

Know when to trust the Web – TEASE IT!

Exploit more information

TRUST ENABLING AUGMENTED-REALITY SUPPORT FOR INFORMATION-ENVIRONMENTS (TEASE)



In our interactions with people in the real world we have an opportunity to use our experience to judge how much we can trust someone. In the online world we often have no way of knowing who or what we are communicating with and therefore no means of assessing how much trust to have in them or the information they produce.

The TEASE project is addressing this capability gap to provide users with a measure of the confidence that they could have in online information or in its source, with confidence measures being based on the provenance of the information / source. Investigations into how best to present the provenance data to a user will result in informative interfaces, and a data processing and visualisation architecture being developed will allow users to combine provenance data with the outputs from other trust enabling technologies, thus enhancing their ability to determine trustworthiness.

TEASE (Trust Enabling Augmented-Reality Support For Information-Environments) forms part of the Technology Strategy Board's Trusted Services Competition (www.innovateuk.org) and the Research Councils UK Digital Economy Programme (www.rcuk.ac.uk/digitaleconomy). The project is a collaboration between the International Digital Lab at the University of Warwick, HW Communications Ltd and Thales UK Research and Technology. The project builds on a current Thales-sponsored CASE PhD on Information Provenance at the International Digital Lab at Warwick University.

Rationale

The World Wide Web is the largest freely available source of information in the world. It is also the largest open marketplace and social / political forum in the world. Most people begin their interactions on the Web via the major search engines (Google, Yahoo!, Bing), social-networking sites (facebook, MySpace, Twitter), online auction sites (ebay) and Web-based email providers (Yahoo!, G-Mail, Hotmail). The resources that these sites introduce us to are often unknown to us. If we are to make an informed decision on which resources to trust we need evidence of their reputation or of the provenance of the information they are offering us.

Where services are transaction-based there is the possibility of building reputation data from previous transactions (financial or social). Such systems exist for online commerce (ebay, Amazon) and are offered for other real-world services (trip-advisor for travel related services, for example). Where there is no interaction beyond the consumption of information from a known or unknown source, the options for accessing reputation data are more limited. The TEASE project is developing innovative tools to assist users in assessing the confidence they should place in the reliability of such sources.

Project Overview

TEASE is focusing on the development of trust models for real-world practical applications and the optimisation of human-technology interfaces to build trust in services and applications. Specifically, we are addressing this via the provision of upstream reputation services relating to information being published in Web environments where sources may be trusted and known to varying degrees. By defining more precise confidence levels for source information, we will improve the ease of management of the source information and the quality of the results emerging from the trust models and reputation services to which they are applied.

The objectives of the project are to:

- provide users with a tool to measure the trustworthiness of information available to them on the Web.

- enable such a tool to be used with other confidence building tools by defining a trustworthiness architecture within which they can operate.
- incorporate the trustworthiness metadata into software applications, presenting information to the user in such a way that trust is formed only where deserved.

To meet these objectives, the project is a combination of scientific development, technical development and applied cognitive psychology. The scientific development takes ideas from the current Information Provenance PhD at Warwick and uses them to develop practical techniques for identifying the provenance of information and assigning a measure of confidence to the information. A prototype implementation of a tool to measure provenance will then be developed based on these techniques. The technical development investigates and defines an architecture for trustworthiness and develops a prototype framework based on it. The cognitive psychology strand informs the work of both developments to ensure that the right information is presented in the right way to the users. All three strands come together in the production and use of an integrated proof of concept prototype. The prototype will demonstrate the use of the provenance measurement tool within the trustworthiness framework and will be employed in user trials.

We will be demonstrating the use of a trust model using information provenance in real-world smartphone and tablet PC applications with overlays to provide the additional confidence information. This will give us the opportunity to evaluate the tool on devices with limited interface scope (size of screen, power limitations etc) and to explore how effective it is at delivering the information and inducing trust. The results will also be more generally applicable to the creation of cognitively inspired interfaces for desktop environments, etc.

Potential Applications

The application space for this kind of technology is large and covers any information critical function where integrity is likely to be an issue. Examples include:

- corporate logistics planning (including for human assets) where dynamic re-planning is required for geographically remote locations when open source data may be the only fresh input available
- corporate open innovation models where design teams are extended through inclusion of previously unknown members via Internet social media technologies
- Web news sites based on mash-ups of third party sources - particularly where there are no accredited correspondents on the ground at the time the story breaks
- command and control in disaster recovery and response situations where any information published to the Web by members of the public could offer significant benefits in the planning of emergency services and evacuations
- search engine augmentation to provide trustworthiness and relevance of online search results, augmented with a variety of open source data and user's own preferences and experience
- combating online fraud e.g. internet fraud, benefit fraud or insurance fraud.

Initially tangible benefits may only be perceived by users who need to gather data rapidly from unknown sources - for example government and emergency-services personnel and certain business users. As the tools mature and become widely used, the benefit of using high-quality information will become apparent. The use of the tools will naturally move into less formal areas of life, as Smartphones and tablet PCs are becoming the platforms of choice for mobile business use and for social purposes. The information used for planning and dynamically managing these activities is often taken from unmediated sources on the Web, and it is thus important that users are able to establish trust (or not) in these sources.

Further Information

More details on the TEASE project can be found at www.tease-project.info