a possible refinement to consider below:

WHO	WHAT	HOW	WHERE
Firms	Tangible	Demand (e-commerce)	At all parts of the value chain – business models/working patterns
Government	Intangible/digital	Supply (download/stream)	
Households			

Market vs Non-market

Eurostat mentioned that for the Internet of Things (IoT) devices there needs to be clarification between the ownership of the physical product as well as the information that these devices produce, and the possible transactions that take place as a result of transmitting data automatically or on-demand to an entity different from the owner. Examples include devices such as meters measuring electricity usage, washing machines that report usage patterns or automatically ordering washing powder.

IMF- No

The enablers are not covered. Will they be covered separately?

Where do sales of data fit in?

Are advertising-funded products B2B services?

On line 7, it’s not obvious why reservations made at the hotel would be considered digitally ordered. The may have been arranged over the telephone.

A consumer in country A purchases a service online, directly at the supplier in country B, and the service is delivered physically (for example, a hotel reservation made directly at the hotel). I think this

category is intended to only be reservations made directly with the hotel over the Internet. So the example, should be modified to be “for example, a hotel reservation made over the Internet directly at the hotel”

Comments on data availability in relation to Table 1.

Israel said that the typology covers the possible transaction but the ability to measure it by the transaction breakdown should be tested. Here are some issues and difficulties we encountered using different data sources and vehicles.

- In most cases we can distinguish between transactions of goods and services digitally ordered. We are using credit card information on transactions together with product classification by industry in order to distinguish phone made deals (it is difficult to exclude those transactions entirely).
- The credit card information doesn't provide the necessary information to properly locate and exclude businesses using credit cards. The credit cards companies suggest that this kind of activity is minor, but we need to take into account that small business owners and self-employed persons might be using credit card for business's needs.
- The 'Household Expenses Survey' enables us to distinguish between e-Commerce or digitally ordered products. This is a new update to the questionnaire and it still needs to be tested relative to other sources.
- In the case of the platforms there are some serious difficulties; in most cases the payment for the platform owner is not visible in credit card information (we consulted one of the largest credit card companies) and household expenditure surveys can't track this kind of information. Our opinion is that it will be extremely difficult to design the survey to provide this information since in most cases the customer can't distinguish between the two.
- In the case of businesses, the main data source is ICT usage and e-Commerce survey. When surveying businesses we might be able to distinguish between the first 4 left category columns (i.e., how (digitally ordered, platform enabled, and digitally delivered), what), but not the 'who'. It might be also possible to capture the relative payment for the platform. But we should take into account that this is only a partial section of the digital economy and could lead to double counting when combined with household consumption data, even more when the product is a 'digital product'.
- In all the above sources and methods it seems unlikely that we would be able to identify the "who" category.

4. Would you consider the full value of products that are digitally ordered as being part of the 'digital economy' category for a future satellite account?

Responses: Yes: 6; No: 12; It depends: 1 (note that one TF member checked yes and no)

Many of the respondents stated that they would **not** record the full value of products that are digitally ordered as being part of the 'digital' economy (12 responses). Many of those responding yes also indicated that really only the margin adds to the digital economy but the full value may be useful in certain cases. A few TF members responded that it really depends on the research question that you want to answer, therefore, some recommended that the full value of digitally ordered products would be good to include in a satellite account as a memo item, but only the margin on e-commerce sales represents output of the e-commerce distribution industry that should be included in a measure that totals up the size of the digital economy. It was noted that a distinction between the margin of e-tailers versus normal distributors would be useful.

5. Would you consider that platform enabled activity creates two separate products: the product provided by the digital intermediary and the product provided by the entity that provides the service and would you include both products in a ‘digital products’ category for any future satellite account?

Responses: Yes: 7; No: 9; It depends: 2

Note that the question was not written very clearly as there are really two questions that can both have yes/no responses. Thus, it should have been worded “Would you consider that platform enabled activity creates two separate products? yes/no” and then “Would you include both products in a ‘digital products’ category? yes/no”. For example, Australia, UK, and Eurostat are included in the ‘no’ count but they further commented that they believe the platform enabled activity creates two separate products, but both should not be included as digital products in a future satellite account. Eurostat added that only the intermediation service should be included in the digital economy.

The Netherlands was one of the TF members saying ‘it depends’ on the research question you have. The concept of the “digital economy” may not lend itself for one single definition. Probably we need more scopes for answering different type of research questions.

5a. Does it depend on how the transaction is arranged?

For example,

- **if the payment to the digital intermediary is recorded gross (i.e., the platform receives the full amount from the passenger then remits a portion to the driver after taking its fee)**
- **If the payment to the digital intermediary is recorded net (i.e., the platform only receives an intermediation fee)?**

Responses: Yes: 5; No-11; It depends 2

Again the question was not written clear enough because you can interpret the question as “Is the arrangement of the transaction a determining factor as to whether there are two products? Yes/no” or “Is the arrangement of the transaction a determining factor as to whether it should be included in the digital economy or not.” Below are some individual TF member responses.

Australia: response: NO

For Q5, we agree there are two products, but not necessarily both digital. Generally, in the digital economy, the intermediary (facilitator) is digital but for the provider, this is not necessarily the case, it depends on the activity. For 5a, contractual and payment arrangements between the parties (customer, a provider and a facilitator) will determine how to profile to industry, but not whether the product is digital. These will vary on a case by case basis. For example, for ride sharing, the ride sharing company matches a customer to a provider therefore is actually providing the service. The contracts are between the customer and ride sharing company and then a contract between ride sharing company and hire car with driver. On the other hand, for Accommodation, the facilitator only provides a list of their clients to the customer, the customer matches themselves to the Accommodation provider therefore the facilitator goes to Travel agent. So the contract is between the customer and accommodation provider with the facilitator receiving commissions from their clients.

Chile- response: NO

Regardless of the transaction arrangement (gross or net) a future satellite account should consider only the digital intermediary payment as a digital product. For example, the commission that Uber receives by a transport service.

Israel- response: NO

Not all services (e.g. transportation) purchased by a platform (e.g. Uber) are 'digital products'. In the case of Uber the platform is a 'digital product' but the service is not, It was only 'Digitally ordered'.

Italy- response: NO

Besides that currently there are practical obstacles in tracking such transactions managed on foreign platforms (both in gross and net terms), in principle to different products should be identified but only the product of the digital intermediary should enter the “digital economy”.

Korea- response: NO

As answered in #4, the full value of product as well as the margin of intermediary had better be contained in a satellite account. If the payment is recorded net and the intermediation rate is known, the full value can be estimated, vice versa.

New Zealand- response: NO

The means of payment may be a practical way to separate the service into different products (one digital one potentially non-digital) but currently we do not consider this as the most important factor to classification. Sometimes the service may not be explicitly paid for in cash but funded through in-app purchases or advertising in which case splitting based on separate identifiable fees may not be as easy.

Splitting the activity into two (or more) separate products is necessary in a satellite account so we can apply the direct/indirect delineation.

Canada- Response: It depends

Only include the margin or direct fees for the service provided by the digital platform. The classification of the service may change depending on how the transaction is arranged. For example, if they record the full cost and then remit portion to the service provider then it could be classified as a financial service whereas the net approach may be classified as simply an advertising service (use of the platform to advertise services). Could include the resulting services in an extension to the satellite account for analysis purposes, but only the service of the platform should be included in the digital economy. Same rationale as above while the scope and magnitude of transactions changes with digitization, we kept asking ourselves could these transaction themselves occur without digitization? And if yes, we tended to agree it was out of scope for digital economy.

5b. Would you consider all products that are platform enabled as being part of the ‘digital economy’ category for a future satellite account?

Responses: Yes: 11; No: 7

Opinion is somewhat mixed on whether all products that are platform enabled should be part of the ‘digital economy’. Despite the divergence in yes/no responses almost all respondents thought that the margin (or intermediation fee) should be part of the digital economy. Some TF members thought that it would be informative to know the value of the products that are traded digitally.

Below are some individual TF member responses.

New Zealand- response: Yes

Noted their direct/indirect impacts argument. The products should be the unbundled service actually provided by the platform itself and the product not directly provided by the intermediary. The product provided by the intermediary and the associated physical product not directly provided by the intermediary would then both be considered part of the digital economy but on a direct and indirect basis respectively.

IMF- response: No

“All products that are platform-enabled” is ambiguous, because in question 5 “products” seems to mean services, but on page 4 and in table 1 “products” includes the merchandise sold on eBay. I would not include the goods bought and sold on internet platforms in a measure of the size of the digital economy. I would just include the margin retained by the digital platform and report the value of the goods sold/bought as a memo item. On the other hand, sharing economy services that are platform-enabled could be included in the digital economy.

6. Would you consider all products that are digitally delivered as being part of a ‘digital products’ category for any future satellite account?

Responses: Yes: 13; No: 4; Not sure: 1

The majority of TF members thought that all products that are digitally delivered should be part of a ‘digital products’ category in a future satellite account.). However, a few TF members thought that being ‘digitally delivered’ is either too vague of a criteria and encompasses products that we would not want to include (for example, a document provided by a consultancy service that was digitally-delivered or an insurance contract that was digitally delivered). Another TF member thought that the mode of delivery should not be used as a determinant for the boundary of digital products—only the underlying product should be used in deterring boundary.

Below are some individual TF member responses.

Canada- Response: Yes;

Unlike other examples these transactions could not occur without digitization. These represent new forms of production and consumption and are at the core of the digital economy. It enables people and businesses to consume new products (streaming online content), in larger quantities and from anywhere. When consumption is virtual (no physical nature) it poses new challenges for governments to impose and regulate safety standards and taxes. Poses significant measurement challenges, similar to that with services (no physical good to capture).

Norway- Response: Not sure;

Two examples from table 1:

- A consumer in country A purchases a service online, directly at the supplier from country B, which is subsequently also delivered digitally, for example an insurance policy.
- An enterprise in country A purchases a service from a supplier in country B via an online platform, which may be located in country A, B or elsewhere. The service is delivered digitally. For example, a firm orders a logo design via a platform for graphical designers.

By definitions more or less, insurance will be a digital product. Why do we want this? For the logo example: this is more a digital service for me (since I suppose that the graphical designers more or less use digital tools in their design). But then, is it the delivery that makes me take this decision, or is something else?

Chile- Response: No

Only the digital provision service should be recorded. For example a Netflix subscription and not the production of the movie provided by this platform.

New Zealand- Response: No

‘Digitally delivered products’ is too vague. The examples given in foreword to the questionnaire including software, e-books, data, and database services (ignoring the issue of marginal product) would likely be considered digital products- agreed.

But if this definition extended to an MS Word document that was produced as part of a commissioned, bespoke consultancy service (an example in table 1) we would not consider this to be entirely a digital product. Although this may meet the definition of created using computer code, including the full value of this kind of production as a digital product does not add value to the satellite account for policy purposes. We would only want to capture the additional value created from being digitally delivered.

This may come down to whether product/service is offered to be delivered non-digitally. If the product/service is only deliverable digitally then we would consider this a digital product. If the product/service was also available non-digitally, using the example provided in table 1 of lectures, we would want to only consider the additional value created by being digitally delivered.

United States- Response: No

I think the mode of delivery is not a determinant for the boundary of digital products—only the underlying product should determine the boundary. As one example, an e-ticket for an airline is digitally delivered, but the underlying product is a transportation service and should not be considered a digital product. As another example, a physical good that is digitally delivered and then printed with a 3-D printer should not be considered a digital product. I think the only determinant of digital products is the feasibility of digitization such as data and information.

IMF- Response: No

A consultant’s report or an insurance contract is not a digital product even if sent to the client as an email attachment. Better to limit “digitally delivered” products to digital downloads of games, software, music, video, etc.

7. What products should be included within a simple system that defined digital products on the basis of a product classification only? Please describe the products below using your current product classification system (specify your classification system, product titles, and codes).

Australia- We don’t as yet have a product concordance to digital product, noting that, what defines a product as “digital” is still being debated (see, for example, the COICOP discussions).

Canada-

Toys and games at retail
Publications at retail
Audio and video recordings at retail
Internet advertising
Advertising intermediary services (platforms perhaps?)
Studio and live recording services, and support services for sound recording
Telecommunications services
Cable, satellite and other program distribution services
Online content
Data processing, hosting, and related services
Financial services (except insurance)
Real estate services
Legal and accounting services
Architectural, engineering and related services
Specialized design services
Computer systems design and related services (except software development)
Management, scientific and technical consulting services
Other professional services
Administrative and support services
Education services
Sport and live performance services
Travel arrangement, reservation and planning services
Photo finishing services
Weight loss services
Dating services
Social event organization services
Psychic and astrology services
Other personal services, n.e.c.
Internet gambling products
Public administration services

Many services can now be offered digitally thus they should be included. Exceptions include those services requiring physical presence e.g. health care services, although arguably these could be offered digitally as well.

Recommendation is to allow many/all products to have a digital classification component. Meaning under each product class a digital/non-digital split could be made. These are the products that could have such a split. This would allow for easy management through time as digitization expands.

However short term could be on those products that would cease to exist without digitization e.g. internet advertising.

Chile

Online content services
Publishing services
News agency services
Computing machinery and parts and accessories (enabler)
Office, accounting and computing machinery (enabler)
Mobile phones (enabler)
Mobile internet services (enabler)
Fixed internet services (enabler)
Information technology (IT) design and development services (enabler)

Israel-

I used two ways to locate those kinds of products:

- 1) The 'ICT products' defined in 'measuring the information economy' as a starting point, focusing on the services which are 'digitally delivered' or have the capacity to.
- 2) Using the UN's CPC Ver.2 - ISIC Rev.4 correspondence table' in order to locate products by looking at relevant industries.

Telecommunications, broadcasting and information supply services
Management consulting and management services
Other information services

Italy-

We would be happy with the list of products considered in T2.A1.1 (ICT) and T2.A.12 (content and media) of the Guide to measuring the Information Society 2011, in view of a broad definition.

Korea-

Semiconductor and related devices
Electronic signal equipment
Other electric component
Computer and peripheral equipment
Telecommunication, video, and audio equipment
Precision instruments
Communications(except postal services)
Information services
Computer software development and computer related services

The Netherlands-

Databanks
Data entry
Software
Digital media
Web hosting

Slovenia-

Reproduction services of recorded media
Computers and peripheral equipment
Wholesale trade services of computers, computer peripheral equipment and software
Retail trade services of information and communication equipment
Software publishing services
Computer programming, consultancy and related services

United States- I think there are too many to list. See question 6 for a perspective on the general boundary of digital products (i.e., The only determinant of digital products is the feasibility of digitization such as data and information). However, I will send a draft paper once we have it in position for public consumption. This draft paper contains a detailed list of products ranging from traditional ICT goods and services, to teasing out where digital intermediaries exist, to e-commerce, to the underlying infrastructure required to support digitalization.

Eurostat- the list below is restrictive: they only contain "pure" digital products, i.e. products that would not exist without computers or the internet. One could go wider and include also products that have been transformed in the digitalisation process, e.g. financial services (which are almost all digital nowadays). I have not included hardware (e.g. computers) as it is physical and not digital. Hardware is part of the enablers.

wholesale and retail trade by internet
e-books, downloadable music, films, etc.
software and programming services
radio and television programmes
telecommunication services
information services (webhosting etc)
Data collection/management services (e.g. IoT will create a new business area)
Data analytics services

Kazakhstan-

Books on CDs, cassettes and other media
Books, brochures and materials similarly bound in electronic form
Dictionaries, encyclopedias and their serial releases in electronic form
Atlases, directories, booklets and books with geographic maps in electronic form
Maps geographic and hydrographic or similar schemes not in book form, globes in electronic form
Services for the publication (placement) of books in the network
Services for the sale of a place for placing advertisements in books in electronic form
Directories and mailing lists printed or on media
Services on the publication (placement) of newspapers in the network
Services for the sale of a place for placing advertisements in newspapers, in electronic form
Services for the publication (placement) of journals and periodicals in the network

Services on sale of a place for placing of advertisements in magazines and periodicals, in electronic form
Services for the publication (placement) of other content on the network
Postcards postal; Greeting cards and others in electronic form
Reproductions, engravings and photographs in electronic form
Pictures transfer (decalcomania) and calendars in electronic form
Services for the sale of a place for placing advertisements on postage stamps, stamped or similar; Paper stamp; Checkbooks; Banknotes, shares, bonds, bonds and similar types of securities in electronic form
Services on sale of a place for placing of advertizing on materials of commercial and advertising, catalogs of trading and products similar in electronic form
Services on sale of a place for placing of advertisements on printed materials, not included in other groups in electronic form
Services on sale of a place for placing of advertizing on postcards of postal and congratulatory and other in electronic form
Services on sale of a place for placing of advertisements on reproductions, engravings and photographs in electronic form
Services for the sale of a place for placing advertisements on pictures of transfer (decalcomania) and calendars in electronic form
Services on sale of a place for placing of advertisements on printed materials, not included in other groups in electronic form, other
Services on publication (placement) of other content in a network not included in other groupings, other
Services for the publication (placement) of games in the network
Services for the publication (placement) of software in the network
Services for the publication (placement) of software in the network
SERVICES FOR MANUFACTURING CINEMA, VIDEO PHILOSOPHY AND TELEVISION PROGRAMS, PHONOGRAMS AND MUSIC RECORDS
Original sound recordings
Originals of radio programs
Music scores in electronic form
Broadcasting services; Broadcast originals
Radio channel programs
Services for the creation and broadcasting of TV programs; Broadcast originals
Broadcast originals
TV programs
Computer programming services
Services for management of computer equipment
Network management services
Computer Management Services
Services for processing data, sites and services are similar; Web Portals

8. Does your current classification and information system allow for the identification of ‘digital products’ that could be split on the basis of the ‘how’, as shown in figure 1?

Responses: Yes: 1 (but only for e-commerce); No: 15

The current classification system does not allow for the identification of ‘digital products’ based on the ‘how’ dimension shown in figure 1, although one country noted that it may be possible to identify e-commerce transactions.

A few TF members noted one could identify some of the ‘digital products’ (like databases or identify only ICT products) if one assumed that all those products with in that category are considered digital. But this would not allow for a comprehensive identification of all digital products.

Below are some individual TF member responses.

Australia - At this stage, the definition ‘digital’ has only been applied broadly to facilitate discussions and limited quantitative research. The nearest we would have is an ICT classification for a one-off ICT satellite account but this classification would only be a subset of “digital”. More detail is available at Q15.

United States- The current system would probably not allow for a comprehensive identification of digital products because some products that are available both digitally and physically (like newspapers) are not separately identified in NAPCS. However, other products (like databases) are generally all digital.

9. Do you think that your current classification system or international classification systems should include further breakouts to allow for a more refined classification of digital products?

Responses: Yes: 8; No: 9

TF members were mixed on whether the current classification system should include further breakouts. For TF members responding ‘no’ much of the reluctance was due to not being able to gather the needed data. For example Finland responded “In theory classification system could include further breakouts but in practice it would be very challenging. Even now we are not able to gather all the data needed to compile product values and corresponding prices at a very detailed level. Therefore, we have to use more aggregated levels.”

Canada- Response: Yes

In those products properly digital (Facebook, Gmail, newspapers or electronic magazines). In case of digitally intermediated products (air tickets, taxi services through Uber, etc.) it is a valuation problem: the payment must be broken down by the product value and the "digital intermediation margin".

Italy- Response: Yes

The current classifications for products and activities were defined by mid of the past decade at the latest, and indeed the explosion of specific digital products, platforms, database utilization developed dramatically during the current decade, so that an international program to review the classification is certainly worth being launched. In particular the review should aim at identifying specific breakdowns, separating typologies inherently digital from their non-digital counterpart.

Korea- Response: Yes

Our classification system needs subclass of e-commerce under "wholesale and retail trade".

Mexico- Response: Yes

In general, the current classification system does not allow the identification of how digital products are purchased, because it is not the same to order something online or to buy a ticket, or to use an app to buy something.

United Kingdom- Response: Yes

On the product side, this should only focus on purely digital only products. Those exist more than one form will be difficult to separate. Maybe a functional classification would be better, for example, on-line sales

would cut across many industries. For example, a digital COICOP category for books, films, travel tickets, etc. Then you may want a separate industry structure for on-line sales – on-line sale of clothing, food etc. Currently these are all in one on-line retailing category.

United States- Response: Yes

This may be necessary for products that are available both digitally and physically (like newspaper) and may be necessary for new digital products that aren't included under current systems.

Eurostat- Response: Yes

E.g. internet trade, books, music, films, etc. Ideally, one would look for symmetry between the industry and product classification.

Germany- Response: No Nevertheless, it may be helpful in some cases, e.g. travel agencies only and/or with physical presence.

10. Which industries should be included within a simple system that defined “digital industries” on the basis of an industry classification only? Please describe the industries below using your current industry classification system (specify your classification system, industry titles, and codes).

Australia-

Digital could appear in any industry. However, higher concentrations of digital are expected in:

Information, media and telecommunication
Public administration and safety
Finance and insurance
Wholesale trade
Professional, scientific and technical services
Retail trade
Accommodation and food services
Transport, Postal and Warehousing

Canada-

NAICS 2017 v1.1

Allow for all industries to be considered digital. It depends on what/how they produce. Only a few examples of truly “digital” industries could exist. E.g. platforms

We think defining an industry to be “digital” or not would be to answer the following questions. Would the activity occur without digitization?

Data processing, hosting, and related services
Internet publishing and broadcasting and web search portals
Telecommunications

Chile-

Publishing activities (industry)
Information services activities (Industry)
Manufacture of computer (enabler)
Mobile telephony services (enabler)
Other telecommunication services (enabler)
Computer programming and related activities (enabler)

Finland-

Digitalisation affects probably all the industries and therefore it is not meaningful to separate “digital industries”. If some sort of definition is needed, then they should be classified perhaps as “enablers of digitalisation” rather than digital industries which might be misleading.

Israel-

Telecommunications
Computer programming, consultancy and related activities
Information service activities
Programming and broadcasting activities**

** ISIC rev. 4. Television and HD radio are digital broadcasts channels. I'm not sure (yet) if I would include them as digital economy, but those activities should be recognised and discussed.

Italy-

We would include activities currently labelled as “Information industries”. These for sure would include ISIC codes 261 to 264 + 268 in Manufacturing and 58 to 63 in Services as “core”. A further simplification would consist in considering the whole Section 26 (for these items there are no differences between our national and NACE/ISIC classifications).

The rationale for including content and media industries lies in comparability (e.g. : many countries are unable to provide specific data for class 582) as well as in the observation that these latter industries are increasingly intertwined with ICTs both technologically and economically.

We would consider carving out the sale of electronic products under codes 4652 (wholesale) and 4741 (retail). Sub-class 4791x (internet sales), instead, might be considered as a special area. The repair of computers and communication equipment (under code 951), which is conceptually in digital industries, might be kept out for sake of simplicity and comparability.

Manufacture of computer, electronic and optical products , excluding the manufacture of measuring and of electro-medical equipment and that of optical instruments (ISIC 265, 266, 267, respectively). An exception might be envisaged to bring back sensors in (these are currently excluded from ICT products on conceptual grounds. Also, on practical grounds, the whole Section might be used.
Information and Communication (Section J)
Including media and content industries

Korea-

Manufacture of electronic components, computer; visual, sounding and communication equipment
Manufacture of medical, precision and optical instruments, watches and clocks
Electronic commerce on a fee or contract basis via internet
Electronic commerce via internet
Telecommunications
Computer programming, consultancy and related activities
Information service activities

New Zealand-

Commission Based Wholesaling
Motion Picture and Sound Recording Activities
Broadcasting and Internet Publishing
Internet Service Providers, Web Search Portals and Data Processing Services
Other Auxiliary Finance and Investment Services
Legal and Accounting Services
Advertising, Market Research and Management Services

Slovenia-

Wholesale of information and communication equipment
Retail sale of information and communication equipment in specialised stores
Software publishing
See footnote below (ICT sector)

The OECD has defined an “ICT sector” and a “Content and Media sector” (OECD, Guide to Measuring the Information Society, 2011). Taken together these are referred to as "Information Industries" and cover ISIC Rev. 4 Division 26, and Communication Services, which consists of Publishing activities (Division 58), Audiovisual and broadcasting Activities (59-60), Telecommunications (61), and IT and other Information Services (62-63).

United Kingdom-

Digital Sector Group	SIC	Description	Overlap with:	
			Creative Industries	Telecoms
Manufacturing of Electronics and Computers	26.11	Manufacture of electronic components		
	26.12	Manufacture of loaded electronic boards		
	26.20	Manufacture of computers and peripheral equipment		
	26.30	Manufacture of communication equipment		
	26.40	Manufacture of consumer electronics		
Wholesale of computers and electronics	26.80	Manufacture of magnetic and optical media		
	46.51	Wholesale of computers, computer peripheral equipment and software		
	46.52	Wholesale of electronic and telecommunications equipment and parts		
	58.11	Book publishing	*	
Publishing (excluding translation and interpretation activities)	58.12	Publishing of directories and mailing lists	*	
	58.13	Publishing of newspapers	*	
	58.14	Publishing of journals and periodicals	*	
	58.19	Other publishing activities	*	
Software publishing	58.21	Publishing of computer games	*	
	58.29	Other software publishing	*	
Computer programming, consultancy and related activities	62.01	Computer programming activities	*	
	62.02	Computer consultancy activities	*	
	62.03	Computer facilities management activities		
	62.09	Other information technology and computer service activities		
Information service activities	63.11	Data processing, hosting and related activities		
	63.12	Web portals		
	63.91	News agency activities		
	63.99	Other information service activities n.e.c.		
Film, TV, video, radio and music	59.11	Motion picture, video and television programme production activities	*	
	59.12	Motion picture, video and television programme post-production activities	*	
	59.13	Motion picture, video and television programme distribution activities	*	
	59.14	Motion picture projection activities	*	
	59.20	Sound recording and music publishing activities	*	
	60.10	Radio broadcasting	*	
	60.20	Television programming and broadcasting activities	*	
Telecommunications	61.10	Wired telecommunications activities		*
	61.20	Wireless telecommunications activities		*
	61.30	Satellite telecommunications activities		*
	61.90	Other telecommunications activities		*
Repair of computers and communication equipment	95.11	Repair of computers and peripheral equipment		
	95.12	Repair of communication equipment		

United States-

Information
ICT good and services
E- commerce

Kazakhstan-

Publishing Activities
Production of film, video, and television programs, phonograms and music records
Activities on creation of programs and TV and radio broadcasting
Computer programming, consulting and other related services
Information Services Activities
Services in arrangement and processing of data; Web portals
Services in arrangement and processing of data and other services
Web Portals

Lithuania-

Production of goods and services in almost all industries could be digitally ordered or purchased via platform, however limited but also large number of them could be digitally delivered.

Eurostat-

Ideally, one would look for symmetry with the product classification.

11. Do you think that the development of the digital economy and new types of economic activities requires a revision to the current ISIC classification system? For example, should publishing activities on the internet be classified differently from publishing activities in print version? Or do you consider that, as the internet is only one means of producing and transacting goods and services, there is no need to revise the industrial classification, ISIC?

Australia- The ABS agrees with the position of the advisory expert group (AEG) that the internet is only a means to transact goods or services and units are classified to the industry of principal activity. Accordingly, the “digital economy” probably sits best in a satellite account, which would have its own methodology of how to split the industries out, rather than revising international classification systems currently used in the compilation of National Accounts.

Canada- No need to revise. The classification of digital economy would be more on the product side. All industries could produce digital and non-digital goods and/or services.

Exception could be made for platforms. Perhaps a specific industry for platforms within the Professional, scientific and technical services industries?

Finland- We are not quite sure if the ISIC classification system could be revised so that it could separate digital industries and that it would be still up-to-date in a few years.

However, we would classify the mediator to the same ISIC code as the activity it serves. Examples: BlaBlaCar (49), Uber (49), Ebookers type travel agencies (79), web-based employment agencies (78), AirBnB type accommodation services (55).

In cases where the mediator does not charge any fee for the use of the platform and earnings are generated instead by sales of advertising space, the classification becomes more complex. ISIC industry could still be

the same as the activity provided on the platform (e.g. 79) even though the product really was space sold for advertising (73).

Israel- indeed, the internet is only one means of producing and transacting goods and services, also the Internet was present when the current version of the ISIC we revised. Therefor a revision of the ISIC manual is not needed at this stage, but in some industries, it could be beneficial if we could distinguish between digital and non-digital activity. This should be follow by defining and identifying digital activity in more precise and profound way.

For instance, in Computer programming (62) industry the activity is diverging into companies providing only generic internet based services (the client interacts with the system e.g. WIX) VS companies that are present in the digital economy but provide costumed products (e.g. system development and consultancy). An indication (or sub-industry) on this kind of activity, if possible to identify, could be helpful in computing a satellite account for digital economy.

New Zealand- No. In the example given the publishing activities are essentially the same: advertising or subscription funded/subsidised where the consumer inherently 'pays' for the content by being subject to advertising or by directly paying for it. It is the medium that has changed not the fundamental activity. However a means of identifying digital economy businesses through additional identifying fields in business registers may be a simpler method of identification.

Slovenia- No. Reporting units are not able to report in such a detail. A lot of units have mixed incomes (normal and incomes from digital sale), therefore, revision is not needed. Any change in classification system would impose additional costs to reporting units and national statistical offices.

Eurostat- For the measurement of GDP a revision of the current ISIC is not required. However, users need separate measures of digital activities in order to understand the importance of the digital economy within specific sectors and to support policy decisions.

It should be noted that the simple approach would be to extend the ISIC/NACE with more details. A better solution is to create a new classification for the "how" because businesses may develop digital options for almost all ISIC/NACE classes. Such a classification should focus on how producers and consumers contact each other and could include the following categories: traditional sale, sale via own websites, platforms (here there are several subtypes), streaming services. (While not relevant for NA purposes, such a classification could have a high policy interest because the nature of the contractual relations differs).

Finally, there may a need for revision of ISIC/NACE and CPC/CPA due to the appearance of new business models and products that are difficult to classify e.g. due to bundling.

Yes, maybe---

Italy- The matter deserves a specialized investigation, involving digital industry and business experts as well as classification experts. Just to make few anecdotal examples, a non-technical but informed knowledge of transformation of music production and distribution in the digital domain seem to point out that there is scope for substantially up-dated details of the "Music content and related services" category considered in the "Content and Media sector" defined by OECD (for instance concerning: digital sharing platforms, such as Bandcamp; integrated music streaming and reproduction, as the SONOS/Spotify or SONOS/Deezer services). The same is likely to apply to digital publishing activities encompassed by the "On line content and related services" category and digital distribution of specific services currently encompassed by "Motion picture, video, television, and radio contents and related services" (see new online integrated content distribution platforms).

Mexico- ISIC classification system should be reviewed. In Mexico's case, NAICS classification system distinguishes the economic activities of publishing and printing newspapers, magazines and periodicals, books, etc., from internet publishing of the same products.

United Kingdom- Possibly - on the industry side, if we can define "pure" digital only operators? Where both take place by the same provider then not for the industry.

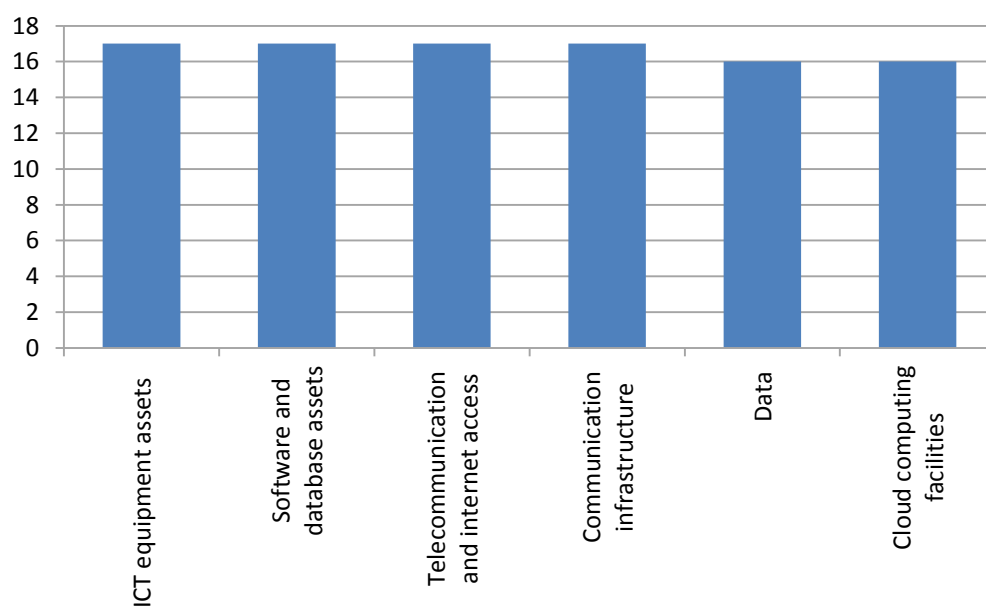
Chile- publishing.

Kazakhstan- It may be necessary to highlight the activities for the provision of intermediary services through a digital platform. Publishing.

12. When looking at the enablers of the digital economy, what would you include from a statistical perspective?

TF members in general would include the following enablers seen in the figure below.

Figure. What to include as enablers of digital economy



Other enablers specified by TF members were:

- Education and skills
- Telecommunication and internet fees
- Repair or maintenance of digital facilities
- Electronic payment systems without banking system (oxxopay, paypal)
- Banking (debit card, credit card).
- To be considered a transaction within the digital economy payments must be made electronically and it is necessary to have a credit card or to be referenced through an electronic payment system
- ICT services (I guess broader than just cloud services)
- Provision of data management and data analysis services (e.g. in relation to Big Data and IoT)
- Provision of data protection services (anti-virus, secure communication, ...)

Specific questions

Digital intermediaries

13. Are the transactions facilitated by digital intermediaries recorded gross (i.e., the platform receives the full amount from the passenger then remits a portion to the driver after taking its fee) or net (i.e., the platform only receives an intermediation fee)? Please take into consideration all types of digital intermediaries and not just transportation or accommodation.

Responses: Gross: 3; Net: 2; It depends: 10; Don't know/unavailable: 2

Finland- Response: It depends

If the digital intermediary is of small scale activity and thus not in our questionnaire, the transactions will be recorded as they are in tax data (gross or net).

This is a bit too detailed methodological issue at this point and it should be discussed later.

Israel- Response: It depends

Until now we were unable to get a clear understanding on the data availability, and this is why 'it depends'. In the case of policy indicators, understanding the extent of activity taking place on digital economy (gross) have greater importance than the value added generated by platforms provided by digital intermediaries. In most countries those type of platforms are not even part of the domestic digital economy.

Of course this raises issues of cross border transactions, but this was considered as all-ready-dealt-with issue in the previous section of our work.

Italy- Response: It depends

At the moment there is not a comprehensive approach to digital platforms and the actual measurement depends on the available information, the detail of data on costs and the possibility to delineate flows involving foreign units.

the Netherlands- Response: It depends

Focus on different variables. For example: consumption, production, turnover, value added. Start compiling figures on consumption and turnover. Value added could be an important key indicator for the digital economy in the future (share in GDP).

We should always look at the economic reality that we want to describe. For example, if an intermediary platform can be said to employ the service deliverers, e.g. the taxi drivers, then transactions should be recorded gross. To determine whether a platform employs the service deliverers may be difficult, but e.g. in the Netherlands, the tax and labour laws provide guidance as to whether a formally self-employed person should in reality be regarded as an employee.

We may also look at parallels with previously existing arrangements. For example, transportation platforms might be compared to telephone call centres for taxis, which sometimes employ the taxi drivers directly, whereas in other cases they act merely as an intermediary.

New Zealand- Response: It depends

In practice it varies depending on businesses operating models (e.g. do they only receive the intermediation service fee, or do they receive the full fee and deduct costs).

Slovenia- Response: It depends

Digital economy is not covered directly by data sources. The majority of digital data are implicitly included in the NA estimates, however the share cannot be determined. C2C business is not sufficiently covered.

United Kingdom- Response: It depends

Do they take ownership of goods or services? Like Uber owns no taxis, Alibaba owns no stock, AirBnB do not own property, etc. Ownership is key. If an intermediary, then net. If not, then gross.

IMF- Response: It depends

Comment on the question itself: This seems to be a question about actual practices. It would also be worth asking for views on what the best practice would be.

Answer/comment:

Sharing economy services would be recorded gross, but for intermediation of peer-to-peer sales of goods (i.e. e-Bay) or peer-to-peer lending, the services would be measured net.

Canada- Response: Don't know

We currently do not directly capture any of these intermediary platform services in our statistical system. These are mostly non-resident units and thus are not included within our collection systems (surveys, tax). We believe that the services of these platforms is captured indirectly within business intermediate consumption and household final consumption, and therefore would be in gross form, but is not uniquely identifiable. Due to this indirect capture the activity is assumed to be misclassified based on the category of business or household consumption, rather than to trade of some sort of business services.

In some instances there are affiliates of the platforms located within the country. However, our investigation has shown that the business structure of these enterprises is such that consumers are transacting with the non-resident establishment and the domestic establishment is simply providing advertising/marketing services on behalf of the non-resident parent company.

14. Does the gross or net arrangement of the transaction vary by type of activity? (i.e., are accommodation services arranged by digital platforms normally recorded on a net basis but transportation services arranged by digital platforms are recorded on a gross basis)? Please take into consideration all types of digital intermediaries and not just transportation or accommodation

Responses: Yes: 2; No: 3; It depends: 9; Don't know: 2

Most countries responded that whether the transaction is recorded gross or net by businesses probably varies by type of activity. It should be noted that the question appears to be interpreted differently by respondents. There are really two issues for discussion. (1) how the company actually reports the data and (2) how it should be recorded within the national accounts.

Below are some individual TF member responses.

Australia- Response: It depends

Who pays the facilitator varies depending on the activity. The ABS approach is to assesses the Value Added of each activity, keeping in mind that proxies of Value Added may not be the most reliable indicator (ie., sales of goods and services for units undertaking both market and non-market activities). Depending on the activity, the source data may be reported on either a gross or net basis, and, based on this, national accounts will need to estimate gross output, intermediate inputs and value added.

Canada- Response: It depends

It probably does vary by type of activity and provider. We would like to begin profiling and/or contacting these companies to understand more fully their business and pricing models to help our measurement, but also our classification or categorization of their services.

Finland- Response: It depends

If the digital intermediary is of small scale activity and thus not in our questionnaire, the transactions will be recorded as they are in tax data (gross or net).

In travel agency activities and in trade industries they are most likely recorded net.

However, this question is difficult to answer as the profit making strategies may vary across digital intermediaries. In other words, they may generate revenue by for example selling data, advertising or charging the intermediation fees.

Netherlands- Response: It depends

Depends on the legal/financial construction involved (can be different per unit). Following economic reality should be the leading principle here (i.c. the nature of the transaction).

New Zealand- Response: It depends

In practice it varies depending on businesses operating models (e.g. do they only receive the intermediation service fee, or do they receive the full fee and deduct costs).

Israel- Response: Don't know

I can't answer this question at this point. This is a data issue and we don't know yet if the intermediates could be separate by it (net) or only the full transaction (gross). It also an issue of who is going to pay for the intermediaries services – the customer directly or the business.

Norway- Response: Don't know

I do not know today if it is recorded gross or net. It should be recorded net (as we do with traders), else we might have problems with double counting. We need more knowledge about how the company record these transactions.

15. Are digital intermediaries classified to the activity where the provider of the service is classified? (For example, if the platform's activity is predominantly matching drivers and passengers is the service provided by the platform classified in the taxi services industry (i.e., land transport industry, ISIC 49))

Responses: Yes: 8; No: 1; It depends: 7

TF members indicated mixed responses on where digital intermediaries are classified.

Some individual responses

New Zealand- It depends:

We would look at the actual service the intermediary is providing to determine its classification as well as other entities providing similar services. This will vary but may often be some kind of management service.

United Kingdom- It depends:

Also, if gross, retain with main industry. Here the characteristics are similar.

If net, maybe consider an intermediary approach such as in financial industries or leave with main industry.

16. Does the determination of the industry classification depend on how the transaction is arranged?

For example,

- if the payment to the digital intermediary is recorded gross (i.e., the platform receives the full amount from the passenger then remits a portion to the driver after taking its fee)
- If the payment to the digital intermediary is recorded net (i.e., the platform only receives an intermediation fee) **then where do you classify these activities?**

Responses: Yes: 4; No: 6; Don't know: 3

Some individual responses:

Australia- Response: Yes

The 'direction' of revenue flows is central to the classification because the activities undertaken by the businesses must be framed in terms of who is the actual service provider. The question of who receives the customer payment and therefore where the facilitator operates within the production process is used to make an ultimate decision on how to classify the facilitator.

Direction of payment:

1. Customer --> Provider (facilitator gets a commission): Classify facilitator to support service class
2. Customer --> Facilitator --> Provider: Classify facilitator to the activity class of the provider

For example, Uber: The direction of payment is Customer --> Facilitator --> Provider: ANZSIC class 4623 Taxi and Other Road Transport.

In cases when the ride sharing facilitator receives a gross payment from passengers via a platform/app and subsequently pays the driver the majority share of the fare, it is providing a "taxi cab management service" and the appropriate code is ANZSIC class 4623 Taxi and Other Road Transport.

In cases when the driver charges the passenger and subsequently the driver pays a commission to the facilitator, the facilitator is simply performing a support service for the driver and the appropriate code is ANZSIC class 5299 Other Transport Support Services n.e.c.

Drivers that are considered owner drivers are involved in providing the ride sharing service and have to apply for an ABN and register for GST. Owner/operators should be coded to ANZSIC Class 4623 Taxi and Other Road Transport which is consistent with taxi owner/operators.

Drivers that are NOT owner/drivers or are contracted by a third party should be coded to ANZSIC Class 5299 Other Transport Support Services n.e.c., which is consistent with the treatment of contract taxi drivers who do not own the cab.

Canada- Response: Yes

In short, we do not think the provider should be classified where the service is classified, but we do not have a strong opinion on where that should be. Advertising services, financial intermediation. Yes, if the payments structures are different, this would impact where they are classified.

Finland- Response: No

The digital intermediaries may be in the same industry despite of being recorded as gross or net.

Israel- Response: No

The classification is based on the firm main activity, in this case is providing a software based platform, which is classified to Computer programming (62). In some cases the local representative of the global intermediary might be engaging in other activities, such as advertising or market research and therefore will be classified to other industries.

Netherlands- Response: No

Sales channel and or delivery channel is not a criteria here.

New Zealand- Response: No

It is not the money flow that determines the industry classification but rather than what product or service they actually provide. Where the intermediary pays suppliers as employees rather than simply arranging buyers and sellers then we would likely treat the transaction differently but the employment arrangement between the intermediary and the suppliers of the service (in this case drivers) is more difficult to determine than simply the intermediary receiving the gross amount.

17. If digital intermediaries are not classified to the industry of the service provider then in which industry/industries are digital intermediaries classified in your country?

Australia- In the case where the provider pays the facilitator gets a commission, ABS will classify the facilitator to a support service class, e.g. Class 5299 Other Transport Support Services n.e.c.

Norway- We have a rule that they should be classified in NACE 62.13 (Computer programming and related services).

United States- We believe the digital intermediaries are classified in the industry with the most equivalent production function. So Uber would be in transportation. Airbnb in travel arrangements. A clear challenge in the US at least is that the drivers are contracted so their incomes are reported as sole proprietors. Their NAICS classification is less certain in the reported tax data.

18. If the digital intermediary is resident abroad do you have trouble obtaining the relevant information from the digital intermediary? If so, how are you trying to overcome such challenges?

In general, countries find that the digital intermediary is resident abroad and they do have problems obtaining the relevant information. A major issue is that surveys, in general, are only (and can only be) provided to resident units. Thus some countries are considering alternatives sources such as credit card information, household surveys, and administrative sources were mentioned as potential data sources.

Some individual responses:

Australia- The ABS Survey of International Trade in Services (used to compile Balance of Payments statistics) can only be provided to resident (Australian) enterprises. Therefore non-resident companies are out of scope for current collections. The ABS is interested in expanding the scope of its economic collections – which may include digital intermediaries who are non-residents.

Canada- Most if not all platforms are non-resident units thus are not included within our collection systems (surveys or tax). We believe these services are captured within business intermediate consumption and/or household final consumption. Currently there is no adjustment being made. Although we are working towards estimating the gross value of these transactions so that we may reallocate the value of the platform services to the appropriate industries and component of GDP (e.g. imports). Acquiring data on these transactions is quite difficult.

In some instances there are affiliates of the platforms located within the country. However, our investigation has shown that the business structure of these enterprises is such that consumers are transacting with the non-resident establishment and the domestic establishment is simply providing advertising/marketing services on behalf of the non-resident parent company.

Israel- we have problems with obtaining this kind of information. At this point we are trying to squeeze the 'Credit Card information' Lemmon, but we already noticed that we will have to find other sources to support this information. At present we are developing our household and business surveys to provide reliable indicators on digital economy, e-Commerce and its typology. We are not yet at the point of identifying intermediaries fees, and I'm not sure if this type of solution can fit to that need.

Korea- Yes, we are trying to seek cooperation to obtain source data from intermediaries. Also, we have a plan to conduct survey on household's expenditure and revenue from sharing economy.

Mexico- This is one of the main challenges for many countries around the world immersed in global production or in global production chains, due to production arrangements, etc. To start off, there are problems to identify the economic unit, which could not be operating in the country. Indirect measurements should be taken into consideration, from goods flow using other data sources as administrative records of balance of payments, and from home surveys (as it is done for measuring taxi services, for example).

New Zealand- While there are challenges in getting information in a comprehensive way discussions around sourcing information have been quite positive to this point. Often the key has been building an understanding on how this information will be used and released in an aggregated in macro-economic estimates so they are comfortable in providing information. This would be a challenge if breaking down the macro-economic estimates as it would likely start getting into confidentiality concerns in a number of areas.

Norway- Today we have no information from digital intermediary resident abroad. We have also scarce information from the survey on "trade in services". This is a survey only covering the non-financial sector. No information regarding household, financial sector or government sector is collected (either this is trade in services or financial transactions) the macro-economic estimates as it would likely start getting into confidentiality concerns in a number of areas.

United Kingdom- Rely on household surveys for HHFCe but imports of services would be deficient.

United States- Since many of these technologies are U.S. technologies, this question may not be as relevant for the U.S. However, if those technologies are sold or otherwise transferred to a foreign subsidiary of a U.S. parent, then the question may be more relevant.

Lithuania- Yes, we have problems. We are trying to get some information from administrative data sources.

Price measurement

19. In practice, do you take into account the change in the offered contents in a streaming service (e.g. Netflix) as a change in quality when measuring price changes?

Responses: Yes: 4; No: 11; Don't know: 1

In practice only a few countries appear to be taking into account the change in the offered contents in a streaming service as a change in quality when measuring price changes. Sometimes this is due to the fact that this type of service is not included in the national price index (e.g. CPI), no data availability to make a quality adjustment, or that the country simply prices the monthly subscription fee.

The UK noted that the quality of service is recorded as part of the price collection and a change would be treated as non-comparable and that the class mean imputation would be used to deal with the change. Two countries mentioned that they only take into account if it was a significant change to the extent of content or its duration. New Zealand stated that they often aim to estimate an impact of consumers substituting to new services. For example, for streaming services they model consumers switching from subscription TV. However, it was noted that such an approach is not possible for all technological change.

The Netherlands noted that, in their opinion, the change in the content should not necessarily be seen as a change in quality. They said it depends on whether or not the consumer has a choice in purchase (for example, between the streaming service with the original contents and the service with the changed contents). Assuming that in this particular case the consumer has no choice and simply has to accept the service with the changed contents, it is justified to apply no quality adjustment at all, even though there may be some discernible change in quality. On the other hand, if the consumer does have a choice, e.g. by subscribing to another service, it might be justified to apply a quality adjustment.

20. Are accommodation services booked through digital platforms (such as Airbnb) included in your CPI sample when you calculate the price index for accommodation services?

Responses: Yes: 4; No: 12;

Four countries appear to take into account accommodations booked over the internet through digital platforms in their CPI (12 responded no).

21. Are transportation services booked through digital platforms (such as Uber) included in your CPI sample when you calculate the price index for transportation services?

Responses: Yes: 3; No: 13;

Three countries appear to take into account transportation services booked over digital platforms in their CPI (13 responded no).

Identifying data gaps

22. Keeping within the conceptual framework of the national accounts, do you think digital intermediaries as well as the (paid) services provided by unincorporated service providers (typically self-employed) are appropriately captured? Are there data gaps due to how the accounts are currently measured?

All national statistical offices responding felt that the conceptual framework of the SNA was sound. However, most countries have data gaps. Countries mentioned that the estimates of income of self-employed data may not be exhaustive (although many countries make adjustments to try to arrive at exhaustive estimates). In addition, the digital intermediary activity may not be separately identifiable.

22a. What are the most important gaps and what are your recommendations for remedying the gaps? (i.e., is the most important gap missing certain transactions or inadequate quality adjustment of price indices)

The most important data gaps identified by countries are the non-residency of the digital platforms and the related missing imports. Many countries noted that these transactions are not currently reflected in the trade data because they do not collect information from non-residents and the providers/consumers of the final service are likely not identifying the (imported) intermediary service when responding to household/business surveys. Areas of challenge are around the import of digital delivered services either directly by households (e.g. apps, games, music, etc.) or implicitly through direct providers of services (such as taxi services). (see also responses to question 18).

Another important data gap is the measurement of prices, either not including these types of transactions in price indices or inadequate quality adjustment.

In general countries felt that the income generated from the self-employed is probably adequately picked up. In particular if the tax registers are considered fairly complete or if the government gives a fairly strong incentive to file appropriate tax information. For example New Zealand noted “While part time self-employed are an area of challenge they are at least to some extent included in the existing national accounts estimates. The tax system in New Zealand provides significant incentive to provide tax information for unincorporated enterprises which is used for the national accounts estimates.”

Australia said that their initial findings show that the potential digital mismeasurement is very small. Also noting that the mismeasurement can potentially go in both directions (for example, double counting of imputed rent and Airbnb would overstate output growth).

23. Keeping within the conceptual framework of the national accounts, are there any additional gaps that you would like to specify?

Here the countries reiterated the issues with non-resident intermediaries and noted that unobserved activities (hidden, misreported) facilitated by digital intermediaries require some investigation. Canada noted that they “are currently exploring our coverage of digital services with particular focus on those services that are traded. Since a large proportion of digital entertainment services (streaming, downloading music, mobile applications etc.) are provided by non-resident firms we must ensure that this activity is captured and properly classified within our national accounts. We are also exploring the area of income generated online, for example from people posting videos on YouTube. We want to know if people are reporting this income and if so what industries these activities are classified to. Again we feel that even if the activities are captured it is likely not reflected within the trade data.”

A few countries also noted the use of consumer durables as investment goods as a data gap.

Quantification

24. Do you have adequate information (perhaps more granular data is needed) to highlight the digital economy?

Responses: Yes: 3; No: 14

Most countries responded that they do not have adequate information to highlight the digital economy.

Countries that responded yes, noted having information on e-commerce. For example, Canada stated that many of their services industries business surveys currently have an e-commerce module included. Thus, they collect information on the proportion of activity that is conducted online. In addition, for specific industries such as newspapers and books they collect revenue and expenditure data by type of product (e.g. physical and e-books). We also collect information on advertising revenue generated online versus in print products.

Israel noted that they do not have adequate information yet, but they are experimenting with credit card information and adapting surveys to capture e-commerce by households and businesses. They are currently focusing mainly on the extent of e-commerce and not on the extent of the 'digital economy'. Israel is also engaged in developing a new set of 'Digital indicators' for Israel, some of them based on already developed and known indicators, but others (mainly in education and health) are new.

25. What types of indicators would you recommend developing to highlight the most relevant items related to the digital economy (e.g., the share of activities that are facilitated by digital intermediation in the economy)?

Australia

- On-line retail as a % of total retail
- Accommodation sharing as a % of total accommodation services
- Ride sharing as a % of total road passenger transport services

Chile-

- Digitally intermediated production in volume terms
- Employment of industries associated with digital economy
- Digital intermediation margin

Israel-

- The extent of the 'digital economy' and its share in the economic activity
- Indicators on infrastructure and accessibility (e.g. investment in ICT infrastructure, Broadband, etc.)
- Education and digital skills
- 'Digital workforce' – to identify the type of occupations related to digital activity and measure their part in the workforce

Italy-

In our view the current priority is developing the measurement of new digital activities, and in particular on gathering detailed information about the specific activities belonging to digital intermediation, digital enabling, digital transactions and so on. Designing indicators seems rather premature, as the delimitation of digital activities is still unclear.

Korea-

Total turnover and intermediation margin through online platform by type of economic activity.

Mexico-

- Weight and size of the digital economy
- Evolution of the digital economy sector
- Structure of the sector
- Percentage of e-commerce in the GDP
- Employment in the digital economy
- Most relevant digital economy sector
- Household expenditure on digital products
- level of digitalization in productive processes
- the economic value of the data.

Netherlands-

Value added should be a key indicator in the future, but start compiling turnover and trade figures in first instance. In general, it is important to emphasize that it is not only the impact on the total economy that is interesting, but also the transition. An example is the transition from traditional providers of services to platform based intermediaries. Or, the transition from investment in own ICT to usage of ICT services (e.g. cloud computing). It may be the case that the current framework is right about the total magnitude of the economic activity, but it does not give any guidance about what is the division between digital and non-digital (however defined).

New Zealand-

- Value of digital economy activity as a share of total economy as part of a satellite account.
- Include a direct vs indirect aspect such as is included tourism satellite accounts. For the Uber example the direct would be the fee/commission that Uber keeps while the indirect could be the gross amount that households pay which also includes the value of the actual passenger transportation service. This would seem to be a way of capturing the needs of a wider set of policy needs than simply going for a direct or indirect approach.
- Value of digitally ordered, platform enabled and digitally delivered.
- Include an imported vs resident producer dimension given the importance of imports of these in many countries.
- Included a direct and indirect aspect as above.
- Would there be value in the number and frequency of use around the use of 'free' software and apps? This might be a useful way to build a better understanding of the impact of this over time.
- Advertising revenue associated with data flows?

Slovenia-

Activities listed under 7 and 8 in relation to total of the GDP, share of digital trade in each of the individual industries etc.

United Kingdom-

GVA generated by the “digital economy” as well expenditure flows, etc.

United States-

The following indicators would probably be a good start: 1) share of activities that are facilitated by digital intermediation, 2) share of retail activities that are attributable to online e-commerce (e.g., Amazon, Target, Bed Bath and Beyond, etc.), 3) share of advertising expenditures that are attributable to social media, 4) flows of “free” data between households and corporations, and 5) some indicator of big data that may necessarily stop short of valuation.

I think that the SNA treatment of databases as capital formation is becoming increasingly important with the emergence of big data and other digital products. The background with this survey indicates that “big data” may not be considered a produced asset in the SNA framework. However, I think the commercial advantage of big data is dependent on the extent to which the data are cleaned, organized, and available for access and use, which does fall within the asset boundary of the SNA.

Kazakhstan- The share of the digital economy in GDP, the share of digitalization in industries, the impact on productivity growth.

26. Would it be possible to develop indicators on computerised/digital inputs, robots, artificial intelligence (AI) in the production process?

Responses: Yes: 4; No: 9; Don't know: 2

Most countries thought it would not be possible to develop indicators on computerised/digital inputs, robots, artificial intelligence (AI) in the production process mainly due to lack of data availability.

Finland noted that they conduct a “Use of information technology in enterprises” survey which contains questions on some of these but that it would be difficult to turn these into monetary values. In addition, Israel noted that there are existing surveys designed to capture Biotechnology and Nanotechnology in the economy and that this type of approach could be a way to capture those kinds of activities. Israel noted another approach is to capture the activity in institutions engage in that kind of activity by sector classification. This approach is more difficult and provides less information but in an environment of increasing answering costs this approach could be more sustainable.

New Zealand noted that , at this stage they do not have the information available to put this together. However in terms of whether it would be possible it probably can be done if resources were available. It would likely require changes in existing collections and potentially additional collections to gather this information. In terms of robots these are not split out in any of the information we currently have available. It isn't clear if businesses have this information separately available however if they do then it seems that asking for additional information would be one approach. If these came through imports it might be possible to identify this information. AI and computerised/digital inputs are highly likely to need new collection vehicles. It seems as though there would be challenges in getting computerised/digital input data from businesses as they are unlikely to separate out this information in the way that we would want. Parallels to the difficulty in capturing own account capital formation can be drawn.

27. Are you planning on undertaking any studies for data compilation, combining existing data sources with new approaches, involving either new questions in surveys, data linking to better identify the digital economy?

Responses: Yes: 10; No: 6

Many countries plan on undertaking further research, in particular on digital platforms and potential data sources.

Canada- We recently conducted a Labour Force Survey (LFS) Fast Track Module. This is an extension of our existing monthly LFS that can be used to collect additional information. In the most recent LFS Fast Track we collected information from households on their use and provisions of services in the sharing economy (ride sharing and private accommodation services). The results were published in February 2017 (<http://www.statcan.gc.ca/pub/13-605-x/2017001/article/14771-eng.htm>). We are planning to conduct 2 more LFS Fast Track Module in the coming year. One in October and the other in February. The first will be a repetition of the first module to add an additional year to our time series and if the results are coherent we will use these to begin making explicit adjustments in our core accounts. Of course, with the accommodation services, we will need to decide how to align this with the owner occupied concepts. The second module will be a preliminary stab at getting expenditures on digital products, related to music, video, TV, gaming, mobile apps, online software and cloud computing/storage/database services. We are also going to try and ask how much income is being generated by providing on-line content through YouTube or other social media use. While the exact content to the Fast Track is not yet know it will focus on digital services, particularly those that are traded.

We have household and business surveys on internet time use. Both of these surveys are planned to be completed in the near future.

Chile-

A working group has been formed to investigate and identify the transactions and products related to the digital economy as well as the exploration and creation of new sources of information to allow an adequate measurement of this phenomenon.

Finland- Statistics Finland is developing modules of questions about the sharing economy for surveys on the use of ICT by Population and by Enterprises. Platform economy is also studied in this year's Labour Force survey's on ad hoc basis. In addition, there is ongoing preliminary discussions about including questions about sharing economy in Tourism Statistics (e.g. Airbnb in accommodation statistics).

Israel- As I mentioned above we are engaging in the development of large set of digitalization indicators which involves the development of new data sources and adapting databases in other ministries (e.g. education and health), developing new surveys and new questions to existing ones. At the end point we will have a set of 84 indicators that will provide KPIs to our government and policy makers in a large budget project to enhance digitalization in Israel's economy and society. Some of the indicators are already known and fully developed but some are new and based on policy needs.

This effort calls for undertaking studies for data compilation in order to develop all the needed information.

Korea- Currently, we are investigating financing structure of Korean digital intermediaries.

Afterwards, we will search a way to capture transactions between service provider, consumer and digital platform company and conduct pilot survey on sharing economy.

Also, we are going to strengthen cooperation with other organizations holding fundamental data.

Mexico- or example, in the Questionnaire for the Manufacturing Industry, applied in the 2014 Economic Census, a question was included to obtain information from establishments, related to Internet sales:

"F316 Indicate the percentage of your sales made by Internet, email in the hosting of a web page during 2013".

Netherlands- Export of digitized products (Eurostat Grant)

Attention for digitalisation in program 'Measuring the economy'.

United Kingdom- The output specification for developing our short-term surveys will aim to include internet related questions in industries other than retail.

United States- This is also tricky. We are in the process of discussions with the Census Bureau about what can be collected. Internally, we are also wondering what can be supported through tax or administrative records.

28. Could you use the typology developed in figure 1 to provide a breakdown of the most relevant transactions?

Responses: Yes: 10; No: 6

Comments from Finland-

We do not find it meaningful to provide a satellite which would cover every part of digitalisation. However, this kind of typology could help us identify areas that need to be further developed.

We would be delighted to see a framework (table) where is noted exactly what is within the production boundary and what is not. This would be useful for identifying production that is not within the current framework of national accounts (not in GDP). Then it could be further discussed, if the product or service is not within the boundary, should it be included in a satellite account.

It should be also evaluated whether the activity (such as some form of platform economy) is significant in country A or not.

Moreover, the price indices should be evaluated. Is there any data gaps and how should the quality adjustment issues be treated.

Netherlands- The identification of the products and the way in which the transaction is carried out would allow identifying the financial flows associated with digital commerce.

There may be limitations in properly capturing information about the purchase of digital products through cash payments. To address these, and other similar drawbacks, deeper knowledge of financial system transactions is required.

New Zealand- The typology seems to suitably represent the activities that we were thinking about. The digitally ordered aspect is seen as an area of interest and it make sense to include this. It is worth noting that based on potential policy implications there have been some discussions around this being less important than the other aspects.

United States-

I think the typology is clear and helps provide some structure to what is the digital economy. I think further refinement will be necessary before it is ready to be utilized for statistical purposes, such as more clarity on enablers, users and producers that fit as sub-sectors into the existing SNA institutional sectors, and well-defined boundaries around the nature of digital transactions.

29. Are you planning on developing any satellite accounts or have you conducted (or will you conduct) any studies highlighting the digital economy?

Responses: Yes: 7; No: 9

Finland- However, we have prepared a report on “digitalisation and GDP” in cooperation with the Bank of Finland. This report will be translated to English this autumn. The scope of this report is on highlighting what is part of GDP and what is not. Moreover, the report underlines some measurement issues relating digitalisation.

Mexico- Our answer is yes but only as a study since we have no intentions for the moment to develop a satellite account on the subject of the digital economy. For example, in the Questionnaire for the Manufacturing Industry, applied in the 2014 Economic Census, a question was included to obtain information from establishments, related to Internet sales:

"F316 Indicate the percentage of your sales made by Internet, email in the hosting of a web page during 2013".

Netherlands- Highlighting the digital economy :Export of digitized products (Eurostat Grant)

Attention for digitalisation in new program ‘Measuring the economy’ (start Autumn 2017).

CBS(2016), Measuring the internet economy in The Netherlands: a big data analysis

<https://www.cbs.nl/nl-nl/achtergrond/2016/41/measuring-the-internet-economy-in-the-netherlands>

United Kingdom- We are working with external economists to develop the digital agenda, measurement and identifying challenges and ideas for what can be done. Also linked to the productivity puzzle.

United States- This is a big part of our agenda moving forward. We will have a draft paper for circulation in early Fall. We are also in the process of publishing a “Federal Register Notice” to solicit public feedback on definitional work.

30. Are you planning on undertaking any studies related to price measurement issues and the difficulty of appropriate quality adjustment.

Responses: Yes: 10; No: 7

Australia-The ABS has an ongoing programme to quality adjust price indexes for a range of services.

Finland- Testing the use of web-scraping and scanner data in price statistics. Price measurement issues and appropriate quality adjustment will be discussed in international working groups.

Germany- Price measurement issues and the difficulty of appropriate quality adjustment in the scope of digitalization are currently analysed for German Consumer Price Statistics, although no official studies are undertaken.

Italy- We are at the first stage of developing a project concerning price measurement issues in national accounts, focusing in particular on specific service activities and on quality adjustment approaches.

Korea- We will review the price measurement of newly emerging products and services in the digital economy. Also, we are considering expanding quality adjusted items using hedonic method.

Mexico- Yes, these issues are under investigation permanently.

New Zealand- There is some work being undertaken looking to extend the use of web scrapped data in price statistics as has been done for consumer electronics in New Zealand. This will better control for quality change given the improved techniques that can be applied to this more detailed data.

United Kingdom- Web scraping and other new data collection aspects and the need for quality adjustment.

United States- Price measurement is a key area of concern around digital. ICT price measurement is not new but the growth in ICT services has complicated the challenge. We have purchased and contracted expert research in a variety of areas including: software, cell phones, cloud computing, medical equipment, and telecommunication services.