AVOIDING AND MITIGATING SAFETY RISKS IN URBAN ENVIRONMENTS

Deliverable D6.2

Consolidation of feedback through the engaged user communities

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1. Introduction

This deliverable presents the findings from the City.Risks piloting activities conducted in London, Waltham Forest in the United Kingdom, Sofia in Bulgaria and Rome in Italy. Participants were recruited in the three pilot sites to 'test' the City.Risks mobile phone application and asked to provide feedback on their user experiences as part of the application's iterative development. This deliverable consolidates the feedback we received from the various piloting activities (outlined in deliverable 6.1).

We present findings from (a) three surveys administered to participants at three time points in the long-term pilot trials (e.g. pre-trial, during-trial and post-trial), (b) feedback from pilot partners who were responsible for administering the piloting activities on-the-ground, and (c) focus groups conducted with participants in Rome and Sofia.

As discussed in greater detail in deliverable 6.1, the planned pilots varied by pilot site. As a result, the findings reported in this deliverable are not comparable but reflect the different ways in which the activities were carried out, the resources committed and the recruitment approach taken.

To obtain a better understanding of the piloting activities, this deliverable should be read in conjunction with deliverables 6.1 and 6.3. Deliverable 6.1 outlines the piloting methodology, target groups and planned trials. As mentioned above, here (6.2) we present findings from the pilots as reported by the engaged user communities, and deliverable 6.3 provides an overview of the piloting activities in the three sites, the methodology, the various challenges encountered and an overall process evaluation.

1.1. Feedback

As part of the iterative action research task, the City.Risks team were involved in obtaining the feedback from a) participants recruited to 'test' the City.Risks mobile phone app in Waltham Forest, Sofia and Rome, and b) pilot partners, administering the piloting activities on-the-ground. Various data collection tools were developed to capture the views of those using the technologies and those overseeing the piloting activities. These included:

1. Web-based surveys with pilot participants
2. Focus groups with pilot participants
3. Email interviews with pilot partners (from the City.Risks consortium)
4. Voluntary/informal feedback (i.e. via emails and social media platforms)

As discussed in deliverable 6.3 and below, overall, the recruitment of pilot participants across the three pilot sites was lower than expected. However, participants from all three pilot sites provided feedback via the surveys, which were administered at three points during the long-term pilot (pre-trial, during-trial and post-trial). The survey data were explored further during focus groups discussions in Sofia and Rome. Recruitment difficulties meant that focus groups were not conducted in Waltham Forest (see deliverable 6.3). All pilot partners from Waltham Forest, Sofia and Rome provided feedback on how they viewed both the City.Risks technology and the piloting process via an email interview. Where voluntary/informal feedback was provided, this has also been consolidated in this document.

1.2. Deliverable outline

The next section looks at the recruitment of pilot participants across the three sites, both the recruitment process and the challenges encountered. This is followed by analysis of the survey data. The qualitative feedback received from pilot participants via focus groups and consortium partners is amalgamated in the final data section. The deliverable concludes with a discussion section, which explores what lessons have been learned through the piloting activities and how these can provide a springboard for future work in the field.

2. Recruitment of pilot participants

2.1. The recruitment process

In this section we provide a brief overview of the pilot participant recruitment process in the three sites. A fuller discussion of the planned piloting activities and recruitment process is provided in deliverables 6.1 and 6.3.

Pilot partners were required in each site to recruit participants (n=100) to take part in 'testing' the City.Risks mobile phone application as part of the long-term pilots which were scheduled to last one month. After downloading the App onto their personal Android phones, participants were encouraged to 'play around' with the different functions and services offered and to use it to report incidents that occurred in their everyday lives. It was acknowledged that 'real' incidents may not occur during this period but nonetheless, were asked to use the function and to upload incident reports via the App, adopting a broader definition of localised 'incidents' (i.e. litter, burst water mains, road traffic problems). Thereafter, participants were asked to provide feedback on their experiences of using the App via three web-based surveys - pre-trial, during-trial and post-trial. The offer of incentives was at the discretion of pilot partners. In Waltham Forest, if participants completed all three surveys, they were offered a High Street shop voucher of their choice for the value of £50. In Sofia and Rome the offer of incentives was not considered necessary to facilitate recruitment. However, in Rome, a gift (a gadget) was given out to all those who attended the final meeting and focus group in April 2018.

2.2. Recruitment efforts in the pilot sites

Pilot partners were engaged in a range of recruitment activities in advance of the scheduled long-term trials (see deliverable 6.3 for further details). Across the three sites this involved the dissemination of recruitment material (e.g. flyers) via host partner websites, social media platforms such as Twitter and Facebook and internal and external emails.

In Rome, an 'information event' was held, which provided an overview of the City.Risks app, platforms and wider project. This event helped to explain what participation in the pilot would entail and in the partner's view was useful at facilitating the recruitment of pilot participants.

2.3. Feedback via Focus Group

The focus groups were intended to follow on from the long-term pilot trials in the three pilot cities. These discussions were aimed at eliciting qualitative insights into the experiences and views of participants who used the City.Risk app during the trial period. Whilst the three surveys (pre, during and post-app use) provided 'live' snapshots of user experiences and a feedback mechanism throughout the trials, it was intended that the focus groups in the post-trial phase would allow users to retrospectively and interactively discuss their experiences with other City.Risks app users.

Focus groups are participant-led discussions, facilitated by a loose set of questions, themes or probes. These provide a loose structure to the group discussion (and ensure uniformity of topic across groups/sites). The focus group participants themselves steer how and where that conversation goes.

Essentially, focus groups look at two things:

1) Content - researchers can explore *what* is being discussed (i.e. what participants say about their use of the App).

2) Interaction – researchers can explore *how* it is being discussed, in terms of group dynamics (i.e. is there consensus in the group or is one person monopolising the discussion and influencing/silencing other views).

Focus groups are a particularly useful way to discuss sensitive topics (e.g. the fear of crime) in a group context. It can produce a forum to share experiences; seek support and challenge views.

On a practical note, each focus group was to be made up of no more than 8 participants and overseen by 1-2 facilitators. The role of the facilitator is to guide the discussion. The focus groups were to be digitally recorded and transcribed. In Rome and Sofia focus groups transcripts would be translated into English.

Key focus group themes/questions:

- User experiences using the app (i.e. user friendliness; access to help/support from the City.Risks team when needed)
- Design features (i.e. how it appeared; aesthetics)
- Favourable/ less favourable aspects of the app
- Aspects of the app that lessened/ added to user fears of crime/perceptions of safety
- Any unintended consequences of app use
- Any particular fears about crime/ safety that are not addressed by the app
- How would users improve the existing app (i.e. features they would add/ remove/ change?)
- Would users recommend the app to friends/family

2.3.1. Recruitment difficulties

The efforts and difficulties of recruiting participants to take part in piloting have been documented in detail in 6.3. The realities of piloting the technologies diverged from the proposed piloting activities outlined in deliverable 6.1. However, we were able to obtain some insight from partners who were involved in the recruitment of pilot participants when they responded via email to a list of questions we posed about this process.

Whilst recruitment of pilot participants was an issue across all pilot sites, the retention of participants was flagged as a concern in both Rome and Waltham Forest. In both sites, partners described the time lapse of around a month between initial recruitment of participants and the commencement of piloting. Retaining the interest of participants over this time period was reported to be particularly problematic and the possible cause of drop-out among those who had expressed interest in the App.

Pilot partners were asked how the recruitment and piloting process could have been improved. One of the challenges to recruitment was being able to translate the technical features of the App in a non-technical manner. To address this challenge, efforts were made by the City.Risks team to explain the technicalities of the App and its functioning to pilot partners and the wider City.Risks consortium. For example, this included the production of some instructional material by the technical partners and revisions made in response to comments received by an external stakeholder who perceived the language on our recruitment flyer to be 'too academic'. In Sofia, it was thought 'live demonstrations and online webinars' which explained what the purpose of the App was and how to use it would have been helpful.

2.3.2. Citizen consultation in Waltham Forest

Given a number of unsuccessful attempts to recruit the participants to take part in the piloting activities in Waltham Forest (see deliverable 6.3), we decided to host an informal Citizen Consultation morning at Waltham Forest. The idea was to invite participants to use or 'play-around' with the City.Risks mobile app and to offer feedback in a quasi-focus group setting.

In total 36 emails were sent out to names provided by our pilot partner in Waltham Forest. Names on the list included mainly employees of the Council and other stakeholders with an interest in crime and community safety. Most, if not all individuals contacted had been previously approached and/or recruited to take part in the piloting activities and/or had downloaded and used the City.Risks app, or had heard about the project through the various information materials that had been disseminated during the life of the pilot. Of the 36 emails sent out, one-quarter (9) responded – six declined the invitation, one email bounced-back and one participant was willing to attend the proposed consultation.

However, several more provided feedback by email/phone about their brief experiences with the App.

It was largely felt that the App was not so intuitive and required some time and information to use it. With an existing and successful Neighbourhood Watch Scheme in operation, one respondent was not keen on the negative connotations of ‘risk’ and in fact, felt that the App went against the need to foster positive community networks.

3. The surveys

3.1. Introduction

To elicit the views and experiences of those using the City.Risks application in the three pilot sites, three surveys[1] were developed and administered pre-pilot, during-pilot and post-pilot.

- **Survey 1 (Pre-pilot)**: to obtain information on participant demographics, feelings of safety, fear of crime, previous victimisation, and use of smart phones and social media.
- **Survey 2 (During-pilot)**: to obtain participant views of the App and its functions at the mid-point of the trial.
- **Survey 3 (Post-pilot):** to obtain reflections and suggested improvements.

Together, the surveys aimed to obtain an insight into how pilot participants used different functions and services offered in the City.Risks app, what they liked and disliked, whether they faced any technical issues whilst using the App and whether they could provide any suggestions on how to build on or improve any of the App's existing functions.

The difficulties with recruitment outlined above are reflected in the low number of survey responses we received.

3.2. Survey dissemination and data collection

The three surveys were developed using LimeSurvey[2] - an online platform. The three sites had localised adaptations of the City.Risks App to incorporate local differences (e.g. functions reliant on geographical maps of the area). The surveys were also made available in local languages Italian, Bulgarian and English.

With the exception of Rome, participants completed all three surveys online. Participants in Waltham Forest and Sofia were sent in-app notifications, prompting them to fill out the online surveys at three points during the long-term trials and this was followed by a reminder to fill in the survey approximately a week later. However, in Rome, data collection methods varied. Participants completed Survey 1 on paper during the short-term pilots. Survey responses were then translated into English and transferred onto LimeSurvey for analysis by a member of the City.Risks consortium. For Surveys 2 and 3, participants were contacted over-the-phone and, with their consent, were emailed an editable PDF of the survey which they filled in and returned via email. These were then, inputted onto

[1] See deliverable 6.3
[2] https://www.limesurvey.org/

LimeSurvey. In Rome, an earlier version of the survey was used and as a result, the questions asked were slightly different to those asked in Waltham Forest and Rome.

Consequently, a combination of the overall low response rates and different data collection tools across the three pilot sites, direct comparisons of the survey results are not possible. The analysis presented here combines the results from the three surveys and from across the three pilot sites and where differences in questions arise, these are highlighted in the analysis that follows.

3.3. Data Processing

Given the low response rate to all three surveys, we were only able to present descriptive statistics or frequencies (for categorical variables). Further, it was decided to combine the Likert scale[3] responses, reporting instead positive, neutral and negative values. As a result, with such a small sample of participants, it is not possible to draw any general conclusions. With these caveats in mind, the survey results presented here should be interpreted with caution. The analysis was conducted using SPSS (IBM SPSS Statistics 24, IBM, New York, US).

Missing data and exclusions

Participants who did not fully complete Survey 1 were excluded from analysis. Surveys 2 and 3 began with a question about whether the participant had used the City.Risks app or not during the pilot trial. Participants who answered that they had not used the App were excluded from the data set as they would be unable to answer subsequent questions about their usage. Participants who exited the survey without completing it were also excluded; most of these participants exited the survey immediately while some filled in one or two questions and then exited. One participant was excluded from Survey 3 for being part of the City.Risks team. All remaining participants had completed all survey questions.

3.4. Survey 1 (Pre-pilot)

3.4.1. The sample

As described above, Survey 1 was completed on paper, translated into English and inputted onto LimeSurvey during the short-term trial in Rome. The surveys were completed electronically in Sofia and Waltham Forest. This pre-pilot survey was designed to obtain information about participant demographics, their feelings of safety, fear of crime and previous victimisation, and use of smart phones and social media. In total, 59 participants across the three pilot sites started Survey 1 and half (29) completed it. Based on data

[3] E.g. “extremely, very, moderately, slightly and not at all”.

referring to the start language of the survey, of the 29 who completed Survey 1, 17 participants were from Rome, eight from Bulgaria and four from the UK. The analysis presented here is based on the surveys completed by 29 participants.

3.4.2. Demographics

Twenty-two participants were male and seven were female. Participants ranged from 24 to 80 years of age. The majority (26) had lived in Waltham Forest, Sofia and Rome for 10 years or longer and almost all (23) also worked in the area for more than 10 years.

3.4.3. Feelings of safety, fear of crime and victimisation

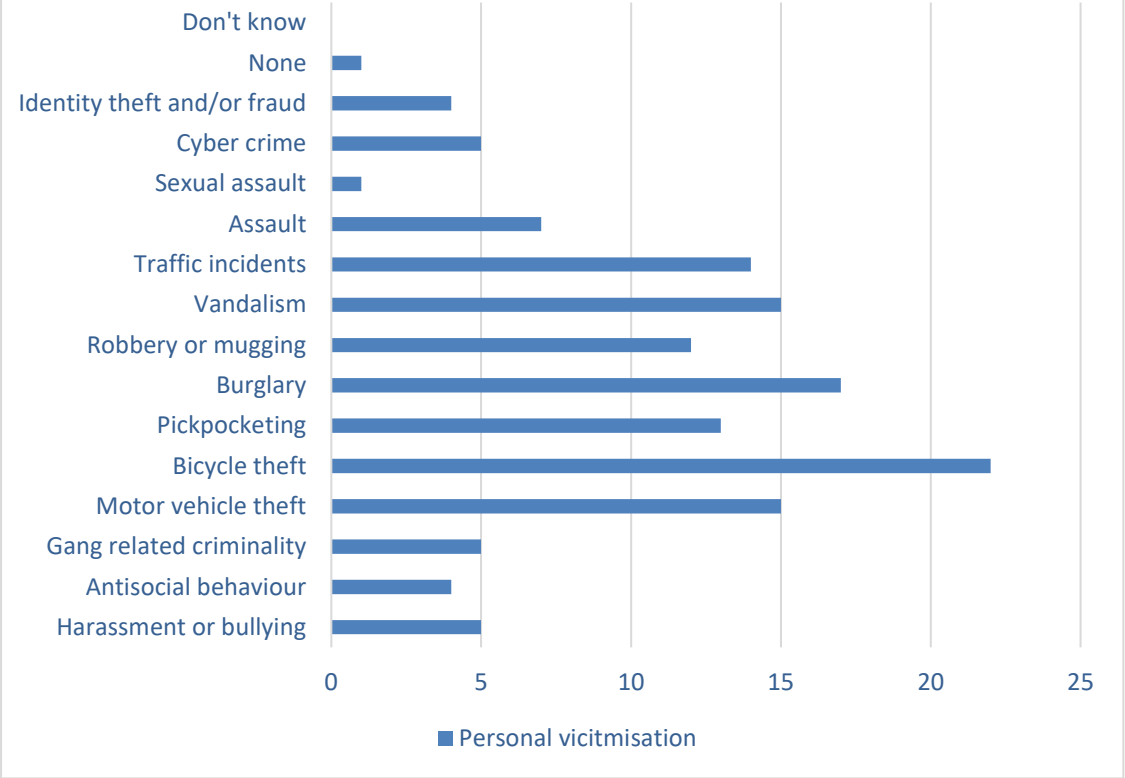
The questions in this section were aimed at assessing how safe participants felt in their local areas and their fear of crime and victimisation.

Participants were asked how safe they felt walking around in their local area during the day and after dark. The majority of the participants (25) felt 'very' to 'quite' safe during the day, whilst the remainder reported feeling 'neither safe nor unsafe' (1) and 'quite' to 'very' unsafe (3). In contrast, fewer (14) reported feeling 'very' to 'quite safe' walking around in their local area after dark, with a higher proportion (11) reporting 'neither safe nor unsafe' and a similar number (4) feeling 'quite' to 'very' unsafe to walk around after dark as they did in the day. In addition, participants were asked if they avoided any areas, streets or places in their neighbourhood due to fear of crime. Over half (15) reported that they 'sometimes' avoided areas, streets and places in their neighbourhood due to the fear of crime, whilst less (10) said that they 'never' did and only a small proportion (4) stated they did so 'often'.

We asked participants how worried they were in general about being a victim of crime. Almost half (15) reported being worried about being a victim whilst the other half (14) were not. Only a minority (5) reported that their quality of life was 'very' to 'extremely' affected by crime, with the majority, 'slightly' to 'not at all' (14) or 'moderately' (10) affected.

Participants were asked what crimes they were particularly worried about becoming a victim of in their local area. They were most concerned about bicycle theft, burglary, vandalism, motor vehicle theft and traffic incidents. Two respondents also commented on the fear of being a victim of moped/acid attack and being harassed by drunk people.

Figure 3.1: Fear of victimisation by crime type



Participants were also asked to state whether they had been a victim of any crime during the last 12 months. Less than half (12) reported that they had been a victim of one or more of the crimes listed above in the last 12 months. Bicycle theft (6) was most common, followed by identity theft and/or fraud (3), traffic incidents (2), vandalism (2) and robbery or mugging (2). A small proportion (3) of the participants had been a victim to more than one crime in the past 12 months.

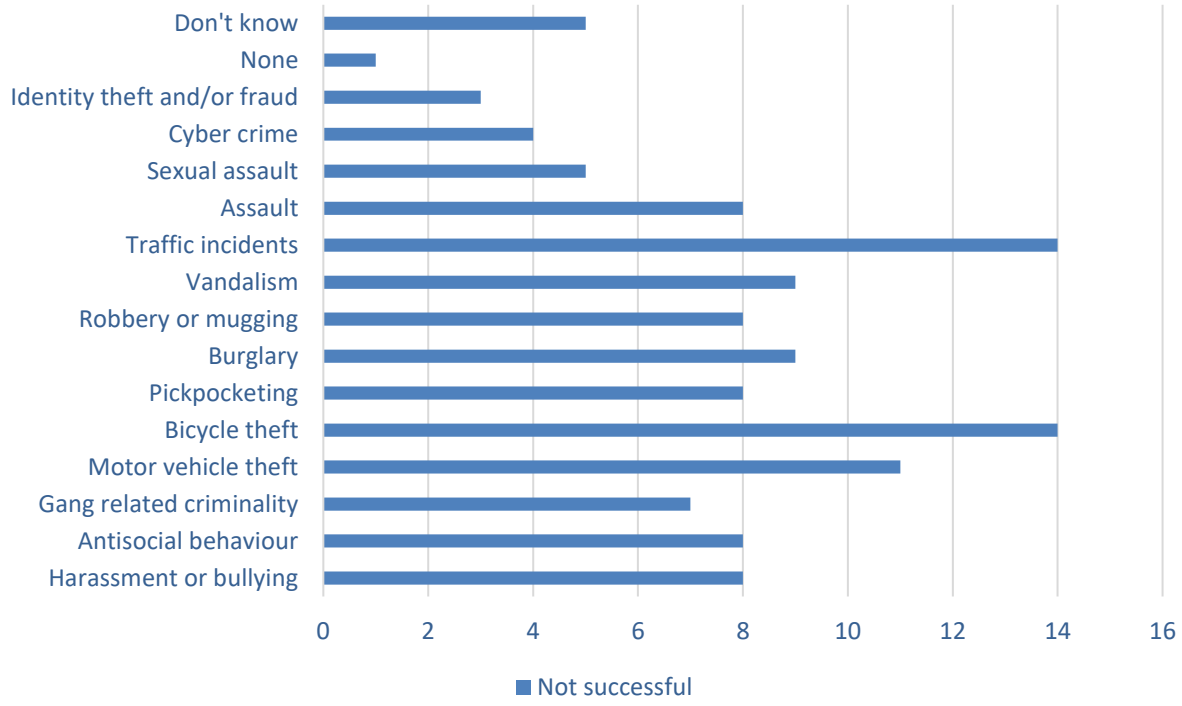
The majority (23) reported that 'sometimes' they changed their behaviour (such as taking another route or avoiding going out after dark) because they were concerned about being a victim of crime, whilst four participants 'never' did and only two stated that they 'often' changed their behaviour.

3.4.4. Responses to crime and other issues

We asked participants if there were particular crime types/issues which had an impact on local areas and which were not dealt with successfully by responsible authorities. Figure 3.2 below highlights areas of concern in the three pilot sites. Traffic incidents, bicycle theft, motor vehicle theft, burglary and vandalism were among the key issues that were considered to be dealt with ineffectively by the authorities in their areas. Participants also

raised several other issues that authorities were not dealing with successfully, including acid attacks and gun crime, drug dealing, urban decay, and illegal parking and traffic problems.

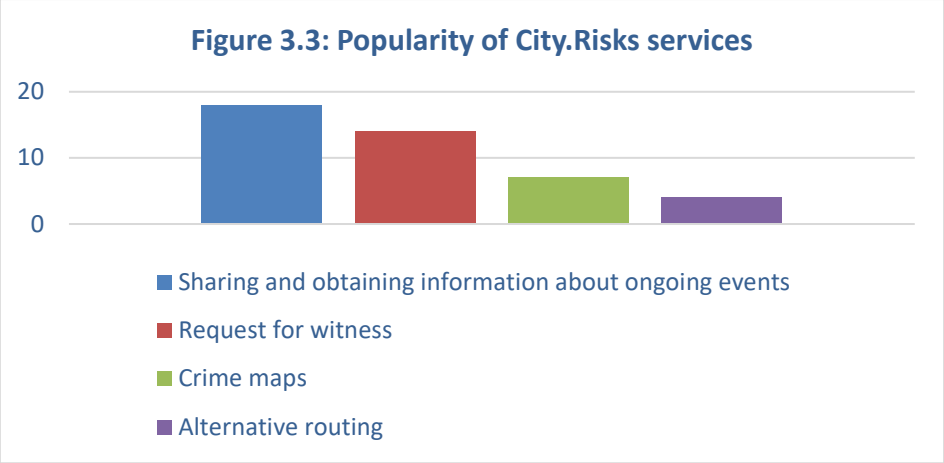
Figure 3.2: Crime/problem not dealt with successfully by the responsible authorities



3.4.5. Use of smart phones

We were interested in how pilot participants were using mobile phones, applications and social media in order to provide a baseline from which we could interpret our findings and understand their interaction with the City.Risks app. It was reported that the majority (20) of participants used social media several times per day. In contrast, only a small proportion (9) reported using applications or tools related to information about safety every week, almost every day or several times a day. The majority (20) of participants used such applications or tools less than once a month, 1-3 times a month or not at all.

In order to get user feedback about the City.Risks concept and its features, participants were asked which functions or service offered in the App they thought could be either helpful or increase their feelings of safety. The results are presented in Figure 3.3 below.



Participants also commented that the City.Risks app could be useful to monitor, retrieve and prosecute bike theft and "provide information [about incidents] to the authorities".

3.5. Summary of Survey 1

Survey 1 of the long-term pilots was completed by 29 participants, 22 male and seven female. The majority had lived and worked in the respective pilot areas of Waltham Forest, Sofia and Rome for more than 10 years. Half of the participants in the sample were fairly to very worried about being a victim of a crime, but only a handful reported that fear of crime affected their quality of life to a great extent. During the day almost everyone felt safe in their neighbourhood, this figure dropped to around half of the participants after dark. Concerning personal victimisation, the participants were most concerned about bicycle theft, burglary and vandalism, motor vehicle theft and traffic incidents. A few participants also commented on the fear of being a victim of an acid attack, which is likely to reflect concern about acid attacks that had occurred in London in autumn 2017. A little less than half of the participants reported that they had been a victim of one or more crimes in the last 12 months, where bicycle theft was most common. A majority of the respondents reported that they sometimes changed their behaviour to avoid becoming a victim of a crime.

A large proportion of participants reported using social media several times a day but only a third used applications specifically related to safety, and the remainder rarely used such applications at all. This may in part explain the attrition rates reported below in relation to Surveys 2 and 3. Along with technical issues with the City.Risks app, which would have influenced whether participants remained engaged in the piloting activities, it could be argued, that in addition, the necessary appetite for using safety applications was limited amongst those recruited to 'test' the City.Risks technologies.

The respondents were also asked to rank which of the City.Risks app functions and services they thought would either be helpful or increase their feelings of safety. The most popular function or service was sharing and obtaining information about ongoing events, followed by sending and responding to a request for witnesses, crime maps of your city and alternative routing. Participants also described the potential of the App to prosecute certain crimes, in particular its usefulness for prosecuting bike theft. However, the piloting activities have highlighted the importance of having the relevant authorities to endorse the App and oversee the City.Risks Operation Centre when incidents are reported by users. In their absence, the potential of the App to heighten perceptions of safety might be limited and could in turn add to the feeling that crimes/certain crimes are not being attended to successfully in the area. This was a critique raised by the Chair of the Safer Neighbourhood Board in Waltham Forest and a concerned Facebook user who were sceptical about having a reporting app which does not have the relevant authorities on board (see deliverable 6.3). Further, it echoes one of the conclusions from the analysis presented in Deliverable 2.2[4] – "In developing a technological solution, the police and other criminal justice agencies need to be both central to its development but also, its operation".

3.6. Survey 2 (During-pilot)

3.6.1. The sample

Survey 2 was sent out in PDF format via e-mail in Rome, and electronically in Sofia and Waltham Forest. The survey was designed to gather user experiences of using the City.Risks app and its specific functions and services at the mid-point of the long-term trial. The survey aimed to gather insights into technical issues that may have been encountered by participants and their likes and dislikes of the App's principle features. This feedback would then inform the iterative development of the City.Risks app as part of the wider 'action research' process.

In total, 13 participants opened Survey 2 electronically in Sofia and Waltham Forest, with five participants exiting immediately. Of the remaining eight participants, only six answered 'yes' to Question 1 - which asks whether the participant has used the City.Risks App. However, four participants (two users; two non-users of the App) exited the survey after filling in the first question. As a result, in total, four participants completed the online surveys in Sofia and Waltham Forest.

In Rome, eight participants were contacted via e-mail to complete Survey 2, of whom six reported having used the App. The two participants who were excluded from the analysis

[4] Deliverable 2.2 available at: http://project.cityrisks.eu/wp-content/uploads/deliverables/City.Risks_D2.2-Analysing-factors-influencing-the-fear-of-crime-from-the-citizens-perspective.pdf

because they had not used the City.Risks mobile phone application, stated that they had previously visited the project's website.

Including the four participants who completed the online survey and the six who completed Survey 2 via e-mail, the analysis presented here is based on a total of 10 participants from Rome, Sofia and Waltham Forest.

3.6.2. Overall experience, likability and usefulness

Participants were asked to rate their overall experience of using the City.Risks app. The majority (6) rated their overall experience as 'good' to 'very good', whilst two participants rated it as 'neither poor, nor good' and two 'poor' to 'very poor'. Overall, participants reported that the application worked well and that it was easy to use, with the ability to see Crime Hotspots[5] as one of the favoured features of the App. However, one participant commented that the App did not work properly, failing to show or upload reports.

Having used the App for over a week, pilot participants were asked to rank the functions and services they found the most useful. Sharing and obtaining information about ongoing events (7) was ranked highly, followed by a request for witnesses (6), crime maps (4) and alternative routing (1).

We were also interested in which functions and services of the City.Risks app were most liked by participants. However, this question was not asked in Rome and therefore the responses only apply to the four participants from Sofia and Waltham Forest. The usefulness and likeability of these functions and services of the App were quite similarly ranked. All four participants liked sharing and obtaining information about ongoing events, followed by crime maps (3), a request for witness (2) and alternative routing (1).

In the free-text boxes, participants also commented that they liked that the City.Risks app gave them access to instant information and that both the crime maps and sharing and obtaining information about ongoing events functions were helpful. Users from London also showed an interest in the alternative routing function of the App (this function was only available in London). One participant from Rome reported liking the retrieval of stolen bikes, a service that was demonstrated during the short-term pilot in Rome.

3.6.3. Technical issues with the App

Participants were asked if they had experienced any technical issues (e.g. lagging, aspects not working) whilst using the City.Risks app overall, or related to any specific functions or services offered in the App during the long-term pilot trial.

[5] Crime hotspots were in fact, not a feature of the City.Risks mobile phone application but available as part of the City.Risks online web portal. Given the number of features reliant on maps of the local area, participants may have mistaken this functionality with other similar ones offered in the App.

Of the 10 participants who completed Survey 2, three stated that all services worked properly, and of those, one reported that no malfunctions were experienced. This is in contrast to another participant who reported that none of the functions and services offered in the App worked properly. Three participants experienced technical issues specifically with sharing and obtaining information about ongoing events, and malfunctions with request for witness functions of the App. One participant commented that he/she could not see any report and could not publish anything either, while another elaborated that the service request for witness was slow to respond in some instances.

One participant also experienced problems with alternative routing and its functionality, commenting that the service did not work. Another participant experienced issues with registration of the BLE tag not working properly but this was for a particular brand model during the simulations as part of the short-term pilots in Rome. Others reported being unable to deactivate notifications.

In order to assess the potential misuse of the services in the City.Risks app, participants were asked to state if they had experienced any inappropriate images, language use or fake reports. Three participants commented that they did not experience any issues of this kind, but two reported issues with fake reports and another with inappropriate posts by other App users. One participant commented that the App did not work at all and therefore was unable to provide feedback on any aspect of the App.

3.6.4. Perception of safety and suggested improvements

Participants were asked if the City.Risks app had increased their perceptions of safety. Half (5) stated that the App had not increased their perception of safety very much, whilst three participants reported an increase to some extent and two did not know.

They were also asked to provide comments on how the City.Risks app could be improved to encourage greater use. There was a general consensus amongst the participants that the App needed to “work better” and have a “better interface and user guide”. It was also suggested that the App should give alerts to major incidents in the local area and that it would be beneficial to integrate a push button from which users could contact the emergency services directly. One participant suggested that detection points/Bluetooth gateways should be placed at traffic lights (potentially with video cameras) and near public places like bus stops to have more sensing points to be able to track items via the BLE tag. Another suggestion aimed at widening citizen participation and adoption of the City.Risks app was to make it available on a wider variety of devices, for example compatible with older versions of Android phone, iphone, and the Windows phone. Given that the City.Risks concept is based on widening citizen participation, furthering its reach and coverage would be key to its future development. Reliance on a large community of users to ensure the App’s success was also mentioned in the focus group discussions.

Over half (6) of the participants who completed Survey 2 stated that they had also visited the City.Risks website. The City.Risks project outline and user guide is detailed on the website.

3.7. Summary of Survey 2

Survey 2 was completed by 10 participants; six were contacted by e-mail and four completed the survey online. Sharing and obtaining information about ongoing events was considered to be the most useful function of the City.Risks app by the majority of participants and was also ranked as the most liked by the participants in Sofia and Waltham Forest

Technical issues were reported by most users during the trial. In particular, these issues related to the alternative routing and request for witness functions of the App. Some noted fake reports and inappropriate posts but there is no independent means of verifying such reports. Overall, for those who completed Survey 2, the App did not increase their perceptions of safety. Participants were in agreement that the App needed to work better and have an improved interface and user guide. It was also suggested that the App (either through citizens themselves or the Operation Centre) should notify the user about major alerts in their local area and that detection points should be placed near traffic lights and other public places. It was also noted that in order for the App to be a success it needed to work on a range of smart phone devices. This would help to ensure an adequate number of users to allow the functions of the App to work well. Despite some negative feedback (mainly related to technical difficulties experienced by pilot participants), six out of 10 participants rated their overall experience of the City.Risks app as 'good' to 'very good'.

3.8. Survey 3 (Post-pilot)

3.8.1. The sample

Survey 3 was sent out in an editable PDF format[6] via e-mail in Rome and completed online by participants in Sofia and Waltham Forest.

In total, 10 participants opened Survey 3. Of the 10, three immediately exited the survey. Like Survey 2, the first question was about whether the pilot participant had used the City.Risks app or not. A further three participants answered 'no' and were therefore excluded from the analysis. In addition, one participant was excluded for being part of the City.Risks team. This resulted in three participants completing survey 3 online; two

participants from Bulgaria and one from the UK. In Rome, seven participants were contacted via e-mail, of which six stated that they had used the App. The one who had not used the City.Risks app stated that their Android phone was too old and therefore not compatible.

The analysis presented here is based on a total of nine participants from the three pilot sites.

3.8.2. Overall experience, likability and usefulness

In this final survey, we asked participants to rate their overall experience of using the App, having had the app installed on their mobile phones for around one month.

Four participants rated the overall experience of using the City.Risks app as 'good' to 'very good', two rated it as 'neither poor, nor good' and one participant rated it as 'poor' to 'very poor'.

Two participants reported that they had never used any of the functions and one commented that this was because a risky or problematic situation had not been encountered during the trial.

The following questions about usefulness and likability were not asked in Rome and therefore the subsequent responses are based on three pilot participants in Waltham Forest and Sofia.

Participants were then asked to choose which Apps services they had found useful. Alternative routing, crime maps and sharing and obtaining information about ongoing events were considered to be the most useful by two participants, while one stated preference for the request a witness the most useful. The responses remained the same when asked which specific functions and services of the App they liked. Participants were asked to elaborate on what they had liked or disliked about the App's functions. Comments included, the ease of clicking on the App, the crime hotspots function, and the ability to respond to an incident.

3.8.3. Perceptions of safety

In this final survey, participants from all three pilot sites were asked to state whether the City.Risks app had increased their perception of safety during the trial period. The majority (5) responded 'not at all' to 'not very much', whilst three participants reported 'to some extent' and one participant 'did not know'.

3.8.4. Methodological note

By Survey 3 we encountered numerous analytical difficulties and at best, in the following sections we present general points and comments gleaned from the survey responses but read as a whole, the data is littered with contradictions. For example, participants who answered 'yes' to the opening question which asks whether they have used the App then later state that they have not used the App. There are various reasons for this:

- Language differences mean that the questions may have been misinterpreted or misunderstood by participants.
- Given the number of contradictory answers, we can infer that at times, participants are actually responding to the questions conceptually and not based on their 'testing' of the App itself or have mistaken functions/services of the App with others that rely on similar features.
- Differences in administering the surveys, paper-based, PDFs via e-mail, online – which may invite errors.
- As mentioned above, an earlier version of the survey was used in Rome. As a result, there are questions that appeared in Sofia and Waltham Forest that were not asked in Rome.

3.8.5. Technical issues with the App

Pilot participants were asked to report if they had experienced any technical difficulties during the pilot trial. Two participants stated that all functions worked properly and one commented that she/he had experienced no problems with the services she/he had used. Although, three participants reported problems with sharing and obtaining information of ongoing events and one commented that none of the reports but one had been loaded and another that there was no opportunity to report an event.

Three participants reported problems with request for witness, while one reported issues with alternative routing; three participants said that they had not used the app.

Two participants reported experiencing fake reports of incidents while three had not had any such difficulties.

3.8.6. Likeability and perceptions of safety related to specific app functions

We asked pilot participants about their views on specific functions and services of the City.Risks app after using it for a month. In particular, we were interested in whether these specific functions had enhanced their feelings of safety.

In the analysis that follows, pilot participants in Rome only provided responses to two specific App functions: 1) sharing and obtaining information about ongoing events and 2) request for witness. Questions relating to other functions and services were not asked in the early draft of the survey that was sent out in Rome. Participant responses from Sofia and Waltham Forest are presented in relation to all app functions outlined below.

3.8.7. Alternative Routing

The alternative routing function did not work properly throughout the long-term pilot trial, one participant stated that they liked using it to 'some extent' but it had not increased feelings of safety to a great extent. Two participants said that they had not used it but one thought it would be something she/he would use in the future and that "It would help immensely though and make me feel safer".

3.8.8. Crime Maps

Of the three participants from Sofia and Waltham Forest, one reported not liking the crime maps at all; another liked the service to a large extent and one had not used it. The service did not increase feelings of safety according to one participant, while another reported increased feelings of safety to a large extent The participant who had experienced increased feelings of safety provided the following comments "It highlighted the areas where there was an incident and stating what it was is very useful" and "Knowing what the crime is makes me more aware of my surroundings and where to avoid". We can infer that a) the participant who had positive feedback on this aspect of the App may have confused it with the name of another similar function of the App and/or b) may be responding the question hypothetically, i.e. if this function was developed and up and running would I like it?

3.8.9. Sharing and obtaining information about ongoing events

Only one of nine pilot participants stated that they liked sharing and obtaining information about ongoing events to 'a large extent'. Four liked the function 'to some extent', one participant 'disliked' it, two had not used this function and one participant did not provide a response. One participant reported that the service had increased feelings of safety to 'a large extent' and five participants reported that the function of the App had increased their feelings of safety 'to some extent', while two participants reported 'not very much' and one reported 'not at all'.

One participant commented "It was useful...although someone else may not have the app installed, the information I receive could be passed on to them via another app and the benefits of city risk could be shared". The participant continued explaining that the

City.Risks app had increased feelings of safety as "having up to date information [is] beneficial to know exactly when the area is safe again".

3.8.10. Request for witness

The request a witness function of the App was liked 'to a large extent' by two participants and three said that they liked it 'to some extent'. One participant said they 'disliked' this function, whilst three had not used it. Two participants reported increased feelings of safety to 'a large extent', while one reported 'to some extent'. On the other hand, three participants reported that the service had not increased feelings of safety to a great extent, one stated 'not at all' and the other had not used it. The participants who had not used the request for witness function of the City.Risks app stated "I would find it useful though".

3.8.11. Feelings of safety and suggested improvements

Participants were asked if the City.Risks app had increased their feelings of safety (this question was not asked in Rome) or had made them inadvertently more concerned about crime in their city. Regarding increased feelings of safety, the participants answered 'not at all', 'not very much' and 'to some extent' respectively. The latter elaborated "It [the App] is easy to use to find out the crime hotspots, which areas to avoid and to know that I can be contacted to assist where necessary".

However, upon being asked if the City.Risks app had made them more concerned about crime in their city, one participant reported to a 'large extent' and five participants were concerned 'to some extent' while three participants stated 'not very much'. They were also asked if the City.Risks app had made them more concerned about crime in any specific neighbourhood in their city, and one reported to a 'large extent', three 'to some extent', two 'not very much' and two 'not at all'.[7] One participant also stated that the City.Risks app had to some extent made the person more concerned about crime, explaining that "It has made me be more aware of potential risks when I am out"; an unintended consequence of developing an app designed to alert you to the potential risks in a city.

In the final part of the survey participants were asked for their views on how the City.Risks app could be improved. Suggested improvements included being able to:

- Recieve instant alerts when a crime is reported in the area
- Report incidents for areas other than your current GPS location
- Upload more than one photo as part of the incident report

[7] One person did not answer this question.

Another participant thought the City.Risks app would be most useful for learning about specified localised incidents and crime types, such as, burglaries and stolen vehicles and much less as a mechanism for raising awareness about major crimes such as murders and violence.

Four participants stated that they would use the app after the pilot trial had ended, whereas four said 'maybe' and one said that they would not.

3.9. Summary of Survey 3

Survey 3 was completed by nine participants; six were contacted by e-mail and three completed the survey online. As noted above not all questions were answered in Rome as an earlier version of the survey was used. This meant that some questions were answered by only three participants from the UK and Bulgaria. Numerous analytical difficulties were encountered. One concern, for example, was contradictory responses as elaborated on in the methodological note. We opted to analyse these responses as though participants were responding to the concept of a specific function of the app rather than their actual 'testing' of that function. These results then provide feedback on the on the City.Risks concept.

Sharing and obtaining information about ongoing events, alternative routing and crime maps were considered most useful and best liked by two of the participants while one preferred request for witness.[8]

Participants reported experiencing technical difficulties with all of the available functions in the app, most participants reporting difficulties with request for witness and sharing and obtaining information about ongoing events. One participant stated that only one of several attempted reports had been loaded and another that none of the reports had been loaded. Another participant reported that none of the functions worked properly, whilst two stated that all functions worked correctly. There were some experiences of fake reports, while most people had not encountered any inconveniences.

There was no consensus among the participants about which functions of the App they liked, much like the results from Survey 2, the majority of the participants reported that the App had not increased their perception of safety during the pilot trials. Thereto, among the majority, the feelings of safety had not increased either.[9] In contrast to the desired outcomes with developing the City.Risks app, participants reported being more concerned about crime than before using the App. This applied both to the city in general and specific neighbourhoods. One participant also explained that this was because the App had made him/her more aware of potential risks when being outdoors.

[8] These questions were not asked in Rome.
[9] This question was not asked in Rome.

Participants suggested that the App could be improved by giving instant alerts, improving basic functionalities and making it possible to make a report in a location other than that indicated by the GPS.

In the final survey, four participants rated the overall experience of using the City.Risks app as 'good' to 'very good' compared to six out of 10 rating it as such in Survey 2. Four participants said they would use the App after the pilot had ended.

4. Feedback from pilot participants

This section consolidates the feedback obtained from a) pilot partners and b) focus group participants. Along with those recruited to take part in the long-term piloting activities, it was also important to gather the perspectives of those conducting the piloting on-the-ground and to take on board any informal feedback they may have received during the course of these activities, not captured with the use of formal research tools (e.g. the surveys or focus groups). These findings are presented thematically below. Whilst the survey data provides some insight into how users experienced the City.Risks app at three time points in the long-term pilot, the feedback in this section, adds further depth to these data.

4.1. Feedback from pilot site-partners

We asked pilot site partners - those administering the proposed short- and long-term trials - to provide feedback on their piloting activities. In particular, we were interested in the how participants were recruited for the trials, their delivery and experiences of 'testing' the City.Risks technologies. A detailed overview of these activities is outlined in 6.3. We also wanted to collate the feedback that pilot partners had received during the trials, from participants and stakeholders through via emails, social media and informal chats.

Pilot site partners were asked to provide feedback on how the City.Risks app and its functions were received by pilot participants and how they found the piloting process. The findings reported here are based on written responses we received via email from the three pilot partners in Waltham Forest, Sofia and Rome.

4.2. Focus groups in Sofia and Rome

Nine participants (four female, five male participants; this includes three members of the City.Risks team) took part in a focus group in Sofia on 22nd February 2018. The six pilot participants had earlier that day taken part in the short-term pilot trial in the shopping mall. Pseudonyms have been used to anonymise the identities of those who took part in the research.

In the Sofia focus group, participants were regular app users and had several installed on their phones, including biking, parking, trade, airline, booking, banking, navigation and weather applications.

We asked focus group participants in Sofia why they decided to take part in the piloting of the City Risks app. One participant stated it was down to his curiosity about the concept of

this application and the project itself. Others were intrigued about particular features of the App, for example Male 2 was interested in what could be tracked and followed by the tracking capability of the App. Female 1 stated that in her role, she is responsible for retail clients, in particular attracting new customers, and was keen to show them 'something new'.

Eight participants (all male; including two members of the City.Risks team) took part in the focus group in Rome on 14th April 2018. Participants had actively taken part in the preceding piloting activities.

4.3. Expectations of the App

We asked pilot participants what their expectations were of the App and whether these expectations had been met during the piloting activities.

In Waltham Forest *a multi-functional urban safety app* which included specific functions such a theft sensor, safe routing and call for witness was expected. However, as the theft detection Use Case was not piloted in at this site, pilot participants felt that a key, interactive component of the App was missing.

Similarly, in Rome, expectations about the App, which were not met, related to specific functions (the theft of a bike, its tracking and retrieval). Being unable to upload incident reports onto the App was thought to diminish the participatory aspect of the pilot and purpose of the App.

In contrast, in Sofia expectations of the App were largely met:

> *"Our expectations were mainly related to be an application that may help people manage risky situations within the city/ living place and be able to communicate with each other. In general, the concept and application corresponded with our expectations."* (Pilot partner in Sofia)

4.4. Design features of the App

Pilot site partners provided their views on the design and aesthetic features of the App.

> *"The App has an attractive and clear design"* (Pilot partner in Rome)

> *"Map and interface looked OK and were fairly intuitive"* (Pilot partner in Waltham Forest)

> *"Main features are well organised. Some difficulties occurred because of the lack of necessary help and guides. The overall design is good and well-balanced"* (Pilot partner in Sofia)

4.5. Challenges with the App

Numerous technical and non-technical challenges with the App were reported by pilot participants. In Rome, pilot partners reported that participants welcomed the idea of having an App which allowed users to post and share information about local incidents. However, across all three pilot sites there was general consensus that the App could be more user-friendly.

4.5.1. Downloading the App

Difficulties with downloading the App onto mobile phones were shared across the three pilot sites. In Sofia, our pilot partner stated that the App crashed 'a lot'. This was also echoed by one focus group participant in Sofia who explained that their phone crashed whilst installing the App. In Waltham Forest, our pilot partner stated that initially downloading the App was 'extremely easy'. However, explaining how the App worked was more of a challenge. Similarly, in Sofia, the process was viewed as 'quite complicated'. Unlike other existing applications, where users are able to intuitively download the App via Google Play, for example, it was felt that City.Risk app users needed more guidance and instructions for them to do so successfully.

With different versions of the App in circulation[10] combined with use on different Android phones, there were reported difficulties in downloading the App in Rome and in some cases, it was impossible.

> "*My android phone had no software updates, so it was not possible to download the app"* (Focus group participant in Rome, Citizen 2)
>
> *"It is easy when somebody explains it to you...If there is nobody to explain what to do first you are lost, you have to try all options in order to know what to do"* (Focus group participant in Sofia, Male 1)
>
> "*The interface is not that user friendly*" (Focus group participant in Sofia, Male 3)

Another criticism about the App, fed back to pilot partners by pilot participants in all three sites, was the absence of adequate channels to ask for help or support from within the App. In Sofia, it was suggested that more 'help' and 'user chat' functions needed to be introduced. In Rome, a focus group participant (Citizen 3) questioned why the City.Risks support function only existed on the City.Risks online web portal and was not an integrated feature of the App.

[10] As part of the action research process, the City.Risks app was continuously being adapted and updated which meant that rather than uninstalling the app with every update, users were given the option to upgrade the App to newer versions as they emerged.

Notifications were limited to reminders to fill in the in-app surveys and this lack of interactivity between the technology and its users was critiqued.

> *"There aren't any mechanisms for feedback that are obvious"* (Pilot partner in Waltham Forest)

In Sofia, it was suggested that a demonstration of how the App worked and its features would have been useful. This was echoed in Waltham Forest where it was felt that adequate instructions were not provided to participants about how to use the App. This is an important learning point for future development.

In Rome and Waltham Forest, participants stated that "*using the application consumed a lot of battery"* (Focus group participant in Rome, Citizen 2) or as the pilot partner in Waltham Forest put it: "*It* [the App] *appeared to be a bit power hungry".*

During the focus group in Sofia, the App was repeatedly compared to Waze[11] which relies on a vast user community to report incidents and provide road traffic updates. There were concerns that to be as successful as Waze, it *"needs a lot of people to make it work"* (Focus group participant in Sofia, Male 1). However, this participant noted that with thousands of users, you could be potentially flooded with incident reports and notifications and not know how to process these. He thought one way around this could be to filter the notifications so that you are only alerted to the incidents happening within a 100-200 metre radius of your location.

In addition, in Sofia, thinking about the unintended consequences of the App, Female 1 raised concerns about fake reports being made or the possibility of misreporting or children playing around with the App. Male 2 stated that the solution to that is to introduce user controls, where users are prompted to enter their username and password as a layer of authentication. Whilst it was agreed that this was a possible solution, Male 1 stated that it would make the App more complicated and therefore unattractive to potential users.

4.6. Suggested improvements

All pilot participants were asked how they would improve the App.

One of the suggested improvements from our pilot partner in Waltham Forest was that the App should limit the number of functions and services it has to offer – for example, only include alternative routing, incident reporting and the theft detection sensor features. This was echoed in Rome by a focus group participant (Citizen 2) who thought "perhaps there are too many features" and it needed to be simpler.

[11] A worldwide interactive GPS, map and traffic App: https://www.waze.com/

In Sofia, one focus group participant (Male 1) stated that we could improve the App and its reach by making it global by integrating the existing City.Risks app with a navigation/ 'Tripadvisor' function which twins up to provide tourist information to users - "*that would be a great application*".

There was some discussion during the focus group in Sofia about integrating crime statistics into the existing City.Risks app (i.e. show how many robberies took place in the area last year). One participant (Male 3) thought that it would be useful in pre-warning you to be extra cautious in particular areas. Whilst it was acknowledged that this sort of information could potentially heighten instead of reduce the fear of crime, it was argued that it was better to be well-informed - "*people will be more fearful but well informed*" (Male 1). Crime maps feature is currently only available as part of the online web portal and is not a part of the City.Risks mobile phone app but it is a function that could be integrated.

Further, in Sofia, it was suggested that the App could be improved if it was able to process speech as well as text reports by introducing speech-to-text capability. This would make reporting incidents faster and easier by having voice recognition instead of having to provide lengthy descriptions of the incident.

5. Discussion and conclusion

The planned piloting activities aimed to elicit feedback from engaged City.Risks user communities in three European pilot sites – Rome, London (Waltham Forest) and Sofia. Whilst the realities of piloting differed from the proposed activities set out in deliverable 6.1, the first-hand feedback obtained by users provides a useful insight into how the App was experienced and offers important lessons for moving forward.

The number of participants involved in 'testing' the App and completing the online surveys during the long-term pilots was much lower than hoped in all three sites. The findings presented in this deliverable need to be understood within the context of these limited data. Further longer-term testing may be necessary to more thoroughly inform the App's iterative development.

5.1. Lessons for future recruitment

As noted, recruiting users to assist with the piloting was difficult and where there was an initial interest in taking part, retaining participants throughout the life of the project was a problem in both Rome and Waltham Forest. Taking a more targeted approach to recruitment and focusing on those who are especially interested in app-use and technologically-savvy first, before embarking on broader recruitment strategies with members of the public, may help to increase the overall number of participants involved. Additionally, feedback from those who did take part in piloting, suggested the need for more focused piloting activities with clearer instructions about what to expect from the App and how to use it effectively.

However, the user feedback we did manage to collate is central to the action-research process and the pilot findings offer pointers for the further development of the participatory City.Risks app into a commercially viable product. Some main findings are summarised below.

5.2. The technology

There were some technical difficulties and while project partners were able to respond to most of these in a timely manner, participants noted that the following issues needed to be addressed:

- The App could be more 'user-friendly' and more intuitive. An in-built 'help' or 'support' function is currently missing from the App but is something that could be added to enhance support mechanisms within the App but also, interactivity.

Increasing interactivity and the creation of a two-way flow of communication could encourage further engagement with an App centred on citizen participation.

- As part of the widening citizen participation and adoption agenda, the App could be rolled out to other mobile devices: Android and iOS. Currently, the App is only available on certain versions of Android phones and this restricts the pool of potential pilot participants - and will likely have an impact on the numbers attracted to such an app in a commercial marketplace.

- Battery consumption was a concern for some users and something that could potentially discourage use of the App.

5.3. The concept

The aim of the City.Risks app is to allow citizens to report urban risks, incidents and crime in an easy and convenient manner. Generally pilot participants liked the concept of the App, however, if and how it links to the police and other responsible authorities was raised by pilot users. They wanted to know what happens to the information they are posting. There is a danger that if incident reports are not responded to by the relevant authorities, the utility of the App could be undermined. Our earlier surveys (deliverable 2.2) highlighted the importance for potential users of having the relevant authorities on board to endorse the App but to also indicate to users that their reports are being responded to in what could be viewed as a dialogue. This is important to ensure the continued use of the App and for users to feel part of a participatory community of users.

While we have insufficient data to confidently confirm which functions of the App were considered to be most useful, users appeared to be particularly interested in receiving information about ongoing events and least interested in alternative routing.

5.4. Interdisciplinary collaborations

Whilst the App, the City.Risks website, dissemination materials and research tools were translated into host languages, there were some wider translation issues that needed to be addressed along the way. In projects such as this, it is important that all the technical aspects of product development are translated for non-technical partners within the team and also, lay participants. Translation needs to extend beyond geographical language barriers. If the technical workings of the App are not easily understandable, it will likely have an impact on technological adoption. This is something that must be done from the early stages of the project but also reviewed throughout as what is obvious to the technical expert is not always clear to the layperson.

5.5. Ethics and data protection

The recruitment process raised a number of ethical considerations that need to be addressed when conducting research centred on citizen participation.

- Technological use has potential for *misuse* – in the case of City.Risks, the App could for example, be used to encourage vigilantism.
- The need to increase transparency about what information personal data about citizens will be collected, how will it be stored and what happens to that information after the project comes to an end.
- The development of an App aimed at improving the reporting of crime and other local incidents needs to provide an adequate response to citizen reports to meet expectations. An App supported by relevant authorities has been mentioned above, however, we need to ensure that App development with citizens is not only informed by end-users but also that as researchers and developers we ethically fulfil what it is we promise to deliver.