



Healthcare Coalition

Melody, Abby, Caroline, Sam, Elijah



- ▶ Virginia based healthcare coalition
- ▶ Serves ~1 million people
 - ▷ Hospitals
 - ▷ Long-term care facilities
 - ▷ Public health
 - ▷ Emergency management
- ▶ Coordinates partner response activities during disasters
 - ▷ COVID-19 pandemic
- ▶ <http://nspa1.org/>



Incident Command System (ICS) Form

Date Submitted:		PPE Request Form – COVID19			Page 1 of 2 Version 04-20-2020	
I. REQUESTING AGENCY POINT OF CONTACT - Please Type all Answers						
1. Requestor's Name (Please Print)			2. Title		3. Requestor's Phone No.	
4. Hospital Name - System (If requesting for entire hospital system, which facilities does this include?)				5. Requestor's E-Mail Address		
6. DELIVERY Address (include any special instructions, such as if there is a loading dock, or a 24/7 number needs to be called, etc).				7. 24/7 Contact Name and Phone number for delivery issues		
II. REQUEST SPECIFICS - Please Type all Answers						
7. Order (Please complete all fields)						
Qty.	Kind	Brand	When will you run out of your current supply? (estimated)	Detailed Item Description: (Vital characteristics, brand, specs, experience, size, etc.)		Date Needed, pending availability
8. If resources request has been fulfilled regionally, please explain how						
9. <input type="checkbox"/> The resource CANNOT be fulfilled locally				10. <input type="checkbox"/> The resource CANNOT be fulfilled regionally		

Incident Command System (ICS) Form

Continuation of form: COVID-19 Specifics	PPE Request Form – COVID19	Page 2 of 2 Version 04-20-2020
III. Additional COVID-19 Related Questions – ALL QUESTIONS ARE REQUIRED AND MUST BE FILLED OUT TO THE BEST OF YOUR ABILITY		
11. As of the request date, what is your current supply of each of the items, in individual units, you requested?		
12. For each item you requested, how many do you use each day when caring for emergent and urgent patients?		
13. Are the items requested being used for emergent or urgent care only?		
14. What conservation measures have you put into place?		
15. Have you cancelled elective surgeries and/or non-urgent outpatient appointments (if applicable)?		

General **Solution**

Requestor:

- ▶ Open a ticket & submit
- ▶ Check ticket status
- ▶ Request ticket updates
- ▶ Avoid login feature

General **Solution**

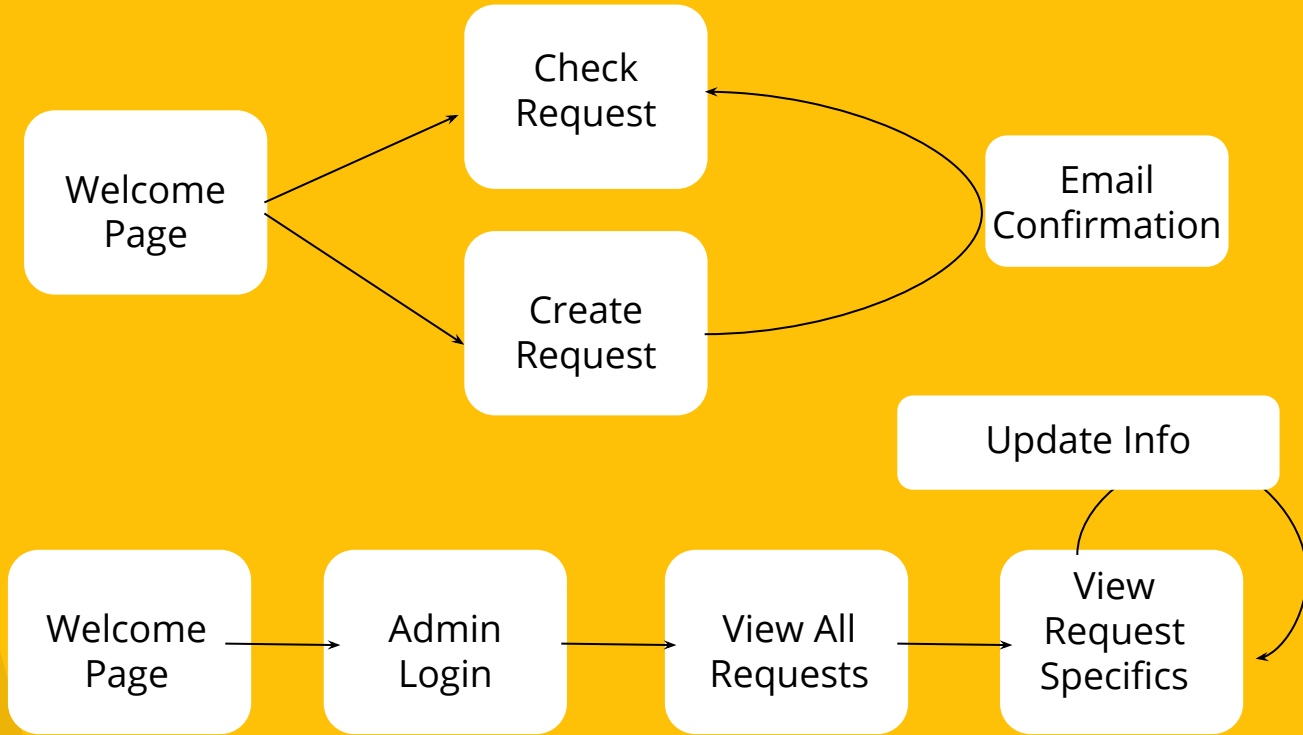
Director capabilities:

- ▶ Escalate ticket
- Delete/close tickets

All staff:

- ▶ Login
- ▶ View all tickets
- ▶ Assign priority
- ▶ Communicate to client
- ▶ Assign tickets to staff

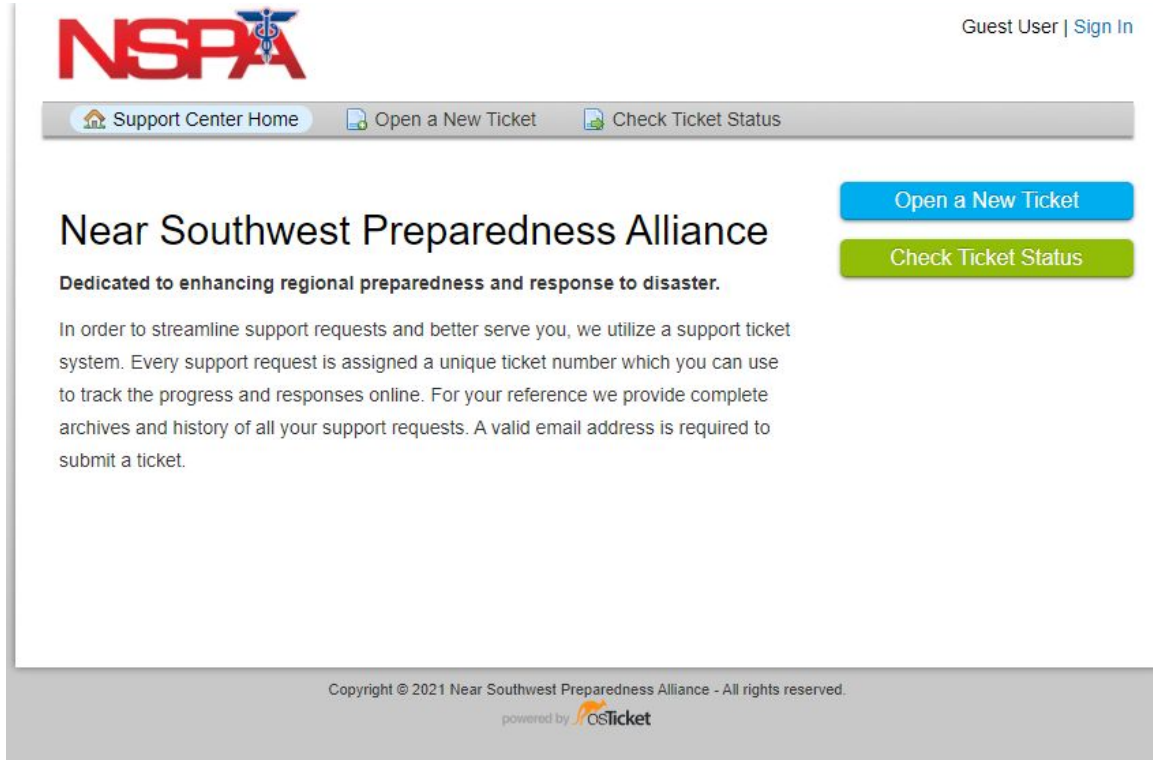
Flow diagram



Ticketing systems

- ▶ Document client requests and interactions
- ▶ Provide better organization, communication, and accessibility between client and staff
- ▶ Monitor ticket statuses in real-time
- ▶ Tickets are usually ordered by priority so that the most urgent tickets are resolved more quickly
- ▶ Records of tickets are stored in a database unless deleted

Opening a new ticket with osTicket



The screenshot shows the NSPA support center interface. At the top left is the NSPA logo, and at the top right is the user status 'Guest User | Sign In'. A navigation bar contains three links: 'Support Center Home', 'Open a New Ticket', and 'Check Ticket Status'. The main content area features the title 'Near Southwest Preparedness Alliance' and a sub-header 'Dedicated to enhancing regional preparedness and response to disaster.' Below this is a paragraph explaining the support ticket system. To the right of the text are two buttons: 'Open a New Ticket' (blue) and 'Check Ticket Status' (green). The footer contains the copyright notice and the 'powered by osTicket' logo.

NSPA

Guest User | [Sign In](#)

[Support Center Home](#) [Open a New Ticket](#) [Check Ticket Status](#)

Near Southwest Preparedness Alliance


Dedicated to enhancing regional preparedness and response to disaster.

In order to streamline support requests and better serve you, we utilize a support ticket system. Every support request is assigned a unique ticket number which you can use to track the progress and responses online. For your reference we provide complete archives and history of all your support requests. A valid email address is required to submit a ticket.

[Open a New Ticket](#)

[Check Ticket Status](#)

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powered by  osTicket



[Support Center Home](#)

[Open a New Ticket](#)

[Check Ticket Status](#)

Open a New Ticket

Please fill in the form below to open a new ticket.

Requesting agency point of contact

Please type all answers

Requestor's Name *

Title *

Requestor's Phone Number

 Ext:

Hospital Name- System (if requesting for entire hospital system, which facilities does this include?)

Requestor's Email Address *

DELIVERY Address (include any special instructions, such as if there is a loading dock, or a 24/7 number needs to be called, etc).

24/7 Contact Name and Phone number for delivery issues

Help Topic

 *

Request specifics

Please type all answers:

Order

Quantity

Kind

Brand

Kind

Brand

When will you run out of your current supply? (estimated)

 (EST)

Detailed item description (vital characteristics, brand, specs, experience, size, etc.))

Date needed, pending availability

If resources request has been fulfilled regionally, please explain how

The resource CANNOT be fulfilled locally

The resource CANNOT be fulfilled regionally

As of the request date, what is your current supply of each of the items, in individual units, you requested?

For each item you requested, how many do you use each day when caring for emergent and urgent patients?

Are the items requested being used for emergent or urgent care only?

What conservation measures have you put into place?

Have you cancelled elective surgeries and/or non-urgent outpatient appointments (if applicable)?

Requestor email

Ticket [#799067] Access Link



DSN NSPA <dsn.nspa@gmail.com>

Thu 2/25/2021 2:55 PM

To: Melody Hsu



External Email - Use Caution

Hi Melody,

An access link request for ticket #799067 has been submitted on your behalf for the helpdesk at <https://128.220.221.23/osTicket>.

Follow the link below to check the status of the ticket #799067.

<https://128.220.221.23/osTicket/view.php?auth=o1xa2aaaaaqaaaaaEiU0nziSb%2FB%2B3A%3D%3D>

If you **did not** make the request, please delete and disregard this email. Your account is still secure and no one has been given access to the ticket. Someone could have mistakenly entered your email address.

--

Near Southwest Preparedness Alliance

Reply | Forward

Admin email

Ticket [#799067] Access Link

DN

DSN NSPA <dsn.nspa@gmail.com>
Thu 2/25/2021 2:55 PM
To: Melody Hsu

External Email - Use Caution

Hi Melody,

An access link request for ticket #799067 has been submitted on your behalf for the helpdesk at <https://128.220.221.23/osTicket/view.php?auth=o1xa2aaaaaqaaaaaEiU0nziSb%2FB%2B3A%3D%3D>

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<https://128.220.221.23/osTicket/view.php?auth=o1xa2aaaaaqaaaaaEiU0nziSb%2FB%2B3A%3D%3D>

If you **did not** make the request, please delete and disregard this email. Your account is still secure and no one has access to your address.

--

Near Southwest Preparedness Alliance

Reply | Forward

New Ticket Alert

DN

DSN NSPA <dsn.nspa@gmail.com>
To: Abigail Rehmet

Reply Reply All Forward

Thu 3/4/2021 6:27 PM

External Email - Use Caution

Hi Admin,

New ticket #762095 created

From: Melody
Department: Support

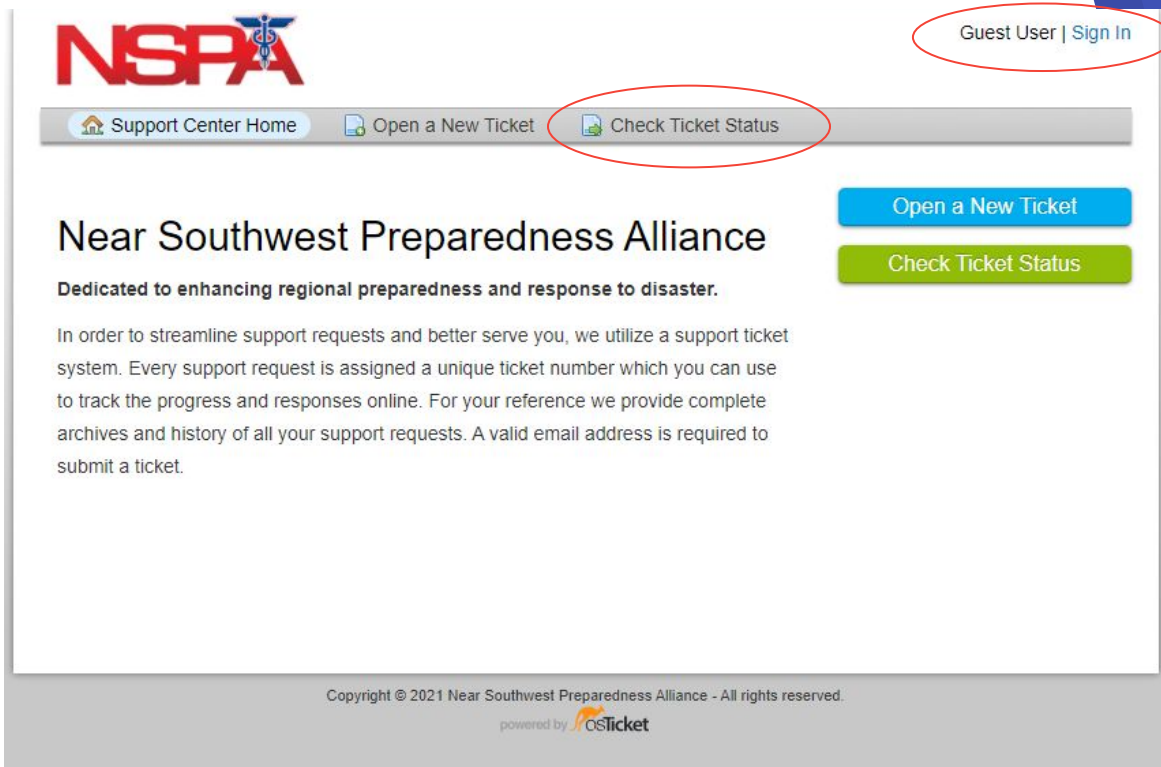
sdaerhae

To view or respond to the ticket, please [login](#) to the support ticket system

Your friendly Customer Support System

powered by  osTicket

Checking ticket status



The screenshot displays the NSPA Support Center interface. At the top left is the NSPA logo. In the top right corner, the text "Guest User | Sign In" is circled in red. Below the logo is a navigation bar with three items: "Support Center Home", "Open a New Ticket", and "Check Ticket Status", with the latter being circled in red. The main content area features the title "Near Southwest Preparedness Alliance" and a sub-header "Dedicated to enhancing regional preparedness and response to disaster." Below this is a paragraph explaining the support ticket system. To the right of the text are two buttons: "Open a New Ticket" (blue) and "Check Ticket Status" (green). At the bottom, there is a copyright notice and the "powered by osTicket" logo.

NSPA

Guest User | Sign In

Support Center Home Open a New Ticket **Check Ticket Status**

Near Southwest Preparedness Alliance

Dedicated to enhancing regional preparedness and response to disaster.

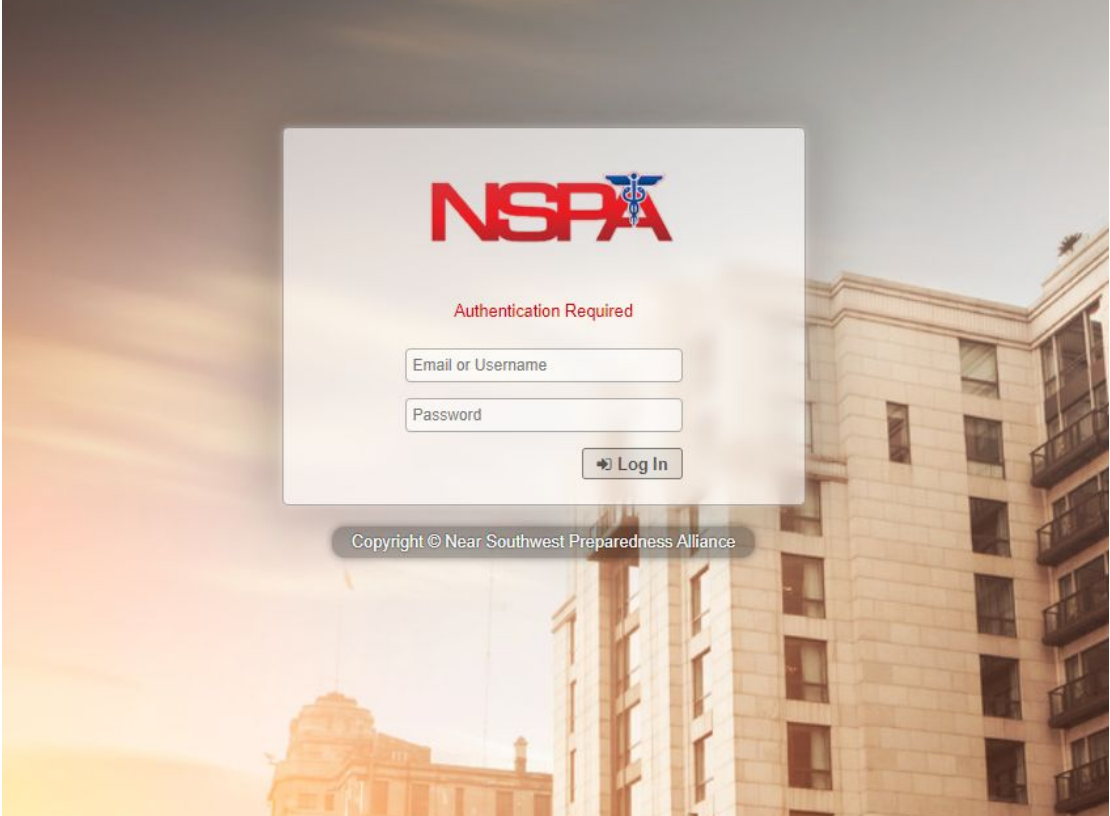
In order to streamline support requests and better serve you, we utilize a support ticket system. Every support request is assigned a unique ticket number which you can use to track the progress and responses online. For your reference we provide complete archives and history of all your support requests. A valid email address is required to submit a ticket.

Open a New Ticket

Check Ticket Status


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powered by osTicket

Staff log in



Staff view of tickets

Not secure | 128.220.221.23/osTicket/scp/

Welcome, NSPA | [Admin Panel](#) | [Profile](#) | [Log Out](#)

Dashboard Users Tasks **Tickets** Knowledgebase

Open My Tickets Closed Search New Ticket

[advanced] Sort

Open Message Assign Print Refresh Export

Ticket	Last Updated	Subject	From	Priority	Assigned To
<input type="checkbox"/> 530977	2/22/21 3:38 PM	hi	test	High	
<input type="checkbox"/> 762095	3/4/21 6:28 PM	afaasfa	Melody	Normal	NSPA Support
<input type="checkbox"/> 874136	3/4/21 6:24 PM	af	aafdfawg	Normal	
<input type="checkbox"/> 799067	2/25/21 5:44 PM	fasgarh	Melody	Normal	NSPA Support
<input type="checkbox"/> 323638	2/23/21 11:16 AM	asfaf	sdgwe	Normal	
<input type="checkbox"/> 798824	2/23/21 10:59 AM	asfa	a	Normal	
<input type="checkbox"/> 408423	2/22/21 4:50 PM	sd	Melody	Normal	
<input type="checkbox"/> 632627	2/22/21 4:49 PM	sdlfgjhesgkl	Abby	Normal	NSPA Support
<input type="checkbox"/> 186367	2/22/21 3:07 PM	Abby's ticket	Abby	Normal	NSPA Support
<input type="checkbox"/> 969019	2/18/21 1:07 PM	this is a test	Abby	Normal	NSPA Support
<input type="checkbox"/> 876157	2/14/21 1:16 PM	osTicket installed!	osTicket Support	Normal	NSPA Support
<input type="checkbox"/> 409593	2/28/21 4:30 PM	lalalal testt	Abby	Low	NSPA Support
<input type="checkbox"/> 905470	2/25/21 6:18 PM	foo1	Abby	Low	
<input type="checkbox"/> 938474	2/25/21 2:55 PM	subject	Abby	Low	NSPA Support
<input type="checkbox"/> 493380	2/18/21 1:05 PM	hello	Test	Low	

Select: All None Toggle

Page: [1] Export

Showing 1 - 15 of about 15

Viewing ticket details

Ticket #493380

hello

Status: Open	User: Test (1) (Manage Collaborators)
Priority: Low	Email: test@gmail.com
Department: Maintenance	Source: Web (73.172.12.22)
Create Date: 2/18/21 1:05 PM	

Assigned To: — Unassigned —	Help Topic: Feedback
SLA Plan: Default SLA	Last Message: 2/18/21 1:05 PM
Due Date: 2/22/21 1:05 PM	Last Response:

Request specifics

Quantity: —Empty—

Kind: —Empty—

Brand: —Empty—

When will you run out of your current supply? (estimated): —Empty—

Detailed item description (vital characteristics, brand, specs, experience, size, etc.): —Empty—

Date needed, pending availability: —Empty—

If resources request has been fulfilled regionally, please explain how: —Empty—

The resource CANNOT be fulfilled locally: No

The resource CANNOT be fulfilled regionally: No

As of the request date, what is your current supply of each of the items, in individual units, you requested?: —Empty—

For each item you requested, how many do you use each day when caring for emergent and urgent patients?: —Empty—

Are the items requested being used for emergent or urgent care only?: —Empty—

What conservation measures have you put into place?: —Empty—

Have you cancelled elective surgeries and/or non-urgent outpatient appointments (if applicable)?: —Empty—

Ticket Thread (1) Tasks

Communicating to requestor

Ticket #493380

Ticket Thread (1) | Tasks

Test posted 2/18/21 1:05 PM

hello

Created by **Test** 2/18/21 1:05 PM

Flagged as overdue by the system 2/22/21 3:04 PM

NSPA Support transferred this to **Maintenance** 2/22/21 4:15 PM

Marked overdue!

Post Reply | Post Internal Note

From: DSN NSPA <dsn.nspa@gmail.com>

Recipients: "Test" <test@gmail.com>
Collaborators

Reply To: All Active Recipients

Response: Select a canned response

hellohellohellohello

Hey User,

From Ushello

can of tuna




















Hey User,

From Us

all changes saved

Drop files here or choose them

Lots of
PHPs!

Name	Size	Last Modified	Type	Permissions
 client.inc.php	2.13 KB	Mar 20, 2014, 4:17 PM	text/x-generic	0644
 gensalt.php	77 bytes	Mar 20, 2014, 4:17 PM	text/x-generic	0644
 image.php	1,009 bytes	Mar 20, 2014, 4:17 PM	text/x-generic	0644
 index.php	1.7 KB	Mar 20, 2014, 4:17 PM	text/x-generic	0644
 l.php	1.16 KB	Mar 20, 2014, 4:17 PM	text/x-generic	0644
 LICENSE.txt	14.86 KB	Mar 20, 2014, 4:17 PM	text/plain	0644
 login.php	1.69 KB	Mar 20, 2014, 4:17 PM	text/x-generic	0644
 logo.php	980 bytes	Mar 20, 2014, 4:17 PM	text/x-generic	0644
 logout.php	737 bytes	Mar 20, 2014, 4:17 PM	text/x-generic	0644
 main.inc.php	1.37 KB	Mar 20, 2014, 4:17 PM	text/x-generic	0644
 offline.php	920 bytes	Mar 20, 2014, 4:17 PM	text/x-generic	0644
 open.php	3.05 KB	Mar 20, 2014, 4:17 PM	text/x-generic	0644
 profile.php	958 bytes	Mar 20, 2014, 4:17 PM	text/x-generic	0644
 README.txt	4.87 KB	Mar 20, 2014, 4:17 PM	text/plain	0644
 secure.inc.php	1.02 KB	Mar 20, 2014, 4:17 PM	text/x-generic	0644
 tickets.php	4.33 KB	Mar 20, 2014, 4:17 PM	text/x-generic	0644
 UPGRADING.txt	3.13 KB	Mar 20, 2014, 4:17 PM	text/plain	0644
 view.php	978 bytes	Mar 20, 2014, 4:17 PM	text/x-generic	0644
 web.config	1.88 KB	Mar 20, 2014, 4:17 PM	text/x-generic	0644

Designing it From **Scratch**

Welcome to The Main Event!!!

Name:

Email:

Priority:

Time:

Welcome to The Requests Page!

Name: Caroline Hoerrner	Priority: UNSET
Time: 2021-04-29 23:20:43.125	Email: choerrner@gmail.com



Admin Login

Check Status of Existing Ticket

Your Email: [i Email address used to complete request. X](#)

Placeholder

Request ID Number: [i Unique request ID number specified in confirmation email. X](#)

Placeholder

Check Status

[start new search](#)

Request 123456

Request Entered System on: 01/01/2001

Request Approved by Staff on: 01/01/2001

Request Priority: HIGH Panel content

Status: Assigned to staff, contacting supplier



Admin Login

Create New Request

Requester Contact Information

Name

Title

Phone Number

Email Address

Hospital Name

Address

Name and Information of 24/7 Contact for delivery purposes

Request

Quantity

Kind

Brand

When will you run out?

Date needed

Details about request

The resource CANNOT be fulfilled locally.

The resource CANNOT be fulfilled regionally.



Welcome, Staff1!

Logout

Search

Sort by

New Requests (5)

All Active

Assigned to Me

Archive

ABC Hospital
01/02/2021 | 13:35
user@test.com 20 bx. Nitrile Gloves L Priority: Medium
Status: Unfulfilled **+**

Requester
01/06/2021 | 14:20
user@test.com Request Item Priority: Priority
Status: Status **+**

Requester
01/06/2021 | 14:20
user@test.com Request Item Priority: Priority
Status: Status **+**

Requester
01/06/2021 | 14:20
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Logout

Search

Sort by

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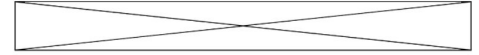
Archive

ABC Hospital
01/02/2021 | 13:35
user@test.com 20 bx. Nitrile Gloves L Priority: Medium
Status: Unfulfilled **-**

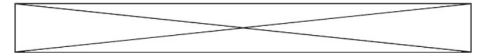
Contact Requester

Assigned to: Staff1

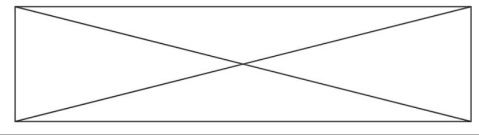
Requester Information



Request Details



Additional Details



Edit Request

Tradeoff: osTicket vs Scratch

osTicket

Pros

- ▶ Provides a more immediate product that fulfills what we need
- ▶ Is already implemented for us

Cons

- ▶ Less flexible (already implemented)
- ▶ Troubleshooting is problematic
- ▶ The log in function is difficult to remove
- ▶ Several pre-existing PHP files
- ▶ Limited documentation

Scratch

Pros

- ▶ Flexibility
- ▶ Not finished on week 1
- ▶ Valuable learning/prof. experiences

Cons

- ▶ Time consuming
- ▶ API/Library Sleuthing

Tradeoff: osTicket vs Scratch

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Scratch

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Development Stages

Basic DB and UI structure & client functionality

Request creation & visualization, check request status, email receipts



Develop staff functionality

Staff login, categorizing & editing requests, tabs for new/open/closed requests

Minimum viable product ready



Receive feedback

Feedback adjustments & new features

Adjust form fields, reorganize staff request tabs
Implement 'escalate request', search feature, pdf's, password reset

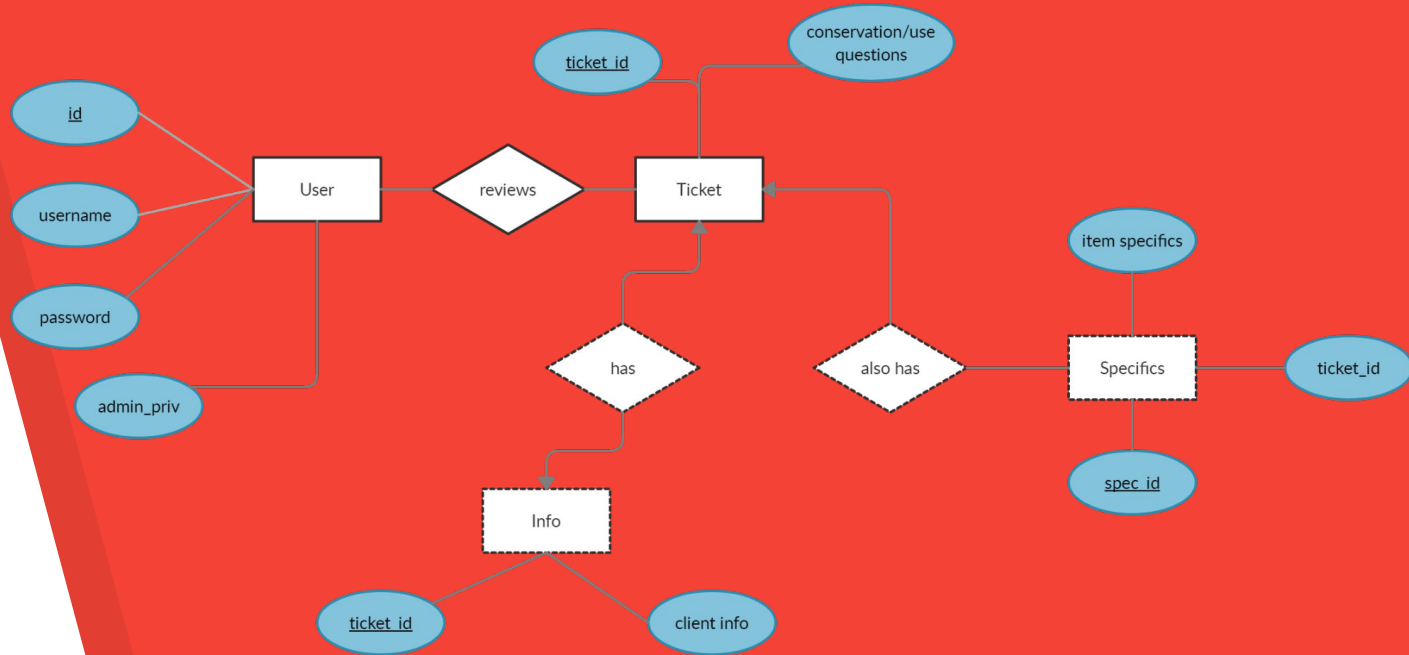


Receive feedback

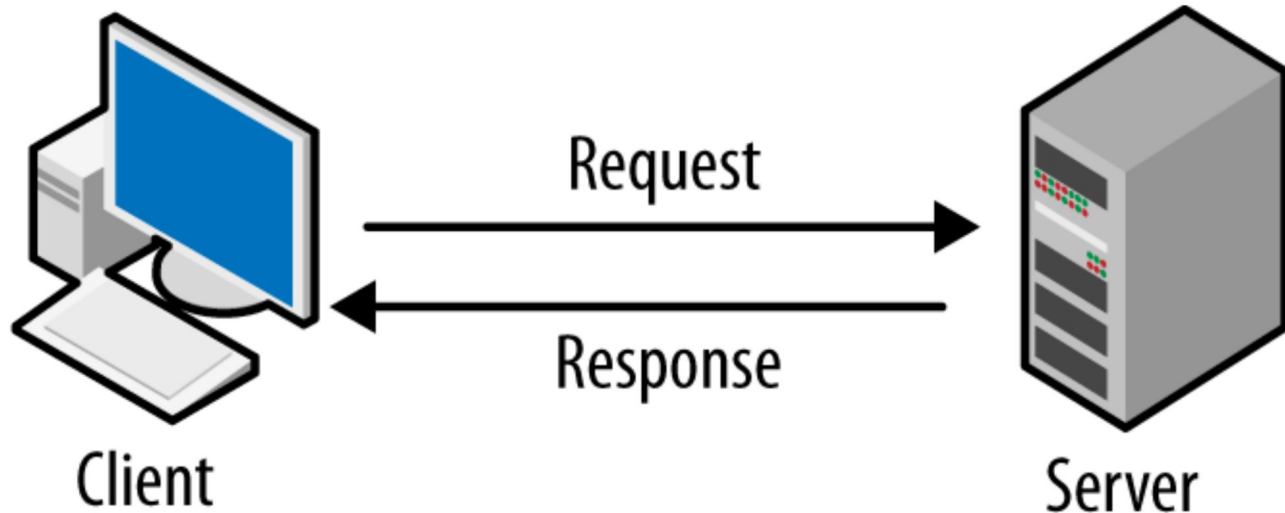
Fine-tuning code, stress-testing, documenting software and code.

Finished Product

Database Design



Software Design: Client-Server Architecture



Client-Server Architecture Examples:

Searching Requests:

Request

Staff selects request attribute & searches with a keyword

Get Request made to server

Response

Server performs DB queries

Server loads a list of requests containing the keyword

Submitting Requests:

Request

Client fills out form fields & submits

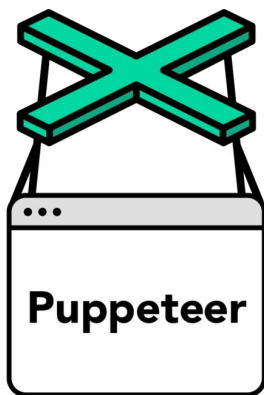
Post Request made to server

Response

Server validates submission and stores request in database

Server confirms submission; sends email receipt to client

Notable APIs



Sendgrid - Emails

- ▶ Free plan - 100 emails/day
- ▶ Request submission receipts
- ▶ Password reset

Dynamic Templates: Drag & Drop Programming

The screenshot displays the SendGrid email editor interface. At the top, there is a dark blue navigation bar with a back arrow, a pencil icon labeled 'DESIGN', a magnifying glass icon labeled 'PREVIEW', and a 'Save' button. Below this, the interface is split into two main sections: a left sidebar and a main content area.

Left Sidebar:

- At the top, there are tabs for 'Settings' and 'Build', with 'Build' being the active tab.
- Below the tabs is a 'Save' button.
- A section titled 'ADD MODULES' contains a grid of drag-and-drop options:
 - Image
 - Text
 - Columns
 - Image & Text
 - Button
 - Code
 - Divider
 - Spacer
 - Social
 - Unsubscribe

Main Content Area:

- At the top, it shows 'Subject: Request Confirmation' and 'Preheader:'.
- The main body of the email contains:
 - A large heading: **Order Confirmed!**
 - A sub-heading: **Below is the information for your request.**
 - A line of text: **Request ID: {{{id}}}**
 - A section titled **Client Information:** followed by several dynamic content tags: {{{name}}}, {{{email}}}, {{{phone}}}, {{{hospital}}}, and {{{addy}}}.
 - A red button labeled **View Request Status**.
 - At the bottom, a link: [Unsubscribe - Unsubscribe Preferences](#)

PDFBox - PDFs

- ▶ Receipts
- ▶ Request escalation

Request Confirmation Inbox x



NSPA Ticket Confirmation nspa.service@gmail.com via sendgrid.net
to me ▾

🕒 9:08 PM (21 minutes ago) ☆ ↩ ⋮

Order Confirmed!

Below is the information for your request.

Request ID: 17LmNSTHWA

Client Information:

Samuel Horigan
samuelhorigan@gmail.com
7817076464
JHH
2900 N Calvert St.

[View Request Status](#)

[Unsubscribe](#) - [Unsubscribe Preferences](#)



Puppeteer - Stress Testing

- ▶ Test storage limitations

```
const puppeteer = require('puppeteer');

(async () => {

  const browser = await puppeteer.launch({headless:true});
  const page = await browser.newPage();
  await page.goto('http://rain16.cnds.jhu.edu/nsipa/requestform');

  //start filling in fields
  await page.type('#name', 'Sam Horrigan')
  await page.type('#title', 'Mr. ')
  await page.type('#phone', '7817077070')
  await page.type('#hospital', 'JHH')
  await page.type('#email', 'samueldhorrigan@gmail.com')
  await page.type('#facility_address', '2900 N Calvert St.')
  await page.type('#facility_city', 'Baltimore')
  await page.type('#facility_state', 'MD')
  await page.type('#facility_zip', '21218')
  await page.type('#special_shipping_instructions', 'fast')
  await page.type('#facility_type', 'house')
```

x10,000

Issues We Faced

- ▶ Rain3 killed by PDFBox
 - ▷ Permissions were unintentionally rewritten when attempting PDF download
- ▶ Database changes
- ▶ Cookie structure enabled external log in

Our Servers

Local changes - Master branch



Development server - Rain16



Production server - Rain2

Demo

Considerations before going Live

- ▶ Privacy Policy

The **Future** of Our System

- ▶ Copyright
- ▶ Documentation
 - ▷ JavaDoc
 - ▷ Database schema and tables
 - ▷ Installation and Database backups
- ▶ Doc for NSPA

Questions?

Thanks!