New technologies and time-use diaries

Ignace Glorieux

Vrije Universiteit Brussel - Sociology Department
Research Group TOR
International Association for Time Use Research (IATUR)

Third Meeting of the Expert Group on Innovative and Effective Ways to Collect Time-Use Statistics.
UNSD, New York, 4-6 November 2019.
1. Choices to make (irrespect. of the mode of data collection)
2. Using PC / Tablet / Smartphone for Time-Use Research
   2.1. Recall
   2.2. Self-completion
      2.2.1. PC
      2.2.2. Tablet/smartphone
         2.2.2.1. Website or app?
         2.2.2.2. Which kind of app?
            2.2.2.2.1. Native app
            2.2.2.2.2. Hybrid app
            2.2.2.2.3. Progressive app
   2.2.3. General issues and considerations
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            2.2.2.2.2. Hybrid app
            2.2.2.2.3. Progressive app
   2.2.3. General issues and considerations
Choices to make (irrespect. of the mode)

- **Research units** (households, respondents, ...)
- **Sample of units**
- **Length of the field work period** (e.g. several years, one year, several months, ...)
- **Sample of starting days**
- **Number of days** (e.g. one day, one week and one weekend day, three consecutive days, a full week, ...)
- **Start of the registration** (e.g. 4 a.m., midnight, ...)  
- **Granularity of an episode** (e.g. continuous, 5 minutes, 10 minutes, 15 minutes, ...)
Choices to make (irrespect. of the mode)

- **Registration method activities:**
  - own wording
  - activity list/taxonomy
  - number of activities / number of levels
  - suggestions via tags?
  - suggestions via external sources (e.g. activity tracker, GPS, ...)
  - ...

- **Which context questions?** (e.g. secondary activity, location/presence/mode of transport, use ICT, for whom, motivation, happiness, ...)
  - own wording
  - predefined
Choices to make (irrespect. of the mode)

- **Linking context to activities / context?** (e.g. no context questions for ‘sleep’; means of transport for ‘travelling activities’, etc.)
Choices to make (irrespect. of the mode)

- **Validity checks:**
  
  **Direct checks:**
  - No registration in the future
  - Change of place without transportation*
  - Inconsistencies (e.g. travelling at home)*

  **Indirect check (after predefined period of registration):**
  - Too few activities (define minimum per day)
  - No sleep* (define period without sleep)
  - No eating* (define period without eating as primary or secondary activity)

* Only with predefined activity list.
Using PC/Tablet/Smartphone? - Recall

- Personal interview (CAPI)
- Telephone interview (CAPI)
- Self-administered (CAWI)

PC/Tablet

Nothing new

online
offline
<table>
<thead>
<tr>
<th><strong>PC</strong></th>
<th><strong>App</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Only accessible online</td>
<td>Can be used offline</td>
</tr>
<tr>
<td>Cost-effective</td>
<td>Always available (continuous registration)</td>
</tr>
<tr>
<td>Don’t need an app store</td>
<td>Better user experience</td>
</tr>
<tr>
<td></td>
<td>Dependent on battery usage</td>
</tr>
</tbody>
</table>
Using PC/Tablet/Smartphone? – self-completion

<table>
<thead>
<tr>
<th>Input</th>
<th>PC or Tablet</th>
<th>Smartphone</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Own wording</td>
<td>+</td>
<td>+ ~</td>
</tr>
<tr>
<td>• Selection (predefined list)</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>• Keywords / tags</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>• Speech recognition</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>• Use of smartphone applications (GPS, camera, user statistics, ...)</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>• Connected devices (external GPS, wearable, sensors, ...)</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>
Using PC/Tablet/Smartphone? – self-completion

<table>
<thead>
<tr>
<th>Registration</th>
<th>PC or Tablet</th>
<th>Smartphone</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Continuous self-registration</td>
<td>+ ~</td>
<td>+</td>
</tr>
<tr>
<td>• Time Tracker</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>• Experience Sampling Method (push notifications)</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>
Must be compatible with different platforms (MacOS, Windows, Linux, ...) and browsers (Internet Explorer, Microsoft Edge, Mozilla Firefox, Google Chrome, Safari, Opera, etc.) and versions, also older versions of these platforms and browsers.
# Self-completion: Tablet/Smartphone

<table>
<thead>
<tr>
<th>Website</th>
<th>App</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only accessible online</td>
<td>Can be used offline</td>
</tr>
<tr>
<td>Cost-effective</td>
<td>Better performance</td>
</tr>
<tr>
<td>Don’t need an app store</td>
<td>Better user experience</td>
</tr>
</tbody>
</table>
Which kind of app?

Native app
Hybrid app
Progressive app
## Which kind of app?

### Native app

<table>
<thead>
<tr>
<th>+</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum use of device functionalities (microphone, gps, camera, etc.)</td>
<td>Not easy to put in the store (Google Play, App Store, …)</td>
</tr>
<tr>
<td>Works offline</td>
<td>Any change / update in the platform software may mean that the app needs to be adjusted</td>
</tr>
<tr>
<td>Better integration with other apps</td>
<td>For every platform (Apple iOS, Android, Windows mobile) a different app needs to be developed</td>
</tr>
<tr>
<td>Higher speed</td>
<td></td>
</tr>
<tr>
<td>Possibility to send push notifications</td>
<td></td>
</tr>
</tbody>
</table>
# Which kind of app?

## Hybrid app

<table>
<thead>
<tr>
<th>+</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexibility in keeping the content up-to-date</td>
<td>Hybrid can be a reason for rejecting placement in the store</td>
</tr>
<tr>
<td>Uses the possibilities of the operating system and local functionalities</td>
<td>Maintaining two environments can lead to more costs in the long run</td>
</tr>
<tr>
<td>Low development costs</td>
<td>Not recommended for complex apps</td>
</tr>
</tbody>
</table>
## Which kind of app?

### Progressive app

<table>
<thead>
<tr>
<th>+</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possibility to send push notifications</td>
<td>Remains a Web app with a number of limitations. Less features and less accessibility</td>
</tr>
<tr>
<td>Works offline</td>
<td>Cannot be found in the store: if the target group is there looking for your app, you will not reach it.</td>
</tr>
<tr>
<td>Accessible to everyone (not dependent on an operating system)</td>
<td>Still in the development phase: not yet clear which further functions will be supported</td>
</tr>
<tr>
<td>Always up-to-date: you don't have to download updates from a website</td>
<td>Not all browsers and operating systems support all functions.</td>
</tr>
</tbody>
</table>
General issues and considerations

- In case of mixed input devices (PC, tablet, smartphone): synchronization
- Compatibility of website or app with different screen sizes
- Link between questionnaire(s) and diary
- Back office to organize the flow of the research
- Which meta data are collected during the data collection?
- Speech recognition as an input in the future?
- Data transfer from device to server: manual, automatically synchronization (when, how many times, ...)
MOTUS software:

- In continuous development since 2012
- First used in 2013 (Feb. 13 - Jan. 14) for the time-use study in Flanders (Belgium) among a sample of 3,260 respondents who filled in a 7-day diary
- Later used and adapted for a dozen time-use surveys, e.g. a longitudinal time-use survey in a women’s organization that adapted a 30-hour week in 2019 (5 full-weeks registration before, during and after the experiment), a time-use study among a sample of 10,000 teachers (full week 24 hours registration), ...
Prototype ICATUS 2016

Options:

- Continuous registration
- Activity list: ICATUS 2016 in 3 levels (no tags) for primary and secondary activity
- Context variables (see further)
- No context for sleep
- If traveling: means of transportation (different options)
- No registration in the future
- Quality checks possible, but not implemented
Prototype ICATUS 2016

**UNDEFINED TIME**

- **Allowed amount of undefined hours/day**
  - Unlimited

- **Allowed amount of undefined hours/week**
  - Unlimited

- **Required amount of activities/day**
  - None

- **Required amount of activities/week**
  - None

**QUALITY**

- **Number of different activities**
  - No validation

- **Duration of sleep**
  - No validation

- **Occasional eating and/or drinking**
  - Not required
Options:

- PC / Tablet / Smartphone: continuous synchronization when online
- Native app for Ios and Android (not for windows), website for smartphone
- Compatible with different screens and operating systems
We believe that the main divisions of ICATUS are clearly defined, can be understood in different cultures, and provide a good idea of what is considered as work (what is not).

We (slightly) revised the list of work-related activities of ICATUS 2016 (categories 1 to 5).
We did not change anything in the taxonomy of the IACTUS classification and did not add nor delete categories.

We would only suggest to use the tri-part division as an entry to guide respondents to the taxonomy of different forms of work in ICATUS 2016, and to distinguish work from non-work:

- Paid work, work for benefit, work for the market (paid, use by others)
- Unpaid work for own final use, for your household or family members (own final use)
- Unpaid work for others outside your own household (unpaid, use by others)
We formulated some of the entries as activities (answers to the questions: What did you do?).

For instance, activity 110 “Employment in corporations, government and non-profit institutions” was reformulated as “Work for an organization, corporation, institution, government, ... (also unpaid overwork)”.  

Or 13 “Employment in households and household enterprises to provide services” was formulated as “Delivering services (by yourself or in your household) for pay or profit”.

Prototype ICATUS 2016: Activity list
We further formulated activities more consistently in terms of who produced and for what:

- In section 12. we consistently used "(by yourself or in your household) to sell, for pay or profit".

- In section 13. "(by yourself or in your household)"

- In section 21 to 24 "for your own household or your own final use"
Prototype ICATUS 2016: Context

Where were you at the time?

- Your home
- Other family’s home
- Working place
- School/place of study
- Shop/services place
- Public area
- Other (not transport)
What kind of transport did you use?

- Travelling on foot
- Travelling by bike
- Travelling by moped, motorcycle or motorboat
- Travelling by car
- Travelling by public transport
- Other
Prototype ICATUS 2016: Context

Did you do this alone or together with somebody?
(see Conclusions meeting May 2019, #25)

- Alone
- Together with somebody
(If together)
With whom?

- Wife/husband
- Parents (in law) with whom you are living together
- Other household members(s) up to 9 years
- Other household member(s) older than 9 years
- Colleagues/fellow students
- Other person(s)
Prototype ICATUS 2016: Context

Did you use a smartphone, tablet or computer?

- Yes
- No

Did you use internet?

- Yes
- No
Did this activity bring you income (in cash or kind)?

not for sleeping (see Conclusions meeting May 2019, #23)

- Yes
- No
For who did or what did you do this activity? => not for sleeping, eating/drinking, etc.
(see Conclusions meeting May 2019, #24)

- Myself
- Member(s) of my family
- Myself and member(s) of my family
- Member(s) of other family
- Job
- Community, education, culture religion
- Others
Prototype ICATUS 2016: Context

How much did you enjoy this activity?

1 - 5
Thank you

ignace.glorieux@vub.be

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