

Guidance Note on Recording and Valuing “Free” Digital Products in an *SNA* Satellite Account¹

March 2022

1. Introduction

1. Options for the treatment of “free” digital products in the *SNA* were considered by the ISWGNA Digitalization Task Team in an issue paper in March 2020. In November 2020, the Task Team decided to move forward with two parallel work streams on “free” digital products, both of which result in no changes to the *SNA* central framework. One stream is a clarification of how “free” digital products are currently treated in the *SNA*. The other stream develops guidance on the treatment of “free” digital products in a satellite account. Following this, the OECD introduced a paper in April 2021 on recording and valuing data as an asset that generated additional considerations for “free” digital products and was used to gather input on the separate guidance note *DZ.6 Recording of Data in the National Accounts*.

2. This note summarizes considerations for recording and valuing “free” digital products in an *SNA* satellite account. The note briefly discusses the intersection of “free” digital products and data as an asset, the latter of which is planned to impact the *SNA* central framework, and then walks through the *SNA* sequence of accounts to outline three options for a satellite account on “free” digital products. The first option merely separates the value of “free” digital products that are already bundled in the value of other products under the current *SNA* treatment. The second option builds on the first option by including costs associated with the production of a data asset as recommended in *DZ.6 Recording of Data in the National Accounts*, specifically recording and processing (R&P) costs plus observable phenomena procurement (OP-P) costs. The third option builds on the second option by including costs associated with the production of user-generated content. All options increase the visibility of the household’s role as a final consumer of “free” digital products. The second and third options increase the visibility of the intersection of “free” digital products and data as an asset. Likewise, the third option increases the visibility of the household’s role in the production of digital content. All options avoid double counting the production of “free” digital products and mitigate imputed transactions, which have been cited as concerns in the development of a treatment for “free” digital products.

¹ This guidance note was drafted by Richard Heys (ONS), Dylan Rassier (BEA), and Cliodhna Taylor (ONS) as members of the ISWGNA Task Team on Digitalization. The note is based on an issue paper drafted by BEA in March 2020 on behalf of the Task Team, a guidance note prepared by the Task Team in June 2020 on recording and valuation of data in national accounts, and a paper prepared by the OECD on recording and valuing data. The note accompanies a separate guidance note prepared by Marshall Reinsdorf (retired) and Jennifer Ribarsky (IMF) on the current *SNA* treatment of “free” digital products (*DZ. 3 Treatment of “free” Digital Products in the “core” National Accounts*). This note also incorporates inputs from other Digitalization Task Team members, including Andreas Doltt and Nicola Massarelli (Eurostat), Erich Strassner and Rachel Soloveichik (BEA), John Mitchell (OECD), Marshall Reinsdorf (retired), Jennifer Ribarsky, Jim Tebrake, Margarida Martins and Slivia Matei (IMF), Ziad Ghanem (Statistics Canada), Sri Soelistyowati (BPS Indonesia), Stanimira Kosekova (ECB), Benson Sim (UNSD), and Kevin Fox (UNSW).

3. The content of the note uses feedback from consultation with the ISWGNA Digitalization Task Team on the March 2020 issue paper as well as the Task Teams' existing guidance note on data as an asset from June 2020 and OECD (2021) on recording and valuing data as an asset.

2. Existing Materials

4. “Free” products (digital and non-digital) produced by non-market producers are already included in GDP to ensure international comparability, although they are estimated in a number of ways across countries: 1) indirectly where input costs proxy for output, 2) direct measures of outputs (e.g., number of surgeries, number of children educated, etc.), or 3) directly with quality adjustment to reflect the change in the value of the service provided. Household consumption of the products is not recorded in individual consumption expenditure but is recorded in actual individual consumption as social transfers in kind from government and non-profit institutions.

5. Advertising-supported “free” products (digital and non-digital) produced by market producers (e.g., broadcast television, online platforms) are also included in GDP through the prices of advertised products. The *SNA* does not recommend disentangling prices of advertised products and unpriced products via symmetric adjustments. As a result, transactions recorded in the *SNA* are limited to advertising services and the advertised products for the relevant industries in the corporations sector, meaning household consumption of advertising-supported “free” products is not visible in the *SNA*. Likewise, in the case of “free” digital products that are provided to access observable phenomena (OPs), household participation in the provision of OPs is not visible in the *SNA*. Moreover, household production of user-generated content is also not visible in the *SNA*.

6. Reinsdorf and Ribarsky (ISWGNA 2021) provided a draft on the current *SNA* treatment of “free” digital products that was developed into *DZ. 3 Treatment of “free” Digital Products in the “core” National Accounts*. They point out that both platform and non-platform market producers often bundle items that are free or priced below cost with marked up items to maximize profits, and the bundle as a whole generates revenue that is commensurate with the amount of production taking place. They explain that digital platforms play an intermediary role by supplying “free” products that facilitate the interaction of two or more parties. There is a “funder side” and a “subsidized side” of such platforms. The funder side (e.g., an advertiser) pays a markup to the intermediary that covers the cost of the “free” products and then recovers that cost in the advertised product that it sells. The subsidized side (e.g., a household) indirectly pays for the use of the “free” products with the purchase of the advertised product. Reinsdorf and Ribarsky’s (ISWGNA 2021) salient point is that the ubiquity of bundled digital and non-digital products should have a consistent treatment in the *SNA* central framework and there should be no different treatment for “free” digital products. Thus, **one option for an *SNA* satellite account on “free” digital products is to simply separate the value of the “free” digital product from the bundle to which it belongs.**

7. Mitchell, van de Ven, and Zwijnenburg (OECD 2021) distinguish “recording and processing” (R&P) costs from “observable phenomena procurement” (OP-P) costs in the development of a data asset, and the paper was developed into *DZ.6 Recording of Data in the National Accounts*. OPs are defined by observations that exist prior to any effort made to produce a data asset. R&P costs include the usual costs incurred for recording, organizing, storing, and

processing OPs to generate information content of value: the data asset is created only when OPs are converted through recording and processing into a useable form. The central theme of the OECD paper is to highlight the value of OPs as an input into the process to create a data asset, and how that value should be reflected in the accounts—as either a produced component in the data asset or a non-produced component somewhere else in the accounts. The paper identifies three ways of accessing OPs: 1) in exchange for “free” digital products, 2) in exchange for explicit payment, and 3) as a by-product of a primary production process. Thus, **a second option for an SNA satellite account on “free” digital products is to demonstrate the intersection of “free” digital products and data as an asset by showing the household’s provision of OPs.**

8. The first two options do not include consideration for the household’s production of user-generated content that is hosted by an online platform. While some user-generated content may be produced for the household’s own consumption and fall outside the *SNA* production boundary as own-account services, there are two characteristics of user-generated content that merit additional consideration for the scope of an *SNA* satellite account. First, user-generated content may benefit the intermediary by attracting users and generating OPs used to produce a data asset and offer targeted advertising. Second, other households or other institutional units may consume user-generated content, which means the content would not fall within the *SNA* exclusion for household own-account services. These additional considerations imply the household may be engaged in production of output that may add to the value of an online platform’s data asset if the output is used by the platform as intermediate consumption in the production of the data asset. Thus, **a third option for an SNA satellite account on “free” digital products is to show the production and use of user-generated content.**

3. Options Considered

9. In the literature generated by statistical offices and international organizations so far, there has not been any consensus to recognize “free” products in the *SNA* central framework. Thus, a discussion of their treatment is limited to development in an *SNA* satellite account.

3.1. Defining “Free” Products

10. Statistical discussions of “free” products often include assertions that “free” products do not impose a new challenge in national accounts because advertising-supported television and radio have been around for decades. However, this assertion misses the point that so much of “free” products today are made possible by digitalization and require that users of “free” digital products provide something of value in exchange—e.g., observable phenomena.² In addition, the users of “free” digital products may also participate in production. For example, a free platform such as Facebook carries content produced by users, which is key to Facebook’s business model in terms of attracting new users and generating data used to target advertising.

11. A definition of “free” products can facilitate understanding for valuation and recording in an *SNA* satellite account. **Broadly, the scope of “free” products includes all digital and non-**

² This note does not articulate a distinction between “observable phenomena” and “data” because that distinction has been introduced in the Digitalization Task Team’s separate guidance note on data as an asset (*DZ.6 Recording of Data in the National Accounts*).

digital content that is provided to users without monetary charge but where there does (or could) exist a paid-for market for the same (or very similar) product. The scope in this case includes advertising-supported broadcast television and radio that have been common for decades and includes both household users and business users. **As a subset of the first definition, the scope of “free” products includes digital content that is provided to households without monetary charge for the full value in order to access household observable phenomena that can be transformed into a data asset that can enrich the effectiveness of advertising messages or can be resold or otherwise used in production.** The scope in this narrow case excludes broadcast television and radio and excludes “free” digital products received by households that opt out of providing access to observable phenomena or are otherwise not required to provide access to observable phenomena.³ However, the scope may include digital products obtained under the “freemium” model in which case the full value of the product is not included in the initial monetary charge but instead recovered through latter charges for additional functionality.

12. Under both definitions, the provision of content is financed with revenues generated by advertising efforts in exchange for products being placed in front of an audience. However, only with the narrower definition of “free” digital products do households provide access to OPs that have value for use in production.

3.2. Deciding the Scope of “Free” Products for a Satellite Account

13. To decide on the scope of “free” products for an *SNA* satellite account, the *SNA* definitions of *economic flows* and *transactions* are useful. *Economic flows* are defined in the *SNA* (para. 3.6) as reflecting “...the creation, transformation, exchange, transfer, or extinction of economic value; they involve changes in the volume, composition, or value of an institutional unit’s assets and liabilities.” *Transactions* are defined in the *SNA* (para. 3.7) as “...an economic flow that is an interaction between institutional units by mutual agreement or an action within an institutional unit that is analytically useful to treat like a transaction...”

14. In the past, households were subject to advertising messages in exchange for content provided through outlets such as broadcast television and radio. A household’s contribution to the exchange was limited to passively waiting through the break in content. In this case, the exchange does not seem to fit the *SNA* definitions of an economic flow or transaction.⁴ Thus, **this note excludes these “free” non-digital products from its scope.**⁵

15. With digitalization, households are still subject to advertising messages, but now the exchange takes place online and generally requires households to engage with a digital intermediary platform that is designed to collect observations that can be used either to design

³ The scope could be expanded to include “free” digital products received by households that opt out of providing access to observable phenomena or are otherwise not required to provide access to observable phenomena.

⁴ While the advertising may be successful in general terms across a population, the same cannot be said at the individual level and, thus, no individual transaction can take place. There is also no mechanism for the individual to participate in an economic exchange with the advertiser distinct from purchasing the advertised product.

⁵ Issues related to the treatment of “free” non-digital products emerged in the context of the COVID-19 pandemic. In particular, the ISWGNA and AEG issued guidance on the macroeconomic statistical treatment of public and private sector responses to the pandemic. The guidance note can be accessed on the UNECE website at the following link: <https://statswiki.unece.org/display/CCD2/Compilation+of+National+Accounts+in+times+of+COVID-19>.

messages that more effectively target preferences or to resell or innovate in production. A household's contribution is expanded by providing access to informational content on changes in behavior – in the form of observable phenomena – as the platform algorithms present stimuli to keep the household engaged in exchange for “free” digital products. In this case, the exchange seems to fit the definition of an economic flow. Likewise, the exchange fits the *SNA* definition of a transaction if the household's engagement is considered mutual agreement.⁶

16. In the *SNA*, *mutual agreement* in a transaction implies prior knowledge and consent of the institutional units but does not necessarily require voluntary participation by the units (para. 3.53). The *SNA* asserts that transactions take so many different forms that any general definition is inevitably imprecise (para. 3.54). In the case of “free” digital products provided by intermediaries, a household's engagement is presumably based on prior knowledge and consent even if the household may be unaware of the full extent to which the intermediary uses the resulting household observable phenomena.⁷ Thus, **this note includes the scope of “free” digital products under the narrow definition.**

17. The scope of transactions included in the *SNA* also includes barter transactions. The *SNA* defines a barter transaction as a transaction (para. 9.49) “...where one basket of goods and services is exchanged for another basket of different goods and services without any accompanying monetary payment... Values have to be estimated indirectly for goods and services exchanged in barter transactions equal to their market values.” Thus, **this note treats the exchange of “free” digital products and user-generated content as a barter transaction.**⁸

18. While the provision of “free” digital products by digital intermediary platforms may satisfy the *SNA* definition of a transaction, the Digitalization Task Team generally preferred a treatment for “free” products in an *SNA* satellite account rather than a treatment in the *SNA* central framework.

19. There are three options that emerge for an *SNA* satellite account on “free” digital products: 1) an option that merely separates the value of “free” digital products that are already reflected in the value of advertised products under the current *SNA* treatment, 2) an option that demonstrates the linkages between “free” digital products and the production of a data asset, and 3) an option that shows the exchange of “free” digital products for digital content generated by household users of online platforms.

⁶ This is particularly the case if platforms are required to obtain consent under GDPR and other equivalent legislation.

⁷ In some cases, consent may be articulated through the clicking of a box to accept terms and conditions.

⁸ Previous work suggests that advertising-supported “free” products should be treated as one side of a barter transaction with the other side being either production of “attention services” by households (Nakamura et al. 2017, Soloveichik 2020) or the production of “personal data” by households (Heys 2020). For this purpose, “personal data” are essentially akin to the concept of “observable phenomena”. However, the ISWGNA Digitalization Task Team has not agreed on the introduction of attention services or personal data/observable phenomena by households as counterpart products.

3.3. Overview of the Options

20. There are three sectors utilized in the subsequent stylized examples: a household, a digital intermediary platform, and an advertiser. The intermediary develops a platform software asset and a database asset, which are used to access household OPs and produce a data asset to sell predictive advertising services to the advertiser sector. Under the current *SNA* treatment, the platform software and the database are included in the production and asset boundaries, but the data asset is excluded. In addition, the household is the sole consumer of the “free” digital products, the value of which is bundled with the value of the advertised products purchased by the household. In other words, there is no distinction made between the “free” digital products and the advertised products under the current *SNA* treatment.

21. Figure 1 presents an overview of the first satellite account option. Under this option, the household is still the sole consumer of the “free” digital products. However, separate values are reported for the “free” digital products and the advertised products, which requires an imputation for the value of the “free” digital products. There is no additional capital formation recognized for the data asset under this option.

22. Figure 2 presents an overview of the second and third satellite account options. Under these options, the household shares consumption of the “free” digital products with the intermediary. The household provides access to OPs in the form of information on marginal changes in its behavior as the platform algorithms present stimuli via “free” digital products to keep the household engaged. The OPs can be collected and used via the platform. In addition to the database asset that is already treated as capital formation in the *SNA* central framework, the intermediary produces a data asset with the household OPs accessed via the platform. The intermediary then uses both the database asset and the data asset to offer predictive advertising services in exchange for advertising revenue.

23. Valuation of the flows is necessary for compilation of an *SNA* satellite account. Following Heys (2020), the red squares in figures 1 and 2 denote the following alternatives to estimate values:

- Value 1 is the intermediary’s cost of producing the “free” digital products.
- Value 2 is the value the household places on the “free” digital products received.
- Value 3 is the household’s “willingness to accept” price for providing access to OPs.
- Value 4 is the value the intermediary places on the access to OPs for production of the data asset that is used to offer predictive advertising services.

24. Assuming the intermediary is rational, values 1 and 4 will be equal because the intermediary will invest in the platform software up to the point where producing the “free” digital products is equal to the value the intermediary places on access to OPs. Likewise, values 2 and 3 will be of equal and opposite values because the household will accept “free” digital products up to the point where the marginal value of the “free” products equals the household’s “willingness to accept” price for access to OPs.

25. The equalities of values 1 and 4 and values 2 and 3 have three implications. First, a rational intermediary will provide “free” digital products up to the value of the resulting flows of OPs.

Second, the household will use “free” digital products until the costs of providing OPs is too great. As a result, the “willingness to accept” price is the lower bound value for the “free” digital products. Third, under the second option, a new flow results for an imputed transfer of OPs from the household to the intermediary in light of the household final consumption that is displaced by the intermediate consumption of the intermediary.

26. None of the options consider how to account for the implicit transfers between users of “free” digital products and consumers who pay higher prices for advertised products, which is only relevant if the parties are in different institutional sectors. Neither the *SNA* central framework nor the *SNA* satellite account proposes recording the transfers because the practical task of imputing such transfers would likely be infeasible.

3.4. Current Treatment of “Free” Digital Products in the *SNA* Central Framework

27. Figure 3 presents an example sequence of accounts for the current treatment of “free” digital products in the *SNA* central framework. In the example, a digital intermediary develops a platform software asset worth \$150 on own account that is designed to offer the household “free” digital products (such as search services or social media services) worth \$20 to access household OPs. The intermediary also develops a database asset worth \$60 on own account. For simplicity, assume the platform software and database values include only labor costs. In addition, the database value excludes \$15 of labor costs associated with recording and processing OPs. Thus, total compensation in the example is \$225 (\$150 + \$60 + \$15). The intermediary uses insights on the household’s behavior embodied in data to sell predictive advertising services worth \$275 to an advertiser that produces an advertised product worth \$300. The \$275 and \$300 each include the actual value of the advertising services and the value of the “free” digital products. Overall, GDP for the economy is \$510 and net lending/borrowing is zero because there are no external transactions.

28. Figure 3 shows the predictive advertising services are recorded as output for the intermediary and as intermediate consumption for the advertiser. The intermediary’s output of own-account assets is also recorded in the production account with uses recorded in the capital account. In addition, the advertiser’s sales of the advertised product are recorded in the production account accompanied by final consumption expenditure by the household in the use of income account.

29. Under the current *SNA* treatment, the role of the household is limited to the final consumption of the bundled “free” digital product and advertised product. There is nothing recorded separately for the “free” digital product consumed by the household or for the household’s provision of OPs because those flows are not observed in any market transactions. Thus, inclusion of flows for the household’s role would require imputed values. Nevertheless, any economic activity embodied in the transactions is currently reflected in value-added of the digital intermediary and the advertiser. In contrast, the value of the data asset produced by the intermediary is currently excluded from the *SNA* production and asset boundaries, so including values for the data flows would have an upward effect on production measures through the valuation of the data asset. The next two sections demonstrate each of the three *SNA* satellite account options considered for this note.

3.5. SNA Satellite Account Option 1 – Baseline

30. Figure 4 demonstrates the baseline option for an *SNA* satellite account, which builds on the current *SNA* treatment from figure 3. For this option, the value of “free” digital products may be imputed using a sum of costs method and then the value of the advertising services may be calculated as a residual. The values in the accounts under this option are exactly the same as the current *SNA* treatment except line items are added for the imputed value of the “free” digital products, which are shown at \$20 and the residual values of the advertising services and advertised product are \$255 and \$280, respectively.

31. *Household Accounts*: The only change for the household accounts is the separate line items for the advertised product and “free” digital products highlighted in pink in the use of income account. An additional counterpart line item is also shown for demonstration in the financial account, which is unlikely to be recorded in the satellite because actual payments do not change.

32. *Digital Intermediary Accounts*: The intermediary accounts also include separate line items for advertising services and “free” digital products highlighted in yellow in the production account and the financial account.

33. *Advertiser Accounts*: Changes to the accounts for the advertiser are highlighted in green. In this case, only the residual values of advertising services and the advertised product are recorded in the production account, and the value of the “free” digital products are left out because they are already included in the digital intermediary accounts. An advantage of this presentation is that it demonstrates the output and consumption of “free” digital products is limited to the intermediary and household sectors. A disadvantage of the presentation is that it creates a discrepancy between recorded values in the production account and actual payments in the financial account. However, none of the balancing items are affected.

3.6. SNA Satellite Account Option 2 – Linkages between “Free” Digital Products and Data as an Asset

34. Figure 5 builds on the baseline option from figure 4 to demonstrate the option for linkages between “free” digital products and the production of a data asset. The values in the accounts under this option are the same as the baseline option except line items are added for the value of a data asset measured with R&P costs and OP-P costs. R&P costs include labor costs at a value of \$15. In addition, half the value of the “free” digital products is attributed to OP-P costs – i.e., \$10 – in anticipation of the costs associated with the data collection aspect of “free” digital products.⁹

35. *Household Accounts*: Since half the value of the “free” digital products is attributed to OP-P costs, half remains for final consumption by the household. Actual payments made by the household amount to \$300, but the value of final consumption expenditure has declined by \$10 to \$290, so an imputed transfer of OPs payable is recorded for the household to account for the value

⁹ For example, a digital intermediary makes a data-harvesting mobile game that is valued at 20 based on labor spent making the game. Of the 20, half of the time is spent making the data collection aspect of the game, so there is investment of 10 to procure OPs. Meanwhile, the remaining 10 is spent making the actual game aspects, which are consumed by the household.

of displaced final consumption of “free” digital products. The transfer is classified as a current transfer, assuming OPs are not assets in the household sector, which may or may not be the case.

36. *Digital Intermediary Accounts:* The accounts for the digital intermediary reflect three changes from the baseline option. First, the value of the R&P costs for the data asset are recorded as output in the production account and as gross fixed capital formation in the capital account. As a result, the balancing items (except net lending/borrowing) for the intermediary accounts increase by \$15. Second, the intermediary uses the \$10 of “free” digital products as intermediate consumption in the production of the data asset, which also adds to the output and gross fixed capital formation of the intermediary under a sum of costs method. Economically, this reflects that “free” digital products are produced for the purpose of obtaining access to OPs. Third, since actual payments in the financial account do not change, an imputed transfer of OPs receivable by the intermediary is necessary to account for the value of “free” digital products reclassified from final consumption to intermediate consumption.

37. *Advertiser Accounts:* The accounts for the advertiser do not change from the baseline option.

3.7. SNA Satellite Account Option 3 – User-generated Content

38. Figure 6 builds on the linkages demonstrated in figure 5 to include user-generated content. The values in the accounts under this option are still the same as the previous options except line items are added for the value of user-generated content at \$5. In addition, half the value of final consumption of the “free” digital products is now attributed to production of user-generated content—i.e., \$5.

39. *Household Accounts:* A production account is added to the household sector to reflect production of user-generated content. The household uses \$5 of “free” digital products as intermediate consumption in the production of content. The value of the output of content is equal to the value of the intermediate consumption, so value-added is zero.¹⁰ Since final consumption expenditure on “free” digital products declines by the \$5 that is now used as intermediate consumption, the imputed transfer of OPs payable increases from \$10 to \$15.

40. *Digital Intermediary Accounts:* The digital intermediary uses the \$5 of user-generated content as intermediate consumption in the production of the data asset, which adds to the value of the OP-P costs component of the data asset (and to the output and gross fixed capital formation of the intermediary) under a sum of costs method. In addition, the imputed transfer of OPs receivable increases from \$10 to \$15.

41. *Advertiser Accounts:* The accounts for the advertiser do not change from the previous options.

¹⁰ As an alternative, the household may generate non-zero value-added in the production of user-generated content, in which case any additional resources generated by the household in the Primary Income Account would be consumed by either the household sector as final consumption in the Use of Income Account or the intermediary sector as intermediate consumption in the Production Account, with equally offsetting entries for the imputed transfer of OPs in the Secondary Income Account.

3.8. Comparing the Options

42. All options increase the visibility of the household's role in the consumption of "free" digital products. The second and third options increase the visibility of the intersection of "free" digital products and data as an asset. Likewise, the third option increases the visibility of the household's role in the production of digital content. All options avoid double counting output and value-added in the production account and thus, avoid double counting for aggregates in other accounts by disentangling the "free" digital products from both the advertising services and the advertised product. Finally, all options offer a single sum of costs measure for imputed "free" digital products, which reflects activity already recorded in the central *SNA* framework and mitigates significant imputed transactions for income and consumption.

43. Balancing items under the baseline option are the same as those under the current *SNA* treatment of "free" digital products. The second and third options yield higher value-added, operating surplus, balance of primary incomes, disposable income, and saving for the intermediary accounts and the total economy accounts as a result of the intermediary's production of a data asset. However, net lending/borrowing are the same as the current *SNA* treatment for all accounts.

3.9. Measurement Considerations

44. Measurement could start with a sum of costs method for each of the values required in the satellite account: 1) data flows, 2) "free" digital products, and 3) user-generated content. Under a sum of costs method, the value includes labor costs, capital costs, and intermediate consumption associated with their production. For market producers, capital costs should include consumption of fixed capital and a return to capital. If properly estimated, the sum of costs approximates a market value, or at least a feasible lower bound estimate.

45. A sum of costs method is recommended for databases in the *SNA* (para. 10.113) and for data flows in the guidance note on data as an asset (*DZ.6 Recording of Data in the National Accounts*). Likewise, Nakamura et al. (2017) use a sum of costs method to value "free" digital content, which could be adapted to the measures introduced in this note.¹¹

4. Recommended Approach and Changes to the 2008 *SNA*

46. Given the Digitalization Task Team's work on data as an asset and tentative plans to revise the *SNA* to include data in the scope of the *SNA* boundaries, the third option is recommended for an *SNA* satellite account on "free" digital products. Since the scope of the note is limited to developing a satellite account, there are no changes required in the 2008 *SNA*.

¹¹ While the scope of "free" digital content in Nakamura et al. (2017) is consistent with the broad definition in section 3.1, the same measurement could be applied under the narrow definition used in this note.

References

European Commission, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, and World Bank. 2009. *System of National Accounts 2008*, New York, NY: United Nations.

Heys, Richard. 2020. “The Impact of Digitalization on the National Accounts and the Satellite Accounts.” Paper prepared for the ISWGNA Digitalization Task Team.

ISWGNA Digitalization Task Team. 2020. “Recording and Valuation of Data in National Accounts.”

ISWGNA Digitalization Task Team. 2021. “Guidance Note on Treatment of ‘Free’ Digital Products in National Accounts.”

Nakamura, Leonard, Jon D. Samuels, and Rachel Soloveichik. 2017. “Measuring the ‘Free’ Digital Economy within the GDP and Productivity Accounts.” BEA working paper.

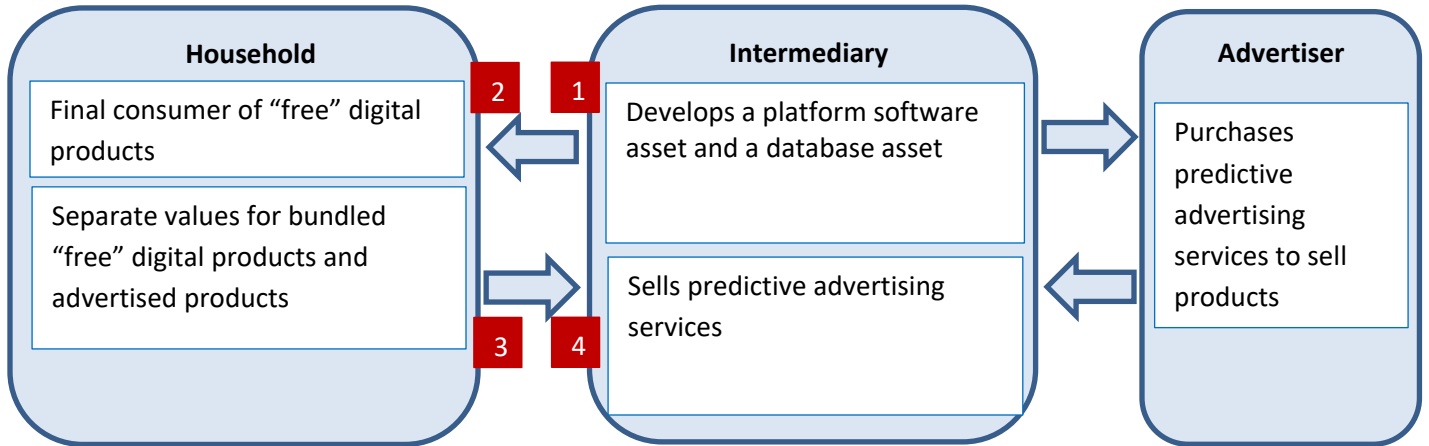
Organization for Economic Cooperation and Development. 2020. “Measuring Data Products.” Paper prepared for the ISWGNA Digitalization Task Team.

Organization for Economic Cooperation and Development. 2021. “An Update on Recording and Measuring Data in the System of National Accounts.” Paper prepared for the ISWGNA Advisory Expert Group on National Accounts.

Soloveichik, Rachel. 2020. “‘Free’ Content in the National Accounts and the Satellite Accounts.” Paper prepared for the ISWGNA Digitalization Task Team.

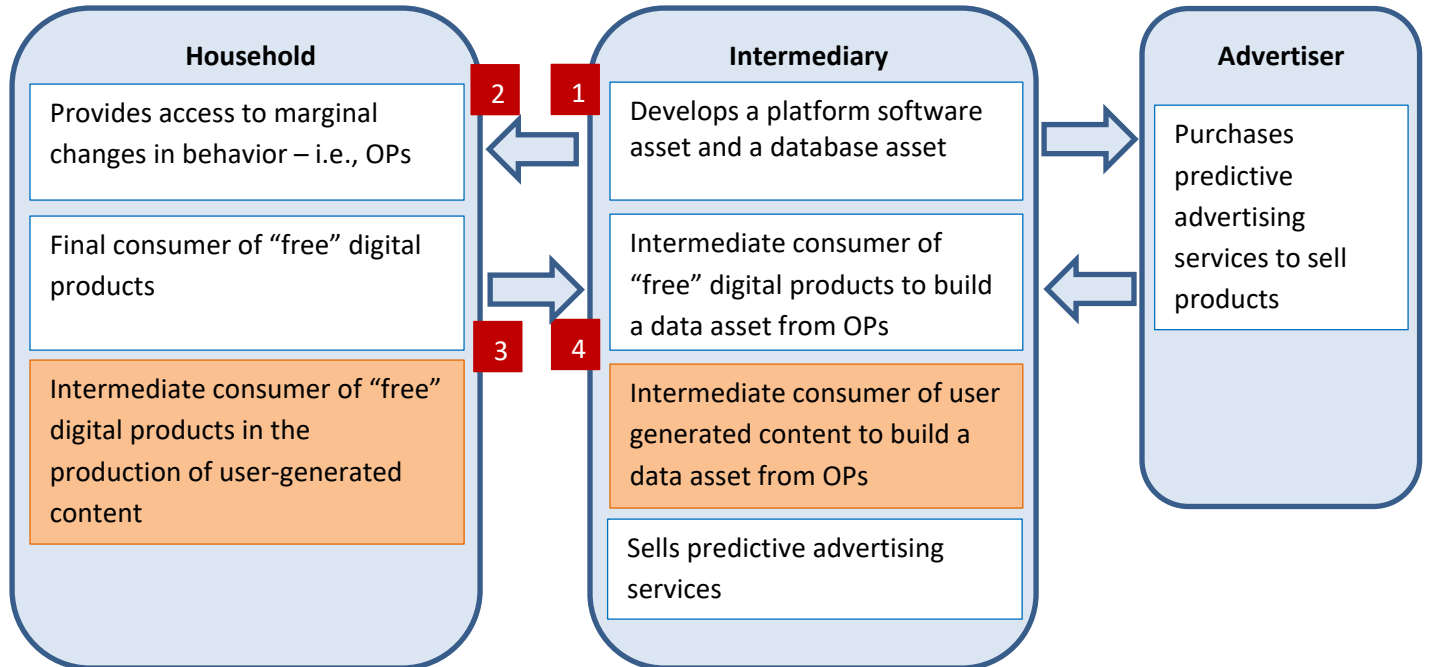
U.S. Bureau of Economic Analysis. 2020. “Issue Paper on Recording Valuation of Data, Free Assets, and Free Services in National Accounts.” Paper prepared for the ISWGNA Digitalization Task Team.

Figure 1: Separate Values for “Free” Digital Products and Advertised Products



Source: Adapted from Heys (2020).

Figure 2: Linkages between “Free” Digital Products and Data as an Asset



Source: Adapted from Heys (2020).

Figure 3: Current Treatment of “Free” Digital Products – SNA Central Framework

	<u>Household</u>		<u>Intermediary</u>		<u>Advertiser</u>		<u>Total Economy</u>	
			Uses	Resources	Uses	Resources	Uses	Resources
Production Account	Output			485		300		785
	Predictive ad services			275				275
	Software (platform asset)			150				150
	Software (database asset)			60				60
	Advertised product					300		300
	Intermediate consumption		0	275		275	275	
	Predictive ad services			275			275	
Value-added		485			25		510	
Generation of Income Account	Value-added			485		25		510
	Compensation		225				225	
	Operating Surplus		260		25		285	
Primary Income Account	Operating surplus			260		25		285
	Compensation		225				225	
	Balance of primary incomes	225		260	25		510	
Secondary Income Account	Balance of primary incomes			260		25		510
	Transfers		225					
	Disposable income	225		260	25		510	
Use of Income Account	Disposable income			260		25		510
	Final consumption expenditure	300		0	0		300	
	Advertised product	300					300	
	Saving	-75		260	25		210	
Capital Account	Saving					25		210
	Gross fixed capital formation	0		210	0		210	
	Software (platform asset)			150			150	
	Software (database asset)			60			60	
Net lending(+)/borrowing(-)	-75		50		25		0	
Financial Account	Net lending(+)/borrowing(-)					25		0
	Net acquisitions	225	300	275	300	275	800	800
	Predictive ad services			275		275	275	275
	Advertised product		300		300		300	300
	Compensation	225					225	225

Figure 4: SNA Satellite Account Option 1 – Baseline

	<i>Household</i>		<i>Intermediary</i>		<i>Advertiser</i>		<i>Total Economy</i>	
	Uses	Resources	Uses	Resources	Uses	Resources	Uses	Resources
Production Account	Output			485		280		765
	Predictive ad services			255				255
	"Free" products			20				20
	Software (platform asset)			150				150
	Software (database asset)			60				60
	Advertised product					280		280
	"Free" products							0
	Intermediate consumption		0					255
	Predictive ad services					255		255
	"Free" products							0
Value-added		485			25		510	
Generation of Income Account	Value-added			485		25		510
	Compensation		225					225
	Operating Surplus		260		25			285
Primary Income Account	Operating surplus							285
	Compensation							225
	Balance of primary incomes	225		260		25		510
Secondary Income Account	Balance of primary incomes							510
	Transfers		225		260		25	
	Disposable income	225		260		25		510
Use of Income Account	Disposable income							510
	Final consumption expenditure	300		0		0		300
	Advertised product	280						280
	"Free" products	20						20
	Saving	-75		260		25		210
Capital Account	Saving							210
	Gross fixed capital formation	0		210		0		210
	Software (platform asset)			150				150
	Software (database asset)			60				60
	Net lending(+)/borrowing(-)	-75		50		25		0
Financial Account	Net lending(+)/borrowing(-)							0
	Net acquisitions	225	300	275	225	300	275	800
	Predictive ad services			255			255	255
	"Free" products		20	20		20	20	40
	Advertised product		280			280		280
	Compensation	225			225			225

Figure 5: SNA Satellite Account Option 2 – Linkages between “Free” Digital Products and Data as an Asset

		<u>Household</u>		<u>Intermediary</u>		<u>Advertiser</u>		<u>Total Economy</u>	
		Uses	Resources	Uses	Resources	Uses	Resources	Uses	Resources
Production Account	Output				510		280		790
	Predictive ad services				255				255
	"Free" products				20				20
	Software (platform asset)				150				150
	Software (database asset)				60				60
	Software (data asset-R&P)				15				15
	Software (data asset-OP-P)				10				10
	Advertised product							280	280
	Intermediate consumption			10			255		265
	Predictive ad services						255		255
	"Free" products			10					10
	Value-added			500			25		525
	Generation of Income Account	Value-added				500		25	
Compensation				225				225	
Operating Surplus				275		25		300	
Primary Income Account	Operating surplus				275		25		300
	Compensation				225			0	225
	Balance of primary incomes	225		275		25		525	
Secondary Income Account	Balance of primary incomes				275		25		525
	Imputed transfer of OPs	10			10			10	10
	Disposable income	215		285		25		525	
Use of Income Account	Disposable income				285		25		525
	Final consumption expenditure	290		0		0		290	
	Advertised product	280						280	
	"Free" products	10						10	
	Saving	-75		285		25		235	
Capital Account	Saving				285		25		235
	Gross fixed capital formation	0		235		0		235	
	Software (platform asset)			150				150	
	Software (database asset)			60				60	
	Software (data asset-R&P)			15				15	
	Software (data asset-OP-P)			10				10	
	Net lending(+)/borrowing(-)	-75		50		25		0	
Financial Account	Net lending(+)/borrowing(-)				50		25		0
	Net acquisitions	225	300	275	225	300	275	800	800
	Predictive ad services			255			255	255	255
	"Free" products		20	20		20	20	40	40
	Advertised product		280			280		280	280
	Compensation	225			225			225	225

Figure 6: SNA Satellite Account Option 3 – User-generated Content

		<i>Household</i>		<i>Intermediary</i>		<i>Advertiser</i>		<i>Total Economy</i>	
		Uses	Resources	Uses	Resources	Uses	Resources	Uses	Resources
Production Account	Output		5		515		280		800
	Predictive ad services				255				255
	"Free" products				20				20
	Software (platform asset)				150				150
	Software (database asset)				60				60
	Software (data asset-R&P)				15				15
	Software (data asset-OP-P)				15				15
	Advertised product							280	280
	User-generated content		5						5
	Intermediate consumption	5		15		255		275	
	Predictive ad services					255		255	
	"Free" products	5		10				15	
	User-generated content			5				5	
	Value-added	0		500		25		525	
Generation of Income Account	Value-added		0		500		25		525
	Compensation			225				225	
	Operating Surplus	0		275		25		300	
Primary Income Account	Operating surplus		0		275		25		300
	Compensation		225					0	225
	Balance of primary incomes	225		275		25		525	
Secondary Income Account	Balance of primary incomes		225		275		25		525
	Imputed transfer of OPs	15			15			15	15
	Disposable income	210		290		25		525	
Use of Income Account	Disposable income		210		290		25		525
	Final consumption expenditure	285		0		0		285	
	Advertised product	280						280	
	"Free" products	5						5	
	Saving	-75		290		25		240	
Capital Account	Saving		-75		290		25		240
	Gross fixed capital formation	0		240		0		240	
	Software (platform asset)			150				150	
	Software (database asset)			60				60	
	Software (data asset-R&P)			15				15	
	Software (data asset-OP-P)			15				15	
Net lending(+)/borrowing(-)	-75		50		25		0		
Financial Account	Net lending(+)/borrowing(-)		-75		50		25		0
	Net acquisitions	225	300	275	225	300	275	800	800
	Predictive ad services			255			255	255	255
	"Free" products		20	20		20	20	40	40
	Advertised product		280			280		280	280
Compensation	225			225			225	225	