

## **Today's and future Web portals for data collection from businesses**

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### *Abstract*

Due to increasing digitalization and demands on reducing both response burden and cost, many National Statistical Institutes (NSIs) make use of Web portals for collecting data. This paper provides an overview of common portal features and some research results that may help NSIs understand the current state of Web portals and perhaps provide inspiration for future development.

A collaboration between Statistics Netherlands and Statistics Norway in 2020-2021 led to a survey about Web portals which 25 NSIs from different parts of the world took part in. This paper is based on results from that survey and the following investigations and research that the two colleagues from the Netherlands and Norway did in connection with the survey.

The focus here is mainly on two themes that is important when it comes to future-proofing Web portals and other data collection solutions: (1) security, hence authentication and authorization, and (2) solutions for automated data transfer. The aim is to share some experiences, results and relevant examples and to bring forth some general recommendations and thoughts about future Web portals.

Keywords: Web portals, authentication, authorization, M2M, machine-to-machine, S2S, system-to-system

## ***Introduction***

The transition from paper to electronic questionnaires have led to new challenges and opportunities for National Statistical Institutes (NSIs). Electronic reporting requires adequate procedures, processes, tools and systems. For instance, NSIs need safe and practical ways to make their web questionnaires available and to receive answers/data from the sampled respondents. As many businesses take part in several NSI surveys, many of them recurring, a single point of access to respond to survey requests can be useful, both for the respondents and for the NSI. A web portal is often used to cover these needs (see Haraldsen 2013).

In 2020 two colleagues from Statistics Netherlands and Statistics Norway decided to work together to find out more about the current state of NSI Web portals for business data collection. This work formed the basis for a chapter written for the ICES-VI edited volume which is to be published in the second half of 2022 (Hole, Houben, 2022).

The research started with the investigation of a selection of web portals, both NSI specific and other portals that cover statistical reporting of businesses. This led to a list of features and content that is typically found in such portals. Based on this information a simple questionnaire was developed that was sent to several NSIs around the world. We ended up with survey data for 19 different NSI portals. The research was complemented with information from some in-depth interviews and a further study of selected portals with features of interest.

## ***Common portal features***

We listed twelve different features in our questionnaire that we considered quite common for portals used for business surveys. Most of the 19 portals covered by our survey were reported to have the following eight:

1. Info pages about each survey (N=15)
2. Pdf or other printer-friendly version of some or all questionnaires (N=15)
3. Separate user instructions (help with filling in), like videos or written guidelines (N=15)
4. Frequently asked questions, FAQ (N=14)
5. Business/entity information, like name, address, constituent parts of the business, type, contact information (N=14)
6. A notification system for important messages, like due date notification (N=12)
7. Archive or overview of submitted questionnaires (N=12)
8. Overview of the surveys that a certain business is obliged to take part in (N=11)

Many of the portals also have

9. an overview of all surveys that the portal contains (N=9)
10. methodological documentation, like concepts, variables, metadata, etc. (N=8) and
11. a calendar with survey field period (N=7).

Only four portals were reported to provide customized feedback reports or statistics relevant for each business (e.g. regional information or sector specific information).

Other features mentioned in the Other-category, were:

- Backoffice management
- XML upload and webservices (for one or more questionnaires and/or business units)
- Self-service options, for checking filing status and applying for time extensions
- Secure email messaging
- A notification system for reminders
- Integrated file upload

### ***Authentication and authorization***

Through our web portal survey and other investigations we tried to find out more about how respondents gain access to the portals and surveys, how widespread the use of electronic identification (eID) seems to be, and what security measures different NSIs take.

The survey results showed that twelve of the surveyed NSI portals offer only one way of logging in. Of these twelve, eight reported that their portal offers a simple username-and-password-based login. In some cases, the respondents register and create a user account in the portal to gain access, in other cases the NSI sends them the required login credentials by post.

Eight NSIs reported that they enable the respondents to log in by using an electronic identification of some sort. For six of the eight portals that offer the use of eID for login, the respondents can also choose to access the portal by using a regular username-and-password combination. Four portals are reported to offer two- or multi-factor authentication; two of them offer only this type of authentication.

A success factor for some NSIs, among them Statistics Estonia and Statistics Norway, has been to let the respondents use an eID and a login procedure that they also use for other common tasks, like accessing their bank online (BankID) or logging in to other public services (for instance with a MyID). In Norway, the Netherlands and several other countries businesses can choose to invest in a digital enterprise certificate – a company digital ID – which allows their employees to log in on behalf of the business in stead of logging on by means of their personal eID (Altinn n.d.; Business.gov.nl, 2020).

Authorization is the process of giving an authenticated user permission to access a specific resource or function. This term is often used interchangeably with access control or client privilege. Nine of the portals in our study provide the businesses with an authorization tool for access administration, so that they can delegate response tasks. In Statistics Portugal's and Statistics Estonia's portals only one person per business is authorized by the NSI initially. This person has the authority to give other employees access rights to the portal. These access rights range from completing questionnaires, to viewing questionnaires, to viewing detailed benchmark information about the business.

The Norwegian Altinn portal uses information from both the National Population Register and the Central Coordinating Register for Legal Entities for authorization. All those registered as a managing director or a board chairman in the legal entities register are preassigned access rights in Altinn on behalf of their enterprise and can assign rights to others. Access rights can be assigned both to own employees and to other individuals or enterprises, for instance someone serving as an auditor or accountant on behalf of the enterprise.

### ***Automated data transfer***

Twelve of the nineteen surveyed portals enable the respondents to import data into a questionnaire, while thirteen enable file transfer. Files of different extensible markup language (XML) format seem to be common, but also less structured file types, like semi-colon separated values files or other delimited text files, are transferred through many of the portals. Eight of the nineteen portals offer both import of data and file transfer. Only three portals are reported to offer data transfer machine to machine (M2M), see Figure 1.

No. of portals	Import (N=12)	M2M (N=3)	File transfer (N=13)
8	✓	—	✓
4	—	—	✓
2	✓	—	—
2	—	—	—
1	—	✓	—
1	✓	✓	—
1	✓	✓	✓

*Figure 1: No. of portals that enable import of data, M2M data transfer and/or file transfer*

Three NSIs reported that they have, or are developing, a separate tool or solution for M2M data transfer; these are not included in the portals counted above. For instance, the U.S. Census Bureau reported that their portal links respondents to a separate electronic reporting instrument (Centurion) via single sign-on.

Statistics Sweden and the Statistical Office of the Slovak Republic reported that they are developing an M2M solution as part of their portal. The Norwegian Altinn portal offers M2M transfer of data already, as does Statistics Portugal's portal (use of APIs / Web services). Statistics Portugal see their data- or file-transfer feature as a feature with potential to join more institutions. They are currently working with tourism authorities and Bank of Portugal, among others, to build a joint solution covering several information requirements.

### ***Some general recommendations and thoughts about future Web portals***

Tailoring, flexibility, freedom of choice and self-service are important key-words when it comes to developing and improving web portals for collecting data from businesses. In the years to come, we think that more portals will offer several ways of granting access, depending on the type of user and intended uses. We may also see more functionality enabling the portal users to choose how they prefer to communicate with the NSI, how they delegate and perform reporting tasks and what type of feedback or data they would like to have.

We recommend that NSIs make use of common authentication and authorization functionality, if such exists and is available for them. If possible, information from central population and/or business registers should be used for authorization.

Flexibility and choice may be equally important when it comes to the actual reporting and data submission. Since businesses tend to be rather heterogenous in terms of size, system and platform usage, digital maturity, etc., it may be wise to offer several ways of fulfilling their reporting duty. If the collection is stable and the data

that the NSI needs is available in the businesses' digital systems, the best option can be to retrieve or import data directly from these systems. There is a cost to this, though, also on the businesses' side. For some businesses, making use of APIs and Web services or granting access directly to their platform or system is not a priority. Hence, uploading data files may for some be the least burdensome way to report.

Cross-survey data submission may become more common in the future, especially when it comes to economic or financial data. For example, in Portugal and Sweden businesses can submit data for more than one NSI survey, and/or for more than one observational unit, in the form of a single XML or XBRL (eXtensible Business Reporting Language) file.

#### *Security and data protection*

Data collectors have to respect laws and regulations concerning data protection and data minimization, like the EU General Data Protection Regulation (GDPR). Data providers are increasingly aware of the value and hence the need for protection of their data and expect data collectors to offer secure ways of transferring, saving and using their data. Since businesses are obliged to provide data to NSIs, it is the NSIs' duty to ensure the safety of business data and prevent data leakage, both during and after reporting. Data leakage can have a major impact on the trust and confidence in the NSI, which in turn may lead to reduced willingness to provide data and respond to surveys. Hence, solid authentication and authorization procedures become more important than before. The use of electronic identification, for persons, businesses and systems/machines, is becoming more widespread and common.

Maintaining a stable multi-entity association between survey, respondent and business, is important. It is also wise to communicate how the NSI ensures that data are safe.

#### *Use of APIs, automation and integration*

The use of system-to-system or machine-to-machine solutions and application programming interfaces (APIs) is increasing. Future web portals should facilitate M2M and mixed-mode data collection, either as an integrated service, or as a separate, but interconnected service. Retrieval of data directly from corporate accounting systems is within reach in many countries, due to accounting rules and standards (Buiten et al., 2018). Automated processes are desirable and more achievable than ever, both for data collectors and for data providers, thanks to new technology and cloud-based platforms.

Altinn offers APIs both for application owners like Statistics Norway and for end users, allowing them to perform tasks like creating an application instance, uploading form data and attachments and downloading form data, among other things (Altinn, n.d.). Since 2015 most payroll and personnel systems in Norway have been integrated with Altinn, much due to the so-called a-ordning. The a-ordning is a coordinated service used by employers to report information about income and employees to the Norwegian Labour and Welfare Administration, Statistics Norway and the Norwegian Tax Administration. The information is submitted electronically, either via the employer's payroll system using Altinn's APIs or manually via a form in Altinn (The Norwegian Tax Administration, 2018). In many aspects, Altinn can be considered a hub or distribution point where data are shared between different entities and authorities. Instead of having to deal with a multitude of different APIs offered by different data providers, data collectors like Statistics Norway can in many cases relate to Altinn and its standard APIs to get hold of available data.

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