

Omniscious Project Description

This document is a short version of Manifesto Prospectus Omniscious Commodum. For full bibliography please revert to that document.

Author: Roy Lachica, January 2010

Last updated: 26. June 2010

Objectives

Introduction

The purpose of the Omniscious project is to develop a Web 2.0 system that can help common people to do investigate and find solutions to anything from small problems to complex global issues through collaboration, collective intelligence, knowledge sharing and creation. The system is intended for ill-defined or open-ended problems where creative thinking and often long term commitment is required.

With this project we seek to augment human capabilities in problem solving by developing a free and publicly available online platform. We will enable users in a mass scale bottom up approach to uncover facts, understand and solve problems, in order to increase democracy, inspire direction change where needed and influence decision makers to make better and more informed decisions. But most importantly to evolve human knowledge.

The envisioned system will help its users to understand the history leading up to the problem as well as understanding the consequences and actions needed to solve the problem. And if solved, shed light on what can be learned from it so to avoid it from happening again.

The project will transform social science research from being an elitist-only monopolist activity to being a public activity for anyone interested in complex problem solving and insight.

Out of scope

Our system is not intended to cover such needs as process modelling, large scale data processing and storage for advanced simulations. It is not intended for use with mathematical, well defined problems where more deterministic techniques may be more suitable.

Goals defined

Phase 1 goal of the Omniscious project is to create a free, open, fully operational, stable and usable web site for the public.

From this we have articulated the following verifiable objectives:

1. At the time of final release anyone can sign up without cost.
2. Users may define, share and collaborate on problem spaces.
3. Have a stable web solution with an uptime of more than 95.5%.

Phase 2 includes making the results of research carried out by end users available to the public in both a human and computer readable format. Phase 3 includes creating a distributed infrastructure for connecting and federating problem space systems running on different and remote platforms.

Motivation

We believe Omniscious can become an influential social media platform in society. The motivation for this project is to enable problem solving and deeper understanding that can lead to a better world.

Innovation/degree of novelty

The problem

We are today faced with a great number of global challenges spanning across countries, cultural and intellectual barriers. These are growing in complexity as a result of accelerated change because of modernity and globalization.

Such problems call for us to be able to engage in effective deliberations on a global scale. The emergence of the Internet has enabled unprecedented opportunities for such interactions. To date, however, such large-scale interactions have been incoherent and dispersed, contributions vary widely in quality, and there has been no clear way to converge on well-supported decisions concerning what actions humanity should take to solve their most pressing problems.

We argue that these problems are also too acute and important to be left alone solved by the elite of the world's researchers. Research results from users of Omniscious will in many cases not be qualified as adequate research results, but they might give an indication and stimulate to further research and in many cases give attention to important issues.

We believe such a system will contribute to new relations between people on a private, professional and civic level. We also believe the solution, through increased collaboration and knowledge sharing on important community level questions, can contribute to increased engagement and strengthened democracy as end users get a stronger feeling of participation and influence on societal issues.

An other important issue is what gets researched. Research within the social sciences and other soft areas are often carried out by research institutions on behalf of governments, intergovernmental organizations or international non-profit organizations. In other cases research seem to be random or chosen as a result of what research institutions already exist. Omniscious will increase diversity in research and help to cover areas that would normally not be covered.

Other value

What are the benefits of such a system vs. traditional scientific research?

- Complex problems can be “simulated and tested” on a much larger scale in comparison to traditional studies when potentially thousands of users participate.
- It can accelerate the pace of governments and institutions to take action as thousands of users may come to a conclusion that there is a need to act.
- Instead of a dead-end dialog not open to the public, dialogs can be taken online increasing democracy and targeting the problems in a tactical and opportunistic manner.
- The power structures of global multinational corporations can be questioned and when needed combated with a globally shared political ethos and culture that may come from the world wide use of the system.
- In our twitch-speed world, there is less and less time and opportunity for reflection. Omniscious is a system where anyone can take part and where reflection and critical thinking is required.

Example user story

This section gives an example of how we envision the system to be used.

“James” is working as a carpenter; he has served in the armed forces abroad. He is interested in geo politics and especially armed conflicts. He has read many books and seen hours upon hours of war documentaries. He loves discussing war on forum web sites but he has recently become frustrated with all the flame wars, all the people who are not serious, and in

general, the lack of tools to take the discussion further. He feels that the discussions are going nowhere. People are repeating themselves, others are just naïve lacking knowledge, and some are getting too fired up to have a meaningful debate. James also feels that his own arguments are not that solid all the time.

James' main topic of interest has for a long time been the Palestine Israel conflict. One day he hears about the Omniscious website. He signs up and finds that he can describe the problem and then start to investigate issues in a systematic matter. There are guidelines and workflows to help him, and he is finally able to dig deeper, and to create or reuse other arguments. Other persons can join in the effort and evaluate, scrutinize or build on the line of arguments and claims. He can collate audio, video, documents, texts. After a year of using Omniscious he is able to present a solid and highly convincing argument of how to solve the conflict. The arguments and data he have used can be reused easily on Omniscious or elsewhere as open linked data.

When James is finished with his investigation, he notices that others are carrying on with his work and that more arguments, both for and against, has been added and reused as part of other related problems. James suddenly realizes that Omniscious is a giant living system of collective understanding. Each argument and claim grows its own evidence roots. More and deeper roots means stronger claims. He also realizes that all the users of the system are gardeners weeding out misbelieve in order to create a sustainable future. The harvest is new knowledge to mankind.

Frontiers of knowledge and technology

There are several projects that Omniscious will draw knowledge from. Some of the most relevant activities are that of the e-science consortium (National e-science centre, UK), The International Research Society on Methodology of Societal Complexity, KMi at The Open University and research on the Semantic Web that is currently going on in several Universities around the world.

There are also plenty of activities under the banner of Virtual Research Networks, eResearch, eScience, and Research 2.0. Most of this research is aimed towards existing research environments and not targeted at the public.

Research on Web 2.0 scholarly communication is also highly relevant. This field brings with it many important factors such as IPR, epistemological and socio-cultural considerations.

Commons-based peer production citizen science should also be mentioned in this regard. The crowd sourcing approach is targeted at the public but are usually centrally organized without shared collaborative environments.

With Omniscious we venture into a new frontier on the web. The figure below shows how technology has progressed. Maturing web technologies and leaps in CSCW, HCI and many other fields as well as socio-cultural shifts with the everyday use of large scale social networking sites such as facebook tells us that the time is ready for a new stage in the evolution of the web where global collective intelligence and problem solving can play an important role.

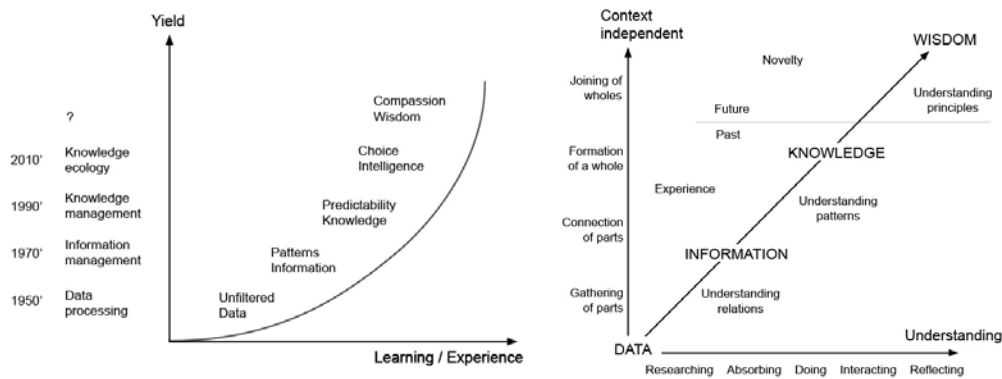


Fig.1. Towards collective wisdom and the knowledge ecology. (Sveiby)

Competitive distinction

As far as we are aware there are no directly competing projects. There are, however a set of applications that share some of the same ideas. Among these are DebateGraph, Cohere, Debatewise and TruthMapping where debate and argumentation is at the core. Solutions targeted directly towards problem solving include Hypios, OneBillionMinds and InnoCentive. These are mostly commercial sites that advertise innovation competitions for solving specific technical challenges. Research platforms targeted towards researchers such as MyExperiment and MyNetResearch also share some similarities.

Omniscious separate itself from these by focusing on being lightweight, extremely intuitive with an emphasis on the workflow of solving a complex problem by common people. Omniscious will also differentiate itself from other platforms by presenting the user with a minimalist user interface and using very simple every day language.

R&D challenges

Summary of R&D challenges

We believe the most challenging task will be to develop appropriate tools that end users will find useful, easy to use and enjoy. Reducing cognitive load and at the same time not limiting creativity is important. Other challenges are likely to be related to such issues as privacy and legal issues.

Scalability of the solution also needs to be researched. How should content be presented when the amount of users and problem spaces increase. We believe it will be challenging to present, and create reporting mechanisms, research dissemination interfaces as well as features for evaluation, quality assurance and promotion of content.

Reusability of data shared across problem spaces are important research areas as well as interfaces to other external data sources.

In order to develop the system we will need to build on existing knowledge on relevant core technologies, relevant methodologies, tools and frameworks for problem handling.

Research into existing domains

The project will require research or inquiries into the following areas: knowledge federation, operational research, complex societal problems research, decision modelling, problem handling and problem solving, virtual learning communities, knowledge building and collaborative inquiry, collective intelligence, cognitive science, UX/HCI, sense making, hypermedia discourse, semantic web, computer-supported collaborative argumentation, online dispute resolution (ODR/ADR) handling.

The work of organisations such as the Nautilus institute, The International Peace Research Institute, Oslo (PRIO) are typical organizations that we will need to draw knowledge from in terms of how to design the end user tools.

Project organisation and management

About the project lead

Roy Lachica holds a Masters degree in Informatics with a focus on Knowledge Management, Information Design, System Development, Semantic Technologies and Interaction Design.

Roy Lachica has a background as a system developer in the private and public sector as well as in private start-ups. He has over 10 years of experience from the IT-industry and hands on experience from developing corporate knowledge management, collaboration and business intelligence systems. He also has experience with developing project management systems for research institutions, issue tracking for software companies and knowledge sharing portals for health care professionals. He has several years experience with developing several open Web 2.0 social and semantic collaborative web applications and mashups. Roy is active in the Knowledge Federation and Topic Maps community.

International cooperation

Omniscious is one of several projects of the joint international Knowledge Federation research group. For more information about this group please visit <http://knowledgefederation.org>.

As this project is itself a meta R&D project, a research project with the aim of enabling research, we believe there is a multitude of possible doctoral thesis' that may be formulated within the vicinity of this project.

We have established a network with individuals from several institutions and many of these have already signalled their interest in the project. Some of these will contribute significantly and it is likely that these institutions will provide contributing master level students and possibly PhD students.

Underlying idea and conceptual model

A framework for problem solving

The envisioned system is all about solving problems. Our initial model is based on guiding principles that can be found in the [pre study](#) and DeTombe's COMPRAM methodology for handling Complex Societal Problems. We have devised a framework for evolving the underlying theories and requirements that are to be part of the system.

Short description of the SIPS framework

The SIPS framework (Socio-Semantic Infrastructure for Problem Solving) consists of a set of modules. At the bottom is the core platform which is responsible for system services such as user login, portal navigation, semantic interoperability and the like. Layer 2 is a service layer that provides the user with general services and common useful functionality for collaboration and increased productivity. The third layer is the main and the most important layer which is responsible for the actual problem solving process. At the top of the pyramid is the federation layer. This module has to do with holistic thinking, gestalt, communication of insight and collective wisdom. The last module of the SIPS framework is the organization which is depicted as the gray rectangle surrounding the pyramid. The organization is important as an interface to political and educational institutions. The SIPS organization is responsible for growth of the community.

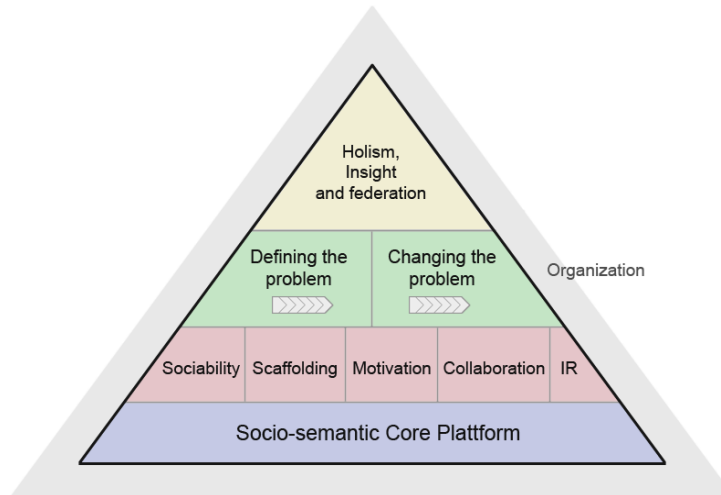


Fig 2. The SIPS framework

SIPS Level 1: Socio-semantic Core Infrastructure

The core platform consists of technologies related to computing, storage, scalability and the like. The system will be a cloud computing solution and several low level API's and web services will be used for intersystem and external data communications. Another important part of this module is the organic and neural network like support that help users in evolving Semantic Web linked data.

SIPS level 2: Sociability

This module support members in peer to peer interaction and community building. It helps people explore others and help users to find like minded and other persons with relevant knowledge and skills etc.

SIPS level 2: Scaffolding

A key feature of the scaffolding module is to build on users intuitions, encourage knowledge integration, and foster life long learning as a continuous process. Scaffolding also emphasizes the diversity of methods and repertoire of strategies rather than assuming that there is a single right answer or a single best path for solving a problem. This part is concerned with help and guidance through out the use of the system. Central to this model is problem solving guides that users can use as a repository of various problem solving techniques. These will often be in the form of dictionary-style set of heuristics, many of which have to do with generating a more accessible problem.

SIPS level 2: Motivation

This module is to overcome the barriers to start using the system. People in large groups, are often reluctant to replace, or even significantly modify, a piece of work authored by someone else, even if that posting has serious failings. They may be reluctant to offer diverging opinions if the bulk of the existing arguments all seem to point in another direction. Social systems also have a value proportional to the number of users using it. Getting an adequate amount of users to use it is of utmost importance. Motivation during normal use is important to make sure the user continues using the system. Reward systems and ways to display rank, reputation and renownment are to be developed.

SIPS level 2: Collaboration

This module has to do with mass collaboration, facilitation, moderation and task management.

Continuity is important to the success of virtual teams. Collective remembering and the bridging of interactional discontinuities allow teams to expand the referential horizon so that the objects created by themselves or by other teams can be expanded, reconsidered or challenged. This module allows team to evolve a sense of colloquial engagement when building new knowledge which makes it possible for them to interlink their collaborative interactions with those of other teams. Democracy, trust and credibility are other facets of this module.

SIPS level 2: Information Retrieval

New information is usually required to solve problems. This module is concerned with Information Retrieval and helping the user in tackling common problems in information retrieval. Information systems tend to get clogged by imprecise and fuzzy data. Poor semantics and content degrades the overall value of the system. In an open web-based system, all kinds of users can add content, often producing irrelevant information for others. As everyone can add any information it is a possibility that too much information will be added and users can not find what they were looking for among all the content. The system can also become slow to apprehend for the user and the web pages themselves can often become slow to render due to higher client and server load. Information overload cause users to read less and thus acquire less social capital, through having less in common with users. The reduction in social capital, in turn leads to erosion in the community involvement.

SIPS level 3: Defining the problem (Phase 1)

In order to solve problems the first step is to identify a problem and finding out what the problem looks like. Defining the problem consists of the following activities:

- Becoming aware of the problem (Phase 1.1)
- Extending the mental idea (Phase 1.2)
- Putting the problem on the agenda and deciding to handle the problem (Phase 1.3)
- Forming a problem handling team and starting to analyze the problem (Phase 1.4)
- Gathering data, exchange knowledge and forming hypotheses (Phase 1.5)
- Formulating the conceptual model (Phase 1.6)

SIPS level 3: Changing the problem (Phase 2)

An empirical model of the problem can be made based on the definition of the problem described in the conceptual model (phase 1). The previous phase can be seen a way to map the domain. Phase 2 is on the other hand more concerned with simulating the effects of proposed changes. The second sub-cycle is a combined process of thinking and acting. Here the focus is on interventions that might lead to a desired situation.

Changing the problem consists of the following activities:

- Constructing an empirical model and establishing the desired goal (Phase 2.1)
- Defining the handling space (Phase 2.2)
- Constructing and evaluating scenarios (Phase 2.3)
- Suggesting interventions/solutions (Phase 2.4)
This phase includes argumentation which is a central sub module in the entire system.
- Implementing interventions (Phase 2.5)
Part of this stage is tools for decision making. One of the most important stages in decision-making is the identification of tasks and overcoming conflicting interdependence among outcomes.
- Evaluating interventions with reporting mechanisms (Phase 2.6)

SIPS Level 4: Holism, Insight and Federation

Collective wisdom can be defined as the capacity of communities to cooperate intellectually in creation and invention, to learn, and to solve problems over time as a cohesive wholeness whose function is larger than the components. Collective wisdom is the convergence of multiple intelligences and can shape deep insights and wide views. This module builds on various ideas, among them Collective Intelligence and Knowledge Federation. Some of the features contained within this module are the ability to vote on what are the most important research areas and being able to promote and federate this research as well as being able to view subjects in different dimensions and with perspectives.

Motivational videos

[Ted Talks video. Jane McGonigal: Gaming can make a better world.](#)