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STATISTICAL FARM REGISTER IN THE EU ACCEDING COUNTRIES - A CONCEPTUAL APPROACH

Crina Turtoi¹, Oguzhan Akyildirim², Plamen Petkov³

Summary

This paper is primarily dealing with the methodological concerns needed to be taken into consideration for the elaboration of the Statistical Farm Register. Core objectives of the Statistical Farm Register are identified and considerations with regard to the place of the Statistical Farm Register in the frame of the General System of Registers are presented. Basic terminology of the registers is spotted and methodological differences between the Statistical Farm Register and Administrative Farm Register were delineated. A general model of the Statistical Farm Register was elaborated and main updating principles were emphasised.

Key words: *Statistical farm register, agricultural husbandries.*

JEL: *C10, C44, Q10*

1. Introduction

Currently, accession negotiations are under way with several states. The process of enlargement is sometimes referred to a European Integration. One of the basic topics on the road to EU accession is the gradual harmonisation with the standard requirements in the field of agricultural statistics. In order to produce harmonised and comparable statistics, one of the core recommendations of Eurostat is to define and set-up a *Statistical Farm Register* (SFR). The SFR is a key element for the Agricultural Statistical System, being generally recognized that a good and up-to-date register is the basis for setting-up a coherent system of sample based agricultural statistics.

The main objectives of the SFR are:

- To maintain high-quality sampling frames for current statistical surveys conducted in agriculture;

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- To update the census data in between two censuses;
- To ensure a more efficient use of existing administrative data;
- To build in the longer term a more integrated and harmonised EU system of agricultural statistics.

Designing a *register for statistical purposes* is the core task for a *sample based system of statistical surveys*. For carrying out a sample survey the first step is to determine the population and the parameters to be estimated. This in turn determines the character of the survey with regard to sample design and estimation. Thus the definitions of the population and parameters are determining the way of the data collection. As a rule one survey at a time is to be considered, with a limited number of parameters.

From available registers it is to be done a selection of objects and variables that are relevant to the issue addressed by the statistical survey. In some cases, on the basis of available registers, new variables - and possibly new objects as well - can be derived. Thus, the data are at hand first, and then they must be adjusted by register-statistical methodological work in order to be used when producing relevant statistics.

By its core objective of serving as reliable sampling frame, setting up of the SFR answers to the following immediate objectives of the acceding countries:

- To ensure the necessary backup for the data collected during the Agricultural Census (round 2010) as a standpoint for substantiation a more complete and coherent range of statistical agricultural surveys, based on EU norms and standards (improvement of the methods and practices);
- To compile data related to the national agriculture comparable with those internationally applied, particularly by EU Member States agricultural statistics;
- To monitor the integration of the national agricultural statistics into the European statistical system through capitalization of an extensive and qualitative stock of harmonized data needed for negotiation process during accession, as well as for satisfying the needs of national users of agricultural statistical data;
- To provide timely and reliable agricultural statistics needed in the enlargement process.

Under the study there were identified the potentially useful administrative registers, their data availability and the possibility to set up linkages with the SFR.

2. Research Methodology

When constructing the SFR it had to be taken into account the possibilities of connection with other related registers by relevant linkage variables (usually the unique organisation or personal identification numbers). Usually other related registers are constructed on the basis of information about farmers or farm enterprises applying for subsidies (Farm Register), animal health (Bovine register), land owners (Cadastre), branch of activity (Business Register) etc. Accordingly, the methodological work

is very important when defining the new object “agricultural holding”, which may encounter different definitions and coverage, according to the objectives of each of the registers mentioned above, that might not be the same with the ones covered by SFR. This work also may include surveys among farmers/owners who cannot be identified as belonging to a certain farm, or farmers/owners for whom is not possible to decide whether they are working together on the same farm or not. It is also very important to follow up what has happened from one year to another to obtain complete coverage of the population in the SFR.

Another important feature is to decide which time (day, month or year) the information is to bear reference to. For structure variables the information should bear reference to some certain day(s) while the information on payments on aid and premiums should bear reference to a whole year. Usually the information in the subsidy registers is up to date. On the other hand the information in the registers for specialized farms may be too old, why it is important to collect new information for the objects in these registers.

For acquiring comprehensive and topical information on the situation of statistical farm registers in the EU countries and for properly address the further development of the SFR there was scrutinized the available documentation, with regard to:

- Goals of the SFR,
- Content of registers,
- Links with other registers,
- Objectives of the SFR,
- Main challenges.

Also there were identified and analysed the potential steps needed to be approached for setting up a reliable and accurate SFR:

- Which are be the main sources that can be used in SFR updating process,
- How data coming from other sources can be used for updating SFR,
- The significance of potential risks,
- Integration criteria for updating process.

Agricultural policy changes from time to time. The register system for agricultural statistics needs to be “self-sustaining” and independent, with use of information coming from other registers, but with control over the variables not found in these registers.

2.1 Statistical registers - basic terminology

The concept of agricultural holding

- The Commission Regulation (EC) No 1444/2002 regarding the surveys on the structure of agricultural holdings defines agricultural holding as: *A single unit both technically and economically, which has single management and which produces agricultural products. The holding may also provide other supplementary (non-agricultural) products and services.* The “Holder of the

farm” is a person(s) who has (have) the legal and economical responsibility for the operations. That means under a single management.

- The Proposal for a Regulation (EC) No. 1166/2008 of the European Parliament and of the Council on farm structure surveys and the survey on agricultural production methods and repealing Council Regulation (EEC) No 571/88 defines an agricultural holding as: *Agricultural holding means a single unit, both technically and economically, which has a single management and which undertakes agricultural activities within the economic territory of the European Union, either as its primary or secondary activity.*
- The draft proposal for a Regulation of the European Parliament and of the Council on Farm Registers and Farm Structure Surveys from 2010 to 2018 has the same definition with the addition of services in the first sentence (... produces agricultural products and services).
- The geographical situation of the holding is defined in Regulation 1444/2002 as: *The holding and all the information relating to it is recorded as being in that district and municipality or sub-survey district where the headquarters of the holding is situated. In the case where the holding is only partially located in a certain type of area, it is classified as being within this area if either the greater part of the land belonging to the holding or the headquarters of the holding is located in this area. One of these rules should be chosen and applied for all holdings.*

Registers, statistical registers, system of registers and metadata

A *register* may be defined as a complete list of objects belonging to a defined object set. The objects in the register are identified by identification variables, which make it possible to update the register and to link it with other registers.

A *statistical register* may be defined as a data set with identifiers where the object set and variables correspond to the statistical matter.

A *system of registers* consists of a number of registers that are linked to each other by one or more common identification variables or linkage variables. An efficient system requires that the linkage variables are of good quality and that the same linkage variables can be found in different registers. Furthermore, the definitions of the objects and variables in the system must be harmonized so that data from different registers can be used together. Reference times must also be consistent.

Metadata have a more important role when producing statistics from a system of registers than from sample surveys. But, data are meaningless and useless without definitions and information on how the statistics are produced and can be used. Under this activity statistical variables will be meant in accordance with EC requirements, norms and definitions. However, the system should not be isolated from others. Sample surveys can be documented one by one and usually have no connections with other

surveys. Without knowledge about definitions and quality problems, the administrative registers cannot be used for statistical purposes. It is also important that metadata are tailored for register statistics. Sampling errors and design problems arising are core issues in the system of survey statistics, while in register statistics the system approach is fundamental. In improving the quality one cannot look at one register at a time, but to consider the system as a whole and to pay special attention to identification variables used for linking purposes.

The Metadata for Statistical Farm Register has to regulate and describe the ways for update and use of the data contained by the register. There were identified three main groups of data in the Metadata: (i) Sources for update of SFR; (ii) Outputs from SFR; (iii) Users of SFR, and five possible sources for setting up and update of SFR: (i) Agricultural Census (ii) Regular Statistical Surveys conducted in agriculture; (iii) Statistical Business Register; (iv) Farm Register (Ministry of Agriculture); (v) Bovine Register (Ministry of Agriculture).

2.2 Designing a register for statistical purposes

Designing a *register for statistical purposes* is the core task for a *sample based system of statistical surveys*. For carrying out a sample survey the first step is to determine the population and the parameters to be estimated. This in turn determines the character of the survey with regard to sample design and estimation. Thus the definitions of the population and parameters are determining the way of the data collection. As a rule one survey at a time is to be considered, with a limited number of parameters.

From available registers it is to be done a selection of objects and variables that are relevant to the issue addressed by the statistical survey. In some cases, on the basis of available registers, new variables - and possibly new objects as well - have to be derived. Thus, the data are at hand first, and then they must be adjusted by register-statistical methodological work in order to be used when producing relevant statistics.

When setting up the SFR it is necessary to define the *basic unit* – register unit. *The basic unit should be* the agricultural holding, defined according to Eurostat and FAO recommendations (as briefly described at point 2.1). If there are various kinds of farms in the country, it is necessary to add indication (status) for each kind (state companies, legal enterprises, family farms, etc.) in SFR.

2.3 SFR in the frame of the General System of Registers

The register methodological work is very important when defining the new object “farm”, which is usually not the same object in the administrative agricultural registers. This work also may include surveys among farmers/owners who cannot be identified as belonging to a certain farm, or farmers/owners for whom is not possible to decide whether they are working together on the same farm or not. It is also very important to follow up what has happened from one year to another to obtain complete coverage of the population in the Statistical Farm Register.

The Statistical Farm Register can be used:

- For producing statistics,
- As a sampling frame for sample surveys, or
- To complement survey data with register information.

Official statistics shall be of the proper quality, which is to say of sufficiently high quality in respect of the user's needs and of the costs involved. A basic requirement, however, is that good statistical practise shall be maintained, which means that the statistics are to be produced by means of recognized scientific methods, which meet requirements on quality, objectivity and reliability.

Statistical Farm Register is to be related with the Registers in the General System. By using data from different registers with complementary information from statistical surveys the possibilities are increasing to produce relevant statistics about agriculture and other activities (widening agriculture) with fewer burdens on the farmers. As well, integration of information from other administrative sources (ex: Farm Register and Bovine Register, kept by the Ministry of Agriculture) play an important role in SFR updating.

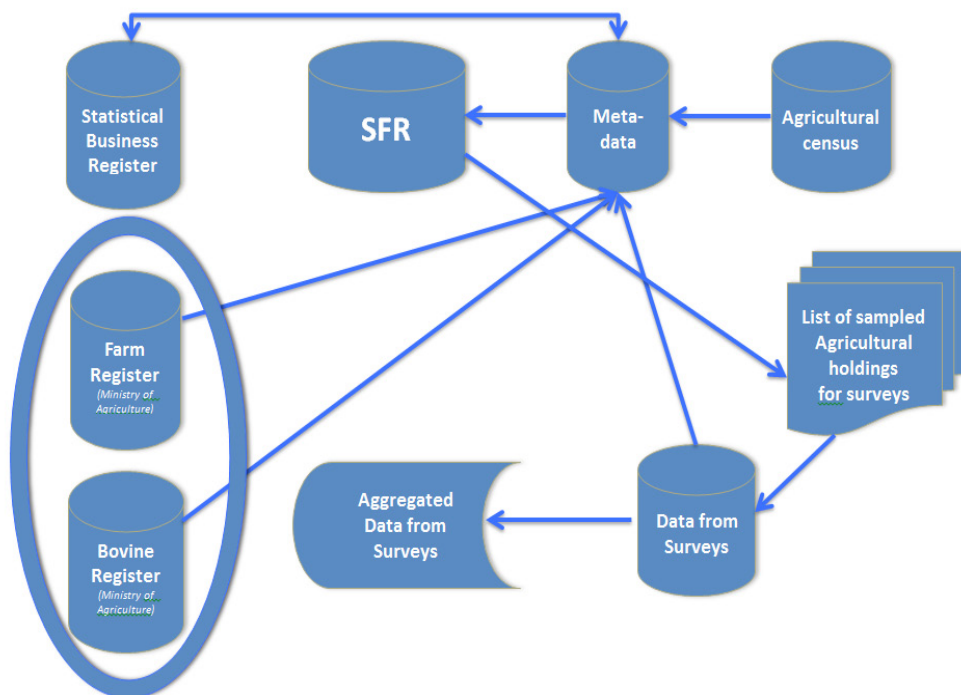
When constructing the Statistical Farm Register, it must be taken into consideration the existence of other registers (statistical or administrative), relevant for SFR updating procedures, which might be linked to SFR by linkage variables (usually the unique number of the unit or personal identification numbers).

1. *Basic registers*: Statistical registers of *objects*⁴ of fundamental importance for the system, Statistical Business Register and Statistical Farm Register.
2. *Other registers*: administrative registers (ex: Farm Register and Bovine Register) whose variables are of statistical nature, describing the populations⁵ in the basic registers, generally kept by the ministries of agriculture.
3. *Linkages* between the objects in different basic registers and between basic registers and statistical registers.
4. *Standardised variables*: variables of fundamental importance for the system.
5. *Metadata*: definitions of objects, object sets and statistical variables, information about quality and comparability over time should be easily accessible.
6. *Register-statistical methods* including routines for quality assurance.

4 Agricultural holdings.

5 Agricultural holdings.

Figure 1. SFR and interference with other Statistical Registers and Administrative Registers



The SFR should contain information necessary for the use of the register. Normally a register shall contain some basic information as:

- Identification,
- Name and addresses,
- Relevant variables for stratification, e.g., size of farm, economic variables, type of production, region the farm belongs to and perhaps also the number of animals.

The following list of general variables for SFR is recommended:

- Name, surname of the owner,
- Registration No./ identity code,
- Name,
- Legal status (natural or legal person’s farm),
- Owner’s address,
- Telephone numbers, e-mail address for contacts,
- Manager (?),
- Family (household) members (?),

- Farm address,
- Code of the territory,
- Registration number from the Agricultural Household Register of the Ministry of Agriculture, Forestry and Water Management (MAFWM),
- Herd registration number from Animal Register, etc.

2.4 SFR updating requirements

Further on it is analysed the relation with the most relevant registers whose data have an important role in SFR updating:

a) Relation with the Statistical Business Register (SBR)

Eurostat always discusses how to integrate agricultural statistics into the broad system of business statistics, in order to develop integrated economic statistics. The observation unit (the basic unit for which data is collected) in agricultural statistics is an “agricultural holding” which has similar features to the statistical units used in economic statistics, as defined in the Regulation on Statistical Units (Council Regulation No 696/93). However, “Agricultural Holding” does not have a clear one-to-one relationship directly with any of the units in the SBR and may refer to different units in different cases. On those special cases, country experts on SBR and country experts on SFR should collaborate together to define the statistical unit. However, for the majority of cases:

Agricultural Holding = Local Unit = Enterprise

In the SBR the reporting unit is often also the agricultural holding, but for some cases it may be another unit, the legal unit or the enterprise, which has agricultural activity. Any unit having any agricultural activity could, in principle, be considered as an agricultural holding, even if the agricultural activity is marginal to the enterprise as a whole (in terms of income, output etc.).

The IT updating workflow between SBR and SFR has to be clearly defined and explained and internal protocols for data transfer set-up. It may be possible that SBR is kept by an administrative body, external to statistical institute. In this case specific institutional cooperation agreements are to be set-up.

b) Relation with the Farm Register (FR) and Bovine Register (BoR)

These two registers are kept for their own administrative reasons. The FR is kept to manage subsidies given for crop production and the BoR is kept for veterinary purposes. FR and BoR can be used for update of administrative variables in SFR **if and only if** the Ministry of Agriculture will use harmonized definitions for agricultural holdings and commonly defined procedures for update. Such an approach asks for clear arrangements and consolidated data-transfer procedures between the administrators involved in both

institutions for matching same statistical units to be kept in FR and BoR with the ones to be kept in SFR.

Farm register (kept by the Ministry of Agriculture) is based on the holder of the land. In order to have a subsidy, each individual holder has to register himself/herself by bringing land ownership documentations from the Cadastre Office. In the register both physical entities and enterprises are recorded. This is why the coverage of the FR will generally differ of the coverage of SFR, being at most asymptotic but theoretically never equal.

Bovine Register keeps individual traceability of cattle, by means of Individual passport for each animal containing data on all movements. This register is animal based. Generally owners/keepers are evidenced in the register with their ID numbers. Each animal may be linked with owners/keepers ID. Companies are also linked with their branches with a link. However each branch has its own number. Main owner/keeper could be defined by those links. There is no clear definition either any company is enterprise or part of it.

The degree of administrative data integration is determined by the following factors:

- Degree of maturity of the country's statistical system.
- The quality and the amount of information available from administrative sources.
- Well-trained and experienced staff.
- Funding
- Cooperation among Governmental Bodies.

3. Results

An insightful analysis was done to discover the possibilities of development the unique ID code for the Statistical Farm Register. The assumptions for updates are based on the codes used in the potential registers entering into the updating process and the possible relations between SFR codes and the ones of the related three registers presented above.

Assumptions for updates with the Business Register

Update from Business Register: BR contains all administrative data for holdings which are legal entities. In order to identify the units the BR uses a specific coding system for each unit register, generally comprising a unique number of the legal entity + code of the branch. These data should be collected during agricultural census and registered in the SFR. Using this combination once per year the administrative data for holdings (legal entities) can be updated.

Assumptions for updates with Bovine Register (BoR)

The main goal of updates is to allow the track of changes in the holdings using different sources. In order to ensure the right track of changes the SFR has to contain the

identification fields which can be matched with the identification data for holdings in other sources, due to the fact that the update can be only in one direction: from source to SFR. BoR is an animal oriented register, but uses specific codes for holdings. For each holding which has an animal they should have a code containing at least: settlement + internal code generated by the system. Each location where there is found an animal should be registered and receive a specific code. Main assumptions: there has to be rules for update of SFR with data from Bovine register.

Assumptions for updates with Farm Register (Ministry of Agriculture)

In order to match the data in the SFR it has to be kept the same code for the holdings in both FR and SFR. The update should be once or twice per year and should concern only the administrative data.

4. Discussion

In order to achieve a basic structure of the SFR, which could then be updated from different sources, two important actions are required:

- a) First, agreement will need to be reached on a common set of categories to be held in the register, together with their precise definitions.
- b) Secondly, a list of identification codes will need to be defined in order to link to an agreed set of data sources.

The main goal of SFR is to support up to date data for agricultural holdings in order to provide a reliable sampling frame for Surveys and Censuses.

From the other side the SFR should keep track of all changes in the registered agricultural holding delivered by different sources.

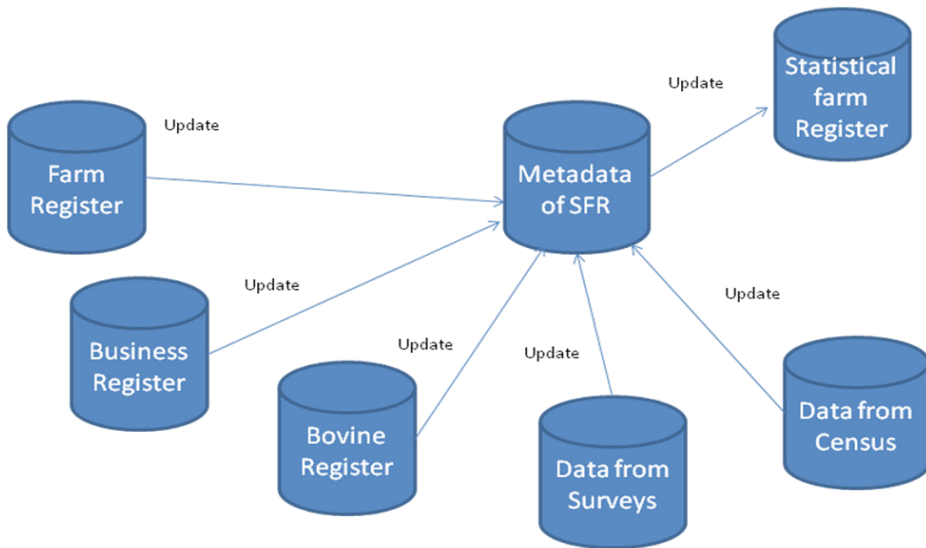
The other registers (Farm register, Bovine register, Statistical Business Register, data base from Surveys and data base from Census of Agriculture) will play a role of updating tools to SFR. The data for updating should be kept in the front end registers and should be passed to the Statistical Farm Register on regular basis. All functionalities of the existing registers should be kept.

In order to keep in the right way all the data the SFR will be developed as Relational database using the existing core Statistical Database Management System. The special procedures for creation, updating and usage have to be created as well as the rules for maintaining and archiving the data.

1. The SFR is to be structured as a relational database.
2. The SFR is be set up on the basis of the outputs of the Agricultural Census.
3. The data from different sources will be checked before the update of the SFR.
4. All variables that will be included in the SFR should be fully harmonized with the European Commission's proposal on the content and structure of SFR for 2010 onwards.

5. SFR has to be only for statistical purposes.
6. Also geographical coordinates for the agricultural holding should be included in the SFR.
7. A strategy for SFR updates (Figure 2.).
 - a. The results of the farm structure surveys that will be carried out in agriculture (both sample surveys and full censuses), but also with the results of the on-going regular surveys carried on annual basis for crop production, animal production, and other current statistical surveys carried out in agriculture.
 - b. The other registers (Farm register, Bovine register, Statistical Business Register, data base from Surveys and data base from Census of Agriculture) will play a role of updating tools to Statistical Farm Register.
 - c. The data for updating will be kept in the front end registers and will be passed to the Statistical Farm Register in the regular basis.

Figure 2. SFR - Updating principles



8. All functionalities of the existing registers will be kept
9. Functionality:
 - a. To contain the data in line with Eurostat requirements for carrying out current statistical surveys.
 - b. Providing sampling frame for statistical surveys.
 - c. To keep the history and changes.
 - d. To keep the current situation for statistics based on the sources for update.

10. Structure:

- e. The SFR should be a subset of an Integrated Database for Agricultural Statistics.
- f. Levels of metadata.
- g. Variables.

11. Relations

- h. There should be updates from Farm Register kept in the Ministry of Agriculture – administrative data, data for owners, data for production, not for animals.
- i. There should be the updates from Business Register ones per year with cleaned data for active and no active legal units. The update should contain all administrative data about legal entities.

At elaboration of the list of variables for establishment of the SFR, there are to be taken into consideration the number of surveys that are to be carried out according to the regulations foreseen in the “**Statistical Requirements Compendium 2011**”, Domain 4: “*Statistics on agriculture, forestry and fishery*”, under the fields of activity covered by the following themes:

- (i) Crop product statistics;
- (ii) Livestock, meat and eggs statistics;
- (iii) Milk and dairy product statistics;
- (iv) Supply balance sheets;
- (v) Vineyard statistics;
- (vi) Fruit tree statistics.

Particular criteria that are to be taken into consideration at sample design for each of the above mentioned topics were taken into consideration⁶.

Agricultural holding is to be considered as the *reference unit* for the SFR.

Each record in the SFR has to be identified with holding/family farm that is to be the same as with the source of the delivered data.

5. Conclusions

When designing the SFR, there is a need to make it basic and widely acceptable. There is no common approach for a Statistical Farm Register (SFR) defined and recommended by Eurostat yet. At developing the SFR there are to be taken into consideration the best practices in European Member States for setting up a SFR

⁶ Annex to the final document.

with maximum coverage compliant with European norms and standards in terms of definitions and classifications.

When the SFR will be created and updated, all relevant sources will be used so that the coverage will be as good as possible. In register-based statistics, the system approach is vital in order to sustain and improve the quality. Hence, we cannot look at only SFR at a time, but we have to consider the system as a whole and pay special attention to identification variables used for linking purposes.

The Agriculture Census Questionnaire should have the necessary inputs for the Statistical Farm Register. The Questionnaire has to be prepared in close collaboration with the Ministry of Agriculture. The questions and indicators should meet both the requirements of the Statistical Institute and the ones of the Ministry of Agriculture and comply with EU and FAO requirements.

In order to create the possibilities for future update of the SFR, a unique coding system for agricultural holding has to be created inside the SFR and also specific codes from other registers have to be gathered during the agricultural census data collection and kept in the SFR.

The structure of the SFR, the rules for update from different sources and the rules for sampling have to be stored and defined in the Metadata of SFR in order to allow easy change and development. Communication protocols between the potential surveys in the Agricultural Area should be elaborated. Update protocols should be elaborated between the Statistical Institute and the Ministry of Agriculture for updating of both registers.

The data for agricultural holdings have to be divided in two parts, according to the content of the variables: administrative variables and statistical variables. The administrative variables can be updated (changed) from all sources (under some conditions) but the statistical variables, will be changed only by regular surveys conducted in agriculture and by Agricultural Census.

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