

How programming and UI can (actually) save lives

The Journey of All-in-one software for
Emergency Management,
9-1-1 Support & Fire Department Operations







Not much of a difference.



18 years

4475 miles

200+ projects

40 countries visited

Millions of lines in PHP

~1147 incident responses

How I ended up in Ohio?

It's actually a great place to start.

Venture Capital Available
8th strongest economy (GDP)
Fantastic support in business incubators
Great schools and high-quality universities

My programming journey from procedural languages to structured web content and dynamic server side applications.

qBASIC

```
PRINT "Hello, World!"
```

Pascal

```
writeln('Hello, World!');
```

HTML +
CSS

```
<p>Hello World!</p>
```

PHP

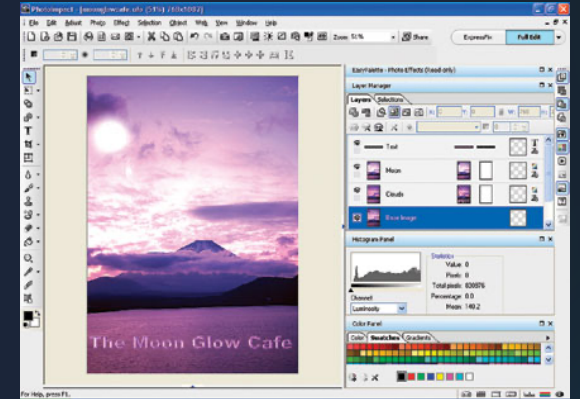
```
<?php echo "Hello, World!"; ?>
```

Python

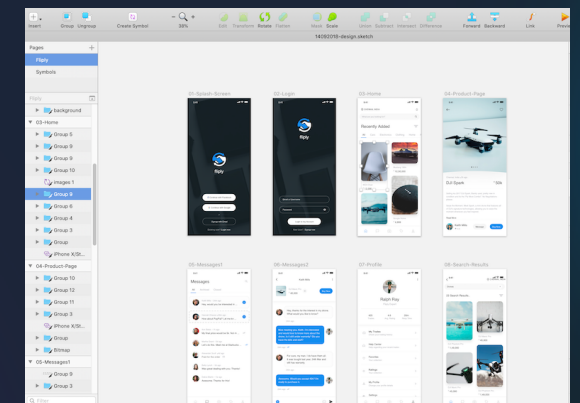
```
print("Hello, World!")
```

My UI journey

PhotoImpact:



Sketch:



The importance of UI



User experience

Design

Birthday*:

January ▾ 1 ▾ 2017 ▾

Primary phone number*:

0 ▾ 0 ▾ 0 ▾ 0 ▾ 0 ▾ 0 ▾ 0 ▾ 0 ▾

Secondary phone number:

0 ▾ 0 ▾ 0 ▾ 0 ▾ 0 ▾ 0 ▾

Fields with asterisks are required. Make sure your details are correct and review your application and will email you on the progress.
Make sure you have read and understood the terms and agree to accept our application in cases outlined in terms and agree

Please enter your phone number:

0	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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6	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
7	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
8	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
9	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Submit

Volume: 50



What have I learned about the UI?

UI directly affects UX.

Developers find UI designs difficult to follow.

Nobody cares about the code in the back.



What matters is what users can see - and use.

Speak to users and observe interactions with your product.

Identify their problems and solve them.

Clutter vs. Focus.

Less for the user often means more work for the developer.

Add Emergency 11/02/015TMay-17:21 By JS166

Address:

Flat: 3136

Type: Status: 99899 Type: Resended:

Assigned:

Ring: Placement of Ring gprnlre, radlreas fectonlre, on calla exchastdn rtle file, adrfreen goloons.

472 TENTH ST: 99899
 CILY - S0300 - CAMMRITE - CHOWNE 0.0.8 AMI Echaboe

CALLER SAW A MAN IN A PUZZLED UNIFORM WHO SOLVE: PUZZES, UPVYZED STATUS: QUERY 17 MINUTES AGO 70 USE STATUS GEER.

Caller Name:

Callback #:

Give Name:

Pttg ex: SAFO130 Former-00000 **N4E**

Call Name:

Priority: :3000

Address:

Beire:

Address:

CONFIRM / SAVE / EXECUTE / DONE !

Submit / Save / CLOSE / Exit All / YES, NO

ERROR 100% / CLOSE / Exit All / YES / NO

INFO-HELP INCIDENT MESSAGES INFO PRINTVIEW PRINT

To: VErticov, Message: (5) hgr2

- 1 Prio-1 SAAMIS LIANE S OUAAN STRONGR RESED T WNA T LDNGR RETZLED ANE A STATUS DIARED STAALED SOUTH ISQUITES IPS A TE CUZER: 9STATUS MET RSDIAR, SGT 3 LONZ-
- 2 Prio-2 MESSAGE GNR LBSS GGGPRENDLTCBN SMTEI LMPPRS SFANGS MANRS NBD DRSS WIRLS
- 1 Prio-1 MANESSET IVTEL LLEGENT BALCEN CUEEF WHIO REUIGF YOLU 6 XALIVE SURE
- 2 Prio-2 QANGS; WANJS TANLA TMSLJCHMNA T TOSHWBHERI, VERI 1!
- 1 Prio-1 QIANGS; WHAT IS THE EMELL OF THE IPS VERY ON CALL HXC11

INFO-HELP Dont Message

Accomition: Accrionart:

- 1 Prio-2 SgprAT C Thepmsse slmrtex, wpsenage
- 2 Prio-3 SgprAT CHANDWRE - STATUS to PUZZLED.
- 1 Prio-3 SgprAT CAD: Evesheo Tlmo
- 1 Prio-6 SgprAT EROAMONIE BECEIBET DRANA GURASS WHO KNOW HGR222 SE.
- 1 Prio-3 SgprAT PUZZLES SUPPED OF A MO: SAME SEABR

INFO-HELP DONT KNOW INFO > ETC

Monpe: Comm: AUseasngs: Oneongs: SAlitane:

* EODRT. OARTE SECResodhne: fann TECERT PUZZLED

Poroges: * CDT. CROMMET SALES RE TRJZLGD BECS PELton: AALL Accermae: AD1331, - 939 TSB97.

Map

Jump too: 472-Tenth-St - Charville, Acte: V - Docation srt0 - 1802 - 100.85% Incident drrMPL6,602 130.000



- HOME
- START INCIDENT
- INCIDENTS
- LOCATIONS
- Astral City Fire Department
 - All stations
- Station
- Trainings
- Employees
- Apparatus
- Inventory
- Fuel
- Equipment
- Issues
- Reminders
- Inspections
- Permits
- Occupancies
- Contacts
- Bizjak Gasper
 - gasper@astral8.io



A2

P1

R01

P2A

PPO

■ In service
■ Actively deployed
■ Malfunction
■ Out of service
■ Unavailable

2 Active incidents

Active incident duration: 4s started active incident at 01:30 PM

● NORMAL

800 East Summit Street, Kent, Ohio 44240, United States Incident commander:

Active incident duration: 26h 45s started active incident at 11:30 AM

● NORMAL

34 5th Avenue, Youngstown, Ohio 44503, United States Incident commander:

Apparatus check

List view Add new

Reminders

Keep track of important deadlines with reminders



Notes

Enter notes

Bizjak Gasper Mar 31, 03:35 PM

● CRITICAL

Road closure, Resurfacing work I-680 between I-76/Ohio Tpke and US-224/Exit 11

Incidents This month 0

No incident data to display yet. Once you start logging calls and reports, you'll see trends and insights here.



- HOME
- START INCIDENT
- INCIDENTS
- LOCATIONS
- Astral City Fire Department (All stations)
- Station
- Trainings
- Employees
- Apparatus
- Inventory
- Fuel
- Equipment
- Issues
- Reminders
- Inspections
- Permits
- Occupancies
- Contacts
- Bizjak Gasper (gasper@astral8.io)



- A2
- P1
- R01
- P2A
- PPO

In service, Actively deployed, Malfunction, Out of service, Unavailable

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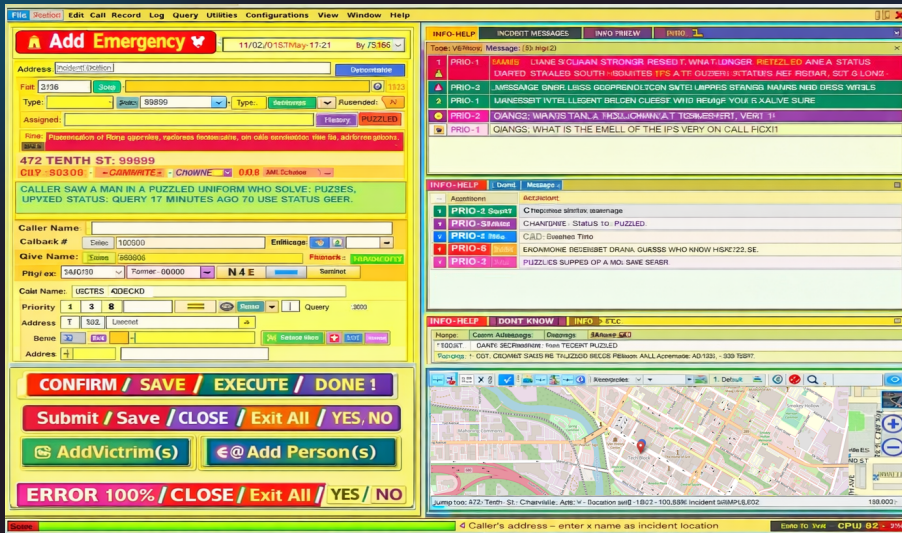
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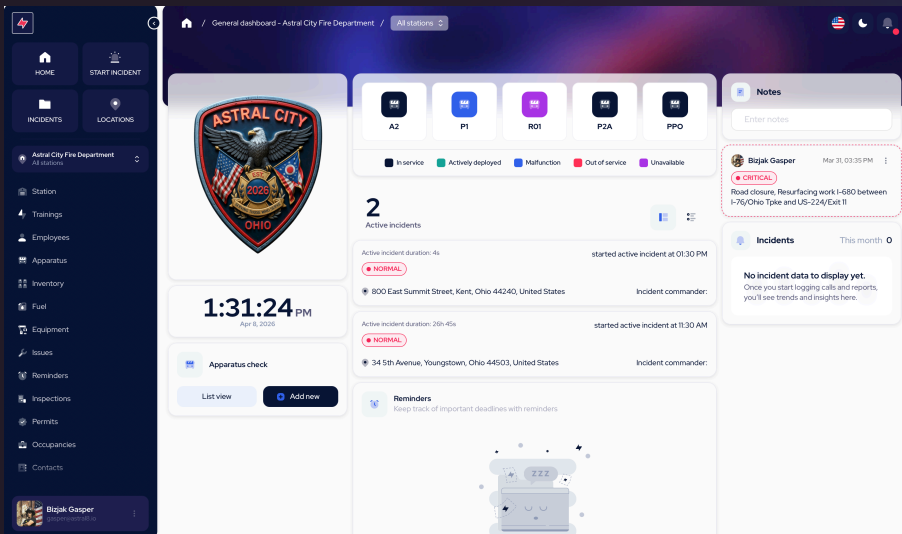
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- Let's capture all data mentality
- Backend-first thinking
- Little real-world testing under stress
- Low effort on UI

"It works - but it was not designed for how humans actually behave under pressure."



- Clear structure (you instantly know where to look)
- Minimal clutter → focus on active incidents
- Visual status instead of text overload
- High effort on UI

"It's not just built to function - it's built to perform under stress."

“Low-effort software asks:
‘Did we capture all the data?’

High-effort software asks:
‘Did we reduce the time to act?’”

User inputs.

In real life, callers frequently start with emotion:

“My husband collapsed!”

“There’s a fire!”

“Someone broke in!”

New dispatch

This will alert all station firefighters.

Incident

Fire alarm activation - Room 120

Address

800 East Summit Street

800 East Summit Street, Kent, OH, USA

800 East Summit Street, Alliance, OH, USA

800 East Summit Street, Attica, IN, USA

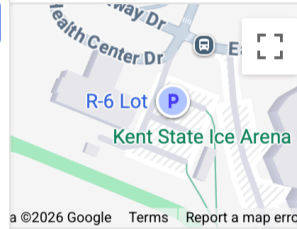
800 Summit Avenue, Niles, OH, USA

800 East Summit Street, Crown Point, IN, USA

Powered by 

Extra notes

Dispatch



We are monitoring the time users spend on each input.
We have found inconsistencies between users.
We have realized that they are jumping from one input to another.

New dispatch

This will alert all station firefighters.

Incident

Fire alarm activation - Room 120

Address

800 East Summit Street

800 East Summit Street, Kent, OH, USA

800 East Summit Street, Alliance, OH, USA

800 East Summit Street, Attica, IN, USA

800 Summit Avenue, Niles, OH, USA

800 East Summit Street, Crown Point, IN, USA

Powered by Google

Extra notes

Dispatch



When someone calls 9-1-1, we don't start with 'what happened.'
We start with where - because without that, nothing else matters.

Button placement.
Small detail for the user.
Significant effort for the developer.
Again.

Random 911 app

800 East Summit Street
Fire alarm activation - Room 120
Apr 8, 2026 1:30 PM
Priority: Normal

Arriving

Not avl.

O M W

Cancel

Delayed

Exit

- Click/tap event
- Minimal logic
- Easy to test
- Accidental Actions
- Low Effort

1:40







Apr 8, 2026 1:30 PM



New call for service

Fire alarm activation - Room 120

800 East Summit Street

-  En route to station
-  Responding – delayed
-  Going directly to scene
-  Unavailable

- Gesture detection (drag vs tap)
- State management (start, dragging, completed, cancelled)
- Edge cases: partial swipe, accidental touches, screen sizes
- Preventing accidental actions
- High Effort

We don't use sliders everywhere.
Only where a mistake is more expensive than a second.

One thing I've learned over the years - before we start building something new,
we need to understand what already exists.

The best technology is not always the most advanced one.
It's the one people can use immediately.
In an emergency, you don't have time to learn new technology.

What is the one device you all have?

Can we use it in emergencies?



9-1-1 VISUAL EMERGENCY GUIDANCE

A dispatch-integrated tool that sends 9-1-1 callers a secure SMS link to a mobile-friendly interface with visual emergency protocols. Supports image/animation guidance (CPR, bleeding, etc.), optional location and image sharing and operates without app installation. It helps untrained callers take life-saving action before EMS arrives.

- Astral8 Team

1 of 2

Enter Caller's phone number

U.S. phone numbers only. (e.g., 740-990-2218)

Next



9-1-1 VISUAL EMERGENCY GUIDANCE

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- Astral8 Team

2 of 2
Select type of Emergency

- Cardiopulmonary Resuscitation (CPR)
- Choking (Adult/Child)
- Unconscious but Breathing (Recovery Position)
- Severe Bleeding / Tourniquet Application
- Broken Bones / Improvised Splinting
- Penetrating Chest Injuries
- Emergency Childbirth / Precipitous Labor

Prev Next



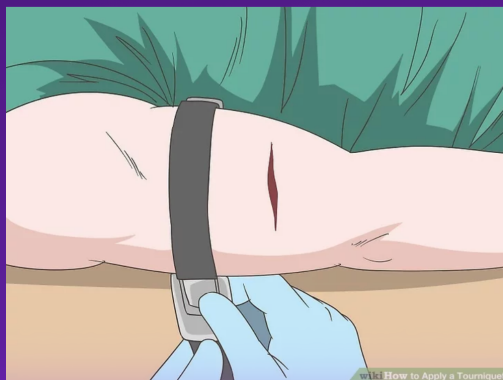
Share Image

Share Location

SEVERE BLEEDING / TOURNIQUET APPLICATION



1. Apply pressure to the wound!



- No app needed
- Works in every browser
- No download. No training. No explanation.
- Close cooperation with developers and designers

Data standardization

Before building systems, we need to ask:

What data structure are we using?

Can we integrate with existing standards?

Or do we need to define one?

If two systems don't agree on what 'location' means - someone has to translate it.

And that costs time.

Adapt to existing standards?

Define your own?

Both are hard. But ignoring it is worse.

Conclusion

UI saves seconds.
Programming enables UI.
Standardization removes hidden delays.

I didn't start by trying to save lives with code. I just wanted to build things. But eventually, I realized - the wrong button, or one extra click... can cost seconds. And seconds cost lives.



Thank you for your attention!