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Schwabe, G; Schenk, B; Bretscher, C


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Gerhard Schwabe, University of Zurich
Birgit Schenk, University of Applied Sciences Kehl
Claudia Bretscher, University of Zurich

1 Introduction

While commercial service industries (e.g. banks, [CS06], [US09]) have made significant advances in improving their advisory services, the public sector is lagging behind: there is a significant gap between support offered, consisting of simple telephone services and self service information on the internet, and the information needs of a citizen in complex life circumstances. Pure information is not sufficient if the citizen is not able to express his/her information needs. For example, a pregnant woman may very well describe her situation, but may not know what information to look for. Structuring websites according to life’s circumstances may give a good general starting point but does not offer sufficient personalized support. Good advice can be found in the public administration offices (local, regional, state and federal) but it tends to be fragmented and distributed among different agencies, citizens lack orientation about what to ask, whom to address and how to use the information provided. In this paper we present a comprehensive overview of the IT-based solution "Citizens' Advice 2.0". It supports citizens’ advisory services inside a public agency. This paper builds on a series of prior publications: In a first prior publication we provided evidence of the need for an advisory service in German public administration considering the circumstances of a pregnant woman [SS10a]. In a second publication we proposed basic principles for setting up a computer-supported advisory process in a public administration [SS10b]. In two further publications we showed that public advisory should be understood as consecutive steps of demand analysis and information aggregation [SS10c] and that structure should not be prescribed but rather allowed to evolve during the collaboration [SB10]. This paper builds on the prior research and makes two contributions: First it summarizes the method and data collection (section 2) as well as the results of the prior papers on process support (section 4) and on citizen-advisor interaction (section 5). These summaries also update the sections with new data and make prior German publications available to the English-speaking research community. Second, it presents original research results on the information provision (section 3) and on organizational aspects of the approach presented (section 6).

The paper is organized as follows: After presenting the research method and data collection, we discuss three major aspects of Citizens' Advice 2.0: Information provision (section 3), the advisory process (section 4) and citizen advisor interaction (section 5). Each section first presents the problem in this area as disclosed in our empirical analysis. These problems lead to requirements for a better system. Then we present how these problems are solved using our system. We close each section with evaluation results. As our approach has only been tested
in experiments, we can only speculate on its organizational impact in section 6 on the basis of discussion with experts. The paper ends with our conclusions in section 7.

2 Method and data collection

The work described in this paper is part of a larger research project on cooperative advisory services in public administration. The part of research presented here follows the logic of "Design research" (He04), more specifically, the pilot study research (SK00). We have chosen the method of scenario-based development [RC02] and the scenario “Having a baby”. Parents expecting their first child have a lot of questions in mind based on the as yet unknown experience. For questions concerning birth and child care, their counselling partners are doctors and midwives, as well as employees at counselling centres for pregnancy matters etc. Two scenarios were developed. Both were based on interviews with pregnant women and women who had just given birth. On two occasions a researcher observed a woman during their information search in a citizens’ advice bureau. Then the demand was analyzed in 18 mystery shopings [VW05] in different local public administration offices and through workshops with pregnant women. The details about used material and tools, relations of interaction and collaboration as well as space and surroundings were gained working with the Needs Driven Analysis [SK96].

The software was developed using the scenario based design ([Ca99], [RC02]). Scenario based design emphasizes understanding the users’ needs. A deeper knowledge of individuals’ behaviour within a smaller population is more important than broad statistically significant data gained through the sampling of a large population, yet delivers a limited depth of understanding. The successive transformation of the scenario in scenario-based design follows the phases of software development. The scenario is used to analyze requirements, envision the new design, and guide the prototyping and implementation as well as the evaluation. In requirement analysis the problem situation is studied based on the data gathered in interviews with the stakeholders, mystery calling, mystery shopping and workshops. In design it moved from understanding problems to an envisioned solution following three steps: the development of activity scenarios (narratives of typical or critical services that people will seek from the systems are here developed), information scenarios (describe the detailed information, with which the system will provide the user), interaction scenarios (describing detailed user action and feedback).

The software was evaluated with the relevant users i.e. 15 pregnant women (or women who had just given birth) and 8 public advisors. The counselling sessions lasted from ca. 20 to 30 minutes which is a common time span in day-to-day life of public advisors. The organizational impact was discussed with the mayor and senior officials of Sindelfingen as well as with experts from the official software house for the public administration of the State of Baden-Württemberg (Datenzentrale Baden-
3 Provision of information

The variety of information, needed by expectant women or young families, are immense and the depth of information needed depends on the specific situation of the women. This addresses two aspects: First, information has to be bundled to meet all the individual information needed across organizational levels and secondly it has to be tailored to avoid information overload as well as personalised to improve comprehensiveness.

Fragmented responsibilities of the public authorities and their governmental employees are still the cause of different information resources and they are still a barrier for citizens [Le07]. A first step to combine information was made by information provision on the internet by the State of Baden-Württemberg. The website www.service-bw.de, which is provided by the State, can be used by all administrative levels to complete information on their websites. But citizens seeking personal advice still end up in a so called “Behördenralley” [SP03] to get all the information needed from all the public authorities involved in the subject.

In citizen's counselling processes the exchange of information, information seeking and aggregation is traditionally a verbal process with all the pros and cons of the lack of externalisation [SS10a]. To support this process, printed brochures, leaflets, questionnaires and forms etc. are often used which can't be personalised but are simply handed out to the citizen. So there are two different kinds of information given in a counselling process: verbal and written information. Both can be improved by using CSCW-tools and sharing digital material [Sc95]. Shared digital material allows verbal information to be more explicit and therefore a shared understanding of the situation with its needs and possible answers [Sc90] as well as the adaptation of written information as a kind of answer. Shared digital material is the reference centre of communication and therefore reduces misunderstanding. Additionally it is more flexible compared to printed material, because of the possibility to rearrange it to meet specific needs [Sc90, p. 98, p. 155]. Using CSCW-tools offers in addition the possibility of redesigning the counselling process not only within the citizens’ advice bureau but also between organizational boundaries of federal, state, regional and local bureaus [Sc09, p. 19] so one stop government is possible and citizen’s needs are met without visiting several bureaus.

3.1 Problems of traditional information provision

In several workshops expectant women and women who had just given birth had been questioned about their information needs. Three different essential areas of information were identified: (a) information about financial support from the government (federal, state, regional or local) (b) information about local offers such as family centres, shops with special offers for pregnant women, (c) information concerning medical aspects such as birth-related topics. Asked about the most
important area they named financial support. This was expressed by questions like “What kind of financial support is offered? Am I authorized to get financial support? What do I have to do to get any financial support? “What forms exists? Where do I have to apply for it?”. Information about medical aspects seems to be wholly covered by doctors and midwives. After an aggregation of the questions asked 15 aspects of the areas (a) and (b) were found. The more or less general questions showed that the women have no detailed pre-information on how to ask specific questions [SS10a, EW02]. This list of aspects was the benchmark for the evaluation of the solutions offered in the mystery shoppers.

Eighteen mystery shoppers took place. All showed that most of the information sought, was not given. In general, no precise information or solutions were offered. Normally information was given as to where responsibility lay for answering questions (e.g. Standesamt, Landratsamt, Landesbank, Jugendamt) and that they might have application forms. In four cases the shoppers got application forms for financial support for parents and for financial support for children. Cross-selling was an aspect in 4 out of 18 cases. The shoppers were advised to go to the adult education centre, to look at the website and to look for information in family counselling centres. In four out of 18 cases advisors handed written information to the shoppers while the others asked the women to help themselves from the rack of brochures. Support was only offered if questions arose when filling in the forms or questionnaires. The written information offered was very complex and stilted. Printed guidebooks can be good, but there are too many of them and mostly only covering partial aspects. In 10 brochures information varied only little, but we had to go through all of them to get the whole picture. None of them offered all the necessary information. All referred to further information on web pages – counting the links we ended up with 71 links to different web pages offered by different institutions. Furthermore they are not all really up-to-date. Thus no alternative to advisory services within the public administration really fulfils all the citizens’ information needs.

In a workshop with the agents we asked them about the different cases they have to handle. The result was astonishing: a citizen advisor has to answer questions about 25 subjects varying from gun law, right of residence, passport applications to simple registration of residents. This explains why they can’t have detailed knowledge of every subject. The variety of products offered by public authorities is so broad that they tend to know only parts or they simply forget during the conversation to mention aspects. This is even more the case if the advisory services include aspects of all the levels of public authorities (federal, regional etc.). In one mystery shopping the advisor’s answer emphasizes this finding: „We can’t be expected to know everything. Our range of subjects is too big!”. This verifies that the citizens’ advice bureaus are still ill-prepared to handle complex issues crossing organizational boundaries.

So none of the advisory sessions was complete (e.g. parenthood has tax consequences) or comprehensive. The written information given in brochures,
leaflets or forms more or less covers the need for information but is hardly used in advisory processes to complete verbal information or to support comprehensiveness despite the fact that official written information is hardly comprehensive to the majority of the citizens without any explanation. There is no help offered to reduce the overload of written information with which agents and citizens have to struggle. Agents need support to remember all aspects necessary in advisory processes. Citizens need support to understand information given and they need to get personalized verbal as well as written information.

The following requirements summarize the empirical results:

1. Support of advisors is needed to provide all information needed across federal, state, regional and local organizational boundaries. (R1)
2. Information should be flexible so that it can be used in the advisory process. (R2)
3. Written information given should be used in advisory processes to initiate and to improve comprehensiveness. (R3)
4. Information offered should be tailored to, and suitable for, the situation of each citizen. (R4)

3.2 Information provision supported by Citizens Advice 2.0

The prototype was created to support the provision of advisors’ information and citizens’ comprehension. To support the advisors a checklist was created which offers the topics found in the workshops mentioned above. If there are no questions asked by the pregnant women because of their missing pre-information [SS10a], the advisor can use the checklist to elaborate on the information needed even if he/she is no expert in this area and/or with little knowledge about the aspects to be considered.

A further analysis showed that each topic consists of maximal four general dimensions: time (dates which should be met), place (maps), information resources (web links) and activities (forms or questionnaires which have to be filled in). The composition of the dimensions linked to a post-it note builds the information architecture of the system (see figure 1) [SS10c].

This architecture allows the advisor to work through the four dimensions of each topic and to add to each topic the individual data of the needed dimension. E.g. a post-it note with the topic “Elterngeld” - financial support for parents by the federal government in Germany - can be created and, step by step, the necessary data can be linked such as date of application (time),
application form which has to be filled in (action), address where to send the application (place) and further information if needed (web links). All questions asked, or rather, all topics which are important for a woman can be noted down and complemented. So the general information is reduced to the specific need and the necessary information aggregated per topic. At the end of the counselling the information resulting out of it can be printed and handed to the women or sent to them via email. So the women have the complete information at hand, which was found and discussed throughout the counselling. No separate time consuming notes need be taken by them and nothing will already be forgotten by the end of the counselling, so no further calls or visits of the citizens’ advice centres are necessary. The information gathered was sorted according to the four dimensions and offered in separate screens. E.g. there is a screen for scheduling (time) or with maps to show where people or institutions are located (places).

Having developed and designed a new way of bundling and structuring information, we wanted to know if it matches the previously described requirements. Advisors and citizens rated different statements on a scale from 1 = strongly disagree to 7 = strongly agree. The first requirement (R1) seems to be met, because the statement “From my perspective the information given is complete” was rated very positively. Advisers rated it on an average of 4.43 and a standard deviation of 0.24 little lower than the women who rated it on an average of 5.47 and a standard deviation of 1.69. Flexibility of the information presented was the central aspect of the second requirement. The possibility of saving all the information discussed on the post-it note and to hand it to the woman at the end of the advisory process should guarantee this. It was used on broad extend during the observed counselling. The advisors always asked if the woman wanted to keep the information and if so, saved it on the post-it note. In some cases they typed in further information, which had been discussed and not shown on the screen such as specific dates which should be met. Information which is explained and tailored to the specific situation of a citizen also enhances comprehensiveness. The statement “From my perspective the information given is comprehensible” focussed on the third requirement (R3). It was rated on an average of 6.14 and a standard deviation of 0.41 by the advisors and on an average of 6.2 and a standard deviation of 1.09 by the women. The fact of having all dimensions combined on a post-it note improves transparency and therefore comprehensiveness. It was also highly welcomed. The question “The post-it notes are very useful” was rated very highly by the women on an average of 6.73 and a standard deviation of 0.12 and by the advisors on an average of 6.43 and a standard deviation of 0.2. The requirement R4 which focuses on individualized information was met by the possibility of saving any information found and of adding any further text to the notes. Advisors used this extensively. Asked about the usefulness of the notes, three mentioned that, being able to save aspects they had discussed on the notes, was more than useful.
4 Advisory process

Good counselling sessions have a structure of different phases [Mu08]. The first phase after greeting and welcoming a person focuses on the shared understanding of the situation and the associated requests and concerns. Finding solutions is the next phase which is characterised by the alternation of information seeking and information aggregation [SS10c]. The adjournment of the conversation is the last phase. If there is no standardized process, citizens, as well as advisors, tend to jump from one topic to the next following their own train of thought. They jump back and forth from understanding the situation to information aggregation and/or to information seeking. So they forget aspects they wanted to ask about or wanted to explain ([Ha06], [He91 S. 64ff.]). Being able to create a conversation structure by given structuring tools/elements improves the advisory process [Sc95] and if supported by facilitation methods [Se95] to gather, cluster, prioritize and to answer all the necessary questions, the advisory process improves the exchange of information as well as comprehension and is to the satisfaction of the persons involved.

4.1 Problems of traditional advisory processes

Mystery shopping showed, beside other problems, such as a lack of responsibility recognized at the agents, a lack of advisory synchronization and the fragmentation of the advisory services two problems addressed by this paper: high variance in service quality and the lack of structured processes. [SS10a]

In all mystery shopings the conversation followed the same pattern. After greeting us with a “Hello” the employee simply waited for us to address our questions. The expectations and needs as well as the situation of the citizen were neither explored nor documented. Only in one case did the employee ask a lot of questions and try to find out who could give more information, where to go next and what to do. Three clients got nothing except a hint to come back after the child was delivered. None of the 18 advisors asked if the citizen understood the information they had been given or if the information given to them was sufficient for him/her. This attitude leads to the result, as already mentioned, that in neither counselling do they provide all aspects of the information needed. The visits to the citizens’ advice centres ended on an average after seven minutes. If the women asked several questions, the advisors took no notes. They always started to answer the first request and didn’t mention the others at all. Even the women didn’t refer to their previous questions. They followed the explanations of the advisor. Only one woman worked through her note pad with all the questions and the advisor followed her notes and questions.

This shows that the complexity of the information needed was not mastered by advisors or citizens. Therefore the solutions given varied immensely depending on the knowledge of the advisors and the ability of advisors, as well as citizens, to structure their questioning, answering and to memorize questions and answers. Thus there is a serious lack of structured processes.
The following requirements summarize the empirical results:

(1) The IT-system should allow the structuring of the advisory process, but should not limit flexibility of the natural conversation. (A1)

(2) Support for advisors and citizens in all phases and activities of the advisory process is needed, e.g. an understanding of the situation, using the information provided during information seeking and aggregation as well as information documentation. (A2)

(3) Possibility of finding shared solutions is needed to improve comprehensiveness of information provided for citizens during and after the advisory process. (A3)

(4) Personalised information found and aggregated should be available to the women by the end of the counselling. (A4)

4.2 Citizens Advisory Process supported by Citizens Advice 2.0

The prototype was created to support all phases of the advisory process as well as the phase after the advisory process (see picture 2).

Figure 2: Phases of the structured citizens’ advice process (based on [SS10c])

The phase of understanding the situation and the related information needs of the citizen is supported by the possibility of gathering questions and noting them down on digital post-it notes. Talking about how to write the question down offers the possibility of creating a shared understanding. Before starting the process of finding solutions, they can cluster and prioritize the questions noted down to make sure that the most important questions are answered with in the given time for counselling. Then they can work systematically through them by seeking information and saving it on the specific post-it note according to the four dimensions. At the end of the advisory process the advisor can print the post-it notes and hand them out to the citizen or email them to the citizen’s email address.
An understanding of the information given is improved because the advisor can explain and, in addition, display the information already explained during the process. Using Citizens’ Advice 2.0 during the advisory process also guarantees that the citizen is already familiar with the information given to him/her and is able to work on it after the advisory process.

Once more the results of the evaluation were positive throughout. We noticed that the advisors structured the process in two ways: some gathered together all the questions at the beginning and then started to find the solutions; some started with the first question and worked on finding the solution for this one before noting down the next question. So the system doesn’t force an individual to change his/her preference or style of counselling but supports both ways. Natural conversation was not limited in any way (A1). The statement “Being able to choose the way to display/save details on the post-it notes, means they can interrupt their work at any point and later continue from that same point without suffering any losses” was therefore rated by the advisors on an average of 6.43 and a standard deviation of 1.1 as well as by the women on an average of 6.4 and a standard deviation of 0.64. The possibility of jumping between screens and therefore dimensions (time, place, action, web links and post-it notes summary) was rated by the women on an average of 6.33 and a standard deviation of 0.7 and the advisors on an average of 5.71 and a standard deviation of 0.2. The prototype supports co-operation throughout the advisory process. This possibility on offer was highly rated by the citizens on an average of 6 and a standard deviation of 0.93 and highly welcomed by the advisors on an average of 6.43 and a standard deviation of 0.53. (A2). The statement “I would like to print the post-it notes or to send them to my email address” was highly rated by the women on an average of 6.73 and a standard deviation of 0.33. We observed that the system was used in all phases and it supported the activities in the phases. Even the statement “...I would also look at them at home after the counselling and work on them.” highly rated by the women on an average of 6.73 and a standard deviation of 0.22 and shows their wish to work on further with the information gathered (A4). The statement “I can understand the information we gained” was rated on an average of 6.2 and a standard deviation of 1.09 by the women, which indicates an improvement in comprehensiveness (A3).

5 Citizen-Advisor Interaction

New Public Management (NPM) supported the perception of citizens being customers [BK95] which already resulted in major changes e.g. long opening hours, centralized citizens’ offices and the most important change being the way public employees face citizens. This new understanding brought forward the idea of cooperation between advisors and citizens in counselling processes [H009]. Both parties should be able to cooperate. The first concept of co-operative counselling and its inherent requirements was developed by Novak et al. [2008] for travel agencies. He noted that specific requirements have to be met by designing a co-operative IT-system e.g. supporting trust development, supporting the solving of shared problems and increasing user satisfaction. Co-operative counselling in
citizens’ advice bureaus has been analysed and worked on so far in [SS10a; SS10c]. One of the most important requirements identified was high usability, because the IT-System is used by a trained advisor and an untrained citizen. The citizen can only feel comfortable with the IT-System and the counselling process, if its use is more or less self-explanatory and doesn’t interfere with the counselling. So the highest level of usability has to be met.

5.1 Problems of traditional interaction in the service centre

With regard to the conversation, the service centres made a negative impression. The mystery shoppers had to cope with professionally incompetent, murmuring or monologising employees. Additionally communication was more or less a one-way communication either of the citizen at the beginning by relating their situation or the advisor by explaining legal aspects or giving recommendations at the end of the conversation. Hardly any efforts had been made by the agents to understand the situation or information needs of the citizen. As already mentioned only in one case out of 18 was the advisor asked questions, all the others started by answering the first question. Some advisors answered after the first question, not waiting for further details. The solution was presented by the advisors without making sure if it was understandable to the citizen or not. This attitude was emphasized if the citizens’ advice bureau was a service hall with several counters and a waiting area. The more citizens waiting, the shorter seemed to be the answer. In two centres the mystery shoppers were dismissed quickly with no satisfactory result after 3 to 5 minutes. In 17 out of 18 mystery shoppings the shoppers left the citizens’ advice bureau without any satisfaction.

The following requirements summarize the empirical results:

1. High usability and non-interference of the IT-systems has to be guaranteed. (I1)
2. The IT-system should enable cooperation by supporting communication and shared working on finding the solution. (I2)
3. The persons involved, advisor and citizen, should be satisfied with the computer-supported counselling process and its results. (I3)

5.2 Interaction via Citizens Advice 2.0

The prototype was developed in such a way as to offer both involved persons the opportunity to interact with the IT-system. The screen chosen was a large-format touch screen. This allowed both people to point out and to show the other the aspect talked about in a quite natural way [HC05, S. 11]. The screen was placed in such a way that both advisor as well as citizen could see it and reach out to it easily. The software followed high usability conventions. The post-it note design allowed a clear arrangement of the necessary data regarding the four dimensions. Each dimension was represented by a screen. So, after noting down a question they could switch to one of the dimensions to add the information needed. Each dimension screen followed the principle of working from left to right (see picture 3). For Europeans this is the easiest way to work. Therefore on each screen all the
information offered is presented in a column on the left. There are links from all the different sources we had worked out. This information/link list is an outline with categories, which can be extended in detail or reduced to their title. If one specific link is chosen, the detailed information is shown in the middle of the screen and if the woman decides to keep the information, it can be saved on the post-it note, which is on the right hand side of the screen. If some aspects are not in the list offered, there is always the opportunity to write on the post-it note directly or to surf on the web and copy newly found links to the post-it note.

**Figure 3: Screen for the dimension “Places”**

As already shown, the prototype supports and allows co-operation throughout the advisory process (I2). The question “Problems were effectively solved together during the counselling we tested” was rated by the citizens on an average of 5.67 and a standard deviation of 1.69 and by advisors on an average of 5.71 and a standard deviation of 1.06. Advisors and women were satisfied with the advisory process as well as with its results (I3). The question “Using the screen together made for a productive counselling” was rated high on an average of 6.57 and a standard deviation of 0.53 by advisors and a little lower on an average of 6.26 and a standard deviation of 0.73 by the women. Asked about their judgement of the whole computer-supported advisory process the women rated it on an average of 6.27 and a standard deviation of 0.33 and the advisors rated it higher on an average of 6.29 and a standard deviation of 0.2. The statement “I would ask for this advisory service on a regular basis” was rated by the women on an average of 6.87 and a standard deviation of 0.12.
The screen design was rated very high (11). E.g. the question ”The screen and its local offers is highly usable” was rated by the women on an average of 6.6 and a standard deviation of 0.24 and by the advisors on an average of 6.43 and a standard deviation of 0.24. Usability was rated very high considering that the citizens were confronted with it for the first time during the advisory process and the public employees had only had one hour’s training with no possibility to use it on their own. Six out of eight advisors used the IT-system for the first time during the counselling process. The statement ”I find the system easy to use!” was rated by citizens on an average of 6.2 and a standard deviation of 1.09 and by the advisors on an average of 6.71 and a standard deviation of 0.20. The statement ”It is easy for me to learn how to use the system” was rated by the women on an average of 6.13 and a standard deviation of 0.52 and the advisors on an average of 6.57 and a standard deviation of 0.24. This proves that computer-supported counselling doesn’t interfere with or harm the advisory process if the IT-system used has high usability and an inherent design principle used repeatedly. On the contrary - it offers fun for advisors and citizens. The statement ”It’s fun working with the system” was answered by the women on an average of 6.47 and a standard deviation of 0.92 – the statement ”It makes work more interesting” was rated on an average of 6.33 and a standard deviation of 0.76. Both statements were answered by the advisors on an average of 6.71 and a standard deviation of 0.2.

6 Implementing Citizens’ Advice 2.0

Looking at the advisory process of parents expecting their first child all the administrative authorities are involved that Germany can offer: federal authority e.g. for ”child benefit” (Kindergeld) and ”parents support” (Erziehungsgeld), state authority grants e.g. ”education vouchers” (Erziehungsgutscheine), regional government e.g. responsible for paying the ”parents support” (Erziehungsgeld) and locally the city hall e.g. with special offers from the community. Citizens become confused about where to go to apply for financial support or other support for families in general.

Citizens’ Advice 2.0 possesses the opportunity to overcome this fragmentation by offering real one-stop-government ([Sc09a], [Sc09b]) in a citizens’ service centre because it provides packaged cross-organizational information, which could be used by any public advisor at any location. Citizens’ Advice 2.0 can be implemented in three stages of development. The initial step includes information management and the qualifications of the public advisors. The second stage focuses on the rearrangement of front and back office activities. The third stage allows the packaging of services in terms of shared service centres. While our analysis of the first stage is based on some data and observations from our field tests, the discussions on the second and the third stages are more speculative.
6.1 Initial stage: Information and qualification

An initial stage in an organization starts with one top-value citizens’ advisory service, e.g. for parents expecting their first child. The organizations involved need to care about the following two areas beyond the technical implementation of the system:

a. Information provision for the life circumstances chosen
b. Developing the public advisors’ qualifications

Information provision: Citizens Advice 2.0 provides information from different sources: 1. official sources (public authorities), 2. commercial sources e.g. midwives, doctors, community based and 3. sources e.g. an urban parental online community. Already the aggregation of information from different public authorities (e.g. national level, state level and city level) poses a challenge for public authorities. Integration of the information from these and other sources provides the foundation for the advisory service and thus should be carefully managed. We therefore envisage the role of a specialized information manager. His tasks would be to develop the information basis, to keep it up to date and correct, to guarantee comprehensiveness and compliance with legal requirements. While a limited amount of information may be entered by the information manager himself, his more important task is the creation of an appropriate socio-technical system. He has to set up the content structure of the system (e.g. schema or ontologies), assure appropriate technical and organizational interfaces to other public, professional and community based organizations (on organizational compatibility [Sc09a]), develop an internal system of editors (e.g. advisors or specialists for the area) contributing to the content and to set up a quality assurance system for the information.

The use of existing websites can cause two problems: 1. with the quality of the information and 2. with the neutrality of the information. Both can vary from legally based and quality checked websites (e.g. websites like www.service-bw.de, websites of the municipality) with objective information to simply opinion based websites (e.g. online community) or information influenced by commerce. If public advisors use information in a citizens’ advisory process, citizens automatically think that this information is trustworthy and reliable. Information which is not quality assured by the administration should be marked differently and the advisor should mention that additional information resources are named but no guarantee can be given for their information. The reliability of information can be judged depending on the information resource.

The experience gained from preparing the test prototype indicates that a very limited amount of work on information provision can already generate considerable value for the citizens consulted. However, discussions with E-Government specialists (e.g. from the Datenzentrale Baden-Württemberg) also indicate that there are almost no limits to the work that can be done in this area. The integrated information base could be a first step towards a public "public content management" (similar to "enterprise content management" [TP06]). This system
could provide additional value e.g. for the administration’s website, for internal deliberations and political decision making as well as for additional services.

*Developing the public advisors’ qualifications:* The analysis of the provision of the current service has clearly shown that the public advisors lack the necessary qualifications to provide comprehensive advice [SS10a]. Their deficiencies are not only in the area of appropriate domain knowledge but also in the advisory process. Both deficiencies require training: To amend the deficiencies in the domain knowledge, a combination of overview knowledge and information search strategies [Sc10] has to be provided. Although this request for wider knowledge was already raised during the debate on citizens’ advice bureaus [LK00], in practice, citizens’ service agents have been able to cope without this wider knowledge. Interviews with higher public officers and politicians indicate that two organizational causes have lead to citizens’ advisors being without a wider knowledge: Many administrations have merged citizens’ advice bureaus with the registry office as registration tasks are the most frequent in a citizens’ advice bureau. Other administrations have transferred agents there who were incapable of doing back-end tasks. They interpret the citizens’ advice bureau as a directory service for referring citizens to specialized advisors. As one senior public officer indicated, these more specialized advisors have developed their own strategy to cope if wider knowledge is needed: If a citizen arrives, needing complex information, they wait until the citizen touches upon a sub-topic they are familiar with. They then nail the citizen on this sub-topic until the allotted advisory time is over. The citizen then leaves with an in-depth partial solution. Thus their provision of information is driven by supply instead of by demand.

Providing information driven by supply requires a different advisory process. The advisor has to first analyze the demand as discussed in prior sections of the paper. This approach requires the advisor to have moderation skills [Se95]. We were surprised, how little training the test advisors needed with our system. After one hour’s training they were all able to advise a test citizen using a sensible process and the majority felt that they could do so in the future on their own. Thus the tool entices them into using a sensible process.

**6.2 Second stage: Rearranging front office and back office**

When an administration moves from providing one computer supported advisory service to providing many, the traditional setup of business services becomes increasingly awkward: First, the increasing activities of the advisor (= front office) leads to an increasingly broad interface to the functional specialists (= back office) as they have to be able to understand and follow up on the leads generated by the advisor. As this broad interface is unproductive, a new separation of tasks between the back-office and the front-office becomes necessary [WR10]. It is still unclear how this separation will look but we envisage the advisor being the process owner for most of the citizens’ concerns just like a bank advisor is primarily responsible for most of their customers’ needs. The public advisor will collaborate with the citizen
on a solution, trigger the necessary transactions and assure that the process does not come to a premature halt. Whenever he/she reaches the limits of his/her competencies he/she receives support from the functional specialist, either during or outside the advisory session. Note that due to privacy concerns, the citizen has to be able to switch his/her advisor.

The new separation of work between the front- and the back-end requires a major reorganization of the public administration. Similar to modern IT-processes [OG07], business processes have to be reinterpreted as providing internal and external services. For example, the functional specialists become service providers for the advisors. The jobs of the functional specialists may change as much as the job of the advisors as in many cases they loose their control over the direct contact to the citizen.

The new working arrangements also require additional investment into the information management. The advisor has to be enabled to track work progress over larger sections of the administration and to manage a larger portfolio of cases over an extended period of time. Up to now this cross organizational tracking of activities has been the sole responsibility of the citizen. This increasing transparency may lead to power shifts within an organization.

### 6.3 Third stage: Shared services centre

Once a larger number of cities have adopted Citizens Advice 2.0, they can benefit from a new division of labour. While each city can keep the contact to their own citizens at the front-office, some back-office tasks may be transferred to shared service centres [Sc09a]. These shared service centres specialize in difficult functional tasks and provide them for a number of public administrations. For example, these can be neighbouring cities or a state can provide one shared service centre for its local communities. Note that in contrast to the current situation, the interface to the citizen is left to the local administration. The re-arrangement of back-office and front-office tasks provides the modular architecture, the defined service interfaces and the IT-tools necessary for the establishment of such shared service centres. However, the service management for them has to be much more professional than within the communities. First, a shared service centre requires a standardization of services: The communities not only have to cut their service modules (in particular: the division of labour between front- and back-office and the definition of life situations that they give advice on) in the same way, but also the service levels need to be agreed and reported on. In many senses, shared service centres are not only triggered by the same economic, organizational and strategic motives as outsourcing [JJ06], but they also require the same management efforts [JJ04] and will lead to similar resistance. Improved citizens’ advisory services will not develop a sufficiently strong impetus to trigger a widespread change but they can be amongst the first to benefit, once a re-arrangement of the division of labour in the public sector is implemented for other reasons (e.g. economic pressure).
then we can see a market for shared service centres for new services. These will primarily be in the area of providing information e.g. for state and national level information (as already implemented by service-BW), or in the provision of jointly used forms and IT-Tools.

It is an open question as to what extent the customer interface may also be re-arranged again after a significant diffusion of Citizens’ Advice 2.0. With an increasing understanding of the citizens’ life circumstances, some of the personal advice may move to self-services over the Web. Other advisory services may not be so strictly bound locally so that a citizen may choose to use them in a nearby local administration, e.g. because she works there or because she likes the services there better. However, advisory services can be provided in only a very limited way over larger distances. Reasons for this can be found in the nature of our approach to advice: Citizens Advice 2.0 should not move all knowledge into a computer system but rather combine the strengths of human and computer based processing of information. Thus the local day-to-day knowledge of the advisor and his/her understanding of the current local situation will be necessary to provide truly comprehensive advice. We rather think that standardized services like car registration are better candidates for non-local service provision.

7 Conclusions

The improvement of the provision of information is possible in a twofold way via IT-Systems like “Citizens’ Advice 2.0” with high usability standards such as those developed and evaluated in our project. First, the setting-up of real one-step advisory services based on the integration of information from different public sources with other information from the Internet is possible and enables informed public service networks. Citizens’ advice bureaus are able to provide a comprehensive service.

Second, the digital information on offer can be tailored and individualised in respect of the citizens’ information needs. Considering this, time and cost reduction can be achieved through reduced first and follow-up contacts, via phone calls and/or face to face consultation at different bureaus. The citizen has the possibility of one-stop government and therefore only tells his/her story once. This reduces the time spent in public administration and therefore the personal time invested as well by the public administration. Being able to preserve citizens’ information extends the additional benefits gained if more than one public servant is necessary, or if the citizens’ advisory process spans several sessions.

A higher level of satisfaction for advisors as well as for citizens is reached by this kind of IT-System because it makes interaction more enjoyable. This encourages advisors to use the IT-systems and reduces their fear of failure and losing face when using it [NS09]. If citizens enjoy the interaction and are satisfied with the results, reputations may increase and citizens may overcome their inhibitions about going to the citizens’ advice bureau.
The implementation of these advisory services requires organizational investment in the information management and in the qualifications of the advisors. Looking at it in the long term, they may lead to a new arrangement of front- and back-office work and to the establishment of shared service centres.

**Literature**


