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Aid Automagically

A2M

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Our approach to the contest theme

The contest theme leads to a lot of solutions for miscellaneous problems, but the context of United Nations Millennium Development Goals narrows the problem field to human problems with strong emphasis on eradication of extreme hunger and poverty, achievement of universal primary education or improvement of maternal health.

We devised a system that aims at helping the others, as designated by Millennium Goals, but not directly. While putting a technology at work in the least developed parts of the world should help locally and partially, from many of the consultations not only with UNICEF (United Nations Children's Fund), but also with individuals who have experience from the most problematic areas of the world, surfaced the fact that this process doesn't always work due to various problems – energy and operating skills needed being only an example. Also, only great systematic changes could make prolonged and sustainable improvement. And people are behind everything, so in order to make such a change, thinking of people who can help has to be changed. The A2M (Aid Automagically) system does so by motivating people to learn about others problems, educating them about these problems and also provides them with a mean to help, at least financially for now. The system therefore needs two base concepts, as shown in Figure 1, one for motivating information presentation and one allowing helping. For the information presentation we proposed the World of Web Information concept called WOWI and the financial helping is accomplished by the Rounder concept.



Figure 1 – Basic idea of the A2M system

Concept overview

The concept overview of the A2M system is shown on the Figure 2. A user rounds up the value being paid in a shop by credit or debit card or on the Internet (Rounder). In his internet banking application he has a catalogue of presentations available, where each organization applying for the donations has a presentation (WOWI). Using this information, where each organization shows what problems it aims at, the user can decide and set to which organization will his donations go.

WOWI

The WOWI (World of Web Information) is a concept allowing **information presentation through a game**. It is based on an abstract structure, which is the base element that hosts the entire game, user activity and information. This structure is represented by graph. More specifically, the game contains following elements:

1. **Three dimensional graph** – vertices depict information objects, while edges display relations between them. These are the basic information holders in the concept. Furthermore, vertices have various attributes acquiring miscellaneous values.
2. **Tools** – manipulate attributes of user-selected vertices at some cost.
3. **Events** – provide mechanism of random occurrences (i.e. changes of other elements) in the game progression and also for informing the user.

The user can navigate through the information presented in the graph either directly by jumping to vertices nearby or also by attributes of the vertices and their manipulation with the help of tools provided by the game.

User's goal is to maintain the highest possible number of vertices in the graph by caring for the needs of individual vertices. The needs of a specific vertex are arising from an unfavorable condition of its attributes. The user tries to satisfy these needs effectively by applying the available tools in a voluminal manner. The usage of tools is priced by the volume (or number of vertices) selected, while applying on more vertices simultaneously naturally leads to discounted pricing compared to single vertex. The user has to rotate the 3D graph and try to find a view, in which he will be able to spot groups of vertices with similar problems – this will leads to more effective use of a tool and therefore higher score. User's score is calculated according to the length of the game (a skill of maintaining the graph for longer time – uncared vertices disappear over time) and also effectiveness of user's steps is considered.

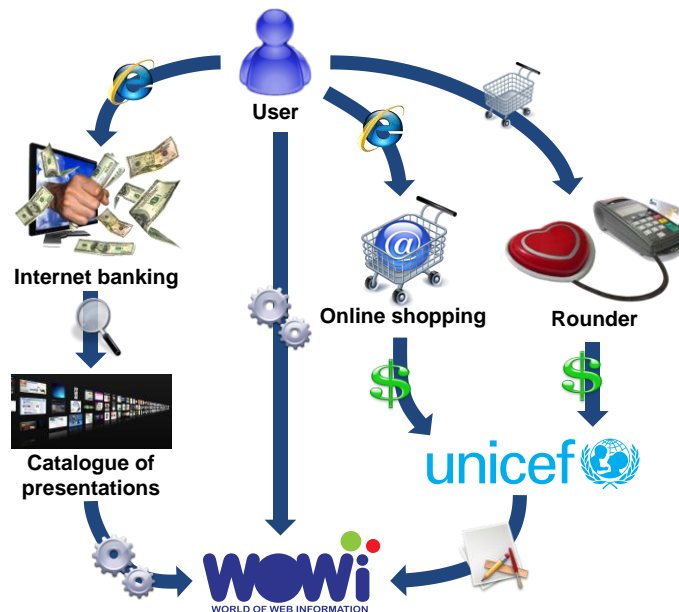


Figure 2 – Concept overview of A2M system

User is **motivated to learn** or at least discover the information being presented in various ways. At first, in order to effectively use the tools he has to study and be familiar with the individual vertices and their needs (and attributes therefore) in order to find a groups where the tools will be applied effectively. This “mental” work (looking for suitable configurations by knowing the principles) interleaves with “fun” part – rotating the graph to appropriate position, so user is kept occupied and amused. Secondly, the game evaluates user actions against predefined rules and possible actions alternative to his actual moves and either gives positive feedback or aids by providing hints. Either way, the user is motivated to continue playing (to receive even higher acclaim or to use the tips). And thirdly, by providing overall score compared to other users and other competitive statistics, the user is motivated to play again and play better in order to beat others. By playing again the user gets to know presented information better, but also in order to receive better score and even be able to play at all – have budget for using the tools (the budget is awarded upon checking user knowledge of the problem, i.e. via voluntary direct questions), he has to perfectly know all the elements in the game and their interaction and consequently also the information embedded – which is the very aim of the information presentation.

In the A2M system, the WOWI concept is used for presentation of charity organizations. In this scenario, an organization shows to the people what its activities are, but also educates them about problems in other parts of the world. Such organizations commonly want to show for example that it is better aim at sustainable solutions (build water well) instead of repeatedly solving the problem partially (give away bottled water again and again). Basic elements of the game for presentation of charity activities should be then interpreted as follows:

1. **Graph vertices** – depict people living in bad conditions, for example in the Third World. Their attributes are basic human needs – hunger, health, education, etc. – and the environment in which people live.
2. **Graph edges** – show relations between people, either geographical or social. That way disease may spread between vertices close to each other or they may have similar problems arising from similar geographical position – common water source running dry, etc.
3. **Tools** – either direct solutions for given needs (i.e. bring bottled water), but also more permanent, but more costly solutions (build water well).
4. **Events** – contain information generated by user actions evaluation as noted above, with corresponding acclaim or hints for improving, but also mix of random events – global drought, floods, etc.

A user tries to help the people presented in the graph by satisfying their needs. This way, he actually virtually becomes a charity organization, which is presented to him, and acts and decides as they do in reality. He then should see himself by costs of his actions in a long run and also by his score that the permanent solution is better. This is more effective way of showing him this particular information than if he just opened written report on organization’s website. Also other possible and very important information is the general need for external help and the reaction it creates – when user helps some people, they, or their vertices respectively,

“level up” and according to their level they can help others in their surroundings – this depicts real situation, where it is better to teach people how to help themselves completely where possible than to continuously partially help them.

In order to create such presentation, we worked in cooperation with UNICEF, which provided data (pictures, stories, etc.) and a lot of real stories implemented in the presentation. Screenshot of the application with presentation of UNICEF is shown on Figure 3. The application is very open to extensions and also all data is stored separately, which allows the editor – since game rules and entire concept are already created (but parametrically customizable), only providing the information and multimedia content is necessary, which not only allows every organization to easily create their presentation, but also makes the WOWI an universal tool for other fields, not only charity.



Figure 3 – Prototype WOWI application showing the presentation of UNICEF

Rounder

Because only educating about the human problems is not enough as people may want to help others once they know about existing problems, a mean for helping is needed. One way to help is financial donation. There currently exist many means of casual donating, for example donation boxes or donor SMS messages, but most of them has some disadvantages (poor availability, no personalization, lack of feedback). Our Rounder is based on the rounding of the value being paid in a shop by credit or debit card or electronically on the Internet. Because card and especially electronic payments are still more and more common, this option is then available to more and more people. When paying, the customer has an option to round the value up by a few presses of single button and the extra amount is then donated. The whole process is fast and simple. The user can select the purpose of a donation in his internet banking application and then the donations made by him are forwarded to this target.

For the paying in a shop, we use a modified POS terminal (point of sale electronic device processing credit and debit card payments), which allows rounding of the amount being paid (in progressive steps).

Design and implementation

The system architecture overview is shown on Figure 4. Various technologies were used in implementation of several parts of the scheme. Main application – WOWI was implemented with the use of Windows Presentation Foundation and runs as an XBAP (XAML Browser Application), which makes running in a browser possible on one side, but on the other side it is run locally with full access to system hardware resources, which is reason why we chose it over Silverlight, as 3D displaying occurs. The architecture of WOWI application is not only very open to modification and improvements, but it also stores all data about presentation itself separately, described in XML files, which makes modification or creation of presentation

possible even without software development tools (and also editor can be provided for easy user interface). The catalogue of presentations utilizes Microsoft Silverlight.

Because of the obvious reasons (cost, imposed security, etc.), the bank system is simulated and simplified in the prototype realization. The front-end uses ASP .NET to simulate its functionality. The demonstration of Rounder-enabled POS terminal is currently being developed in the cooperation with AXA, a.s., which facilitates the programming of the terminal and borrows us the terminal and we are creating a demo back-end for rounder-related operations simulation.

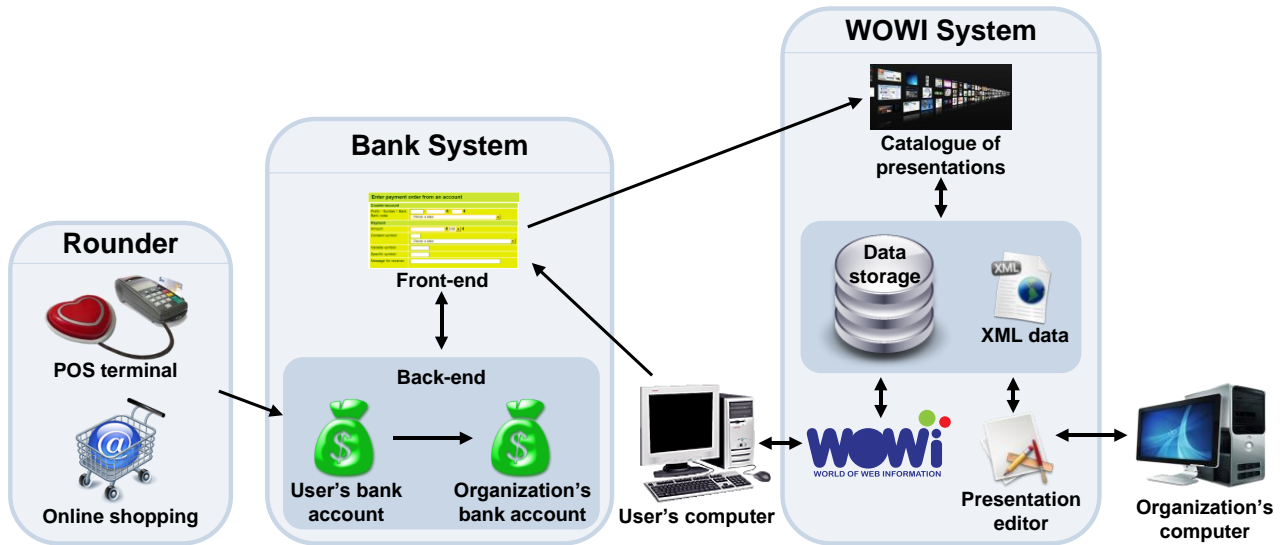


Figure 4 - Architecture overview

Commercial potential

Despite of the charitable nature of the system as a whole – there is an aim at showing the need for help and means of helping to as many people as possible and providing an option how to help, there is a clear commercial potential in the both base parts of the project.

Both individual shops implementing the Rounder and the financial institutions covering in the Rounder can benefit from very positive advertisement and attract customers. Also, since the Rounder can be implemented via software update of existing terminals, it presents almost zero cost for shops to implement it.

The WOWI information presentation concept is not constrained to this application, as it was already shown. Because it can be used in nearly every field of information presentation, it can be widely used in commercial applications. For example Internet shop can present its product range and directly benefit from WOWI properties, that means: attract potential customers (because of a game), get the visitors acquainted with its items for sale (knowledge of depicted environment needed) and easily create the presentation (editor and open architecture). This culminates to an Appstore-like principle with an environment, where bids can be posted for presentations and developers or even designers then compete with their presentations for bidding companies or charitable organizations.

Another commercial advantage of WOWI is that it essentially creates an environment, where the user is willing to see advertisements and even pay an attention to them (as it is a way for him to obtain budget needed). Charitable organizations within the A2M system can prosper from it by showing the advertisements from its sponsors, gaining funds for it, but also commercial presenting users (web portals, e-shops, schools) can display various advertisements and adverts within their own presentation.

Conclusion

Our solution realized by the Aid Automagically system brings several improvements and advantages:

- Improvement in the field of world toughest problems by educating the users and showing them where the help is needed and how
- New paradigm for amusing information presentation in the electronic environment
- Improvement of the process of financial donation – transparency, personalization, overcoming “small amount syndrome” by innovative concept of Rounder
- Easy presentation creation for those who want to present, also in other domains such as internet shop or e-learning

Our team

Dano

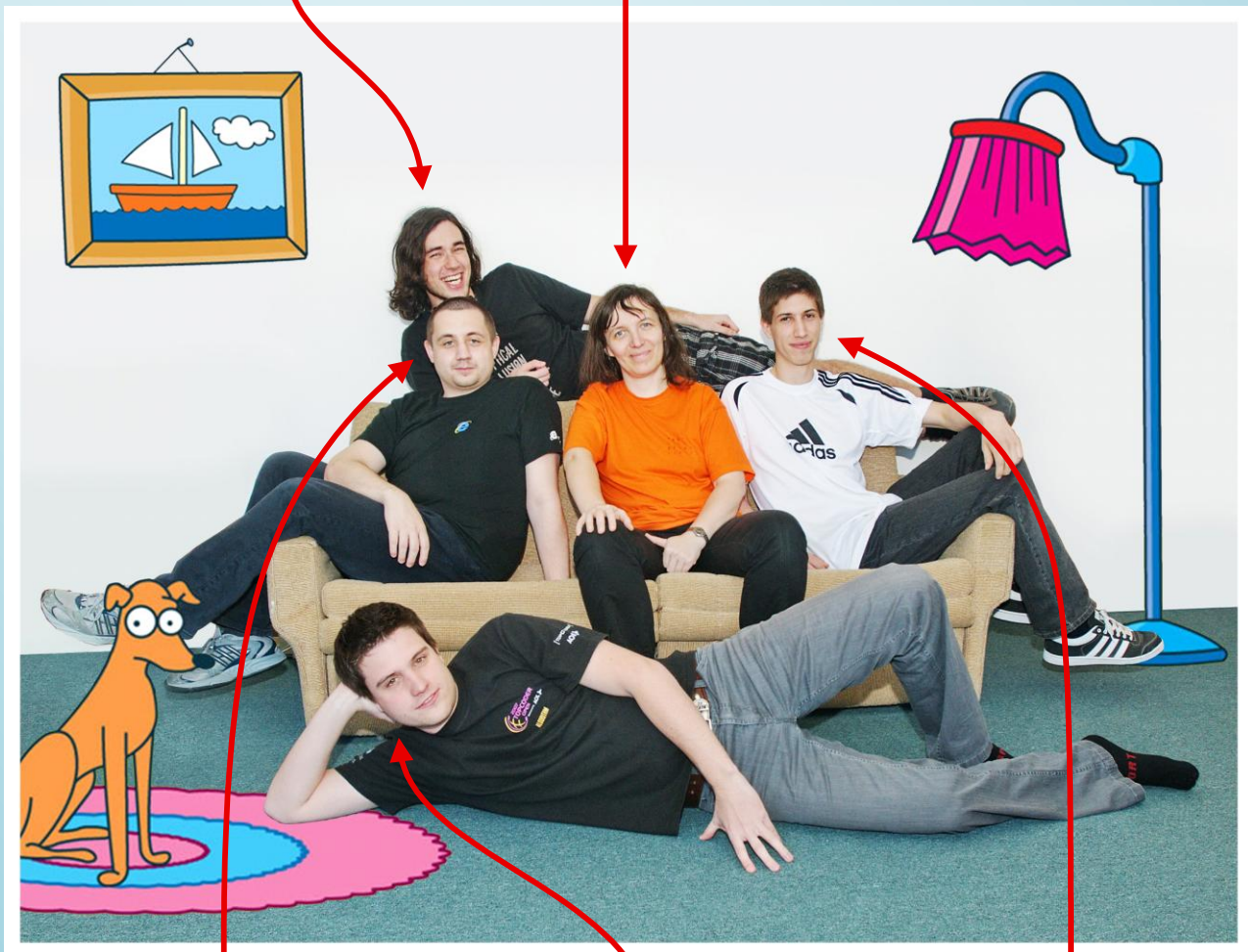
- graph
- graph physical models
- optimization
- advanced algorithms
- events, epidemics
- head-tracking
- artificial intelligence based scoring

Prof. Bieliková

- Our mentor
- motivating
 - guiding

All

- devising innovative ideas
- software specification, design and testing



Martin

- rounder/bank
- catalogue
- development support
- XBAP support
- document writing
- data entry
- artificial intelligence controlled dynamics

Mišo

- graph visualization
- visual design
- GUI
- in-game tools
- attributes, needs
- head-tracking
- artificial intelligence based scoring

Pet'o

- data representation
- data storage
- application mods
- multilanguage design
- readiness for editor
- data entry
- artificial intelligence controlled dynamics