



Project no.: 610658
Project full title: eWALL for Active Long Living
Project Acronym: eWALL
Deliverable no.: D2.4 (amendment)
Title of the deliverable: Ethics, Privacy and Security

Contractual Date of Delivery to the CEC:	04.12.2014
Actual Date of Delivery to the CEC:	30.11.2014
Organisation name of lead contractor for this deliverable:	Stelar Security Technology Law Research
Author(s):	Matthias Pocs
Participants(s):	Aristodemos Pnevmatikakis, Markus Garschall, Harm den Akker, Miriam Cabrita
Work package contributing to the deliverable:	WP2, WP3
Nature:	R
Version:	2.0
Total number of pages:	6
Start date of project:	01.11.2013
Duration:	36 months – 31.10.2016

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 610658

Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Abstract:

Following the review of the first period of the eWALL project, we as technical, legal and end users analysed the privacy implications posed by video processing used to track users.

Keyword list: Kinect camera; sensing devices; European Union data protection legislation; telemonitoring use cases.

Document History

Version	Date	Author	Description
1.1	Nov 13, 2014	A. Pnevmatikakis (AIT), M. Pocs (STELAR)	Drafted first video privacy analysis for submission to user-side partners
1.2	Nov 24, 2014	M. Cabrita, H. op den Akker (RRD), M. Garschall (ATE), A. Pnevmatikakis (AIT)	Contributed to video privacy analysis
1.3	Nov 25, 2014	M. Pocs (STELAR)	Compiled contributions and drafted new text
2.0	Nov 26, 2014	S. Kyriazakos (AAU)	Finalized, approved

Following the review of the first period of the eWALL project, held in Aalborg on 14/05/2014, and based on the Commission decision and review report of the independent reviewers of 07/10/2014, the consortium discussed the reviewer's remarks. In particular, the technical partner in charge for audiovisual devices and processing, the legal partner as well as the end users involved in the eWALL project analysed the privacy implications posed by video processing used to track users.

The Commission recommendations state that it is “to be addressed before / at the first Annual Review” to do the following:

“Consider the privacy implications of the use of video to track the user, discuss with the end users involved, and if needed, plan an adequate strategy to cope with potential rejection from the users”.

In addition Annex 2 of the Review Report, under section 2.c., documents the “STATUS OF DELIVERABLES”:

No.	Title	Status	Remarks
2.4	Ethics, privacy and security	Approved	Please add an analysis of the implications of using video for user monitoring

Therefore, the technical coordinator planned two action items to realize the recommendation and remark. Accordingly, the first analysis was drafted by the technical partner leading the work-package WP3 which includes audiovisual devices and processing and the legal partner in charge for work-package WP2 task T2.4 on privacy aspects of eWALL. The end users involved in the project, that is, the partners who will conduct the large-scale demonstration trials in four countries, were invited to discuss the analysis of the privacy implications of the use of video to track users. Our analysis reflect the results of that discussion.

Consistently, having regard to the review recommendations and remarks, we recommend to insert after section 5 of the Deliverable D2.4 “Ethics, Privacy, Security” as of 30 April 2014 a new section with the following wording under the title “6 Privacy implications of video for user monitoring”:

Video is used for teleconferencing and user sensing for estimating the social interaction. Regarding teleconferencing, video is a commodity in PCs and is becoming one in TVs, with 4 million units equipped with a camera being sold in the UK and 200 thousand in Greece. In these devices the video is used after the informed consent of the user, either automatically or explicitly when the user asks for it.

Video is only one of the sensing cues of eWALL. Most of the user context is extracted by home or body sensors not involving video. Moreover, most research projects use video recordings to evaluate studies manually (similar to making audio recordings of interviews), whereas the specific video functionality in eWALL (enabled by a Kinect device) could also serve to automatically track/monitor users to detect their social interaction. This automatic video analysis extracts features such as the number of people in the room. In contrast to general video use in research projects, this specific component does not store any video recordings.

The specific video device used in eWALL for automatic analysis provides two streams to the system. A visual and a depth one. The depth does not have any privacy implication, since it just informs the

system of the number and body pose of the people in the living room. This is adequate evidence for social interaction, but we do wish to augment our analysis with face analytics to estimate gender, age and mood of the interacting people. This is only possible with the visual video stream. The video is neither stored, nor transmitted outside of the home (with the possible exception of an emergency). Anonymous metadata from video processing are stored and transmitted.

Since the video is only processed in the older user's home under his or her sole control (household activity), we will avoid legal implications. It is outside the scope of data protection law according to Article 3(2)(2) of the European Data Protection Directive 95/45/EC and the national laws implementing it. However, this does not prevent us from taking precautionary technical measures.

Concerning the trials using eWALL prototypes, the privacy implications of the use of video to track the user will lead to measures in the study design and consent procedures. Since there is no cloud connection or storage of video for tracking users, the privacy risks are reduced. However, privacy and data protection law also apply to video streaming which we will fully address as well.

Therefore, we will inform end users that we take all measures concerning the use of video for user monitoring to ensure protection of the privacy of older users and their visitors. To that end, we will ensure the measures for ethics, privacy and security of video data (see also Deliverable D2.4) and we will

- include in the consent declarations, among the intended uses and categories of data, the monitoring of social interaction and processing of video data,
- avoid automatic decisions on social interaction with negative effects for trial participants by avoiding that feedback is triggered on the basis of video processing alone without further verification by non-audiovisual means, habits or similar additional information sources,
- protect captured video data against loss, using reliable and sufficiently fast algorithms, before metadata are extracted from the video streams and decisions are taken by the reasoners,
- use the data only for the extraction of metadata that drive the eWALL apps and services which is covered by the primary purposes of the research on ICT-enabled independent living,
- take security measures for video data including access control, encryption and local processing (video will not be sent to the cloud platform) against attacks on the local subsystem that would otherwise destroy or steal video streams or manipulate metadata extraction or reasoning on the video data,
- guarantee rights of trial participants to access and erase metadata and decisions and avoid any storage of video data, and
- avoid cloud and other interfaces to secondary users concerning the video processing and ensure that the responsibility is solely maintained by the older user residing in the eWALL home.

In addition, the privacy measures concerning the use of video for user monitoring will include a Privacy-by-Design paradigm for the development of develop innovative privacy protecting technical concepts (Deliverable D2.8). Since we make a clear distinction between audiovisual and non-audiovisual data processing in terms of eWALL's privacy impact, for video processing, we plan the following subtasks in work-package WP3: T3.4.7 Privacy-protecting tracking and detection, T3.4.8 Privacy-protecting analysis and T3.4.9 Privacy-protecting recognition within the Task T3.4 A/V analysis of humans (D2.8 pages 22f.). These subtasks will include simple options to erase video data after extracting the information needed, e.g., the fact that more than one person is in the living room (the only place in the house where a camera is planned). Moreover, these concepts will help to

transform facial images into data representations to rule out the possibility, for a human who watches the video or a computer that recognizes biometric features, to identify the people in the living room.

By developing these privacy protecting concepts, after the end of the eWALL project, end users and institutions will be able to choose the options to instantly erase video after detection of presence of people, use the privacy protecting facial transformation, etc. or even deactivate video and abstain from functionalities that rely on social interaction detection.

Our risk management strategy will address the cases where users do not consent to video processing or withdraw their consent before we are able to analyse the data. As a mitigation measure, we will deactivate the video devices (i.e., the camera in the living room). However, the impact on the validation results will be minor. Despite the potential lack of video for some of the trial participants, the study analysis will be valid on the basis of a smaller group of participants. Even in the unlikely event that all trial participants object to video processing the impact is minor because video processing is only one of the many technologies deployed and the purposes of video processing - detection of presence in the living room, etc. - are only a few of the numerous eWALL services.