Smart Checklist

An integrated checklist system for the police

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Our mission is to decrease potential fatigue related mistakes by utilizing Action Triggers & Positive Reinforcement through a personal checklist system.

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Action Triggers

"They eliminate the need for conscious deliberation by making people "pre-decide" what they are going to do, and that they protect goals from tempting distractions, bad habits, or competing goals."

Peter Gollwitzer
Professor of Psychology

Positive Reinforcement

"...involves the addition of a reinforcing stimulus following a behavior that makes it more likely that the behavior will occur again in the future. When a favorable outcome, event, or reward occurs after an action, that particular response or behavior will be strengthened."

Cherry, K. 2015.

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The Problem

Officers are overworked

Officers can be subjected to negative consequences

Officers face tremendous pressure

Being a police officer is considered a 'thankless job'

These hardships lead to fatigue.

Wear and tear on an officer causing mistakes or missteps while conducting daily activities.

Design Constraints

The design should not get in the way of an officer's current on-site routine. If the solution is going to support routine activity, it needs to allow the officer to create his or her flow through the procedure.

The design will work with existing technology, including in-car computers and smartphones. Considering police departments of all sizes and budget limitations, the solution should be accessible to all departments technologically.

Challenges building this system

Adapting to a New Framework
Police officers are used to using a particular system and might be complacent with existing systems and resilient to change. Hence the system should give officers a solid reason to adapt to a newer framework.

Positive reinforcements to help officers in alleviating pressure and stress is an arduous problem to solve. A robust but simple system should be designed to stand the test of time in creating a healthy incentivizing system.

Utilizing Current Standards
The current Computer Aided Dispatch (CAD) framework consists of certain parameters that are displayed on their devices already. The original system should transpose existing features onto the new system to support an evolution of behavior.

The way police officers function need to be considered - the design needs to take into account the existing devices they use, their current procedures and behaviors and how a checklist fits into their routine, contextually.

Research & Insights

Action Triggers can be utilizes to help officers get into a flow, for procedures they already know

"Officers can always refer to the written directive, but they are expected to know this stuff."

Michael Diekhoff
Police Chief

"Action triggers eliminate the need for conscious deliberation by making people 'pre-decide' what they are going to do"

Popper, Pam. 2015.

Research & Insights

"Unless a citizen approaches the officer and thanks them for their service, police officers generally do not receive positive feedback or reinforcement. This is perhaps why police officers have a lot of stress and consider their job a 'thankless job'."
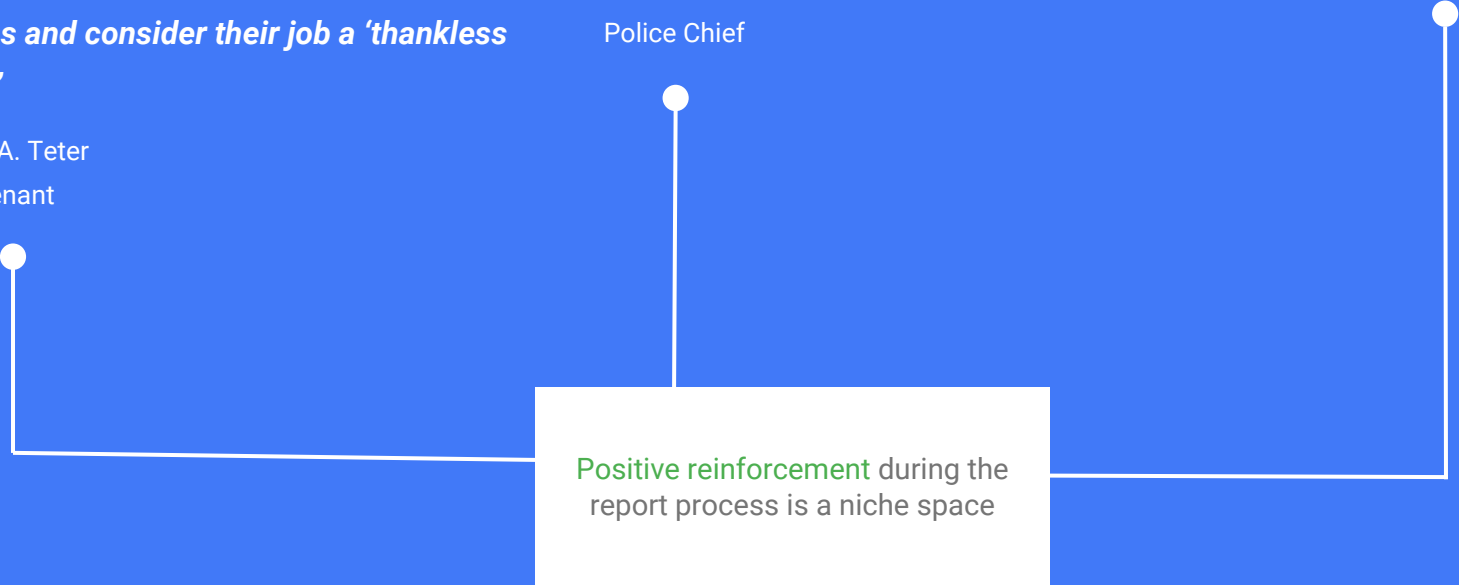
Brice A. Teter
Lieutenant

"Supervisors look over reports. They let the officer know when something goes wrong, but don't let the officer know when something went right"

Michael Diekhoff
Police Chief

"even a small win—can make all the difference in how they feel and perform."

Teresa, A., Kramer, S. 2015

Positive reinforcement during the report process is a niche space

Design Solution

Designing for fatigued officers is about accessibility. By focusing on how we can make the system usable, simple and supportive for officers in the worst situation, we create a system that supports ease of use, proper behavior and a motivation for thoroughness in officers of all states.

"Of all the things that can boost emotions, motivation, and perceptions during a workday, the single most important is making progress in meaningful work. And the more frequently people experience that sense of progress, the more likely they are to be creatively productive in the long run."

Teresa, A., Kramer, S. 2015

Design Solution

Design Solution

While Officer Amy receives an alarm call, the 'call' screen populates with information from the CAD system and a checklist of the necessary procedural actions, including an action trigger based on the call type.

Why it works

This screen is primarily meant to be something to look over right before getting out of the car. Officer Amy does not need to take any action yet, but as she takes in the visual cue of the action trigger she starts to get into her flow, which will help her complete the rest of the procedure.

Residential Alarm

812 W 9th St, Bloomington, IN 47404

Caller Info

Maffin Capcake

(812) - 666 - 9999

Owner Info

Coca Mashmallow

(812) - 666 - 9999

Be cautious &
assume the building was broken into

Pre-approaching

☐ Tactical parking of vehicle

☐ Notify dispatch

IF there are signs of entry or occupancy?

NO	YES
☐ Check location history	☐ Call backup
☐ Issue citation or warning	☐ Notify dispatch
☐ Leave citation or warning at front door	☐ Maintain perimeter

Design Solution

Building Action Triggers

Seeing the first step or warning every time a routine action occurs trains the brain to react, using less brain power over time to complete a task. This is known as an action trigger. The highlighted first step of the procedure is a guiding action that acts as the 'trigger' and the procedure that follows is the officer's behavior, which is a repeated 'action'.

As the trigger is utilized more frequently, the brain associates the trigger with the rest of the behavior, forming an automatic reaction. As the trigger sets in, the officer can get into an immediate flow, stressing the officer a little less each time a call comes in. Over time, this should decrease the brain power needed to memorize any procedure, and allow officers to perform the same behavior every time, even if the cop is emotionally or physically drained, zoned out or fatigued.
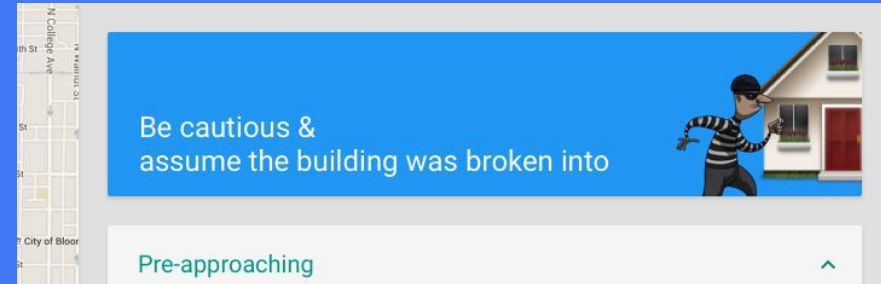
Design Solution

Design Solution

Officer Amy reaches the call location. She gets out of the car and starts to secure the perimeter before calling for backup. While she is posted in a secure location and waiting for backup, she quickly glances at her phone to remind herself of the next steps.

Why it works

The solution has a mobile component, so that Officer Amy can take the system with her. More importantly is the glanceability of the mobile checklist. As it is listed on her lockscreen and each item is abbreviated, she can use her mobile device without taking her attention away from the situation.

12 : 30

Thu, Sep 4

Wrap up

☐ Location history

☐ Citation or warning
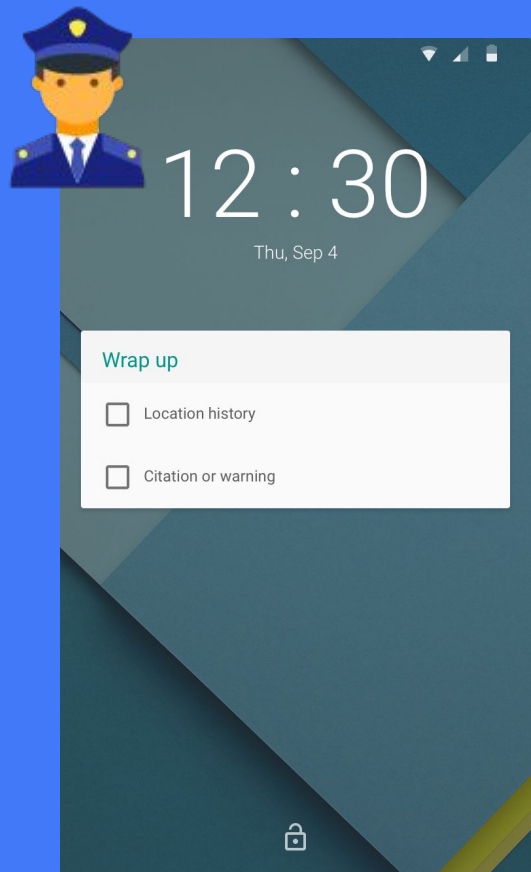
Design Solution

Extremely Brief Mobile Checklist

A tool that can be utilized during a call needs to pull as little attention away from the surrounding scene as possible. The mobile checklist, which appears on the officer's lockscreen or in the native application on a call, uses 'glanceability' to keep the officer focused. Glanceability is the ability to view all the relevant information at a glance (2 to 5 seconds, including pulling the phone out and putting it away). The mobile checklist acts as extremely brief notes, where each item is summarized down to keywords. Having this simplified checklist on hand will not distract an officer from the procedural flow, and provides a refresher in moments of fatigue, distress, or just in case.

Wrap up

☐ Location history

☐ Citation or warning
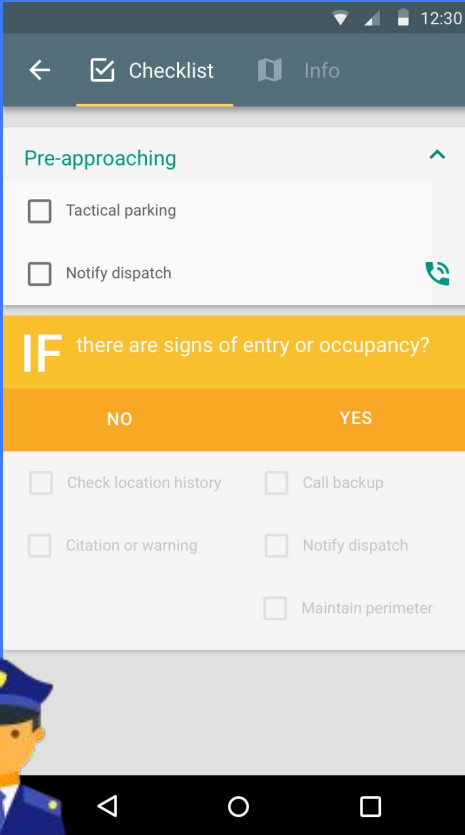
Design Solution

Design Solution

Officer Amy has completed checking out the alarm call and has declared the scene 'all clear.' It was just a tripped alarm. On the way back to the car she pulls out her phone, opens the native application and starts to check off each action to make sure she did everything that was required before leaving the call location.

Why it works

By having a mobile component, Officer Amy can complete her duties in or out of her automobile. Having the ability to be 'on-the-go' through mobility supports efficiency and safety. Officer Amy does not have to sit in her car to finish her work and can get call information even before getting into her car.

Design Solution

Design Solution

Officer Amy does not finish the checklist on her phone, so she continues to complete it in her car. Once she has checked everything off, she can click the submit button in the bottom right corner.

Why it works

Having the versatility to move seamlessly between the phone and car computer makes the system intuitive to use. This makes Officer Amy's daily activities that much easier, making her more productive and less stressed.

Residential Alarm

812 W 9th St, Bloomington, IN 47404

Caller Info

Maffin Capcake

(812) - 666 - 9999

Owner Info

Coca Mashmallow

(812) - 666 - 9999

Be cautious &
assume the building was broken into

Pre-approaching

Signs of entry or occupancy found

Check with backup

Forced entry found

Wrap up

Design Solution

Design Solution

Officer Amy proved that she completed all the required actions for the alarm call by checking off everything she did. Having just completed the checklist and her focus is still on the screen, a message from her supervisor appears, giving her the good feedback on a previous report.

Why it works

This little bit of positive feedback lets Officer Amy know that she is doing well on her reports and has done everything right for the checklist. She feels better knowing that someone has validated her good work and takes pride while on the next call and throughout the rest of the day. Officer Amy has a small but renewed sense of meaning in her routine tasks and has a stronger bond to completing the checklist.
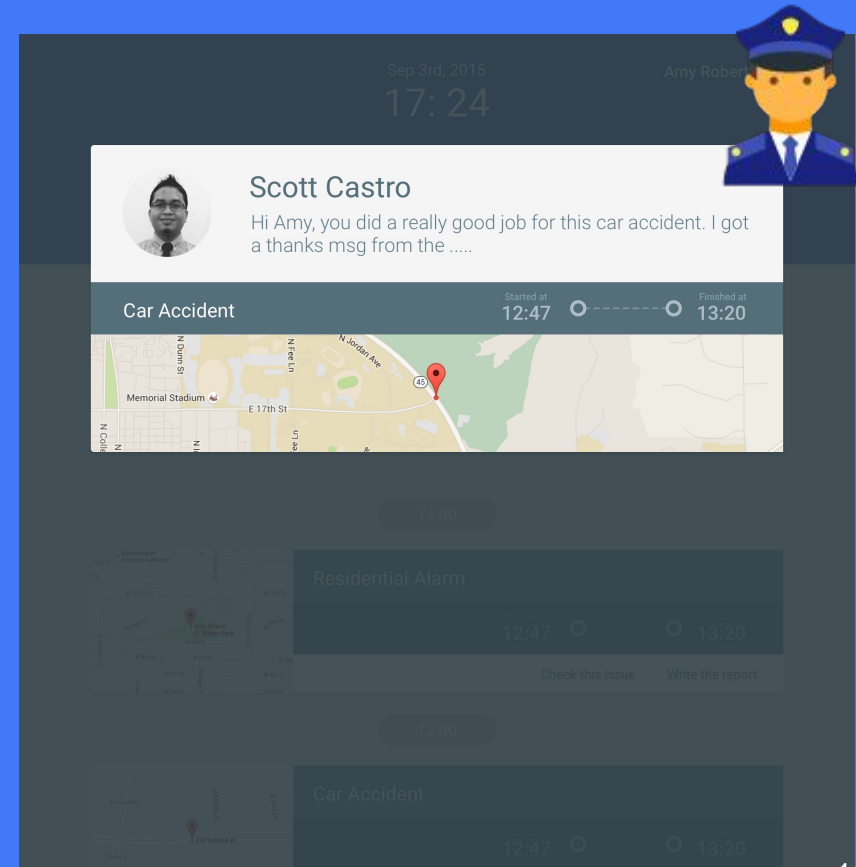
Design Solution

Small Wins in a Human Relationship

This system uses a supervisor's positive remarks on an officer's previously submitted report as a small affirmation for the officer. The officer receives the positive remark when he or she has completed a checklist, including all the procedurally required actions. This is known as a 'small win,' which helps to make that day feel more meaningful, especially when built on other wins throughout the day. The positive remark positively reinforces their behavior to complete all the required actions involved with a call. This system inspires motivation in daily routines and validates officers' hard work while they are in uniform. The action is a metaphorical pat on the back from officer to officer, human to human, which helps make each day worth the effort and assists in preventing fatigue over long work hours.

Scott Castro
Hi Sarah, you did a really good job for this car accident. I got a thanks msg from the .....

Design Solution

Design Solution

As Officer Amy prepares for her next call, the positive reinforcement sticks to the top of the call log. From this screen she can review her past calls and edit today's calls, if necessary.

Why it works

The call log screen is the application's home base. From this screen Officer Amy can hold onto the good feeling that her supervisor gave her by completing the checklist properly and look up other procedures for review.

PROCEDURE   CALL LOGS

Sep 3rd, 2015
17 : 24

Amy Robertson

Scott Castro
Hi Amy, you did a really good job for this car accident. I got a thanks msg from the .....

Car Accident
Started at 12:27   Finished at 12:43

14:00

Residential Alarm
Started at 12:57   Finished at 13:40
Check this issue   Write the report

13:00

Car Accident
Started at 12:27   Finished at 12:43
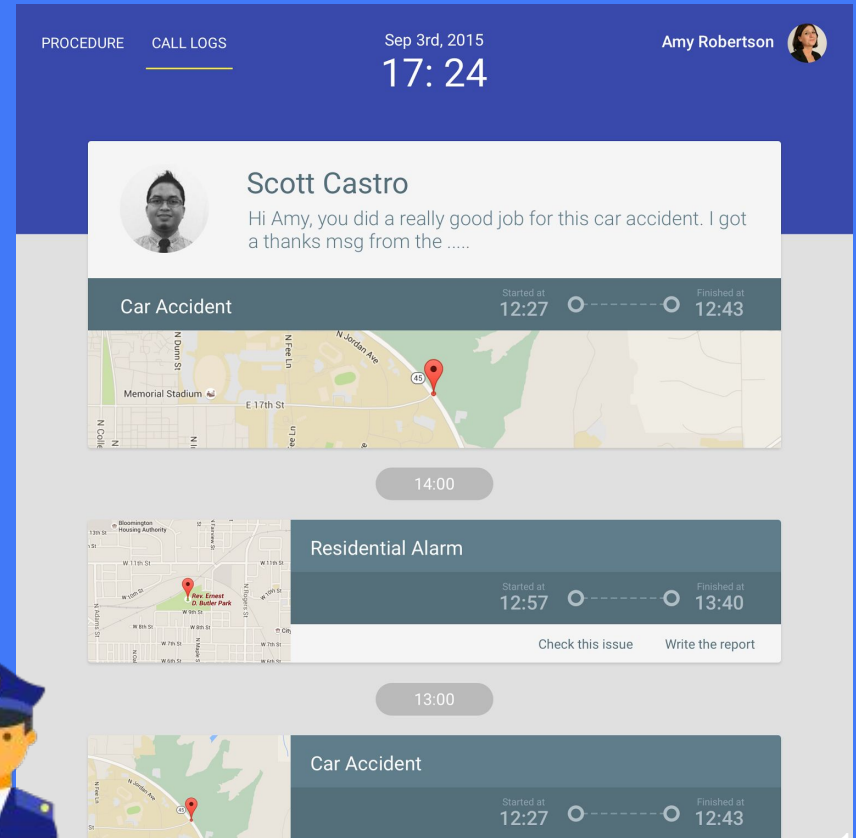
Challenge Adopting The System

Against Adopting

Officers who are set in their ways may not want to try a new system. They believe they do not need something new or it will not make them better or they just do not want to learn something new, when their old way is not broken.

Extra Work

Having to complete a checklist as part of a call is one more thing to do, when there are already a huge amount of things that need to be done to complete a call.

The Police Make Mistakes

A system like this is about reducing mistakes, which means that to use it means that the police are admitting to being able to make mistakes. While departments will like this idea, individual cops may have a harder time accepting this.

Loss of control

Police officers may feel a loss of control trying to understand why they need a system like this. In many ways, having a checklist that a supervisor can monitor can feel like a micromanagement system.

Design Overview

Computer Officer Flow
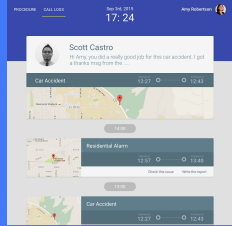
Call Log
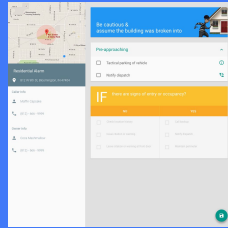
Call displays relevant info.
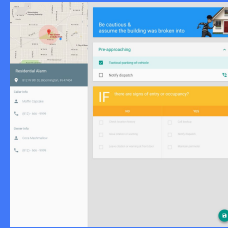
Check off item
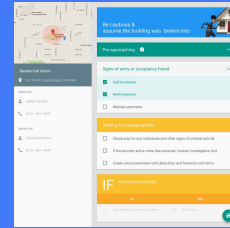
List updates from checked
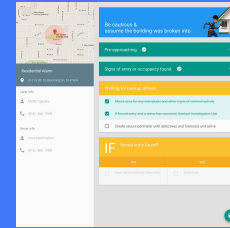
Completion of conditionals
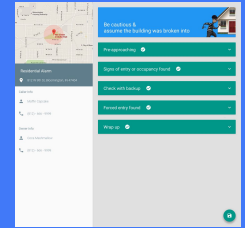
Completed checklist

Phone Officer Flow
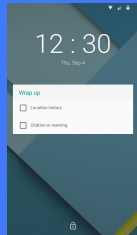
Lockscreen checklist
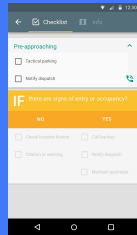
Checklist
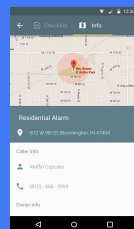
Call Info

Call Log

Supervisor Flow
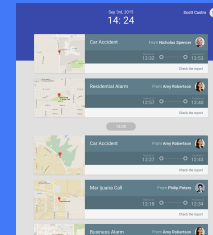
Report Log
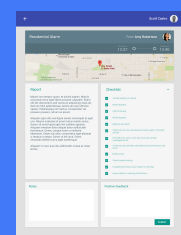
Report Check

Conclusion

Lots of work and pressure → Fatigued Officers → Action triggers & glanceability

set officers up to be successful in the field → When they are successful they get positive reinforcement

less fatigue and makes them more productive → supports thorough & meaningful work

Lessens fatigue build up and supports a healthy work environment
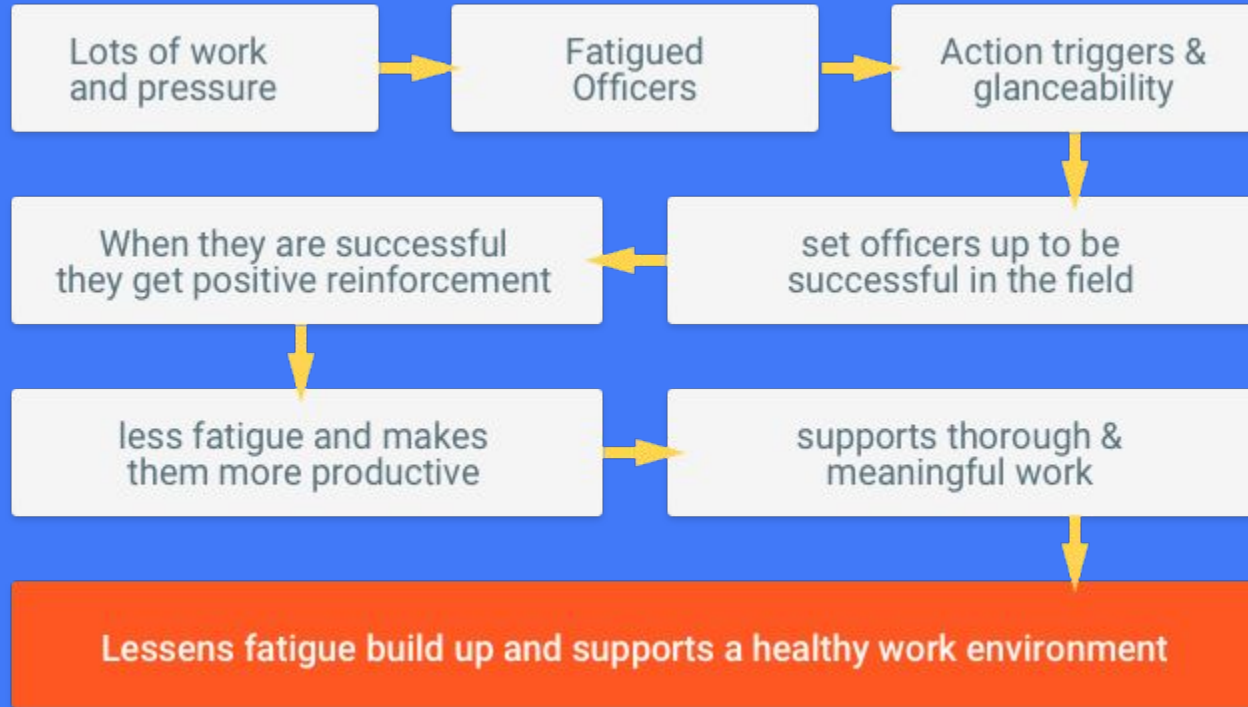
Thank you!

Appendix

Table of Contents

References

Amabile, Teresa, and Steven Kramer. "The Power of Small Wins." *Harvard Business Review*. N.p., 01 May 2011. Web. 04 Sept. 2015.

Bond, Mark. "The Impact of Stress and Fatigue on Law Enforcement Officers and Steps to Control It." *In Public Safety*. N.p., 24 Feb. 2014. Web. 04 Sept. 2015.

Cherry, Kendra. "Positive Reinforcement - Operant Conditioning." *About Education*. N.p., n.d. Web. 04 Sept. 2015.

Fox, Justin. "What Sort of Checklist Should You Be Using?" *Harvard Business Review*. N.p., 23 Feb. 2010. Web. 04 Sept. 2015.

Marshall, Lisa. "Read, Memorize, or Use Notes?" *Quick and Dirty Tips*. N.p., 23 Sept. 2010. Web. 04 Sept. 2015.

Popper, Pam. "Use Action Triggers to Make Lifestyle Change" *Vegsource*. N.p., 10 Jan. 2011. Web. 04 Sept. 2015.

Prince, Kelley. "The Difference between Positive/Negative Reinforcement and Positive/Negative Punishment - Behavior Analysts Tampa: ABA Therapy, Autism, Behavior Problems, ADHD/Learning Disabilities." *Behavior Analysts Tampa: ABA Therapy, Autism, Behavior Problems, ADHD/Learning Disabilities*. N.p., 05 Feb. 2013. Web. 04 Sept. 2015.

Appendix

The Problem - Delving Deeper

Why are officers overworked?
The number of officers on duty for the amount of calls coming into dispatch during peak hours is usually low. Due to a limited number of resources each police department can afford, officers are assigned too many calls over, what could become, very long hours. This leads to fatigue, which in-turn could potentially lead to mistakes being made on the job.

Why are officers subject to negative consequences?
Irrespective of officers' efforts, one mistake can be highlighted over many procedurally correct actions. When an officer makes a mistake, the officer is punished and any good work the officer did for the day can is overlooked. This constant focus an officer's negatives can lead to stress and fatigue, making working without committing errors an arduous task.

Appendix

The Problem - Delving Deeper

How are officers under so much pressured?
Officers can feel a tremendous amount of pressure trying to fulfill all their daily responsibilities. For each call that comes in the officer is not only expected to be flawless in their procedure delivery, but they must complete paperwork, submit evidence and more, which may differ for each type of call. When each completed call goes on the officer's record, which is evaluated for raises and promotions, there is a lot at stake and the officer may feel that weight pushing down on him or her.

Why is being a police officer a 'thankless job'?
Enforcing the law and keeping our streets safe is not easy. People do not like getting tickets or getting arrested or having a report taken on an accident. So when officers are doing their job, they tend to receive the brunt of people's issues. They get yelled at, avoided, called pig, hunted, glared at, which does not begin to cover the regular abuse they take. This can start to wear on an officer's well being, making daily routine unpleasant.

Appendix

Call Type and location.

Contact Information.

Residential Alarm
812 W 9th St, Bloomington, IN 47404

Caller Info

Maffin Capcake

(812) - 666 - 9999

Owner Info

Coca Mashmallow

(812) - 666 - 9999

Be cautious &
assume the building was broken into

Action Trigger Block. Changes based on call coming in.

Pre-approaching

☐ Tactical parking of vehicle

☐ Notify dispatch
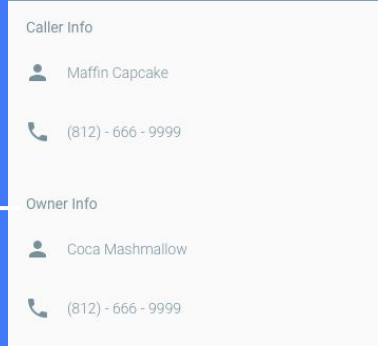
Checklist area. Is determined by type of call.

IF there are signs of entry or occupancy?

NO	YES
☐ Check location history	☐ Call backup
☐ Issue citation or warning	☐ Notify dispatch
☐ Leave citation or warning at front door	☐ Maintain perimeter

Conditional checklist items format

Appendix

Location Map and directions.

Caller information.

Be cautious & assume the building was broken into

Pre-approaching

☑ Tactical parking of vehicle

☐ Notify dispatch 📞
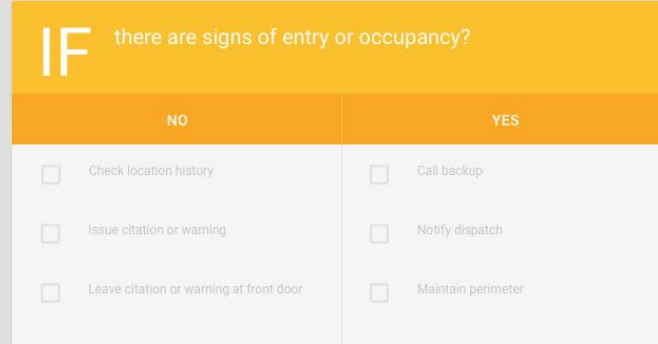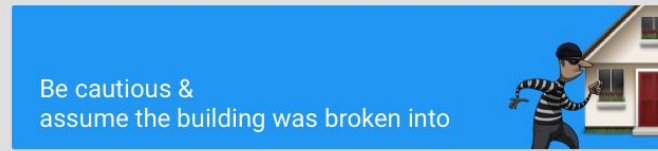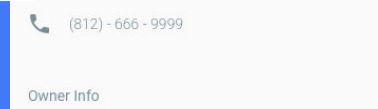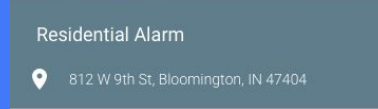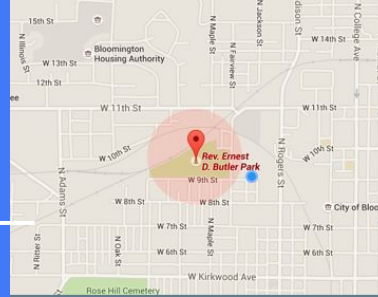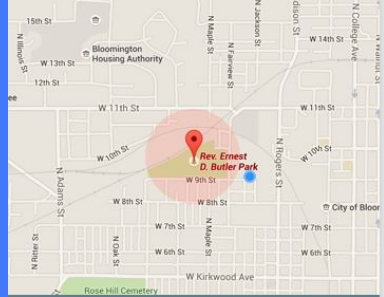
Checked-off list.

Actionable button based on task.

IF there are signs of entry or occupancy?

NO	YES
☐ Check location history	☐ Call backup
☐ Issue citation or warning	☐ Notify dispatch
☐ Leave citation or warning at front door	☐ Maintain perimeter

Tasks based on user's selection of above condition.

Residential Alarm

📍 812 W 9th St, Bloomington, IN 47404

Caller Info

👤 Maffin Capcake

📞 (812) - 666 - 9999

Owner Info

👤 Coca Mashmallow

📞 (812) - 666 - 9999

Appendix

Be cautious &
assume the building was broken into

Pre-approaching ✓

Signs of entry or occupancy found

- ☑ ~~Call for backup~~
- ☑ ~~Notify dispatch~~
- ☐ Maintain perimeter

Waiting for backup arrives

- ☐ Check area for any individuals and other signs of criminal activity
- ☐ If forced entry and a crime has occurred, Contact Investigative Unit
- ☐ Create secure perimeter until detectives and forensics unit arrive

IF forced entry found?

NO	YES
☐ Issue citation or Warning if false alarm	☐ Notify Owner

Residential Alarm

📍 812 W 9th St, Bloomington, IN 47404

Caller Info

👤 Maffin Capcake

📞 (812) - 666 - 9999

Owner Info

👤 Coca Mashmallow

📞 (812) - 666 - 9999
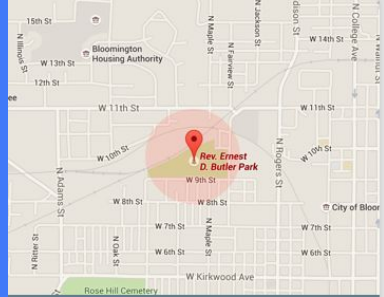
Completed list of tasks.

List view of conditional tasks once the user has selected an option.

Appendix

Residential Alarm

📍 812 W 9th St, Bloomington, IN 47404

Caller Info

👤 Maffin Capcake

📞 (812) - 666 - 9999

Owner Info

👤 Coca Mashmallow

📞 (812) - 666 - 9999

Be cautious & assume the building was broken into

Pre-approaching ✓

Signs of entry or occupancy found ✓

Waiting for backup arrives

☑ ~~Check area for any individuals and other signs of criminal activity~~

☑ ~~If forced entry and a crime has occurred, Contact Investigative Unit~~

☐ Create secure perimeter until detectives and forensics unit arrive

IF forced entry found?

NO	YES
☐ Issue citation or Warning if false alarm	☐ Notify Owner

Tasks for conditional checklist completed.

Appendix
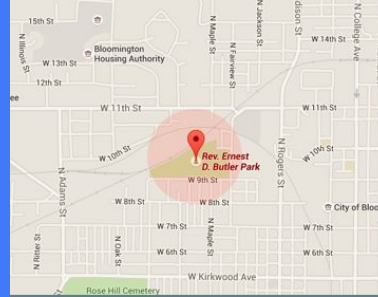
Be cautious &
assume the building was broken into

Pre-approaching ✓

Signs of entry or occupancy found ✓

Check with backup ✓

Forced entry found ✓

Wrap up ✓

Completely finished set of tasks.

Submit button

Appendix
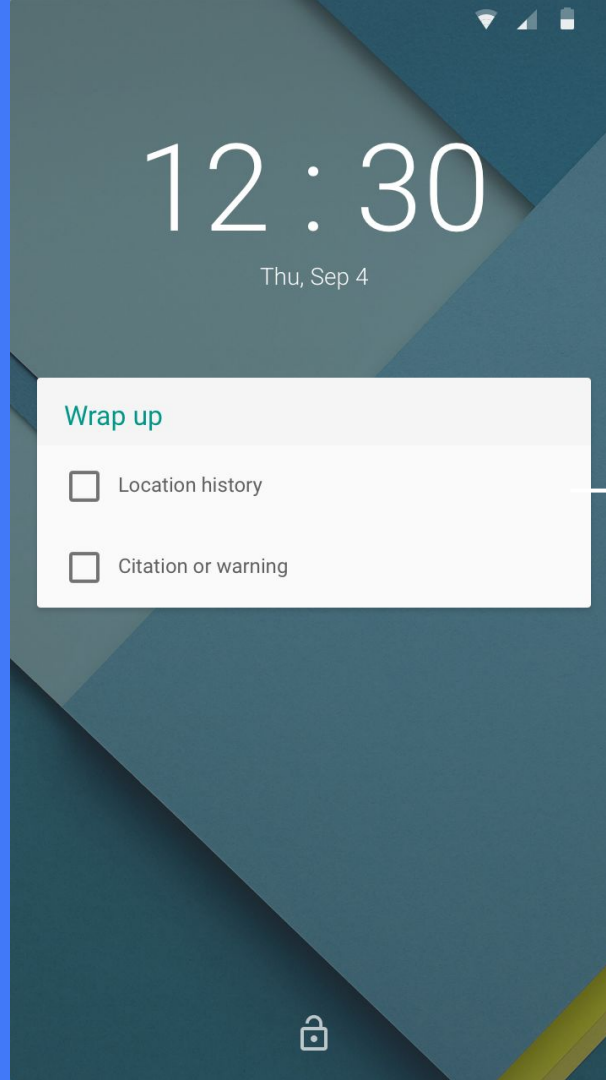
Mobile lock-screen with immediate brief checklist items.

Appendix
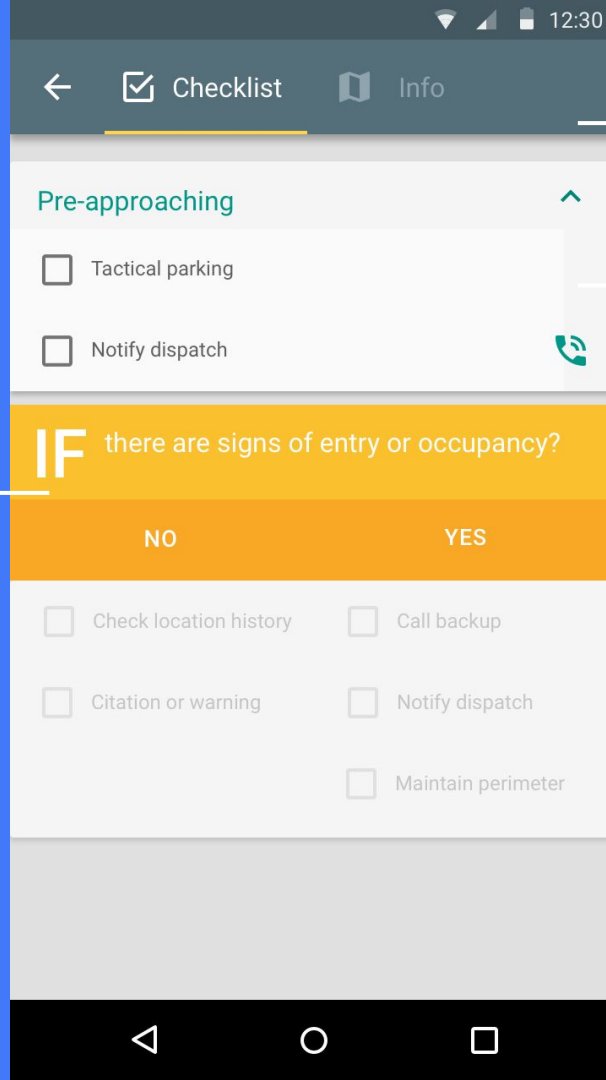
Tabs to select checklist or information screen on the mobile app.

Mobile checklist view.

Mobile conditional task view.

Appendix

Info screen on mobile

Map to call location

Call information.

Appendix

Positive reinforcement on the mobile screen.

History log of calls

Sep 3rd

Scott Castro
Hi Sarah, you did a really good job for this car accident. I got a thanks msg from the .....

Car Accident   12:47 O------O 13:20

14:00

Residential Alarm
12:47 O------O 13:20
Check this issue   Write the report

Residential Alarm
12:47 O------O 13:20
Check this issue   Write the report

14:00

35

Appendix

User profile

Pull-out menu on
mobile screen.
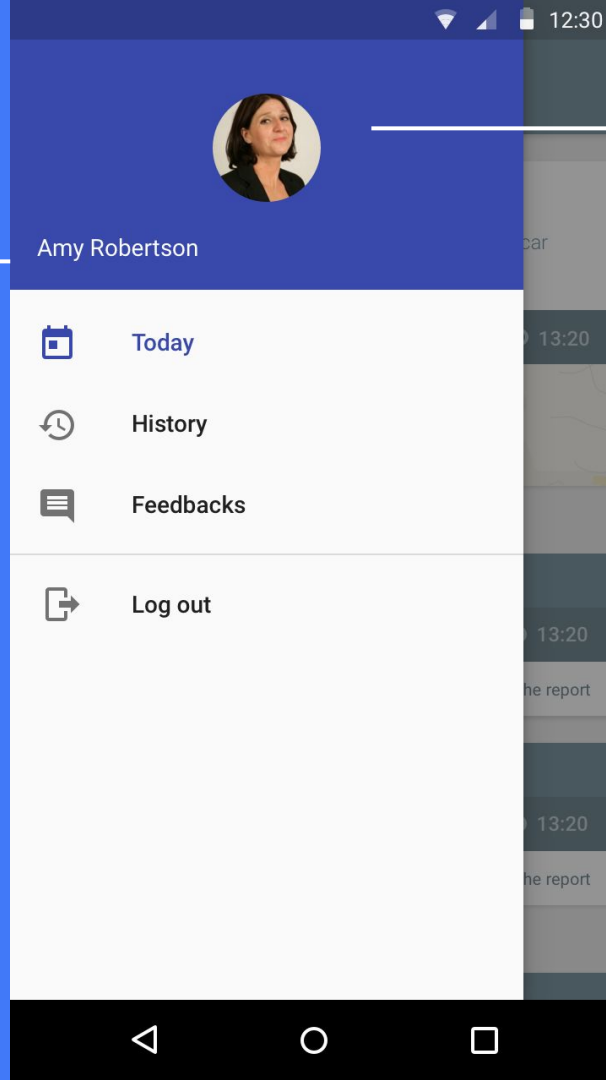
Amy Robertson

Today

History

Feedbacks

Log out

Appendix

Sep 3rd, 2015

17: 24

Amy Robertson

Scott Castro

Hi Amy, you did a really good job for this car accident. I got a thanks msg from the .....

Positive reinforcement on the desktop.

Car Accident

Started at 12:27 — Finished at 12:43

N Jordan Ave
N Fee Ln
N Dunn St
Memorial Stadium
E 17th St
N College

14:00

Log of incoming calls for the officer.

Bloomington Housing Authority
12th St
W 11th St
W 10th St
Rev. Ernest D. Butler Park
W 9th St
W 8th St
W 7th St
W 6th St

Residential Alarm

Started at 12:57 — Finished at 13:40

Check this issue   Write the report

13:00

N Jordan Ave
N Fee Ln
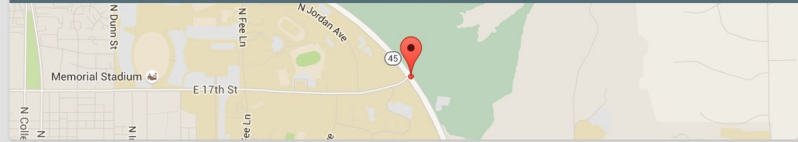
Car Accident

Started at 12:27 — Finished at 12:43

Check this issue   Check the report

Business Alarm

Appendix

Car Accident — From **Nicholas Spencer**

Started at **13:32** — Finished at **13:53**

Check the report
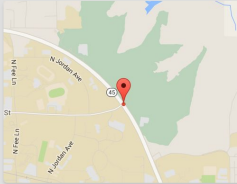
Residential Alarm — From **Amy Robertson**

Started at **12:57** — Finished at **13:40**

Check the report

13:00

Car Accident — From **Amy Robertson**

Started at **12:27** — Finished at **12:43**

Check the report

Mar ijuana Call — From **Philip Peters**

Started at **12:18** — Finished at **12:34**

Check the report

Business Alarm — From **Amy Robertson**

History of calls with high level details.

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Appendix

Supervisor Screen

Submitted police report.

Checklist of officers displayed in real-time.

Area for general supervisor notes.

Text-area to send officers positive message for positive reinforcement.