Hide yo kids,
Hide yo wife.

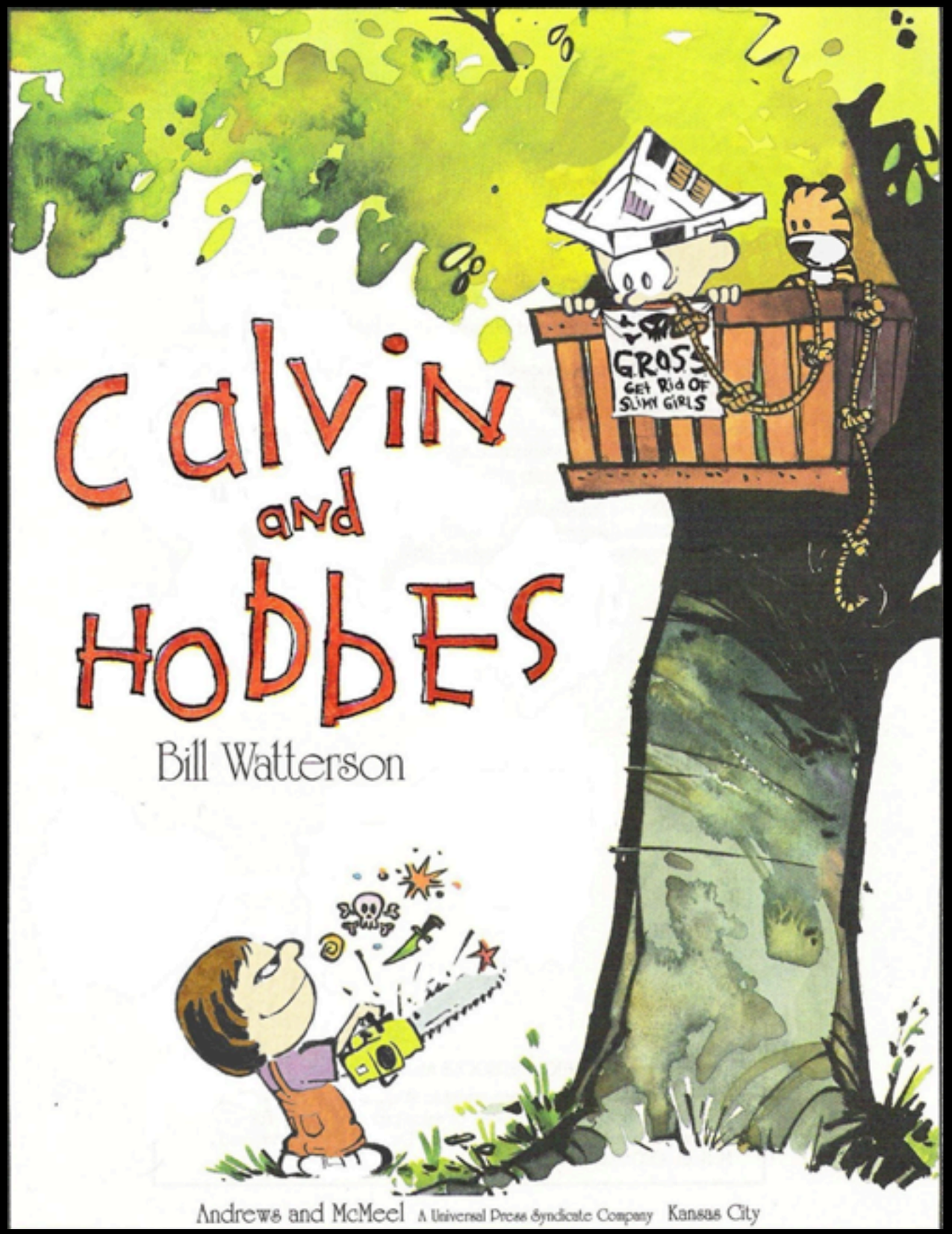
Residential security and
monitoring the bottom line.

What we'll cover

- Anatomy of a break-in
- Overview of a "typical" alarm system
- Benefits of an alarm system
- Things that suck
- How to make things suck less

Who am I?

“treefort”


GROSS
GET RID OF
SLIMY GIRLS
Calvin
and
Hobbes
Bill Watterson
Andrews and McMeel A Universal Press Syndicate Company Kansas City

Evan

Recursive Squirrel Interactive

Developer / Designer

Problem-solver

I break stuff.

wooo....

- We drink and look at locks
- We attempt to remove obscurity from physical security
- We go hard in the paint
- lockfale.com

redditors?

Why do I care about issues in residential security?

- They are bountiful
- It's germane to my skills and interests
- I see it as an extremely widespread issue
- Someone has to set a lofty goal for residential security in order to push things forward

Assumptions

- This is all the opinion of one guy
- I'm not in any position to profit from trashing commercial alarm providers.
- I'm not an expert on the subject. Just a consumer who enjoys thinking critically.
- I focus on residential in this talk, but many (if not most) of these concepts could apply to commercial.
- No one cares about my assumptions

A Typical Setup

Control board (brain)

Control Panel / Keypad

Sensors

Sensors

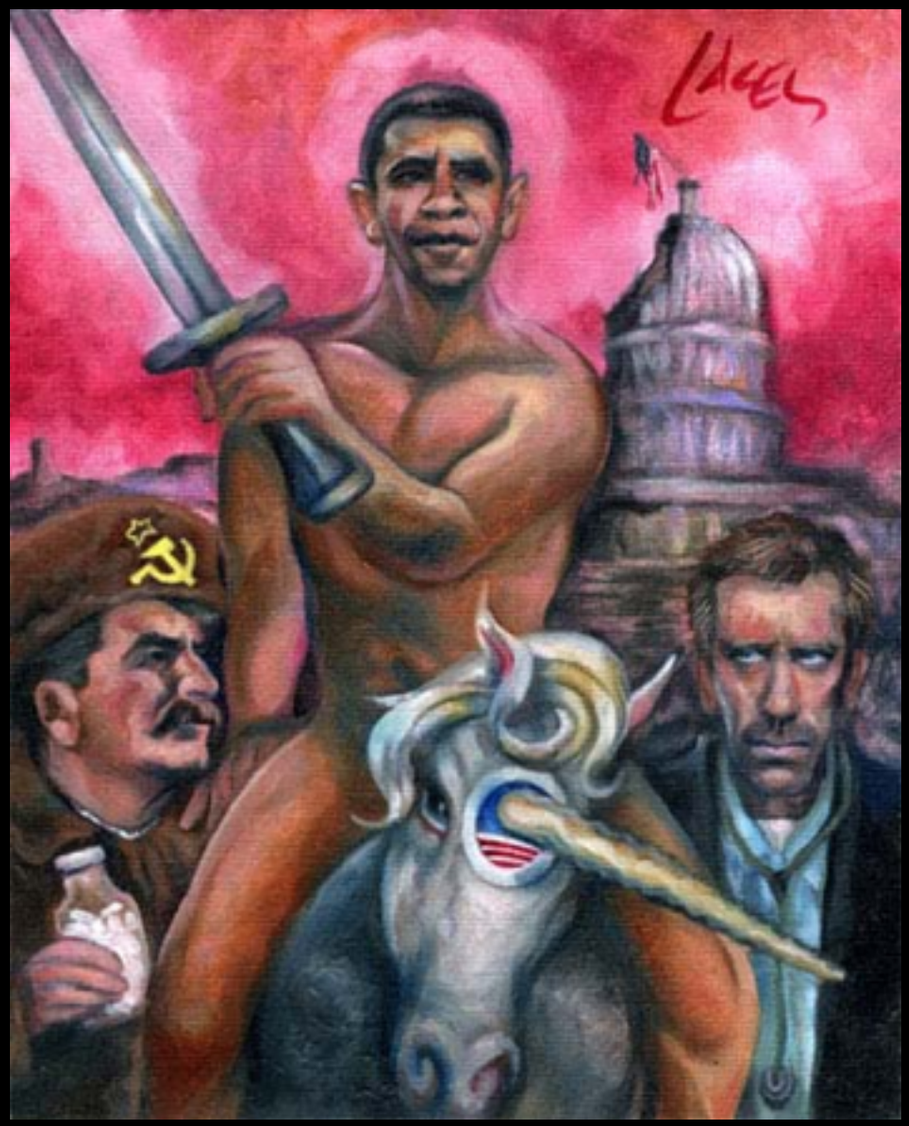
Magnetic Contact / Plunger

Sensors

Motion Detectors

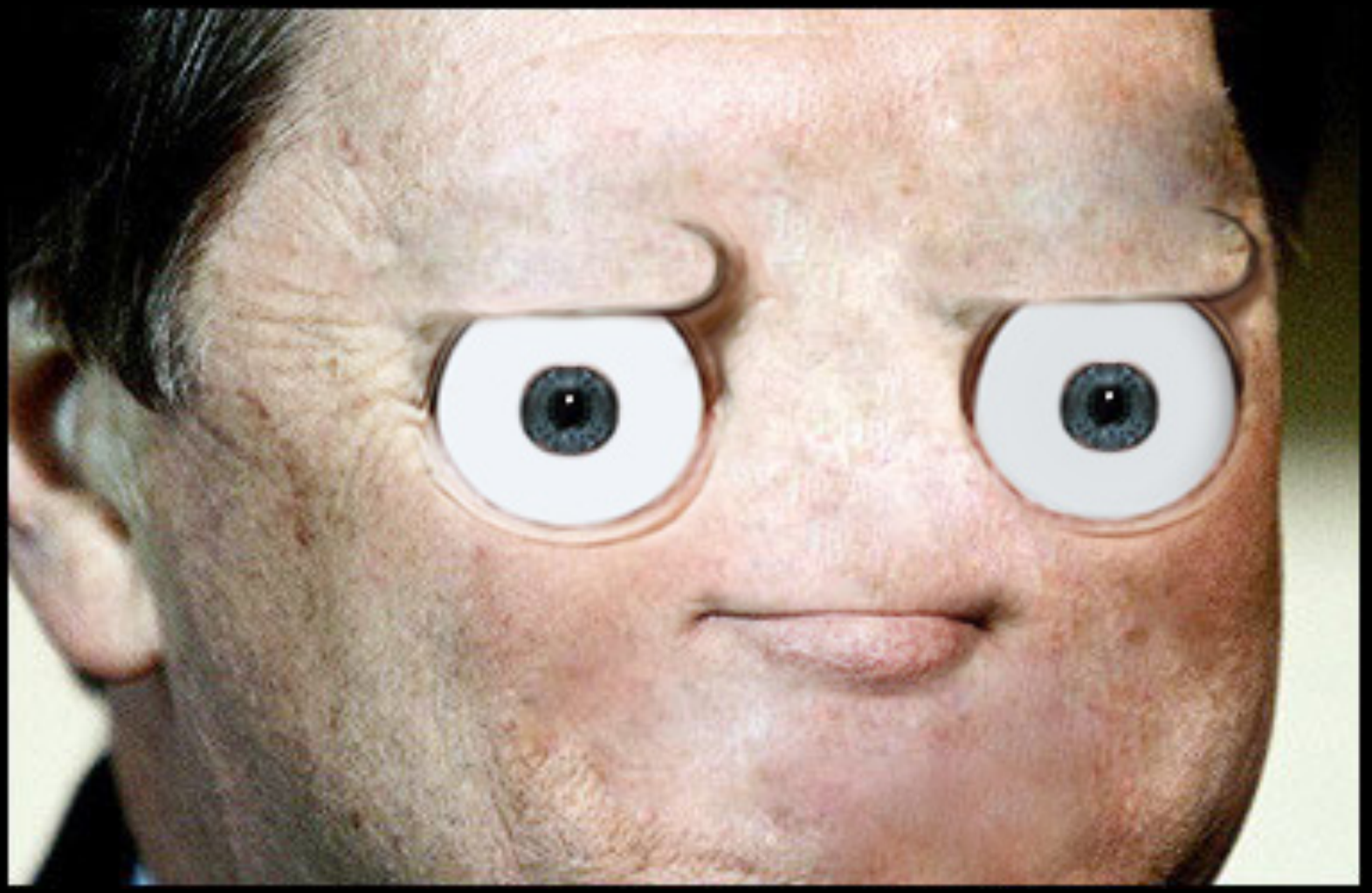
Sensors

Boring



Glass Break

Sensors



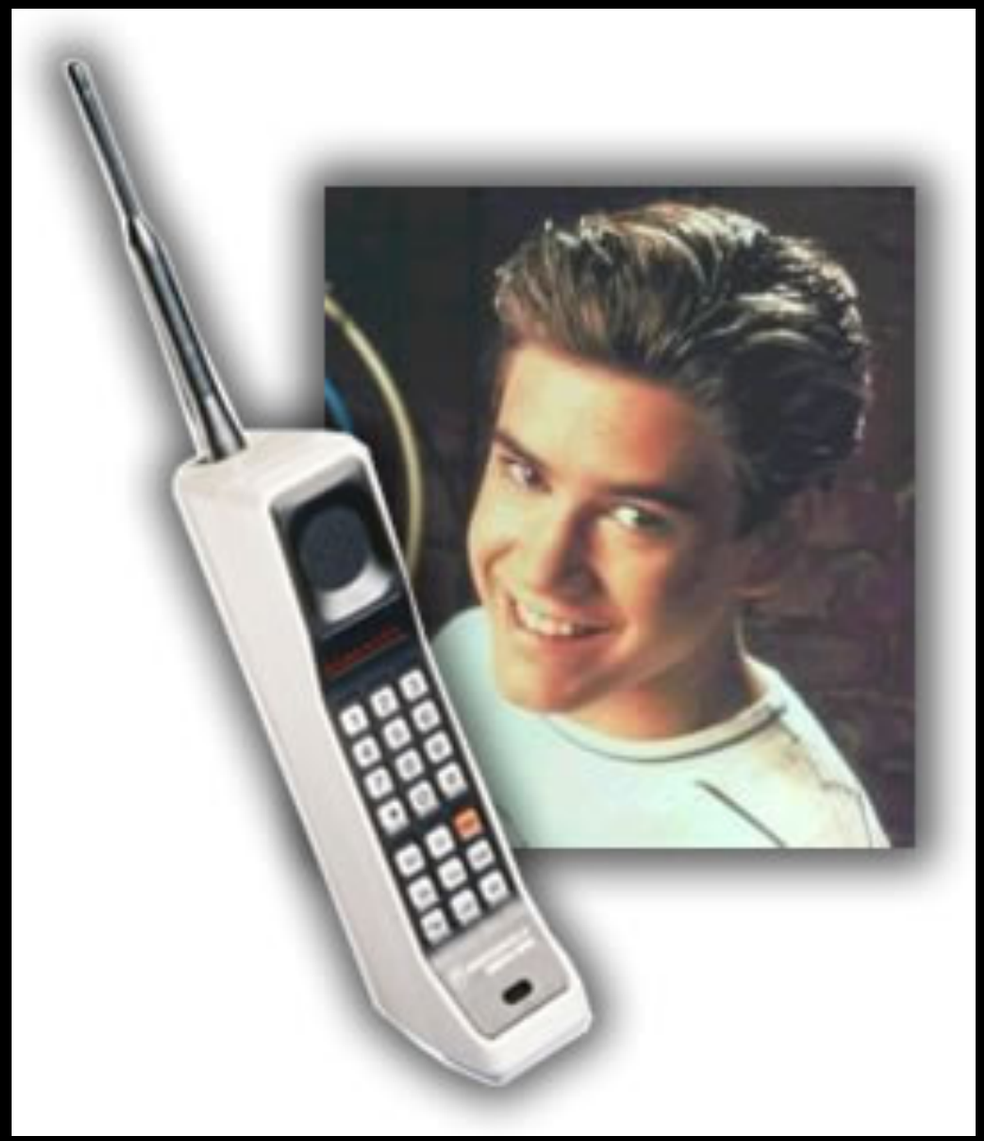
Pressure Mats

Communications/ Networking

Communications/networking

The landline

Communications/networking



Cellular

Communications/networking

Ethernet

Communications/networking

Hybrid

Siren / Strobe

Traits of a “typical” burglary

- Twice as likely to occur between the hours of 6am and 6pm
- Likely to enter through the front door (32%), or through the back door (22%)
- Of all burglaries, 61% involved forcible entry, 32.6% were unlawful entries (sans force), leaving 6.5% forcible entry attempts. FAIL LOL
- Average dollar loss per residential burglary: $2,163
- Per a study done in CT, 41% of alarmed homes that were burglarized had the alarm turned off
- Burglars generally spend one minute or less to gain entry.

Fun fact: In many US jurisdictions, burglary at night carries a more severe punishment than a burglary committed during the day.

What are the benefits of an alarm system?

Financial Benefits

- Less property loss due to the reduced time a burglar stays in the house (they take less crap)
- Pay less for homeowner's insurance (up to 20%, per ADT)

Security Benefits

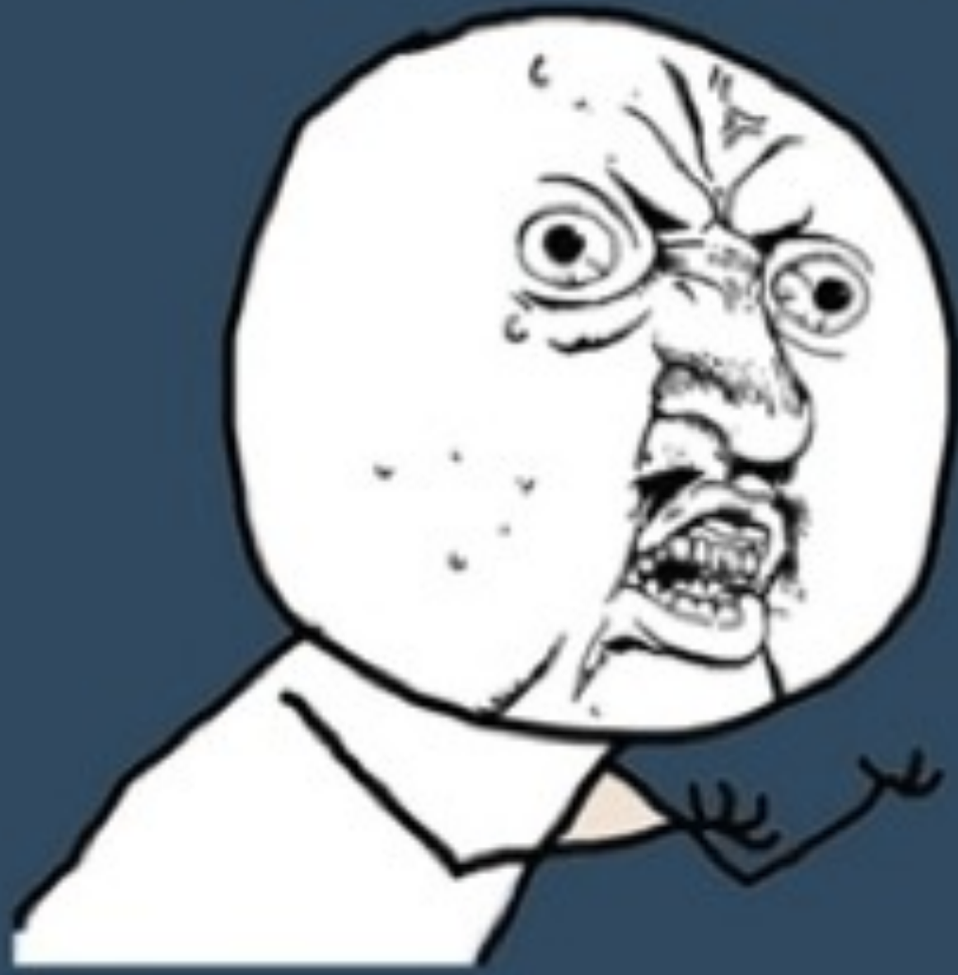
- Less likely to get snooprobbierobbed in the first place (some estimates put unsecured houses at 2.8-3.5 times more likely to be burgled)
- Occupants are quickly notified that someone has nefariously entered the house, so they can take steps to increase their personal safety
- Police/fire/EMT is dispatched quickly
- It gets the neighbor's attention

Other Benefits

- Peace of mind? Masterpiece Security Theater
- Most systems have modes that chime when a door opens, so this could signal a parent that their young child has just vacated the premises.

Or the zombie apocalypse has begun...

ALL THESE BENEFITS



Y U NO HAPPY?

Okay, what are the sucky parts?

90s Hardware

- Standing the test of time is a good thing, but sometimes simplicity comes at the expense of missing opportunities to increase security
- Doesn't take advantage of commonly available equipment in the house
- No future-proofing, whatsoever

Monitoring is a bad product

- Humans performing a task that could easily be automated. Your thermostat is smart enough to make the same decisions.
- Probably the least qualified people to make decisions about your current situation.
- Crap's expensive
  - Oh, but they're subsidizing the cost of the hardware
    - Don't kid yourself
      - You're mean!
        - **SHADDAP!**

We're in a rut. But why?

- The priority is getting as many customers on the hook for monitoring contracts as possible.
  - Again, an awful product/value.
- The ultimate goal of the system is to make a phone call because this justifies the existence of the monitoring centers.
- Best case scenario: the police are dispatched immediately and they show up 15 minutes after the burglar leaves. All for $39.99 a month.

  You might as well balance an upside-down coke bottle on the doorknob and sleep beside your cellphone.

I think there is room for improvement

But first, why should “we” make said improvements?

I’m glad you asked.

- We’re problem solvers.
- We embody the ideal collection of skills required to do this well:
  - Electronics
  - Software development
  - Physical security
  - Policy
  - Reverse engineering
  - The list goes on and on...

Why should “we” do this?

- We have the right motivation: A genuine pursuit to increase security in a given system.
- We’re infinitely more objective simply because we don’t have to satisfy a bottom-line.

The fun stuff

How can it be improved?

Hardware

Hardware

- Integrate existing household components such as laptops, desktops, network cameras, etc. as extensions of the system
  - Webcams collect video and offer another means of detecting motion
  - A laptop's accelerometers could trigger an alarm when moved
  - Computer speakers could blast all manner of awfulness
- Interface with existing/popular protocols (think: Zigbee, Z-Wave, Android@Home, etc.)
- Enterprising users could write drivers/plug-ins for specific hardware
  - Humidity sensors
  - Kill-a-watt type devices
  - Flood detectors

User Habits

PEBKAC

- Introduce “gamification” to alarm state management
  - No, really. I want 500 points.
  - Achievements for good performance
  - You maintain a running security “grade” based on your habits
  - Real rewards for diligent alarm usage
    - Discounts on new sensors, etc.

Achievement Unlocked!

- Alarm was set for 30 consecutive days
- Disarm code entered 200 times without error.
- Created 3 custom alarm states
- Interfaced 5 computers with the alarm

Decentralized Monitoring

I don't need you.

- Takes advantage of how interconnected everyone already is.
- Assign an infinite number of people to become monitors
  - These people would ideally know something about your home, as well as your general status
  - Could implement simple roles & permissions
- Choose notification type: Txt, email, automated phone call, Twitter #robbedlol, smoke signals, etc.
- If no one responds, the system would simply notify the police. IT'S NOT THAT HARD.
- At the very, very least, the system would allow users to choose their monitoring service.

Alarm Notifications

You've Got Burglars!

When an alarm is triggered...

- Txt, email, etc. a summary of sensor activity with respect to time.
- Link to an incident-specific webpage
  - Updated in real-time
  - "Scrubbable" list of changes in sensor states
  - Output of all available video/audio
  - Quick links to common actions (dial police, turn off alarm, RELEASE THE KRAKEN, etc.)
- Live communication between all recipients of the alarm notification

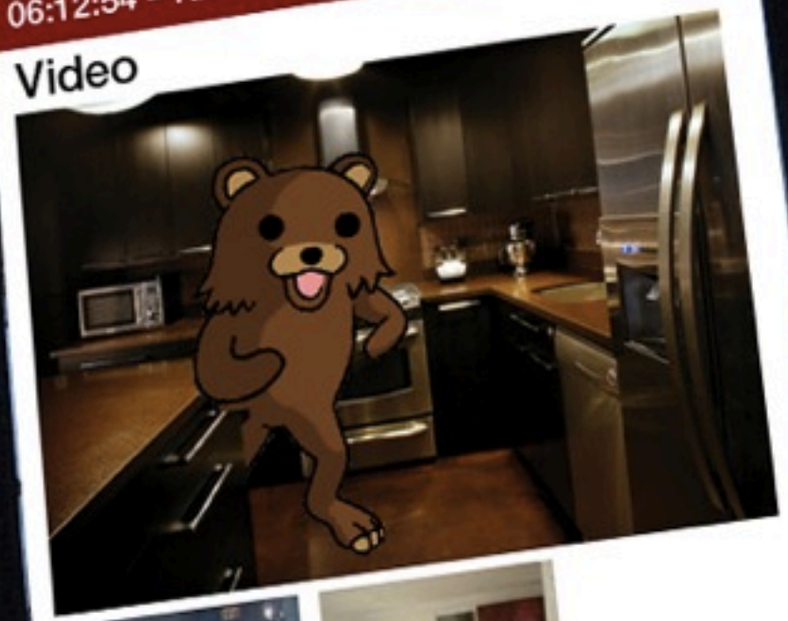
MOTOROLA

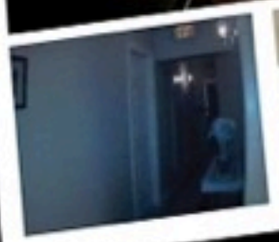
3G 11:04

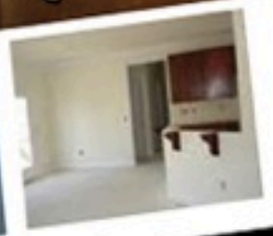
Timeline

06:12:04 – Back door triggered
06:12:22 – Back hall motion 1 triggered
06:12:54 – Kitchen PC motion triggered

Video







Actions

Collaborate

verizon

For Responding Authorities

- Can check the feedback from other people who are monitoring
- Access to camera feeds and sensor information
- Homeowners could set a “status” for their system

  eg: “We’re out of town from 6/1 to 6/8. Joe will be coming by in the evenings to feed the squirrel. Joe: 333-4321-1234. Joe is nerdy, has brown hair, and likes the number ‘six.’”

Leverage Statistics/Data

Leverage Statistics

- Adjust sensitivity based on time / regional crime statistics
- Have the option of sharing data with other systems in your area
  - Useful to identifying trends. Eg: Four houses in a six-block radius have had their back doors kicked in within the past 3 hours.
  - Minority Report pre-cognitive prevention
- Google called and they need more data

Custom Alarm States

Give Me Away, Instant, or Stay or GIVE ME DEATH!

- High level of customization for alarm states
  - Set how each sensor in the system should affect the overall alarm state
  - Set the response type according to the alarm
- Would make it easier for you to have different structures (barn, shed, porta-potty) on one system

More Installation Options

More Installation Options

- Use existing sensors, of course
- Use an array of wireless sensors that could be built into common things around the house
  - Light switch and outlet boxes
  - Motion detectors screw into lightbulb sockets in the ceiling
  - Would ideally work inline with current functionality

“Honeypot” Mode

Ideas. Got one?

How do we do it?

I propose: Moxercat!

Moxerwhaaaat?!
I am 12 and what is this.

- Moxercat is a dream – mythical alarm system nirvana
  - Open-source hardware & software
  - Uses established, open-source protocols for communication
  - Robust plug-in software architecture to create unparalleled hardware compatibility
  - Scalable hardware IO
  - Stupid-simple OS & firmware updates
  - Administrable over the LAN
  - Compact and flexible form factor

Why Open-Source?

- [Insert obligatory OSS discussion here]
- Many hands make light work
- Growth of the system is based on actual needs
- Would allow for a new marketplace of products and services (read: competition)
- Trial by fire

  10 Will it get owned?

  20 Yes, and then it will get fixed

  30 Goto 10

What's next?

What's Next?

- We start this conversation. Come find me.
- Gather awesome people
- Map out the core functionality
- Raise enough funds to develop/construct the foundational software and hardware for Moxercat
- Release the SDK and let creativity, momentum, and gumption take over

That's all.

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