Supporting Regional Sustainable Development by IT-Assisted Communication and Cooperation

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Abstract

In this paper we describe an software system which supports a virtual community in ordering, purchasing and delivering organic products like food, wooden building material etc. The software supports especially the communication and cooperation between the members/consumers to improve local sustainable economy and to allow orders in organic whole-sale (which requires to sum up single orderings to fulfill whole-sale bundles).

(in German): In diesem Beitrag beschreiben wir ein Software-System, das eine virtuelle Gemeinschaft in Bestellung, Einkauf und Verteilung von ökologischen Produkten wie Nahrungsmitteln, Holz-Baumaterialien etc. unterstützt. Die Software unterstützt speziell die Kommunikation und Kooperation zwischen den Mitgliedern zur Förderung lokaler Ökonomie und um Einkäufe im Bio-Großhandel zu ermöglichen (was das Zusammenfassen von Einzelbestellungen zu Großhandels-Gebinden erfordert).

1. Introduction and Context

One possibility to procure regional organic food and products as contribution to sustainable development (Word Commission 1987) is to organise oneself in a (virtual) community (Rheingold 2000, Schubert 2000), often called food-coop (Bundesarbeitsgemeinschaft 2000). The advantage is the chance to buy in whole-sale and regional organic farms, but one have to organise everything like purchasing, commissioning and distribution on the group. In rural regions the distances between community members are large, and so also the input to cooperate and decide together.

So the idea is to support ordering, communication and distribution by an Software-System which can be extended to a system that assists sustainable everyday life requirements like decision finding, product ordering, communication etc.

2. Problem Scope

Common purchasing requires to communicate corporately. Before using the described new software-system “efood-coop” (Naumann 2001) the catalogue with organic products was handed round through the members of the purchasing community (the food-coop). So it

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tooks a lot time to decide and then to purchase the products by whole-sale. The second problem is to optimise the bundles. As no private person normally wants to buy 25 kg of wheat, it is necessary to bundle the desires. So the system should be able to recognize a total bundle and give feedback to the user.

3. Methods

Last year a distributed Java application was developed to solve these problems. As the idea is to purchase together, the users can down-

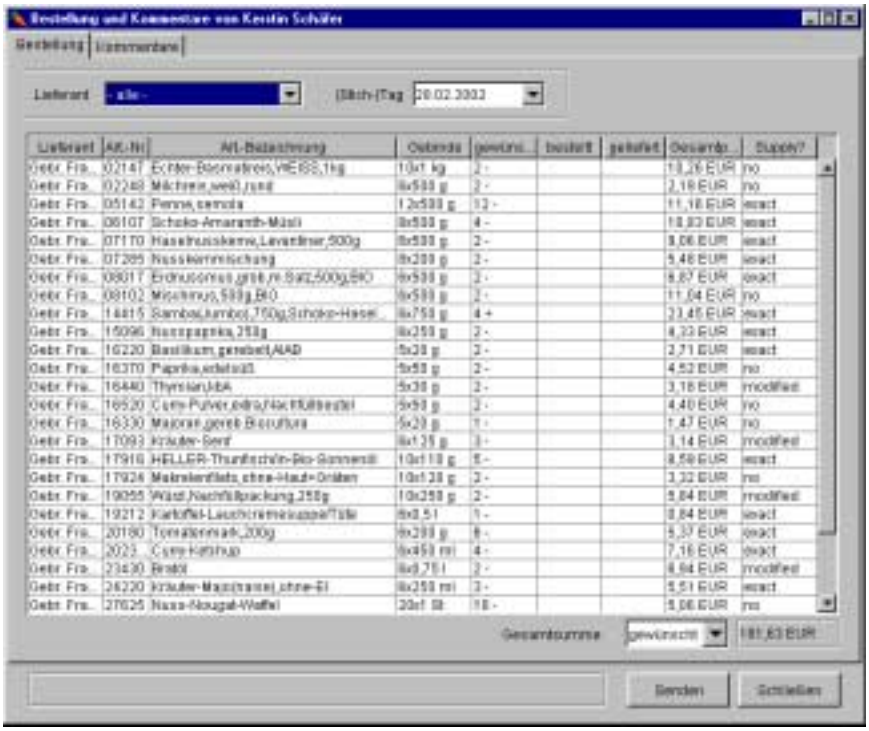

Figure 1: Overview of ordering-request with the additional information if the bundle is complete (column „Supply?“)

load the catalogue with products and are able to order. We decided to set up an application and not to use a web-interface, since the user community is limited and we had more programming possibilities. In addition we could offer orderings off-line, as all datas from the database server are replicated locally.

3.1. Communication and Cooperation

To reinforce communication between the participants, it is possible to write down comments. We can classify these comments into two groups: comments directly refering to the product (like additional informations, recipes) and comments which belong to the common ordering. For example if 2 persons want only a part from different sorts of noodles, an ordering by whole-sale is not possible. If they commu-

nicate through the comment-option in the application, they can decide to order the same article and the bundle may be fulfilled.
With the system it is also possible to have different vendors, and one can choose in the display between suppliers and product groups.
After ordering the consumers can have a look for their wishes with the mask shown in figure 2. Here they can see their whole orderings, and also if the bundles are complete at the moment and are fitting the desires, or a modification is expected (the users see the value “no”, what means no ordering, “exact or “modified”).

3.2. Optimising the bundles

After all wishes are uploaded to the server, the ordering coordinator is able to look if the bundles are refillable. He is supported by the mask shown in figure 2. We distinguish between “should” (meaning the user request for product parts) and “in fact”, meaning how many parts will be ordered in whole-sale. The ordering coordinator is authorised to change the is-ordering, but not the should-ordering. At any time he can start an implemented algorithm to compute which bundles are

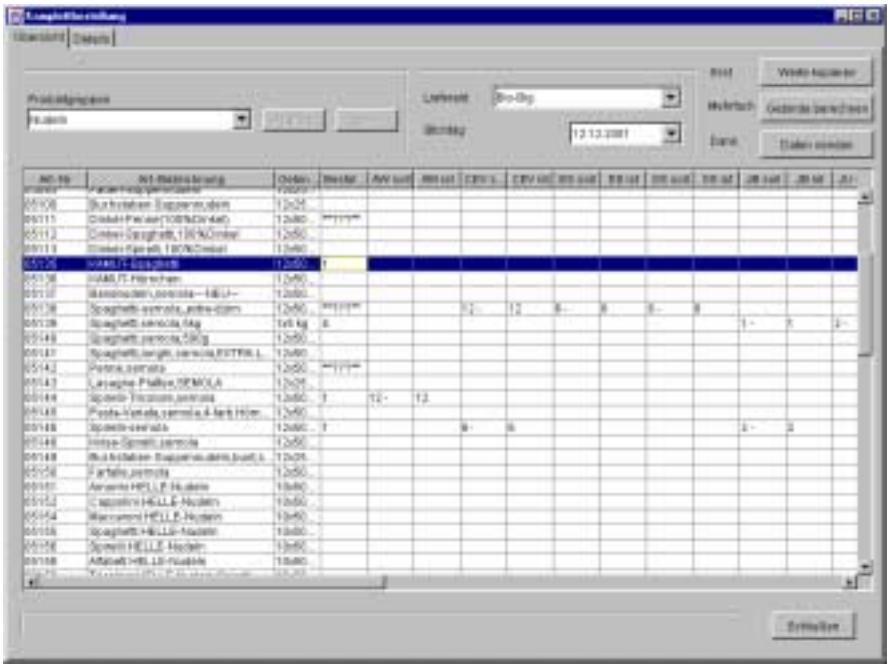

Figure 2: Mask to support the ordering coordinator. Right from the article he sees if the bundle is (in-)complete (column „Bestellung“)

complete and which not. In this case he can change the “in fact”-value and compute again until every ordered article is complete.

3.3. Technique

We implemented the software with the programming language Java to be secure in internet-transactions and also be platform-independent. The data is stored locally in vector-classes and on the

server (using Java-servlets to make up object-oriented data to relational tables) we run a PostgreSQL-database.

4. Conclusions and Outlook

With the new application a parallel ordering is possible, so more people can participate at the food-coop system. After using it the first time in December 2001, more (new) consumers wanted to order organic food through the efood-coop software.
Also the ordering and bundle-optimisation is easier, since the algorithm computes which bundles are complete.
The next step will be to extend the offerings with non-food products and items which can be lend or exchanged in a local exchange trading system (LETS, Hoffmann 1998).
So we have a virtual regional shop for organic products to support a virtual community with a sustainable living-culture we call “virtual ecovillage”. This community subsists in a bounded area to reduce environmental impacts through traffic.
Actually we focus on two research topics: Using the software to support a green box scheme (Kreuzer 1996), and the question how algorithms and data structures can help the community members to transport themselves and also goods from A to B in their decentral community.

5. References

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