Recruiting citizens to use ICT for saving energy in public buildings

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Keywords

users, energy behaviour, local authorities, citizens, information and communication technologies, public buildings, recruitment

Abstract

Recruiting people to do or partake in something is a hard task in itself. When this something is a novel technology targeted at a wide range of audiences, this task becomes even harder. A recipe is needed that contains a variety of ingredients – behavioural change and change management both in and outside of organisations as well as marketing, branding and appropriate communication channels. In the best case the recipe enables others to follow it and replicate the strategy on their own.

ICT-enabled energy efficiency services have been introduced in eleven European municipalities and 600 buildings as pilot sites for the European project SmartSpaces. Public buildings pose a special challenge for the strategy, as the recruitment target includes both organisation members (e.g. office workers, museum clerks) and the public or citizens that visit the building. In this sense the recruitment is not just an organisational problem within institutions, as is typically the case with such enterprises. Involving the public requires coming up with unconventional ideas that work on a wider audience and are still effective.

The municipalities have joined efforts in identifying suitable recruitment strategies and developing materials and messages to promote their ICT solutions for energy efficiency. Successful approaches include an as-is analysis, development of the concept of "champions", using the organisational structure to communicate, creation of tailored messages and slogans and conceptualising a consistent branding strategy. Organisational burden such as cross-department coordination and usually not relying on having to convince citizens had to be overcome.

This paper presents a replicable recruitment strategy based on SmartSpaces and explains how it has been applied within the pilot sites. Analysis follows the phases of the change curve by Kubler-Ross, as understanding citizens' needs and behaviour is central to a successful recruitment strategy. A case study for Bristol will be presented, having been selected as a 'project to be watched' by the UN-GlobalPulse BigDataChallenge on Climate Change.

Introduction

The European project SmartSpaces (empirica 2012) launched in January 2012 with the aim of developing innovative ICT-based energy decision support and awareness services along with (automated) management service components in public buildings. Decision support is provided to city energy managers and other building professionals responsible for building performance, as well as to building users, both staff and visitors to the building, in order to enable them to optimise their energy-related behaviour based on up-to-date meter feedback on energy consumption within the building. The resulting service enables public authorities in Europe to significantly improve their management of energy in the buildings they occupy. The project consortium consists of 26 partners with eleven pilots in eight cities across Europe. With the project ending at the beginning of 2015 the consortium has succeeded in achieving a number of targets, including:
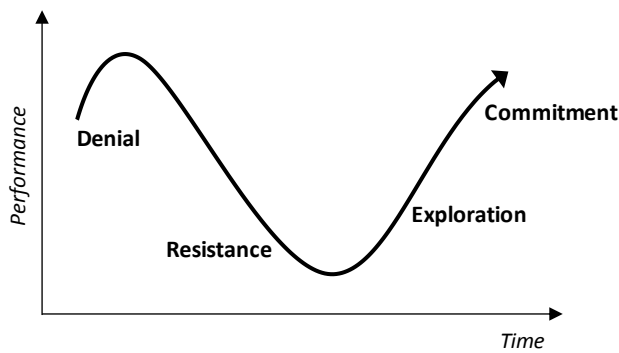
Figure 1. The change curve (Gilley, et al. 2001).

- the successful implementation of the services in all eleven pilot sites as a result of iterative development that includes requirements identification, use case and process modelling, design and testing (detailed documentation can be found at www.smartspaces.eu/outputs);

- an average energy saving for the project of ca. 19 % or 9.7 kg/m^2 emissions (12.7 % for electricity, 27 % for gas; for more information about the calculation methodology see http://82.165.143.35:8080/eemeasure/ and deliverable 7.2 on the project website);

- wide dissemination of project results and development of a public 'Guide for Replication' (empirica 2014) for the service.

A critical success factor for the project is the adoption of the services by the citizens – they need to be recruited to use the developed solutions. This poses a particular challenge due to a couple of reasons. Firstly, the potential users of the services are very diverse – they differ largely in age, social status and creed. Therefore their understanding of the services and willingness to adopt them is divergent. In addition, the ability to use them is not always a given, especially with elderly people that are not IT savvy and take longer to adopt new technologies. Secondly, the target audience for the services comprises users that are either internal (e.g. office workers, museum clerks, school teachers) or external (e.g. museum visitors, hospital patients, office guests) to the building. Their level of interest towards energy-related activities in the building varies based on the 'roles' of the citizens, which were identified to be visitors, staff and (building) professionals. A further challenge arose from the project's composition demanding exchangeability and comparability of materials and messages developed across countries which also ensures replicability outside of the project by other municipalities.

This paper describes the developed recruitment strategy and explains how it was applied in SmartSpaces to influence citizens' behaviour to save energy. In addition, one of the project pilots – Bristol which has been selected as 'project to be watched' by the UN-GlobalPulse BigDataChallenge on Climate Change – is introduced in more detail in order to give examples and demonstrate the easy applicability of the recruitment approach. The Change Curve is used to illustrate the change process and how the recruitment strategy addresses the different stages of change experienced by the citizens.

The change process

A key step towards a successful recruitment process is to understand how change is perceived by individuals. Studies have shown that they tend to follow a predictable pattern of reactions, known as a transition or change curve. The proposed strategy for the SmartSpaces project has been aligned to take these patterns into account. Presented here is a simplified variation of the Kubler-Ross change curve.

When confronted with something new, citizens will typically experience shock and denial at the beginning. They will avoid the topic, refuse to believe a change is happening, and show no initiative because they are happy with the status quo. The main reasons for this are lack of information, fear of the unknown as well as feeling threatened by the new technology and experiencing fear of failure. In a next step, they will be resistant as to the adoption of the new idea, show no accountability and will generally try to find a scapegoat to justify their non-committing to the change. With the proper tools, citizens will slowly come out of this state and begin to explore the new solution. Active support and training is a must in this phase. When done properly and consistently, this will lead to the citizens committing to the change and ultimately will help to reduce the energy consumption in the building and save municipality money. How the different stages are addressed with the approach is presented in more detail in the next section.

The recruitment strategy

The strategy developed within SmartSpaces is a result of multiple meetings and project workshops with professional and technical staff from all eleven pilot sites in eight countries – Belgrade, Birmingham, Bristol, Hagen, Istanbul, Leicester, Lleida, Milan, Moulins, Murcia, and Venlo. Its core characteristics are:

- **inclusion**: engage all citizens – of different age, occupation and level of technology awareness;

- **balance**: find the right mix and number of recruitment measures, as too many measures may overwhelm the audience, too few can result in low level of interest and participation;

- **coherence**: eleven pilots in different parts of Europe were required to apply the strategy and successfully recruit the target number based on the size of the pilots. The different pilots assessed possible risks and planned how to manage them to ensure successful application of the strategy.

Core strategy elements presented below are aligned with the way users perceive the topic of energy saving through the use of ICT and the need to commit to reducing CO_2 emissions:

1. In order to overcome the **denial** they may have, they are provided with catchy *messages* and support *materials* as part of a long-term *branding* plan.

2. For internal users (regulars in the buildings), their **resistance** is effectively overcome by leveraging the *structure of the organisation*.

3. In order to **explore** the new possibilities energy-saving measures offer, users need to be *trained* and provided with more details in order to get their buy-in.
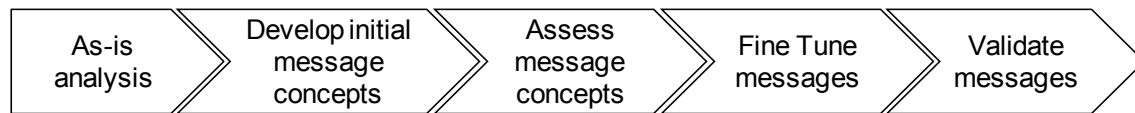
| As-is analysis | Develop initial message concepts | Assess message concepts | Fine Tune messages | Validate messages |

Figure 2. SmartSpaces message development process.

4. **Committing** to the change of using ICT to save energy in buildings is solidified by the continuous *branding*, *assistance* and also by introducing the notion of *champions*.

The strategy elements represent a set of components that are essential for a successful recruitment. They can be seen as ingredients that could be used for similar undertakings as they provide a holistic approach independent of the working domain.

As-is analysis – get to know your audience

The best suited strategy for each pilot site depends on the results of the pilot's as-is analysis that delivers information on the profile of staff/visitors in the buildings, the hierarchical strength, the organisational relationships (e.g. boss – colleague or city mayor – executive), goals, values, etc. In the case of Smart-Spaces, the as-is analysis was performed by means of qualitative research. It involved identifying the target audiences in the buildings (age, interests) and their needs, as well as available channels for communication, suitable materials and incentives, and possible problems that may occur during recruitment.

For any stakeholder wishing to use the strategy, the as-is analysis should include at least the following:

1. Audience profile: Who are the target audiences, what do they like, which communication channels do they prefer?

2. Organisation: Can organisational relationships influence the changes, who are the change initiators?

3. Materials: What are suitable materials and incentives for the different audiences?

Message development – catching attention

Messages are used to communicate with and encourage individuals to change their environmental behaviours (Wilson 2014). Such were developed in accordance with the pilot-specific situation in SmartSpaces. Helping questions include 'Is the message involving, important, relevant to the receiver?', 'Is the information useful for busy people?', 'Is it professionally/convincingly delivered?', 'Is the source credible/trustworthy?', etc. All messages should tick the boxes of being relevant, interesting, credible, clear, convincing, and come from a trusted source. Macnamara's (1992) pyramid model served as a guiding source for the message development process, as it gives a systematic overview of media evaluation divided into three stages – inputs, outputs and outcomes. The complete process of creating such messages identified by the consortium involves the steps described in Figure 2.

In SmartSpaces messages are usually oriented around topics that are close to the target audience. For example, in an economic crisis with job uncertainty, municipal workers would most likely support the idea that energy saving contributes to saving municipal money and therefore helps to keep jobs. This was observed in pilots like Bristol and Murcia, but apart from

financial topics others include environmental and ecological, cultural and institutional influences. The messages are delivered through different channels. The media richness theory (Heeren and Lewis 1997) alludes to the importance of having the right mix of channels in order to avoid oversimplified or overcomplicated communication. Channels like face-to-face and video meetings offer the most effective results and should be applied when possible. However, the right mix should be selected based on the as-is analysis for each individual case.

Materials and incentives – fighting the fear of the unknown

The centralised database used by the SmartSpaces consortium for generation of ideas, reuse of materials and general knowledge collection, has been specifically designed for the purpose of pilots being able to easily share ideas, templates and work collectively towards achieving desired recruitment results.

Various materials and incentives have been developed for this purpose, including:

- leaflets and brochures
- posters and banners
- articles and other publications
- newsletters
- video materials
- social media
- presentations and workshops
- games and quizzes
- free services/bonus system
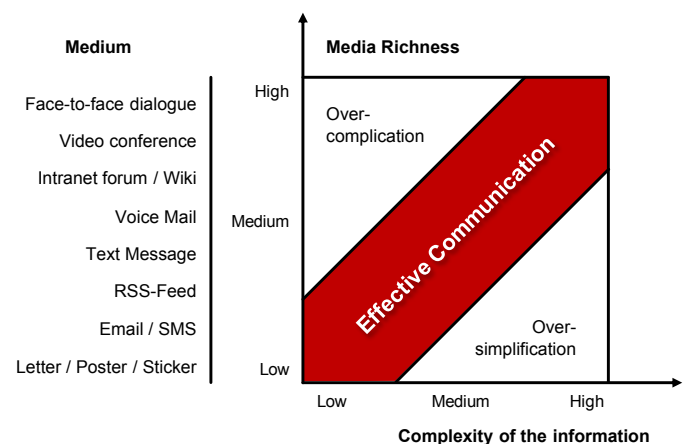- energy coaching services.

Figure 3. Different media as part of an effective communication.

Figure 4. Recruitment materials and incentives in SmartSpaces. From left to right – 1) roll-up banner for the building halls, 2) poster used in a nursery, 3) info-desk in an administrative building in Belgrade, 4) pencil box promoting better energy management in offices.

All materials and activities should be tailored to the needs and expectations of the different audiences. Example materials are presented in Figure 4.

Branding – providing consistency

The way in which an idea is presented influences dramatically the idea's success. For example, Lewis et al. (2012) explain that the initial message proclaiming initiatives to save energy and money should come from communication sources for which the consumer associates no negative vested interest; a source that they feel is independent, ideally on their side and/or the side of the environment, but at least not on the side of the utility companies. These and other considerations suggest strongly that the recruitment strategy should have a clear view on what the face of the initiative/project is. Typical related questions concretely for the case of SmartSpaces include 'Who is providing the services – a private company, the municipality, etc.?', 'How are the services and/or products branded – under SmartSpaces, under the municipality programme, under national initiatives that have more authority and respect among people, etc.?', 'Who has already won people's trust and can be used to endorse the SmartSpaces services?'.

The organisational structure – overcoming resistance

As public buildings are owned or controlled by the state (municipalities, city authorities) and most of them have an established structure (most commonly mechanical and therefore not flexible but strongly hierarchical), especially true for administrative buildings, one should take into consideration the value the structure could provide when it comes to communicating an idea and inducing change in an organisation. There are different approaches for initiating such changes (see Figure 5) each of which possesses advantages and disadvantages.

Utilizing the influence of the structure is very helpful for overcoming the resistance of the internal users when it comes to change. The most common models in the case of SmartSpaces suggest the use of a top-down-strategy where the top management's authority is undisputed and actively involved (city mayor, department executives), a bottom-up strategy where the users bring forth a request for change that is acknowledged by the top management, or a mixed strategy combining the previous two. The best suited strategy for each pilot site depends on the results of the pilot's as-is analysis that delivers information on the profile hierarchical strength and the organisational relationships (e.g. boss – colleague or city mayor – executive).

Training – facilitating exploration

Trained and motivated users have the ability to further disseminate among their fellow colleagues or among visitors, creating a cascading effect that has the potential to achieve high user awareness and education. Effective training includes multiple sessions or focus group with support materials such as manuals and instructions. Designated contact people for each building combined with a hotline are further facilitators for supporting users in their exploration of the new technology.

The concept of champions was utilized in SmartSpaces to expedite the wider update. Champions are individuals who serve as role models to others and influence them through their actions and opinions. A champion can be anyone with good social skills. In SmartSpaces they are seen as 'social hubs' that have great potential in raising awareness and recruiting new users. Therefore, the process of identifying these persons in each building has begun early on in the project. Identification instruments include the use of a survey to screen for potential champions, observation during focus groups and audits, and the use of contests where specific characteristics (champion profiles) are sought.
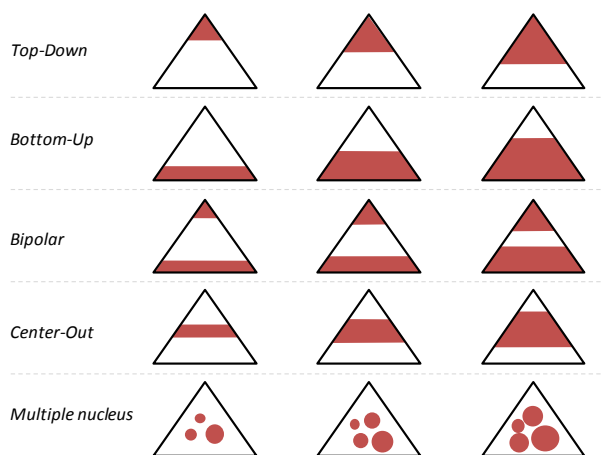

Figure 5. Inducing change: approaches (Vahs 2012).

Applying the strategy – experience from Bristol

This paper can only present one pilot site's strategy in detail due to page constraints. Strategies for all sites are presented in the public document D5.1 available on the SmartSpaces website (empirica 2012).

The pilot site Bristol (UK) has a long-term plan on carbon emissions reduction in accordance with the CRC (Carbon Reduction Commitment) Energy Efficiency Scheme. With the ambitious step to include over 500 buildings in the SmartSpaces project, Bristol City Council is a perfect candidate for this short case study.

The pilot site provides two types of services to the users. The EMS (Energy Management Services) use AMR (automatic meter reading) data provided every 30 minutes which is analysed intelligently and provides real-time feedback to the building energy management unit. A key requirement of EMS is to be able to determine what levels of consumption are considered problematic, and to gain swift notification when this occurs. For this, profile alarms are set up (see Figure 6). The EDSS (Energy Decision Support Services) are targeted at all users and are used to communicate energy use in an understandable and engaging format, which will enable them to make informed decisions on actions they can take to reduce waste and achieve savings.

As-is analysis

The citizens that visit and work in the buildings are very diverse – pupils, students, office and administrative workers, hospital staff, sports centre staff, etc. In total over 11,000 citizens are involved, which dictates the necessity of the EMU's (Energy Management Unit) recruitment and training strategy to be flexible so that the service can be applied effectively to this great variety of users. Messages and services are therefore tailored to different audiences.

Branding

Use of the SMARTSPACES logo and the Bristol City Council logo feature consistently across all the products of the service that EMU provides, such as reports, web interfaces, presentations and publications. Emerging as a key benefit is the SmartSpaces identity which has been established. This identity has started to become immediately recognisable to clients as energy information specific to them. A sub-set of this SMART-

SPACES branding is the SmartSchools brand, which is specific to schools.

Organisational structure

The structure of Bristol City Council is in theory hierarchical, with the Mayor and Senior Management at the top. However, in such a large organisation it is often the Building/Facilities Managers who have the most influence over the day-to-day running of the buildings. It is also vital to engage with ordinary staff and visitors: both to change their behaviour and for them to influence those further up the chain (e.g. through team meetings, local democracy). EMU have therefore adopted both a top-down and a bottom-up approach, ensuring senior management approval and giving staff the necessary tools to carry out the required work.

Staff training

Training of staff has been carried out by members of EMU. With such a large number of buildings, there is some difficulty in identifying and contacting the most appropriate individuals. These have been identified initially on an ad hoc basis and later on through increased promotion and senior management influence. Identification of energy champions has been carried out through attendance at building user groups, during site energy audits, and through the council's social media and intranet. These users are given extra services, access and reports in order to allow them to prompt both staff and managers towards reducing energy consumption.

Materials and incentives

All developed materials have been specifically tailored to raise awareness among the different citizens. For example, children and young adults are introduced to the topic of energy saving through an animated character called Green Finger. Social media are both freely available and widely used communication platforms that make an ideal resource to be exploited. The Council's in-house social media 'Yammer', intranet 'The Source' and well known public social media websites such as 'Twitter' and 'YouTube' all make effective communication routes to reach users – in particular building staff. The variety of energy reports that are distributed directly to users through email and face-to-face at building user group meetings and trainings include Monthly Site Profile Reports, Quarterly Site Invoice Re-
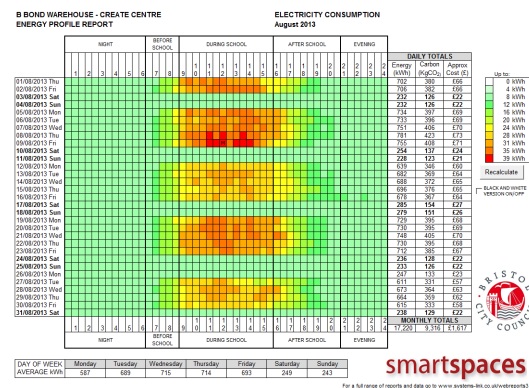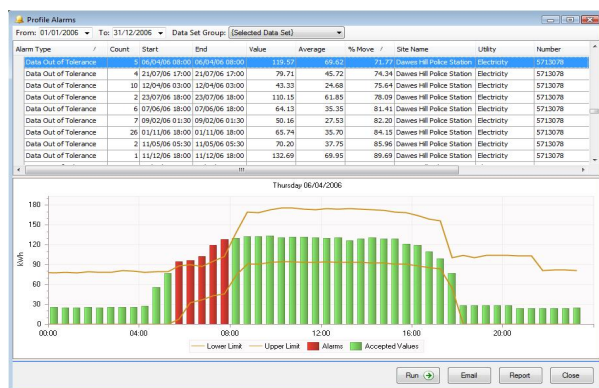

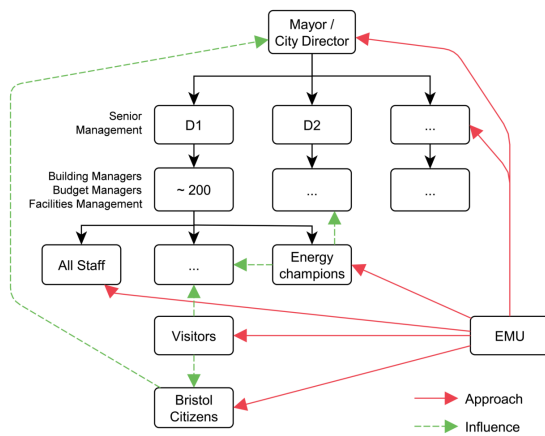*Figure 6. Snapshots of the EMS (left) and EDSS (right) systems in Bristol.*

Figure 7. Bristol: organisational structure and recruitment range.

port, Greenfinger Reports and the Energy Managers Reports, each type targeting different users.

The complete section on the recruitment strategy in Bristol can be found in the project deliverable 'D5.1 SmartSpaces Pilot Operation' available on the project website (see references).

Outlook

This paper provides a strategic recruitment framework that comprises key aspects that need to be considered in recruitment processes where different stakeholders are involved. The aspects in the form of strategy elements provide a non exhaustive list of measures, which should be carefully selected based on the specifics of the given situation. Comprehensive information such as lessons learned along with a guide for replication not just of the recruitment strategy, but also of the technical implementation, can be found on the project website smartspaces.eu.

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Acknowledgments