MarketCommons functional specification for a sustainable economy database – Part 2 – Valuations

– A steadily growing document of basic concepts, requirements for the database and, in the future, a functional specification of the Connected Web Applications

Version: see file name
Date: July 12, 2017
Author, copyright: Oliver Sendelbach (Email: socialmedia (@t) ourconomy.org)

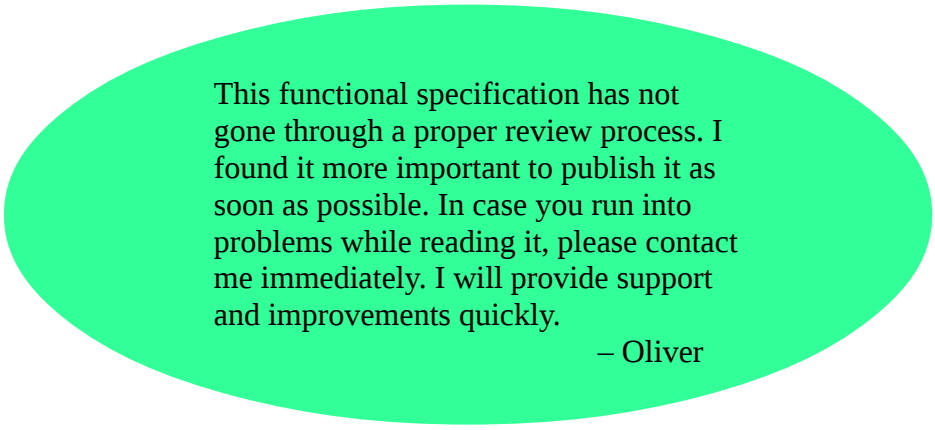

Table of Contents

1 Short introduction to valuations

A database for sustainable Places and beneficial Effects is only half the fun without user valuations. The purpose of the valuations is to give people all over the world the opportunity to shape the businesses that concern them. This second part of the functional specification introduces valuations to the Central Database.

The design of the database is done in a way to allow for different projects with different valuation categories to manage their data on the Central Database server. The intention is to record valuations in a way that makes different projects share their collected valuations and choose from the valuations of others–just as they see fit.

The Central Database is more than just a place where Connected Web Applications can share data about Places and Effects. It is a a joint research mission on sustainability, measuring the impact of modern economies, the life-cycle of products, etc.

The Database is not a data mine that you fill involuntarily during your daily life with your personal data. Rather it is a data free shop where you give what you want to contribute and take what you find useful.

Please read also the latest version of part 1 of the documentation, MarketCommons_Functional_-Specification_v0.037.odt, first for all information about the projects purpose. It also contains additional technical information about the Combined System and the already introduced tables.

This second part of the functional specification comes with an enhanced and updated version of the database descpription MarketCommons_Database_v0.0XX.ods. That file describes the database tables / JSON files. The second line in the file, 'Field implementation', contains the value 'step 2' for all fields (columns) that need to be implemented with the valuations. All fields in the new tables as well as one updated column in each of the Places and Effects tables have been marked 'step 2'.

2 How do valuations work?

This section explains why the Central Database is a little more complicated than it would have to be for a stand-alone website. The extra features are necessary for different Connected Web Applications to share their Valuations data.

Valuation Categories are the line items for valuations. A collection of these items and the Valuation Values filled into them by users constitutes a user's valuation for a Place or an Effect.

The specification allows Connected Web Applications to create forms: a list of Valuation Categories, that invite users to fill in the categories like score cards. Whether Connected Web Applications use forms or find other ways to make their users enter their values is up to them.

2.1 Implementation of valuations

How are valuations implemented in the Central Database? The structure has three main elements:

Valuation Categories are where users fill scores which are called Valuation Values.

Valuations are a set of Valuation Categories where users have filled Valuation Values. Each user can make one valuation of any valuation object. A valuation object can either be a Place or an Effect.

Valuation helpfulness ratings are simple ratings that users can use to rate valuation of other users. Connected Web Applications can use these ratings to apply weights to the different valuations.

2.1.1 Usage of main Valuation Categories

There are several important features of Valuation Categories:

In order to structure a valuation model and/or the forms that belong to it, Connected Web Applications can use three different Category types

- Aggregate: These are main Valuation Categories that cannot be filled with Valuation Values. Instead, they can be used for the aggregation of other Valuation Categories. A good example would be the total for the environmental performance of a company in different 'green' disciplines.
- Primary: These are Valuation Categories that are meant to be filled with Valuation Values.

Connected Web Applications are encouraged to arrange these Primary Valuation Categories in forms. They can implement rules to the forms as to how many Values need to be filled to have a meaningful overall valuation. These rules can also be necessary for the calculation of the Aggregate Valuation Categories. The rules and forms mentioned above are not part of the Central Database and therefore are not described further in this specification.

- Secondary: These Valuation Categories cannot be filled directly. They can be referenced to a Primary Valuation Category. For reports and ratings of Places and Effects they can use Values entered into Primary Valuation Categories to reuse them for another valuation model. This is especially useful when Connected Web Applications want to convert Wikirate style metrics into valuation scores.

  This would be possible anyway on local Connected web application level, but that would mean the thoughts and previous work of projects are not available to other projects of the Combined System. By using Secondary Valuation Categories sharing one's work becomes easier.

2.1.2 Valuation scores

Valuations are controlled by two functions:

A **validity function** which determines whether an entered score is valid. It must be true for the Valuation Value to be accepted by the system.

A **score calculation** which converts the Valuation Value into a score that fits the valuation model spanned by the Valuation Categories.

2.1.3 Valuation helpfulness

The database provides functionality to record user estimates of the helpfulness of valuations. This is meant to provide a means to decrease the power of malicious trolls. It might also be used for trolling, so that the administration probably will need to fine-tune once the service is set up. This will be part of the joint research effort.

2.2 Direct and derived Valuations

Because the system has a certain level of formality, two ways exist to get a valuation for Effects:

- One can calculate derived valuations of Effects by totaling the valuations of its components or
- One can make direct valuations of an Effect using gut feeling of the value according to the applicable Valuation Categories

Each Valuation by a user should follow the second approach and target the Effect in question as it is while estimating the impact of the components. When the users' estimation-based Valuations are very different from the Valuations calculated from the components' Valuations this will be a starting point for further research for errors. There could be unforeseen effects in the Effect as well as in the calculation functionality. This will be a good opportunity to learn more about the system and to improve it.

Derived Valuations do not apply to Places as Places do not inherit Valuations from components.

2.3 Calculation of Valuations

The method for calculating Valuations will require further research. Many questions need to be dealt with:

How will environmental versus social sustainability be weighted against one another?

Does is make sense to do an aggregation on the level of each component or will it be necessary to add up Valutions of each Valuation Category through the different levels separately?

How do you treat fairly mined lead if it is a desirable component in one product and a dangerous contamination in another one?

This requires input from a lot of researchers and the bigger part of these creative processes will probably need to be done in the Connected Web Applications.

2.4 How Connected Web Applications can use their and other's valuations

Connected Web Applications can use other Web Applications' Valuations and Valuation Categories in two ways:

- If they want to enable their users to enter data into Valuation Categories of other Connected Web Applications, they can just integrate these Valuation Categories in their own form and allow users to fill the data.

- If they want to use existing Valuation data they can accept the Valuation Categories how they are and use the data they produced as is. Or, Connected Web Applications can create Secondary Valuation Categories that use other Connected Web Applications' Valuation data, but changes the contend a little bit by applying different validity functions and score calculations.
  Data can be reused to generate new analyses or reports from a different angle. It can also be used to aggregate Valuations from specialized Connected Web Applications to a bigger, more general picture.

- A combination of the two approaches: Theoretically, a Connected Web Application could use forms to fill other projects Primary Valuation Categories and then transform the data by means of Secondary Valuation Categories to fit the valuation framework of the own Connected Web Application. The entered data would then benefit the two projects.

- What should not be done: Different Connected Web Applications should not 'support' different versions of Valuation Categories in order to use different meanings of the Valuation Category. The mecanism of 'supporting' works by flagging the ValCatRecordStatus accordingly. This feature is explained below in the explanation of the field.

  If Connected Web Applications have a distinctly different view on a given Valuation Category, they should rather create a new one that they can manage as they wish.

Every application has access to the full database and has the records anyway. So, why use Secondary Valuation Categories in the first place? Connected Web Applications can meddle with data on the local level anyway. Because: it is better to collaborate through the database. Local thinking can be of use globally and projects can connect easier.

2.5 Database dumps

This was missing in the first part of the functional specification although it is important: The whole database should be exported and made available to the public every day. The only thing that needs to be protected and/or obfuscated is metadata of users. While the dump will not be able to do away with user names completely for license reasons it should use timestamps that are not fine-grained.

2.6 Important license addition

There is one important addition to the thoughts on licensing: The data in the database can only be used under the provision that no restriction for other users' usage is created. External researchers can create closed-source algorithms for their own data analysis if they wish. But, they are not allowed to prevent other users from re-engineering these using them under a free and open source license.

3 The valuation category table

It makes sense to read the MarketCommons_Database description in parallel with the following sections about the database fields. They are represented by the table columns in the MarketCommons_Database file. The paragraphs below give additional information on those fields that are not self-explanatory. If something is missing here that needs to be explained, readers are asked to first look into the first part of this functional specification.

Please note that Valuation Category records can be changed by users if the Connected Web Application offers the functionality. The administration of a Connected Web Application itself has the ability to endorse versions of Valuation Categories by 'supporting' them. Nevertheless, normal users carry great responsibility and should be aware of it.

ValCatRecordStatus
Valuation Category Record Status has these possible field values:

- user-contributed: “contributed”
- adopted (by administration): “supported”

This field is used to give to a record in this table the support of an administration of one of the Connected Web Applications. All fields and subfields of a record that is supported need to be filled in order to create a complete record that users can rely on if they want to.

The field does not have to be mixed up with ValCatPrio, because it is needed to be able to 'support' the ValCatPrio entries made by the administration of a Connected Web Application.

ValCatRecordStatus can be used by different Connected Web Applications to endorse different versions of a Valutation Category by submitting different datasets with ValCatRecordStatus 'supported'. Users who rely on the versions supported by their respective Connected Web Application would then use

different Valuation Categories. Administrations are not supposed to use this functionality extensively. They should try to make sure they create a new Valuation Category if they want to give an existing Valuation Category a different spin.

ValCatIsDoubleOf
This ...IsDoubleOf has a different meaning as compared to Effect/PlaceIsDoubleOf. Valuation Categories which have an entry in this field will not be subordinated to to the “master” Valuation Category. It shall rather be used as a starting point for user community discussions.

ValCatType
This field indicates whether this valuation category is a:

Primary one (that collects its own values), a
Secondary one (that uses values from other valuation categories) , or an
Aggregate one (that is used be Connected Web Applications to cumulate ValValues of ValuationCategories that group under this Valuation Category)

Secondary Valuation Categories are very useful to convert metrics that other Connected Web Applications have gathered as described earlier.

The field ValCatPrimaryValCatID (see below) is used to reference the Primary to the Secondary Valuation Category.

ValCatCategory
This field has a special meaning in this table: It is used for translations of the value in field ValCatArea, while only one translation per language is allowed. This is in contrast to the similar field for Places and Effects where an unlimited amount of categories can be entered for every language.

ValCatPrimaryValCatID
This field is only relevant for Secondary Valuation Categories, but then a value is mandatory. The Primary Valuation Category's ValCatID the data of which is reused has to be provided.

ValCatValidityFunction
This field is filled with the formula that needs to have the value TRUE for any valid Valuation entry. The format of the the formula still needs to be determined in a conversation with the main developers.

ValCatScoreFunction
This formula converts the Valuation Value entry to a value which can be used in the calculation of the aggregated Valuation. The format of the function needs to be determined with main developers. Excel style syntax could make sense.

This is function is needed for conversion of scores of a given valuation model into scores for another valuation model.

ValCatPrio: Valuation Category Priority
Users filling Valuation Values into Valuation Categories can be guided by applying priority values to the Valuation Categories. Different degrees of requirement can be entered in the ValCatPrio embedded table.

Possible degrees of requirement:

required
Valuation category score is required for every effect or place.

recommended
The use of this valuation category is recommended, but not required.

discouraged
This category is open for use but discouraged because it is deemed redundant or not useful for the operation of the particular Connected Web Application

deprecated
This category type is reserved for categories that are no longer usable for valuations.

There are two places in which the requirement flags can be set:

- The default requirements are set in the Valuation Category dataset but these can be overwritten with the respective field in
- the Effect or Place datasets (eg, in the Place table: PlaceRequiredValCat1...X).

Who sets the degree of requirement? Every user can do that. Users are invited to take responsibility. The sometimes more orderly administration of a Connected Web Application can also set the record status to 'supported'.

In the ValCatPrio subtable, mentioning the system for which a ValCatPrio record is valid is a duplication of data because this could be derived from the value of field ValCatContribSystem. The advantage of the duplication is that the embedded ValCatPrio table can be read on a stand-alone basis. A nice solution would be to auto-fill it at Connected Database level.

Amendment to part 1 of the MarketCommons Functional Specification

In the Place and the Effect database tables, the following subtables have been added

PlaceRequiredValCat and **EffectRequiredValCat**
These subtables are used to fine-tune the required Valuation Categories for Places and Effects, as mentioned above. For some items, extra Valuation Categories might be needed or those required by the records of the Valuation Categories might be useless. For instance, a user might want to enter a sea breeze as an Effect, but wants to deactivate the need to enter Values to Valuation Categories that are related to working conditions.

The same degrees of requirement, ie required, recommended, ..., are applicable as in the Valuation Category table.

End of Amendment to part 1

ValCatOrder
The fields of this subtable allow the administrations of Connected Web Applications to apply an order to their Valuation Categories, eg for creating a structured form from them. While they could do that in their Connected Web Application they are encouraged to use the Central Database for it and share their thinking.

Users can use it, too. Administrations should support a preferred ValCatOrder if they wish to give some guidance to their users. The use of ValCatOrder does not mean that Valuation Values are aggregated to the higher section. Aggregation is controlled by using field ValCatIDSum as explained below.

ValCatOrderSys is a duplication because the information is also present in technical field ValCatContribSystem. This makes the subtable more meaningful on a stand-alone basis. Again, the Connected Web Applications should fill this value automatically.

ValCatIDSum
In this subtable the Aggregated Valuation Category is entered to which the value (the ValValue of the Valuations table) of this Valuation Category is aggregated. In order to create a sophisticated valuation model weights can be entered.

Labels and validity dates can be used to model the valuation analysis over time. The labels in this subtable are *not* the same as those in field ValCatOrderLabel.

Values are optional. But if a weight is provided for one Valuation Category under a label, weights will have to be provided for all Valuation Category under the same ValCatSumLabel. Otherwise, Valuation Values in Valuation Categories without a weight will be ignored.

Do weights have to add up to a certain total? No, all given weights of categories that point to an aggregate category are added up. Their actual weight is then the fraction of the total. That means also that the total is calculated anew for every level of aggregation. A valuation model could use percentage points that add up to 100 on the lowest level, employ number with one digit after the decimal point that add up to 4.2 on the next higher level, and then use integers that add up to 7 in the top aggregated category.

This is only a facility that does not need to be used by the valuation models that the users or administrations put in place. But it helps to build and master bigger valuation models on Connected Web Application level. If Connected Web Applications and their users want to experiment with large numbers of aggregation models, this should be done on local Connected Web Application level.

ValCatArea
This field can be used to designate an area where the Valuation Category belongs to (ie, 'ecology', 'social sustainability', etc.)

ValCatSubArea
An addition to ValCatArea

ValCatSumPhysicalQuantity
This field is still experimental but it is supposed to become useful for the aggregation of valuations. Here the physical quantity can be entered according to which the the Valuation Values of the Valutation Category are aggregated to the total.

4 The valuations table

The concept of a 'valuation' in this specification means a set of coherent Valutation Values for a set of Valuation Categories. A valuation are the Valuation Values that one user gives to one object, ie a Place or an Effect.

A valuation can be updated by the user once a Connected Web Application has a user management. A registered user can only make one valuation per object. While user management does not exist in the system, users cannot update valuation but have to make new ones.

A valuation can be seen as a form. The form is not necessarily set in stone. The user does not need to fill the Valuation Categories that are not required by the Connected Web Application. Users can also enter new Valuation Categories if the Connected Web Application used provides this feature.

The fields of the valuation table that have not yet been sufficiently explained are the following:

ValRecordStatus
This field is slightly different from status fields in other tables. The possible values and their functions are:

- user-contributed: 'contributed'
- set by the administration: 'supported'
  This means a special confirmation for valuations: Supported valuation items empower the administration to make a statement. It depends on the Connected Web Application how to weigh these.

ValStyleCategory
This a category field that is again very similar to the Places and EffectCategory fields in the respective tables. Unlimited amount of entries for any language are possible.

ValValue
The subtable needs to allow for enough entries that big forms can be created by the Connected Web Applications.

5 The ValHelpfulness table

The valuations themselves can be rated according to their helpfulness. This functionality can be used to fight unfair or hateful valuations. It is supposed for troll prevention. If it turns out to be an inroad for trolls some fine-tuning will be done as an community effort.

Only one Valuation Helpfulness table entry per user per valuation is permitted. As long as users do not exist in the system, users cannot update their valHelpfulness entries. To begin with, administrations should only be as paranoid as necessary and first trust that entries in this table are not systematically biased by single users or groups. Users need to be able to access their own valuations for amendments and review once user management exists.

ValHelpRecordStatus
This is very similar to other RecordStatus fields except the fact that administrations cannot support a Helpfulness record. They can only officially ban inappropriate records.

ValHelp
This is the only field in this table that needs to be filled by the user. This makes it possible to create very convenient entry methods for the data of this table, ie a five-star rating bar.

6 Valuations categories of ourconomy

The Valuation Category table is filled not only with meaningful example data, but with the first suggestion for the valuation categories for the Connect Web Application called 'ourconomy'. Valuation categories for the Connected Web Application 'kartevonmorgen' are not yet entered into the table.

This section describes the thinking and choices behind the actual Valuation Categories of the ourconomy system. These valuation categories do not necessarily apply to other projects using OpenFairDB although it is desirable to have a set of common or reconcilable valuation categories among different systems.

6.1 Choice of main categories for ourconomy

The main categories are:

- Sympathy
- Community
- Environment
- Healthiness/Quality

While Sympathy is a special category that does not have subcategories the other three follow an intuition that is often used to handle the different aspects of sustainability. Some might argue that this categorization is somewhat arbitrary. They are invited to come up with their suggestions.

The separation of environment and community is a little artificial because the environment valuation categories mostly treat the environment as a community resource. Every bit of pollution that is done to nature is hitting back on members of humankind to some degree.

For information about the particular Valuation Categories see columns ValCatShortDescription and ValCatDescription in the latest version of file MarketCommons_Database_v0.XXX.ods.

6.2 Possible values for valuation scores

In ourconomy the Valuation Values will be set to be in the range between '0' and '5'. The ValCatValidityFunction will make sure this is respected and ValCatScoreFunction will be 'ValValue times 1'. The meaning of the possible Valuation Values is as follows:

1-5
Normal valuation, a best estimate for the items score in that category. Higher numbers are better. A high benefit is '5' and a very low pollution is also '5'.

0.5
A value indicating that the score is still poor, but a little effort has been done to be a bit better than '0'.

0
If a certain percentage of users or the adminstration set a valuation to zero the Effect or Place are regarded as unfit for ourconomy.

“”
No value provided: This is not a problem if the category is not a required category.

6.3 Big companies and ourconomy

ourconomy's most important sensitivity is a Place's potential for power abuse, because power concentration raises the potential for violence. Big companies will get a 0 in the respective Valuation Category and will therefore be regarded as unfit in this Connected Web Application. It is designed to represent the small lovable and low footprint Places and excludes the companies that act like business is warfare.

It is very like that there will be a lot more good ourconomy style restaurants and economic entities in Africa than in Europe.

The valuation functionality of the Central Database can also be used to bash Big Business for the harm that they do to society. However, this will not be the job of ourconomy. Other, yet to be established Connected Web Applications can specialize in it and try to attract users. ourconomy will focus on the good things, the alternatives that will make one feel good if one cares for what happens around the world.

6.4 Summary of subcategory scores in main categories

The valuations for each valuation category will be summarized in the main categories. These main categories cannot be filled directly because they are of type 'aggregate'.

Every valuated item needs to have at least 0.5 points in any of the mandatory categories. As stated above, a value of zero in any of the required valuation categories will lead to a total aggregated valuation of zero in the respective main Category. This is bad in ourconomy.

For the calculation of the grand total of a valuation, weights are applied on a system wide basis as a default at the start of the Connected Web Application. In a remote future, users are planned to have the opportunity to draw their own reports with their own weightings. This should allow to test better combinations of categorizations and weights.

7 User interface

These notes are supposed to give developers of Connected Web Applications some ideas for their sites:

ValCatIsDoubleOf: Provide extra page where these doubles can be found and changed

It should be possible to copy Valuation Categories to create new ones.

A nice understandable form for valuation entries is useful to attract users to fill the database.

Some sort of five-star set for the quick and convenient entry of Valuation Helpfulness ratings next to the Places or Effects to which they apply would be nice.

Probably an extra page is needed to allow users to manage weights.

Connected Web Applications should provide their users with a choice whether to use only supported Valuation Categories or not.

8 Concluding remarks

A valuation of each Effect should be equal to the sum the the valuations of its components. Wherever this is not true it is a good starting point for analysis. Administrations, developers, users, and interested researchers will have the opportunity to work together to improve the aggregation of valuation. Or they will learn a lot about the bias of perception of consumers.

Also: What happens when one component is a pollution in some place but in this Effect it is positive? For example, the heavy metal lead can be a dangerous pollutant in drinking water, but as a component in solder it can make an aircraft safer. What will the community do with it?

This functional specification for valuations leaves more open questions than have been answered. That is exactly the purpose of the system and the specification: Create a “data-base” as foundations for research into the impact of modern day consumption. This should give the global society a tool to control its impact on the globe and lead to a better life.