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To: **AMS Institute**
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1018 JA Amsterdam

Subject **ShutterUp POC**
Issue date: 22 November 2020
Place: Amsterdam

Project:

The Responsible Sensing Lab (RSL) of The Amsterdam Institute for Advanced Metropolitan Solutions is currently researching video surveillance as it related to digital rights of the public. In the upcoming Phase 3, RSL would like build an interactive research device that 1) asks public when they are being recorded or not, and 2) what types of control mechanisms best protect personal digital rights.

RSL has asked to provide an interactive physical shutter system as an intuitive way for the public to understanding whether a camera is recording or not

Goal:

There are five principle goals of Phase 3:

1. Design, build and deploy a Camera Shutter system, controllable interface and signage for public to engage with.
2. Validate that a Camera Shutter will be good ‘visual guarantee of privacy’ for activists policy makers.
3. Validate user cases where if a controllable shutter system will be a good solution,
4. Assess the amount / types of data loss when the shutters are covered with the problem owners.
5. Creating a movie to document the prototype and its application, interaction.

Solution:

For this assignment, Tapp will provide 3 working prototypes. All 3 prototype cameras have timers set in backend, no front end GUI needed)

Prototype1 - one operated with remotely set time schedule (no UI/UX web app)

Prototype2 - one operated with remote time schedule coupled with overriding winding mechanism that connects directly to firmware of camera assembly

Prototype3 - one with a large push button that closes the shutter for a set time (Camera will have a remote time schedule and the push button as a over-ride) for X-minutes

The scope of work will consist of:

- Design and Construction of Shutter Cameras (incl. parts, materials, 3d prints, creating circuit boards)
- Firmware of stm32 on circuit boards
- Backend Timers for Control Server and physical button in public space
- Deployment of system at specified locations
- Connection between Shutter Cameras and Control Server
- 3 fully functioning cameras with Shutter (3 Motor Controllers, 3 Servos, 3 Shutters, 3x3d printed parts for attachment)
- Deployed Control Server with API and GUI to control the Motors manually and configurable via timers
- Cables and Casings
- All 3 cameras will be connected to MT-Dashboard.nl
- No cameras will be recording or saving video data
- All LED indicator lights should not connect to backend (to avoid tampering / hacking)
- “Responsible Sensing suggests that all interfaces from public relate only with shutter itself (no backend risk)
- Data needs to be saved to know times & durations of open / close shutter states.
- Install 4th camera (Separate estimate in quotation)
- Whammy button connects only to motor (no backend)

Planning:

- AMS Institute aims to develop 3 prototypes.
- The cameras will be placed at a suitable location on the Marine Terrein upon approval of MALL partners
- The pilot will run for a period of 1-2 months.

Cost Estimate:

- The cost of this assignment is **EUR €** [redacted] exclusive BTW
- Tapp will charge AMS-Institute 50% (€ [redacted] as downpayment
- Tapp will charge AMS-Institute 50% (€ [redacted] at completion
- For a complete overview and description of deliverables, please see the table below.

Task	Description	Cost
Shutter parts & manufacturing	• mechanical design • 3d printing of attachment and stabilization parts • manufacturing of shutter case • assembly on cameras • electronics for shutter movement • On sight testing	€ [redacted]
hardware & firmware circuit boards	• firmware changes to allow remote button control • firmware changes to allow disabled of remote functionality and rewind functionality	€ [redacted]
Backend Server	• modify LIFE electronic server deployed at MT to control the shutters • add trigger functionality (for buttons)	€ [redacted]
Button Box	• hardware parts (Button, leds, IP65 Casing) • assembly of hardware parts into IP65 casing • cabling to firmware circuit board	€ [redacted]
Rewind Box	• hardware parts (Knob, leds, IP65 Casing with glass door & lock) • PCB Board to control knob and leds • assembly of hardware parts and PCB into casing • cabling to firmware circuit board	€ [redacted]
4x Cameras Test	Reolink RLC-511W - 5MP - WiFi - with audio	€ [redacted]
Promotion	• Assistance in building a signage for the prototype (to be placed on-site next to the frame/ prototype)	€ [redacted]
2x Participatory Session	• 2 sessions with groups of privacy activist/enthusiasts to incorporate their feedback on the prototype and open/close timings	
1x Report Data Loss	• Report on estimated data lost when the cameras were covered and documentation on hardware development of the shutter system	€ [redacted]
	TOTAL	€ [redacted]

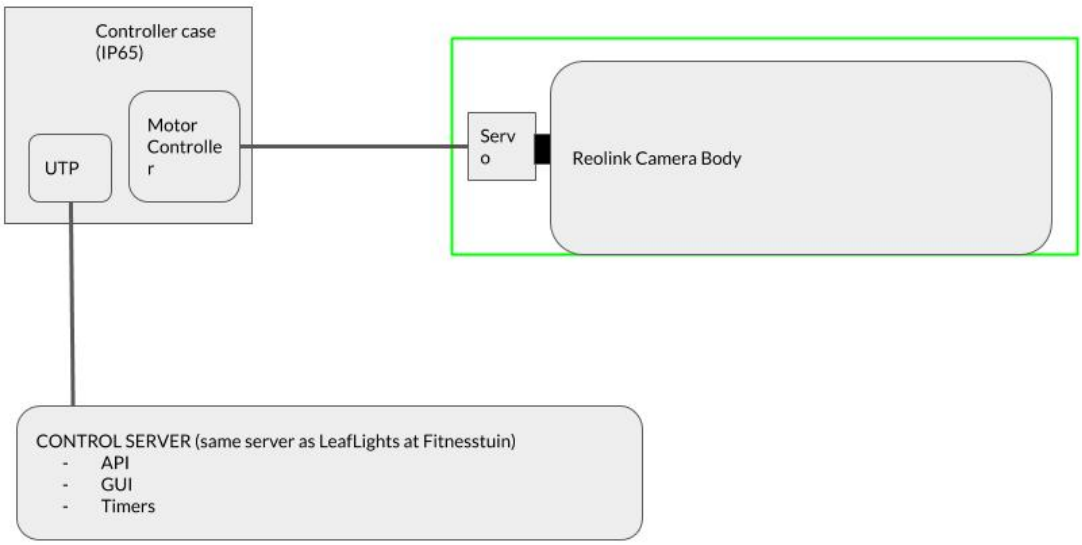

Fig1. Schematics system architecture

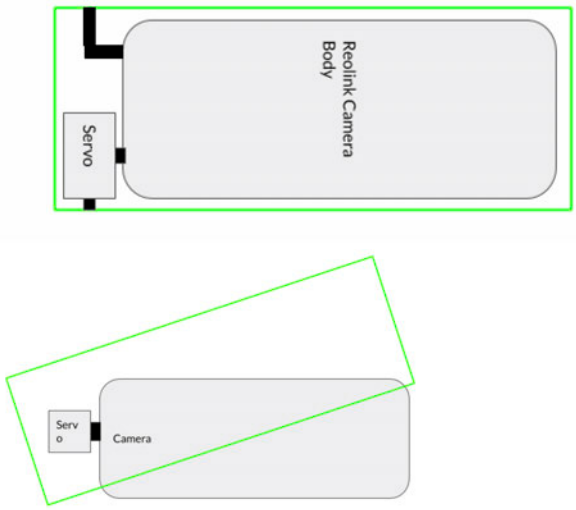

Fig2. Schematics of Camera & Shutter

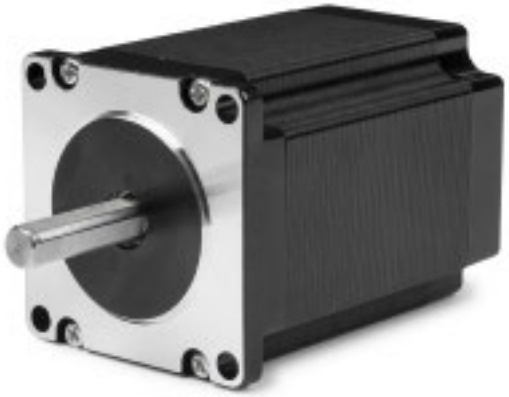

Fig3. Servo operating shutter

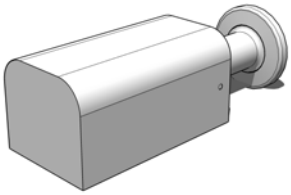

Fig4. Mech ShutterUP POC - Closed

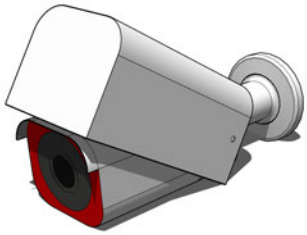

Fig5. Mech ShutterUP POC - Open

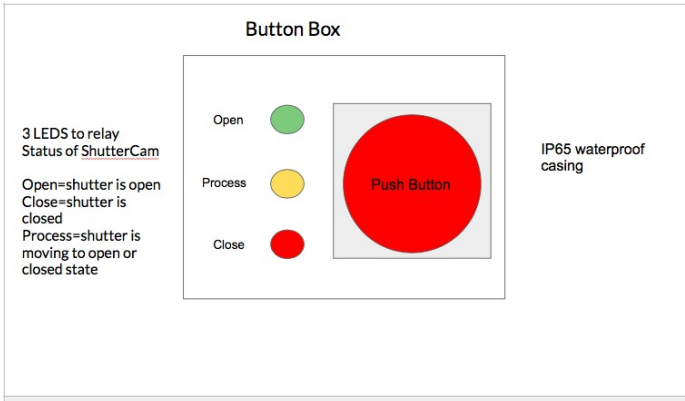

Fig6. Button Box detail

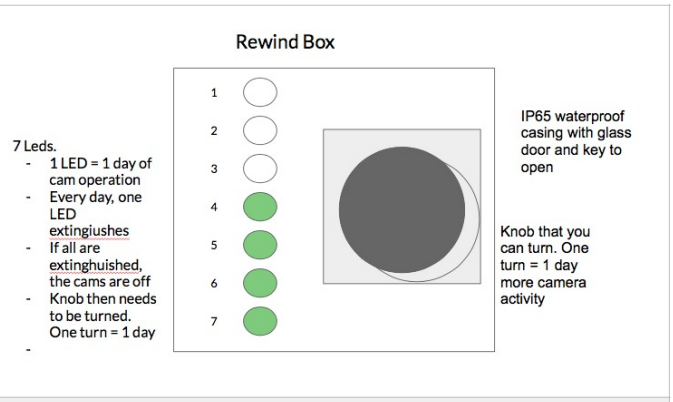

Fig7. Rewind Box detail