Using di.me digital.me on Business Conferences and Smart Events

David Alonso, AMETIC – *dalonso@ametic.es*
Sophie Wrobel, CAS Software AG - *sophie.wrobel@cas.de*
Richard Wacker, YellowMap AG – *richard.wacker@yellowmap.de*

Date: 10/25th/2013

European Internet users deserve protection of their fundamental right to privacy, even when they interact in the digital world. As a result of social media's rapid rise, individuals are revealing more personal data online than ever before. People's need for communication is now growing faster than their understanding of the implications of sharing personal information through existing social media tools. Of course, this data disclosure gives value to users, like enhancing social contacts or obtaining personalized services and products. But it also compromises their privacy, resulting in users' loss of control over their personal information.

When customers attend an event, they want control of their data without sacrificing the convenience of online interaction. Event organizers want to provide trustworthy and friendly registration systems, and are obliged to securely manage their attendees' personal information. The di.me framework presents a holistic approach to cover both of these needs. Event managers can adapt di.me features to provide an infrastructure which allows attendees to securely provide data, while enjoying an enriched and personalized

Introduction

Nowadays, private and working lives are increasingly integrated. The world of online collaboration, often denoted by the catchphrase 2.0, sometimes forces individuals to mix personal preferences and working capabilities. Online shopping, social networking, job hunting or the ability to carry out official functions, such as renewing a work permit or contacting local councils and government employment departments online, are now an everyday part of life – and often blurs the line between private and working personas. However, modern individuals do not want to lose the benefits of such social services, since they offer convenience and widen opportunities, providing them with added-value services.

In the specific case of participation in business events, organizers face two challenges: First, they have to provide a rapid and easy registration service to prevent discouraging potential attendees through a time-consuming registration process, a requirement which lines up with attendees' interests in providing as little data as possible. Second, organizers need some personal information to provide personalized offers.[1] Some current solutions address the first challenge by allowing attendees to register through any of their existing social media profiles. Unfortunately this potentially compromises attendees' personal data privacy, as the extent of information made available to the organizer through this method often widely exceeds the minimum necessary data required for event registration. Other existing solutions oblige attendees to fill out a registration form every time they want to participate in an event. The collected information can be erased afterwards, which perfectly complies with current regulation, but is quite inconvenient and hinders actively inviting participants. (see *Figure 1*).

[1] This conflicting interests of the person concerned (the attendee) and the data controller (organizer) are also subject to privacy regulation which allows collection of data if it is necessary for the performance of an underlying contract. See Directive 95/46/EC Article 7 section b.

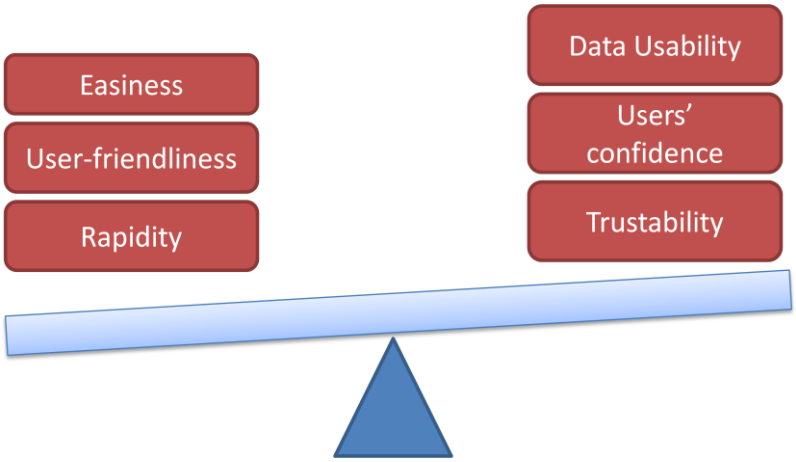

Figure 1. *Conflicting requirements that an event organizer must balance in the registration service.*

Furthermore, in the modern working environment with tight time schedules, organizers are fully committed to encourage people to participate in their events and conferences. They need to offer an enhanced, integral experience to attendees and make every procedure during the event celebration easy for them.

The di.me framework demonstrates a holistic approach to mediate conflicting interests at event registration, and to help event organizers supply a trustworthy and secure integral end-user experience through a mediating platform. It offers the user a convenient solution to manage multiple online digital identities, as well as several services to improve the attendees' experience.

High-Level Solution

The di.me project is a research prototype platform supporting and responding to the needs of private, professional, and customer relationship operators. It uses various devices or services to facilitate digital information exchange between social networks and business networks, while keeping multiple digital identities separate and maintaining customer confidence, trust, and legal compliance. It is conceived to integrate all personal data into a single personal information sphere, the *di.me personal server*, while complying with the EU legal framework.

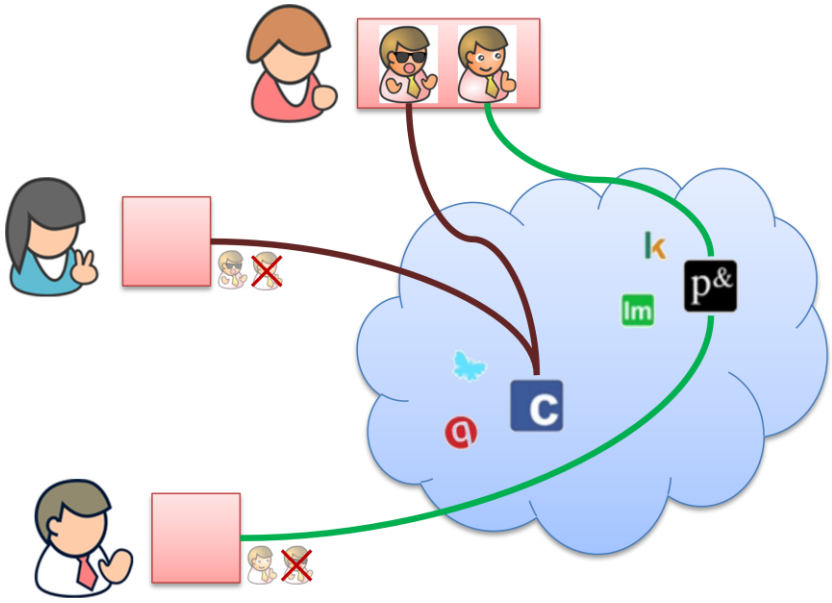

Figure 2. *Each user has multiple digital identities. The di.me userware (red) operates as a series of decentral nodes. Each node manages a single user's digital identities to ensure that the user's contacts are only able to see the profiles that the user explicitly wants to share with them, and helps to avoid inadvertently revealing the user's alternate digital identities to their contacts.*

di.me can be run on any trusted computer, be it a hosted enterprise server accessible, or a user's own device. It realises decentralized communication to eliminate any untrusted middleman, avoids external data storage by providing a personal data sphere. Unnecessary or undesired third-party data disclosure is effectively inhibited, as each personal server acts as an autonomous node in the di.me network. Any exchange of information with other di.me nodes or other web services (see *Figure 2*) is triggered by the user. Additionally, di.me provides a sophisticated privacy monitoring that warns the user against any action which potentially could cause:

- linkability between his personal profiles
- disclosure of personal data to less trusted contacts
- undesired disclosure of additional information

The result is ***a user-controlled personal service providing intelligent personal information management, which targets integrating social web systems and communities.***

di.me guarantees security and privacy:

1. *A **decentralized data model** prevents data from being saved unnecessarily on third party servers.*
2. *An **opt-in approach** guarantees that the user explicitly authorizes every connection to third party contacts and services.*
3. ***Decentralized, secure direct communication** eliminates man-in-the-middle attacks and protects your valuable data.*
4. *Explicit support for **multiple digital identities**, called 'profiles' in di.me, allows for targeted control over which parties can access which personal information.*
5. *A **trust-based recommendation engine** warns users when sharing information in a particular context could lead to unintended consequences.*

AMETIC, the Spanish Multisectoral Trade Association for Electronics, Information and Communications Technologies, Telecommunications and Digital Contents Industries, invited experienced personnel from the event management sector to validate the di.me framework on a trial server, in order to determine the effectiveness of the di.me concepts and ideas against a virtual ICT event. The conclusions of this trial demonstrated the potential convenience and contributed to the development requirements for an ad-hoc tool for event organization and management based on di.me.

AMETIC:

- *Provides logistic services to **330 technological members**, among industries, universities and technological centers.*
- ***Organizes 20 meetings per month** on average, among members' working groups, specialized ICT events and business conferences.*

Validation Case Study

To determine the effectiveness of the di.me solution, the following question was considered: How effective is the di.me platform in helping organizers to provide an integral experience to attendees of an event or conference without compromising their privacy?

This paper evaluates three key validation use cases that highlight the value of a mitigating platform:

Secure, User-controlled Registration Use Case: Does di.me's multiple identity management efficiently preserve attendees' privacy?

Ad-hoc Documentation Sharing Use Case: Does di.me location and proximity service together with the di.me sharing capabilities provide a framework for easing a secure share of documents between lecturer and attendees?

Social Recommendation Use Case: Does di.me social recommendation service help organizers to improve the integral experience of the attendees?

Methodology

Objectives. The main objectives are to monitor and validate the feasibility of the di.me paradigm to become a solution for event organization and management.

Approach. Validation was conducted in form of a focus group. Qualitative results were obtained by open discussions between focus group members and through a personal questionnaire. The responses were analysed to assess the applicability of the di.me solution in a virtual ICT event as well as its acceptance as a solution for event organization.

> *A focus group is "**a special type of group** in terms of purpose, size, composition and procedures. The purpose of conducting a focus group is to listen and gather information. It is a way to better understand how people feel or think about an issue, product or service. Focus group are use to gather opinion" (R. A. Krueger, M. A. Casey, 2009)*

Subject Selection. Organizing and managing a business conference or an event is a multi-step process that involves professionals of very different profiles and positions, ranging from an administrative assistant, to the CEO of a company who participates as speaker. To test the feasibility of using the key di.me features as a solution for event organization, the focus group was set up to test system functionalities according to the predefined validation use cases.

> *In a focus group, "participants are selected because they have **certain characteristics in common** that relate to the topic of the focus group. The researcher creates a permissive environment in the focus group that encourages participants to share perceptions and point of view without pressuring participants to vote or reach consensus" (R. A. Krueger, M. A. Casey, 2009)*

Thus, experienced personnel on event organization and management were invited to participate in the focus group.

Aligned with AMETIC expertise, the validation was conducted over a virtual business event in the ICT sector. Participants were selected in accordance with the following criteria:

- *Proven expertise on business events organization / participation.*
- *Cover the entire process of event preparation.*
- *Each subject must represent a different sector of application of the ICTs.*

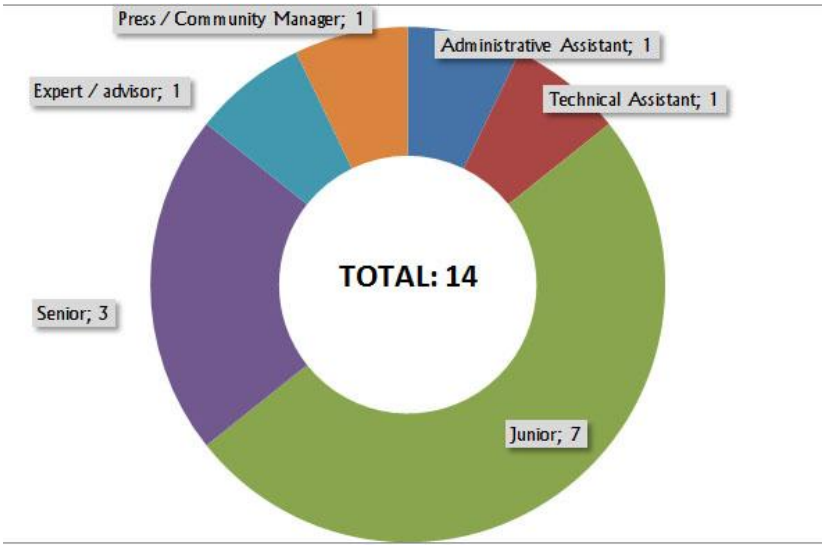

Figure 3.- *Composition of the Focus Group according to the position of the subjects*

Procedure

The participants met in a meeting room in which a di.me expert acted as a moderator. The expert gave an introduction to the key di.me features and the participant roles. Additional information about the idea and concepts in di.me were provided in form of a video with Spanish subtitles.

The members of the focus group were then guided through the three selected use cases. The data collection was carried out in an iterative process consisting of three steps. First, a short explanation of each use case by the moderator. Second, each subject had the opportunity to test the di.me prototype applied to the specific validation use case. Finally, focus group participants were encouraged to discuss their experiences amongst themselves, and subsequently fill out a questionnaire.

Picture 1.- *Focus Group shot. October, the 7th, 2013*

1.1 Secure, User-controlled Registration Use Case

The registration process is a critical issue in the event organization. Organizers must solve the conflict between ease-of-use and profitability: the registration system must be user-friendly and has to collect valuable data for the organizers. The required data depends on the type of event and its specific characteristics, venue, etc. Furthermore, the whole registration process has to comply with legal regulation especially in the field of data protection. Basically, the registration process of an event is a procedure involving sending a registration document to the event organizer with some personal information. The nature and extent of this information is determined by the underlying purpose, which could be either to receive information about upcoming events, or to create a binding contract for attendance. In the first case, the organizer needs some information to contact the potential attendee, and perhaps some additional data about his fields of interest. Therefore, it would suffice to have pseudonymized data and a channel to contact the attendee. In the latter case, the organizer needs a clear identification consisting of name, company, address, payment information, and potentially other event-specific details. This includes personal information by definition.

The di.me system presents a solution based on the support for multiple identities. In di.me, it is possible to create multiple profiles covering a certain, customizable combination of personal attributes which are needed for a specific context. From a privacy perspective, this feature strengthens the principle of data economy and purpose binding.

To prove the suitability of di.me in this context, the focus group members were requested to create two identities with specific attributes and send the same registration document through both identities to a virtual organizer profile. The organizer observed two independent contacts created for each focus group members. That demonstrated that the personal data selected to be sent to an event organizer is under users' control. (See *Figure 4*)

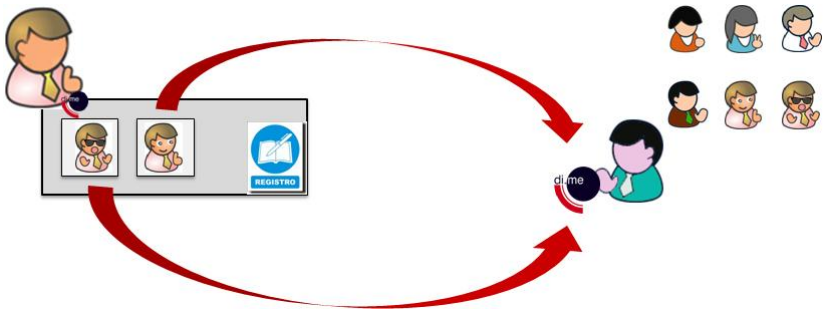

Figure 4.- *Secure, User-controlled Registration Use Case. The organizer receives the registration form through different identities and is not able to discover that both come from the same person, and, consequently, creates two contacts.*

Focus group subjects considered this feature more valuable for users than for organizers. In their freeform responses, they made several recommendations on how to apply the multiple identities management feature of di.me in other contexts of the event organization scenarios.

Other contexts of applicability of di.me multiple identities management feature:*

- ***Networking**. di.me sharing through different identities feature might be use for event networking, using profile cards as digital business cards.*
- ***Ad-hoc messenger service.** Secure sharing feature of di.me might be the base for a further development of an event ad-hoc messenger, in which attendees can personally decide which identity to show. This ad-hoc messenger network could be eliminated directly after the event to avoid traces.*
- ***Feedback provision**. di.me doc sharing feature might be harnessed to collect user-controlled unsigned impressions and recommendations for improvement from the attendees.*

**According to the freeform responses of AMETIC's Focus Group to test di.me. Oct, the 7th, 2013*

1.2 Ad-hoc documentation sharing use case

Trust management is one of the major concerns for organizers. The documentation used in the event needs to be shared with the attendees. Sometimes, these documents are confidential, and thus should only be received by trusted attendees.

To test this use case, the focus group moderator created a profile of a virtual speaker, who had several contacts in a contact group who were tagged as "distrustful". Then, the speaker broadcasted a "confidential" document to the group. Warnings appeared on the speakers account when the document was about to be sent to the distrustful contacts.

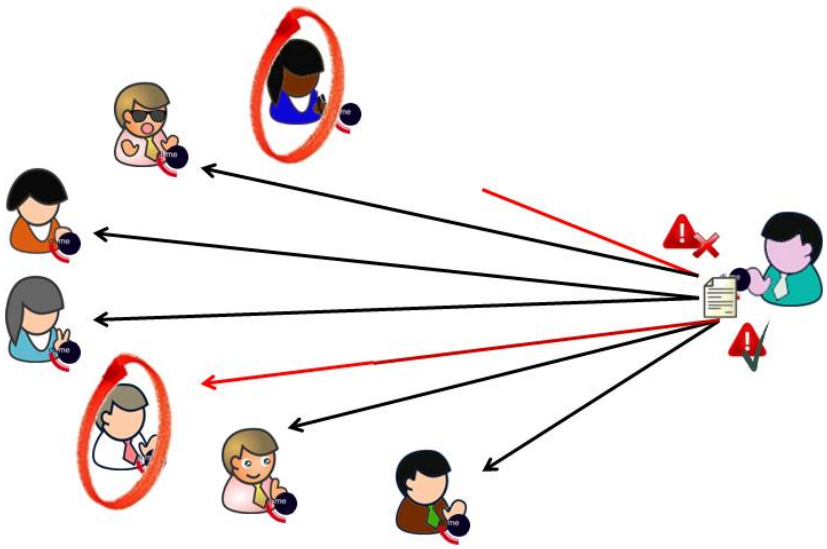

Figure 5.- *Ad-hoc documentation sharing use case. At the very moment that the speaker is sending a document, he will be warned and can decide whether the document must be sent or not to a distrustful recipient.*

The subjects of the focus group considered this feature highly valuable for improve both, the user experience and the support to organizers. According to this result, the development of an event organizing tool from the di.me developments should have a secure sharing capability and ad-hoc documentation sharing system. Furthermore, some of the participants pointed out in the freeform texts that this characteristic becomes useful even in daily internal get-togethers and meetings. This suggestion falls on the potential profitability of such a tool since it shall we use not only for event organization but also for the ERP system.

1.3 Social recommendation use case

The general feeling regarding the third use case was that this feature is interesting from the organizers' point of view since it makes them able to previously reach agreements with places to be recommended on the system. However, the focus group integrants asked themselves in a free discussion if this use case will improve the user experience.

This use case received a special consideration on the subjects' freeform responses. Recommendations on how to progress on development to improve the applicability of di.me to the scenario of event organization were particularly encouraging in the third use case.

Figure 6.- *Tagcloud consisting of free text responses on additional comments for the social recommendation use case. The answers were written in Spanish and the tag cloud refers to an automatic translation to English.*

Conclusions

di.me features are highly valued in the context of event organization. The potential di.me's characteristics demonstrate in mitigating several concerns event organizers have makes the system effective as a basis for a future event organization tool. Thus, continuing development with particular emphasis on the end-user expertise (for event organization companies in this scenario) is beneficial for the market uptake of such a tool.

1.4 Benefits

The di.me framework can help event organizers by providing:

- ***A secure registration system*** which maintain the personal date of attendees under their control
- ***A documentation sharing system*** which highly guarantees the no uncontrolled disclosure of confidential information at an event.
- ***Enriched integral user experience*** by providing recommendation systems
- ***Separation of personal and working life sphere***

Further information:

1. *di.me Project Overview:* *http://www.dime-project.eu/*
2. *di.me Open Source Project:* *http://dime-project.github.io/*
3. *AMETIC:* *http://www.ametic.es*

References

dime-project. GitHub. [Online] 2013. https://github.com/dime-project.

Information commissioner's office. ICO [Online] http://www.ico.org.uk

Akhawe, Devdatta and Felt, Adrienne Porter. "Alice in Warningland: A Large-Scale Field Study of Browser Security Warning Effectiveness." [Online] 2013. http://www.cs.berkeley.edu/~devdatta/papers/alice-in-warningland.pdf

Krueger, Richard A. and Casey, Mary Anne. (2009). *Focus Groups: A Practical Guide for Applied Research.* USA: Sage Publications.

Thiel, Simon, et al. "A Requirements-Driven Approach Towards Decentralized Social Networks." *Future Information Technology, Application, and Service.* 2012 164(1): 709-718.

Thompson, Ed. "What's Hot in CRM Applications in 2013." Gartner, Inc. [Online] 2013. http://www.gartner.com/DisplayDocument?doc_cd=250985&ref=g_sitelink

Vallor, Shannon. "Social Networking and Ethics", *The Stanford Encyclopedia of Philosophy* (Winter 2012 Edition), Edward N. Zalta (ed.). Winter 2012 Edition. [Online] http://plato.stanford.edu/archives/win2012/entries/ethics-social-networking/

Wrobel, Sophie, et al. "Towards a minimal legal framework for considering data privacy and protection goals for social networking platform providers." *Power of Information Conference.* Brussels. January 2013.

Acknowledgements

This project is a collaborative effort between

- Fraunhofer IAO,
- YellowMap AG,
- University of Siegen,
- CAS Software AG,
- AMETIC, the Spanish Multisectorial Trade Association for Electronics, Information and Communications Technologies, Telecommunications and Digital Contents Industries,
- Barcelona Digital Technology Centre,
- National University of Ireland (Galway) and
- Telecom Italia S.p.a.

It is funded under the E.U. 7th Framework Programme, Target Area Intelligent Information Management (ICT-2009.4.3), target d) "Personal Sphere".