Design, Deployment and Evaluation of a Social Tool for Developing Effective Working Relationships in Large Organizations

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Abstract. In an attempt to raise public awareness and promote their objectives, organizations increasingly strive for social media presence. Similarly to using social media tools to communicate externally, organizations are starting to adopt such tools internally to promote information exchange. This is especially the case for large technology companies with a skilled workforce, where exchange of knowledge and ideas can help establish working relationships and eventually improve organizational performance. Past experience shows that successful adoption of social media tools differs between cases, and is closely related to organizational culture. In this paper, we present an application designed to arrange custom lunches between randomly-selected employees and argue that a study of the organizational culture and subsequent application of the findings of this study to the design of the application has contributed to it's success. We determine success by exposing the application to trial use and evaluating feedback from real users.

Keywords: social media, enterprise, organizational culture.

1   Introduction

Driven by rapid growth, social media today are widely used and represent a significant share of the Internet's user base; an eMarketer report titled "Worldwide Social Network Users: 2013 Forecast and Comparative Estimates" and published in June 2013 indicates that one in four internet users worldwide connects to some kind of social media platform at least once per month, while the number of users is projected to reach 2.55 billion by 2017.

Originally, social media were targeted at private individuals, and were perceived as tools for communicating their personal interests; with organizations frowning upon or even banning their use (well known examples for prohibitive social media policies were the sports network ESPN and US Marine Corps). However, as their popularity rose, the perception of their usefulness in the enterprise changed.

Ployhart observes that as organizations are becoming increasingly aware of the value of social media in the enterprise, they are starting to include them as part

of their corporate strategy. At the same time, he proposes different approaches for external social presence expansion and internal adoption [1].

Many organizations have already created and are executing strategies for managing their social media presence. In a recent survey, approximately 75% of the 110 respondents indicated that their organization has already deployed and is improving it's external social media presence [2]. However, in the same survey only 32% of the respondents indicated that their organization has deployed social media for internal use.

The results of this survey are not incidental, and are based on the fact that the success factors for internal social media introduction are more complex than the ones for establishing external social media presence (thus requiring additional effort to understand all parameters). The latter case typically involves an external relations group publishing content in a controlled manner. Successful execution in this case depends on how well the goals outlined in the organization's social media strategy are communicated and how the organization diffuses feedback from social media users. The former requires a careful examination of the observable patterns of behaviour of the employees in the organization - also known as organizational culture - prior to any attempt of deployment. Empirical findings from previous deployments support this claim. NASA's social network for example failed to gain traction because employees had very specific job roles with repetitive tasks and thus not having the need to update their online profiles [3]. Findings from the evaluation of an instant messaging system in an organization also indicated that employees were reluctant to use it for communicating with their superiors because they were concerned about conveying inappropriate impressions [4].

In this paper, we present ConnectedLunch, an application designed to arrange lunches between employees of an organization. This application introduces employees previously unknown to each other and allows them to discuss at a mutually convenient time. In the long term, some of this discussions may lead to establishment of working relationships. After a review of previous research on the importance of working relationships in organizations and comparison of similar applications to ConnectedLunch (section 2), we show how the application was designed to be compatible with the culture of the organization it was deployed in (see section 3), describe it's architecture (section 4) and determine its successful deployment (see section 5). We conclude by discussing the benefits of ConnetedLunch in greater detail as well as reviewing organizational learnings.

2   Background Work

The goal of ConnectedLunch is to introduce employees to one another over lunch. This is seen as a first step in establishing working relationships, which are proven to produce short and/or long-term benefits for the organization (for further analysis on the benefits there relations produce see section 5) [5]. Working relationships in the context of this study, are professional relationships employees have with each other, irrespective of their position in the organizational

structure. In contradiction to formal interactions such as scheduled meetings, ConnectedLunch arranges for people to meet in informal environments such as restaurants or cafés. Such informal meetings are important for building working relationships: previous research shows that informal communication strengthens working relationships by building trust [6] and aligning perspectives [7] of the people involved.

Table 1. Comparison of ConnectedLunch with other Lunch-pairing applications

	Lunch Pairing	Pair Lunch	Lunch Roulette	ZinkUz	ConnectedLunch
Pairing rules	no	no	simple	complex	complex
Scale	small	small	large	unknown	large
IT Integration	potentially	potentially	potentially	potentially	yes
Charges	no	no	no	yes	no

The idea of pairing people for lunch is not new. There exist a number of approaches, such as "Lunch Pairing" [8], "Pair Lunch" [9], "Lunch Roulette" [11] and "ZinkUz" [10]. Table 1 compares these solutions with ConnectedLunch, against four basic criteria.

The first criterion is the complexity of the pairing rules. Applications use these rules to decide if any constraints will be applied when matching employees for lunch. Small-scale solutions such as "Lunch Pairing" and "Pair Lunch", which target companies of 30-40 employees have no pairing rules, meaning that the matching process is completely random. The absence of rules in this case is not a technical limitation of the applications, but it is a conscious design choice taken in order to maximise lunch arrangements, given the small user base. "Lunch Roulette" provides simple choices such as time of lunch and restaurant of choice. Finally, "ZinkUz" provides a customisable ruleset, according to the company's webpage [10]. In the case of ConnectedLunch, we also offer users sone control over the choice of lunch partner by optionally allowing choice of a partner's work area and work experience. Given the large user base of the application (see section 3), offering these choices was not only reasonable in terms of matching lunch partner availability, but it also increased application desirability (as validated by our measurements in section 5).

We also compare the applications by their capability to scale in order to serve organizations of thousands of employees. For cost reasons, it is important that the application is designed in such a way that it is easily accessible and does not require excessive maintenance, other than provisioning for the required IT resources. As per previous, "Lunch Pairing" and "Pair Lunch" were designed for small companies, and require manual maintenance by an administrator rendering them cost-ineffective for large-scale deployments. "Lunch Roulette" has a proven record of successful, large-scale deployments as mentioned in the application's website [11], while we could not find any account of deployments of ZinkUz in the company's website[10]. ConnectedLunch was designed from the beginning to

scale to serve a large user base, requiring limited maintenance. The scalability capabilities of the application were evaluated during the trial launch period (see section 5).

Scalability also relates to the degree the applications can interface with existing enterprise software systems deployed in the organization. By interfacing with these systems, scalability risks can be mitigated as functionality can be delegated to already-deployed enterprise applications. In ConnectedLunch, we minimised the application's maintenance costs by delegating user and lunch calendar management to existing enterprise software. In addition to cost-cutting, we reduced the learning curve of the application for new users (see section 4). Although they offer no direct support for interfacing with existing enterprise software, all other applications could be extended to provide such functionality. In this case, the additional cost of implementing these interfaces has to be factored in to the deployment costs.

Finally, all applications except "ZinkUz" are free of charge and their authors provide access to the source code. However, when all four of the aforementioned criteria are considered, we find that ConnectedLunch offers a unique combination of low-cost, high-scalability, rule customisation and integration with existing enterprise software, which cannot be provided from another tool.

The next section describes the thought process we followed on identifying the factors contributing to a successful lunch experience, and subsequently how these factors were interpreted as requirements in the application design.

3   From Analysis of Customer Experience to Creating Application Design Constraints

Prior to implementing ConnectedLunch, we investigated the work environment and culture of the organization in which the application was to be deployed. We started by considering the contributing factors for a successful lunch experience (i.e. one where all lunch partners satisfy their personal expectations). We have managed to reduce the number of factors contributing to this success to three:

– Spatial Proximity: Since business lunches take place during working time, all lunch partners must be close to a lunch venue to reduce time spent in reaching the venue.
– Temporal Alignment: All lunch partners must meet for lunch at a mutually convenient time. Given that lunches take place during work-time lunch reservations are more prone to being cancelled bilaterally, or unilaterally due to overlaps (e.g. more important meetings, deadlines, etc.).
– Personal Preference: Employees participating in a business lunch may have a personal preference on the type of person they would like to have as a lunch partner. Based on their preferences, they might be looking to establish a working relationship for expanding their professional network, exchanging knowledge, seeking to receive or provide mentorship, engaging in synergies and professional collaborations or a combination of the above. Furthermore, employees may also have a personal preference on the lunch venue.

We subsequently filtered the success factors through an organizational culture lens, which allowed us to deduct a number of constraints our application should operate in, when matching employees for lunch (see table 2).

Table 2. This table shows the factors for a successful lunch experience and how they relate to the organization's culture. The application design constraints are requirements on the application design and are derived from the aforementioned relationship.

Success Factor	Organizational Context and Culture	Application Design Constraint
Spatial Proximity	ConnectedLunch was designed to serve employees of a large telecommunications organization located in Kista, a suburb of the city of Stockholm in Sweden, where approximately 11.000 employees are occupying workplaces inside an approximately squared area of 0.87 by 0.9 km (or roughly 0.78 km^2).	The spatial proximity of the potential users means that all restaurants in the area were accessible by everyone; therefore, we made all the restaurants in the area available to all users to choose from. It is worth noting that due to the same spatial proximity reasons we did not consider user location as a determining factor when pairing users.
Lunch Time	Lunchtime for the majority of employees is between 11:30 - 12:00 every day	Two fixed timeslots for booking lunch each day, 11:30 to 12:30 and 12:00 to 13:00.
Lunch Reservation Routine	Users usually make lunch arrangements between a few days and a few hours before lunchtime.	Lunch reservations possible for any date within the current work week but not for subsequent week(s), as users could schedule more important meetings over the lunch meetings in the interim, which could lead to cancellations.
Personal Preference	User base from all parts of the organization, experience ranging from newly hired employees to experienced people. Large selection of lunch venues to suit personal taste (in terms of cuisine, environment and lunch cost).	Desired work area (e.g. finance, marketing, supply, research and development, human relations) and level of experience of lunch partner as well as preferred lunch venue can be optionally set (see section 4).

The next section describes the architecture of ConnectedLunch and a typical lunch booking use-case from a hypothetical user.

4   Application Implementation

4.1   Development Lifecycle

The idea for creating ConnectedLunch was a result of a round-table discussion between employees of a large telecommunications organization located in Kista, Stockholm, Sweden, in mid-October 2012. The application was developed part-time by one employee, tested by a team of 6 people and was ready for use 3.5 months after the original discussion, in the beginning of February 2013. The total development time was 83 man hours, 40 of which were spent in programming the application, 35 on testing it, and the remaining 8 on deploying and configuring the application in the corporate cloud environment.

4.2   Architecture

The design of the application is based on a standard client-server model (see figure 1). Users are able to book lunches using their preferred web browser, while server side software modules manage user authentication, match users for lunch and notify them on a successful match via e-mail. The rest of this subsection describes the software modules and their interactions in greater detail.
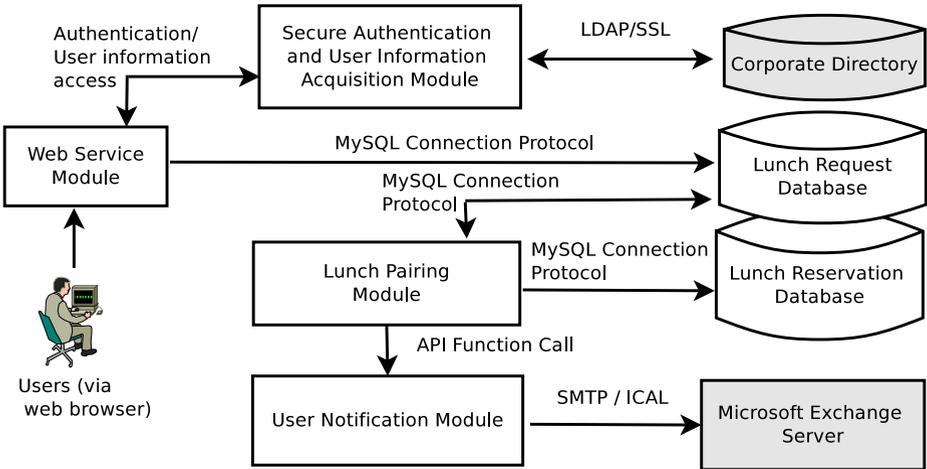

Fig. 1. This figure illustrating the block components of the application and their interactions. The components filled with grey colour are already existing enterprise assets (databases, servers, etc.) interfacing with ConnectedLunch.

The "Web Service" module contains a web server running a user interface (presented in section 4.3) which is accessed by users (i.e. employees). Using this interface, employees can create new lunch requests, view their lunch reservations for the current week, or cancel pending lunch requests that have not yet been

matched to a colleague. Internally, the "Web Service" module interfaces with the "Secure Authentication and User Information Acquisition" module, which in turn interfaces with the "Corporate Directory" module.

The "Corporate Directory" is a database which contains information about the employees of the organization, such as their real names, email addresses, work phone numbers, job roles and exact office addresses. This information is used when employees submit new lunch requests, so that when they eventually get a lunch reservation confirmation they also receive a few useful information about their lunch partner (e.g. a phone number in case they want to call each other before lunch). Additionally, this directory contains the corporate credentials of employees, which are used by the "Web Service" module to authenticate them before using ConnectedLunch. The "Corporate Directory" predates Connected-Lunch and is managed by the Human Resources (HR) group of the organization, thus it did not add any additional costs to the development and maintenance of the application.

Triggered by an employee lunch reservation request, the "Web Service" module stores the request to a "Lunch Request Database". The request stores information about the employees preferences such as desired time to have lunch and optionally lunch venue and preferences about the potential lunch partner. As mentioned previously in this subsection, it is possible to cancel a lunch request, in which case the reservation request entry is removed from the "Lunch Request Database".

The "Lunch Pairing" module is software running independently in the background. It executes a pairing algorithm which periodically polls the "Lunch Request Database" incoming lunch reservation requests (a detailed description of the algorithm is provided at [12]). In case of a match of two requests, the "Lunch Pairing" module removes those requests from the "Lunch Request Database" and creates a reservation entry in the "Lunch Reservation Database". It also calls the "User Notification Module" to send a meeting invitation in ICAL format to the two lunch partners.
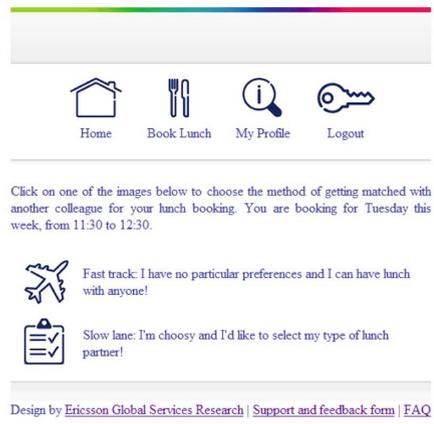
4.3   Lunch Reservation Use-Case

This section describes a typical ConnectedLunch usage scenario, according to which a hypothetical user logs in to the application, creates a new lunch reservation request and receives an email from the system when he/she was successfully matched against a lunch partner and a reservation has been made. Figure 2 illustrates the process.

Notice how the requirement for fixed timeslots, as shown in table 2, has been implemented in figure 2b. The fixed timeslots significantly increase the number of paired lunches, compared to allowing users to specify arbitrary times explicitly, while at the same time they serve the majority of the employees in the organization who traditionally go for lunch between 11:00 and 12:30.
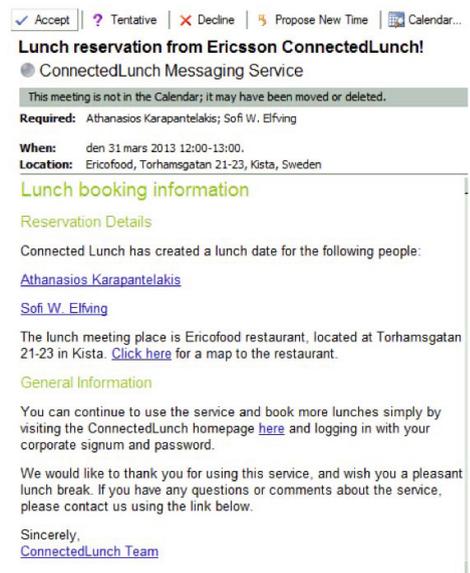
(a)

(b)

(c)
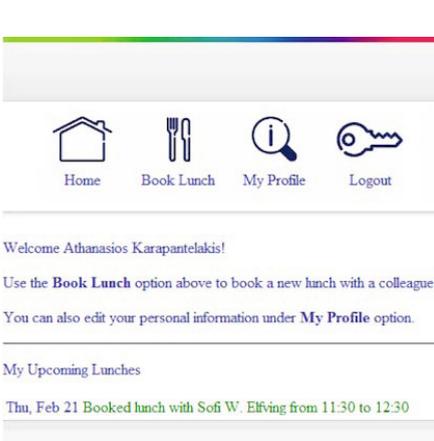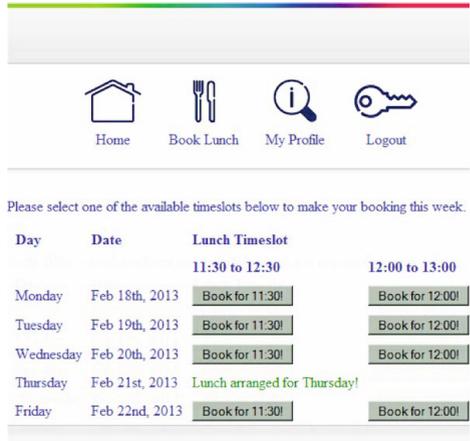
(d)

Fig. 2. This figure illustrates the lunch reservation process in ConectedLunch. Upon successful authentication, users are greeted by the "home screen" of the application which shows their arranged lunches for the week, if any. Bookings are done from the "book lunch" option. In the first step of the booking process, users select an available timeslot for a day of the week (b). Subsequently, they are presented with the choice of entering their preferences about their lunch partner (work area and years of experience) and/or lunch venue, or choosing a completely random match (c). Finally, (d) shows a calendar invitation sent via email to lunch partners upon successful match.

Also note the wording "fast track" and "slow lane", for matching with a random lunch partner, or a preferred one respectively (figure 2c). These words were chosen intentionally, as we wanted employees to choose to be randomly matched as we believed that this approach would increase the appeal of the application, as it stired the curiosity of the employees to try it out.

5 Application Deployment and Evaluation

ConnectedLunch was deployed for trial use in a large telecommunications organization located in Kista, a suburb of Stockholm, Sweden from end of February 2013 until middle of September 2013. The application was initially announced to a small number of employees via email using a distribution list for event communication and its use was expanded through word of mouth. The user group was heterogeneous, as employees who joined had different work backgrounds and years of experience (see tables 3 and 4).

Table 3. Number of ConnectedLunch users categorised by work area

Work Area	Number of Users
Research and Development (R&D), Product Management	113 (55%)
Service Delivery, Other Services	16 (8%)
Supply and Sourcing	17 (9%)
Business Development, Sales, Marketing, Commercial Management	16 (8%)
General Management, Operational Development, Competence Development, Human Resources (HR)	14 (7%)
Finance, IT, Communications, Other Jobs	29 (13%)

Table 4. Number of ConnectedLunch users categorised by work experience

Years of Experience	Number of Users
Up to one five of experience	68 (33.2%)
Between five and ten years of experience	85 (41.4%)
More than ten years of experience	52 (25.4%)

Although the overwhelming majority of users of ConnectedLunch had R&D and product management roles, other functions of the organization had a fair amount of representation in the user base. This is something we expected, given the fact that the number of employees from R&D represent the majority of total employee number, in the area were ConnectedLunch was deployed. Interestingly enough, all levels of years of experience in the organization, from newly hired to

long-time employees had substantial representation. We therefore consider that ConnectedLunch had universal appeal to the organization's employees.

In total, during the trial period, 205 users booked 384 lunches. From these users, approximately 64% used the service more than once. From the lunch reservations, 186 were between managers and employees with a non-management role (roughly 48%). This is a positive result showing that ConnectedLunch facilitates communication between employees of different levels in the organizational structure. Although communication was happening before ConnectedLunch horizontally (i.e. on the same level - for example, between engineers from different groups), vertical communication between leaders and managed employees was limited to formal interactions.

Another one of our observations was that the majority of lunch reservations (334 lunches or 87% of total) was done using the "slow lane" approach, where users preferred specifying the profile of person they wanted to have lunch with (work area and years of experience) and/or the lunch venue over a random match (see figure 2c). This came as a surprise result to us, especially since we chose the wording "slow lane" intentionally to encourage users to use the random matching option "fast track" to promote random matching of employees. These results show that users had specific intentions when booking lunches, as they provided specific requirements on the profile of the desired lunch partner.

In order to gain more insight into these intentions as well as the whether the application fulfilled it's original goal of bringing people together to establish working relationships, we carried out a qualitative study after the trial phase concluded. An electronic questionnaire was made available to ConnectedLunch users on the application webpage. The questions focused on the perceived value of ConnectedLunch. 168 users (or 60% of the user-base) participated in the survey. 143 users (or 85% of those that participated) reported that the application was easy to use, while 147 (or 87.5%) reported that their lunch experience was overall positive.

Some users also reflected on how it helped them create and grow working relationships, in particular:

- 44 users stated that they rescheduled a lunch with the same lunch partner after the first meeting.
- 68 users stated that they maintained contact with their lunch partner over email, instant messaging, or using the company's internal social network.
- 32 newly-hired employees stated that ConnectedLunch helped them to expand their network and facilitate their introduction within the company.
- 18 users stated that they scheduled a professional meeting with their lunch partner (e.g. for knowledge exchange and/or potential collaboration).

In addition to the above, 50 users recommended ConnectedLunch to their colleagues. Users also suggested ways for improving the application. For instance, some mentioned that it would be beneficial if we provided a reward system for application use - which could help spread the application even further (some suggested examples were arranging random lunches with the company CEO,

providing a "high score" page, where users with the most lunches would be clearly visible, etc.).

6   Contribution and Learnings

ConnectedLunch was a simple idea for enhancing dialogue in large organizations. It was rapidly prototyped and tested from employees of such an organization. The next paragraph summarises the benefits of ConnectedLunch, as observed from a 6-month period of trial use.

- Enhancing organizational cohesion by breaking traditional communication barriers between senior leadership and managed employees.
- Facilitating introduction of new employees to the organization by expanding their network of contacts.
- Benefitting seasoned professionals in the organization who can use Connected-Lunch as a means to expand their knowledge and engage in potential collaborations with other senior colleagues.
- ConnectedLunch does not affect the daily performance of employees, as lunchtime is typically a planned activity during a working day.
- Easy to learn and use, ConnectedLunch follows the organization's UI design guidelines (see figure 2) and reuses already existing, managed IT infrastructure and enterprise software to minimize maintenance costs.
- ConnectedLunch is a good return-on-investment, given the relatively small cost of implementation (see section 4.1) and maintenance (see section 4.2) and the promising results of the evaluation of the trial phase (see section 5).

Our experience with the application has also resulted in a number lessons learned. These could be considered by any organization planning to design similar tools.

- Organizational Flexiblity for Innovation: The organization must be flexible enough to support materialization of promising ideas, no matter from which part they originate. There are two dimensions for such flexibility, which, in our experience, the organizations need to have in place; namely, leadership commitment and resource procurement.
  Albeit small, ConnectedLunch required an up-front investment from the organization in order for the idea to materialize. Given that the application was outside of the designated work tasks of both authors, commitment was required both from the leadership team, who had to make a decision whether or not to proceed and the authors, who had to carry out their designated work tasks in tandem with implementing the application. Mutual understanding of the value of the application, which implies communication of justification of how the application would benefit the organization in clear terms to the leadership team, was the success factor in our case.
  Additionally, the organization must provide for the resources required for the idea to materialize, without stalling provisioning of such resources through

tedious, bureaucratical processes. A virtual environment in the corporate cloud platform, which automatically handled authorisation for accessing other enterprise software and specifically designed for prototyping new small-scale applications was in our case the catalyst for accelerating development.

– Users Desire Tailored Experiences: Another lesson learned for us was that the users actually preferred spending more time in the application to profile their lunch partner when reserving lunches, ignoring the option of random matching, which we believed would be the most popular one.

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