Fire Protection Reporting at DOE: Review of Current Practices and Proposed System Upgrades

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Office of Environment, Health, Safety and Security

Presentation Overview

- A little history of DOE FP data collection
- What do we track now and what does it tell us?
- FP Community feedback and issues with data/database
- Expectations
- Value proposition and proposed “fix” - FPIRS
- Timeline
- FP Database Committee

History of DOE's Fire Protection Annual Summary

- Has been around for about six decades
- Used to evaluate performance of the FP Program, by comparing to civilian high-risk industry
- Enables DOE accountability and pathways for continuous improvement

Fire Loss Number (history)

- In 1835, the American Mutual Insurance Company started tracking industries whose processes, raw materials or products were considered high risk.
- DOE compares itself to high-risk industry by using the fire loss number generated by that same company (now called Factory Mutual Insurance Company).
- Although the fire loss number is a key indicator, DOE collects and tracks other metrics.
- DOE collects data to be used by management, fire departments, safety and emergency management staff to improve operations.

DOE Requirement

- DOE Order 231.1B, *Environment, Safety, and Health Reporting*, requires organizations responsible for maintaining property under the stewardship of DOE to enter reportable fire and fire protection-related incidents into the DOE Fire Protection Reporting System (FPRS).

What do we Track Now?

- Fire Losses: events that involve fire, smoke, or both, that ALSO result in monetary losses
- Fire Loss Rates: both overall and by site
  - Unit of comparison in cents loss per $100 of valuation (facilities and equipment)
- Recurring Fire Protection Program Costs
- Water and Non-Water Based Fire Suppression System Actuations
- Fire Department Responses by Site: Fire, HazMat, Non-Emergency, Medical and other calls

Analyzing DOE Fire Protection Data

- Fire Protection Data Trends Report (2015-2019)
  - This report was developed to test our new Data Analytics analysis tools (DAMaL) tools.
  - This report analyzed information from 59 DOE organizations that submitted data into FPRS.
  - The analysis utilized natural language processing and machine learning text clustering methods to evaluate the text data of the fire protection loss reports.

Key Finding:
We Need Better Data

- No insights could be obtained due to limitations of the current data collection, including:
  - Inconsistency and reliability of reporting across the enterprise
  - Categories of data are limited

- Path forward would include:
  - Improving the reporting fields of the fire department response data to ensure data consistency and reliability
  - Provide the ability to measure trends, identify areas of improvement and potential leading indicators that could enhance learning and safety across the DOE

Feedback from our Community

The feedback from our Fire Protection Community has been in favor of change, including:

- Consistent and useful data
- Data that matches up with NFIRS
- Data we can analyze
- An Annual Report that is relevant to our needs

What are the Main Issues with the Current Data Collection?

- Users were using “Unknown or Other” too often
- Sites are reporting differently and inconsistently for the same fields
- Input is labor intensive due to not being NFIRS Compatible
- Some sites are just copying their ORPS reports and not adding other incidents
- Responses are not specifically categorized
- Valuable facts about the responses are not collected
- Sites can’t use, analyze or trend data using the current system

Our Conclusion: We need to update our database to collect better, more relevant, consistent data that is more accessible and useful to our sites.

What can we expect from an updated database?

- Ability to collect and analyze better data using NFIRS fields.
- Sites that currently submit NFIRS reports will be able to upload them into the database and export the text file.
- Sites that don't have a commercial program will be able to use FPIRS as their emergency database.
  - The NFIRS data fields will insure concise entries.
- Sites currently are projected to spend over $300K/YR on commercial software. The new system can save money.

FPIRS Value Proposition

- Key Aspects
  - Make it easy for the user
  - Provide better real time data
  - Make new tools available
  - Provide sites an option to use our system as their NFIRS System
  - Automatically produce key aspects of the Annual Summary
  - Facilitate the flow of information between Headquarters and sites

Timeline

- If approved and funded, the system is built over the course of about a year
- Test sites will be chosen to test the system
- We will need a few months of testing before launch

Our goal is to make the best database possible, while meeting everyone's needs.

New Fire Protection Database Committee Members

- Chairman- Bart Drummond- EHSS
- Tony Boyd- ORNL
- Jim Bisker-EHSS
- Joseph Sellers-NNSA
- Michael Cates- INL
- John Saidi- Office of Science
- Felix Gonzales- EHSS
- Robert Plonski- NNSA
- David Collins- NNSA
- Michael Brock- CNS
- Mari-Kaye Monday - CNS
- Travis Scott- SRS

Any Questions?

Barton W. Drummond, CoSM
Fire Protection Annual Summary Manager

Office of Environment, Health, Safety and Security

Background: Proposed Conceptual Design of FPIRS

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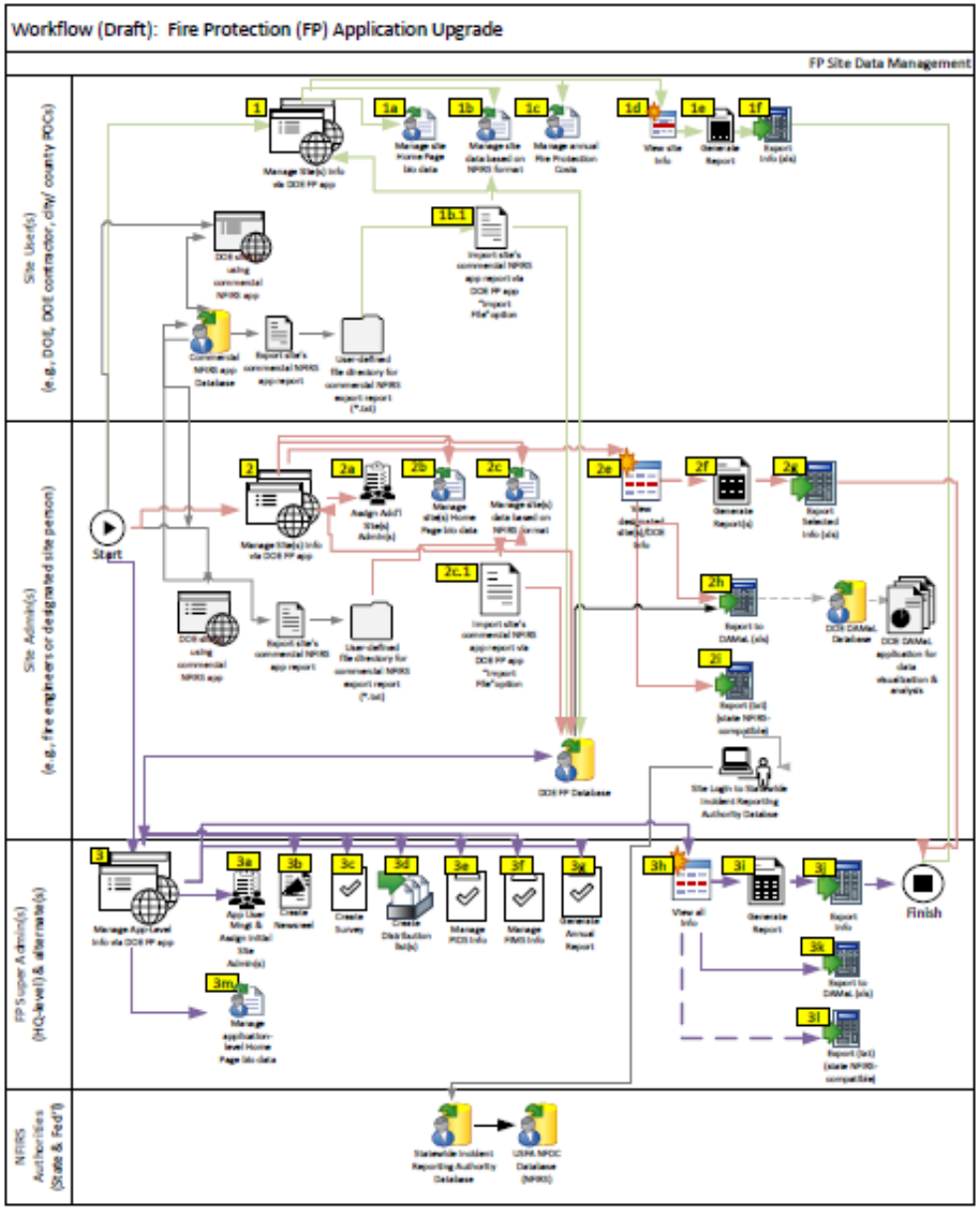
Introducing the Proposed Conceptual Design for what FPIRS May Look Like

- FPIRS stands for Fire Protection Incident Reporting System

Security

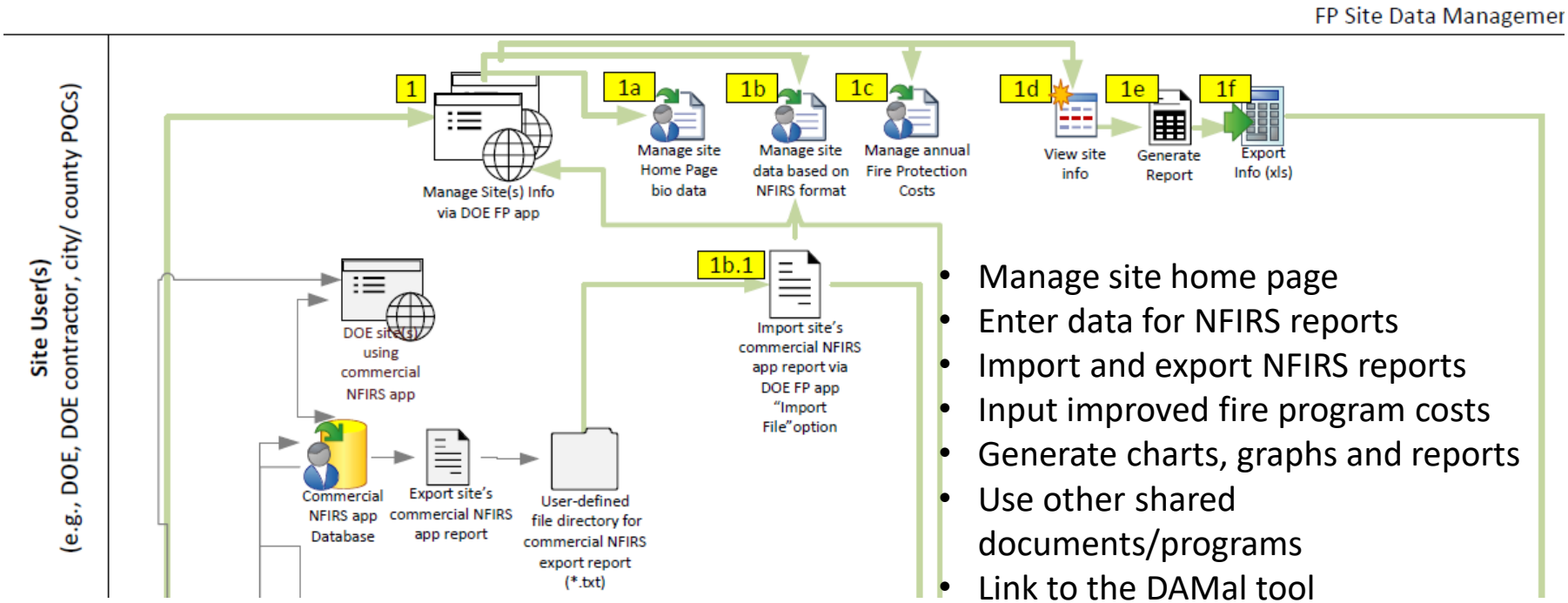
- FPIRS will be built to the FED RAMP level.
- Site administrators will not put anything classified or PID into the system.
- Users will have to have a badge or token to use the system.
- County or City fire departments will be able to upload NFIRS reports, if an agreement is worked out with the site administrator. (Access renewed every 30 days.)



Work Flow

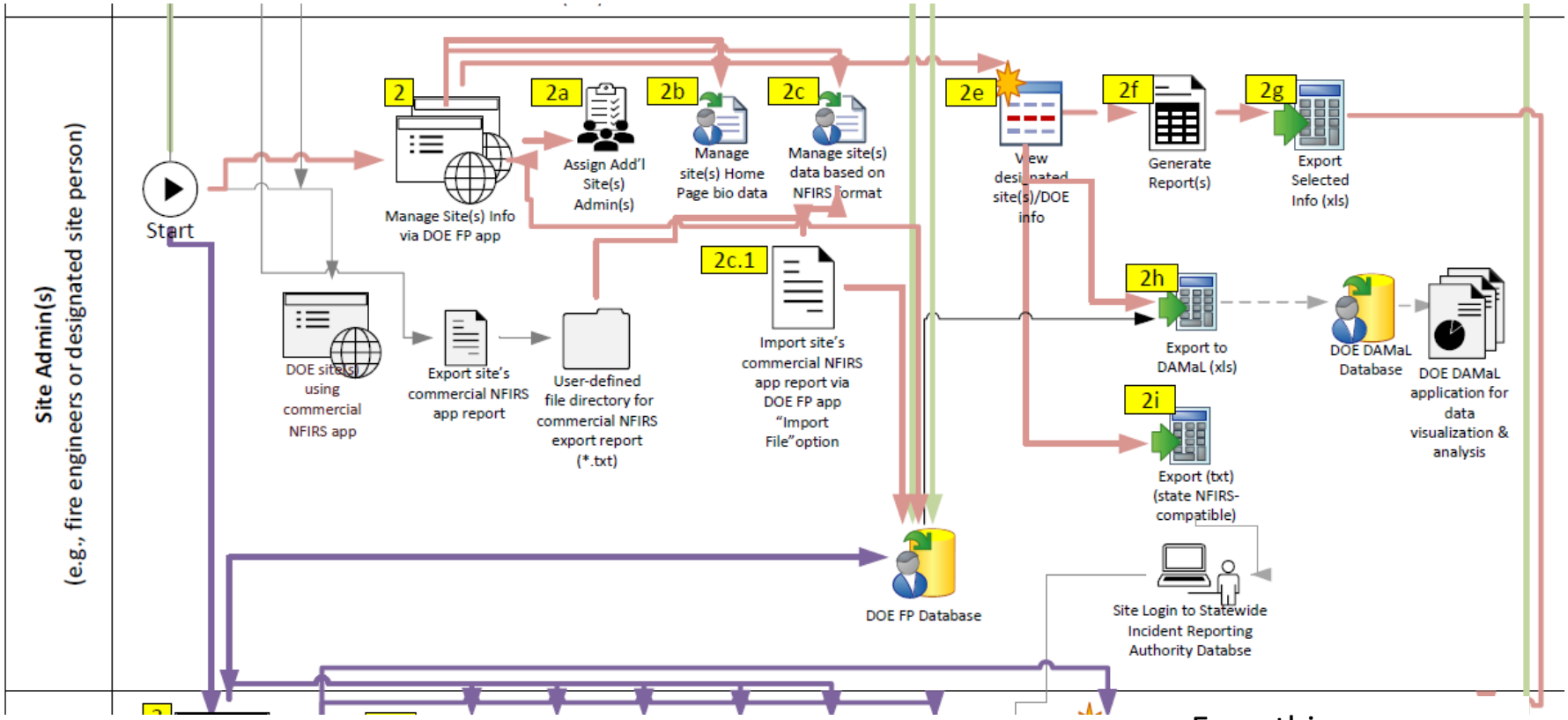
3 Types of Privileges: User, Administrator, and Super Administrator

User



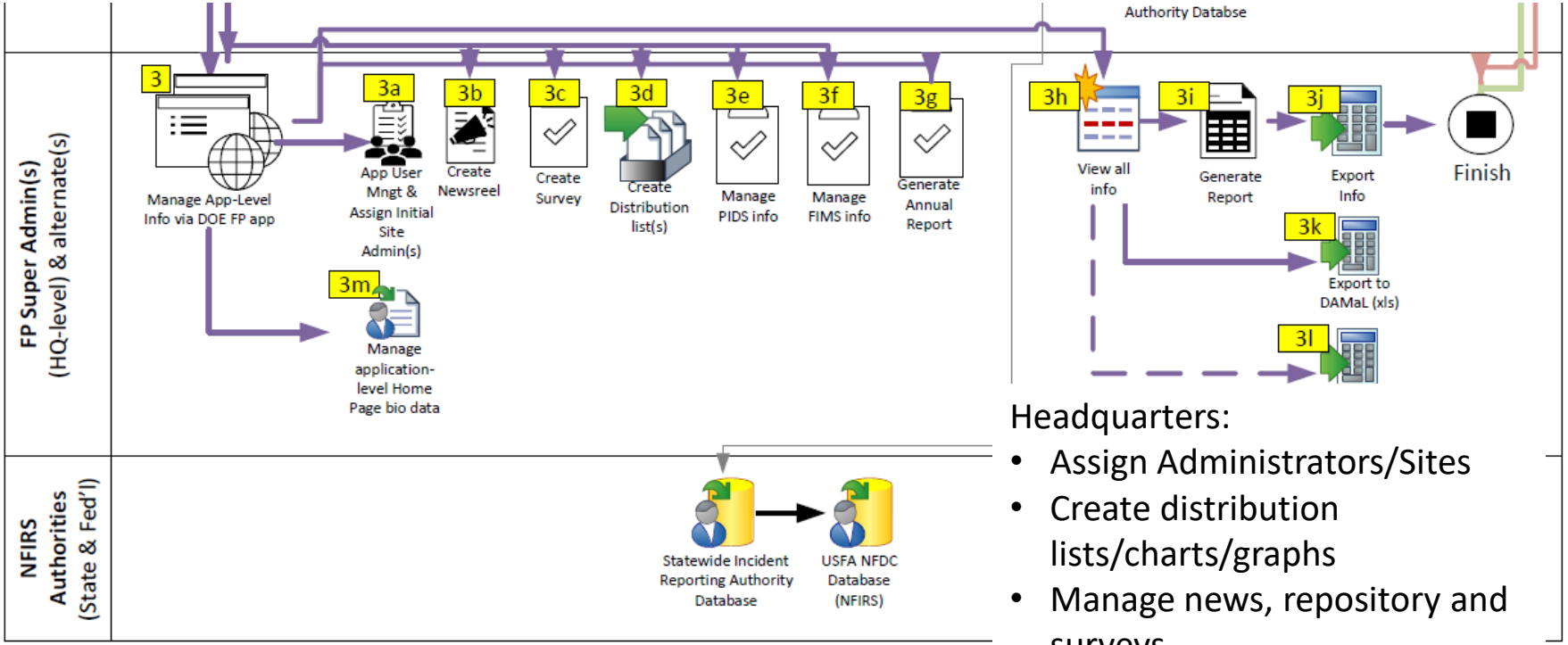
- Manage site home page
- Enter data for NFIRS reports
- Import and export NFIRS reports
- Input improved fire program costs
- Generate charts, graphs and reports
- Use other shared documents/programs
- Link to the DAMal tool
- See contact info for HQ and other sites
- View HQ news and receive emails

Administrator



- Everything a user can do plus add users/administrators

Super Administrator



Headquarters:

- Assign Administrators/Sites
- Create distribution lists/charts/graphs
- Manage news, repository and surveys
- Generate the Annual Report
- Notified if certain incidents occur

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FIRE INCIDENT REPORTING SYSTEM

News	News	Rotating News	News	News	News

Log in

User Name

Password

CAT Card etc…

Site Pull Down

My Site(s) - Once they log in, a pull-down will have all their assigned site's home page.

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DOE Headquarters Statement

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Fire Protection Annual Summary Manager info, and contact info.

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DAMal Charts Graphs Annual Summaries/Order (link) FP Site Home Pages(to view only) Links FAQS

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FIRE PROTECTION INCIDENT REPORTING SYSTEM

Truck #	About	Picture
HAZ Mat 1	Tdftfytjy fddgghhj	
Rescue 1	crthyuyjh	
Crash 15	rttthyhjjh	
Ladder 22	gfgfgfggcff	
Engine 3	rtthgftygh	
Crash 19	trfhgfhjkgg	
Chief 1	ftyuyjhjyjj	

Site or FD Statement (About us)

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Chief, Fire Marshall or Program Manager Contact info

Fire Engineer and FPIRS Site Admin picture, and contact info.

Fire Engineer and Site Admin picture, an contact info.

Truck list should be editable for more

Site Data Programs(NFIRS/NEMSIS/other) DAMal Forms/Tools Daily Log Charts/Graphs Admin Tools

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FIRE PROTECTION INCIDENT REPORTING SYSTEM

Daily Activity Log

(Only the site can see this page.)

Station(s) information is listed here such as responses, vehicle issues or other key information

Program	Program	Program
FPIRS	Station Inventory	
NEMSIS	Extinguishers	
Rosters		
Vehicle Inspections		
Hydrants		
Station Inspections		
Training		

Station	Date /time	Author	Information

DAMal Charts/ Graphs Program Repository (Inspections, Rosters etc.) Admin Tools Main

List should be editable if more programs are selected from repository.

Easy Form Flow

- Required- Basic Module(Form, NFIRS-1)-Date, location, type
- Plus at least one or more of these Modules:
  - Fire (NFIRS-2)- Property/equipment details, ignition, and suppression
  - Structure Fire (NFIRS-3)- Type of building and characteristics
  - Civilian Casualty (NFIRS-4)- Cause, facts and victim' s information
  - Fire Service Casualty (NFIRS-5) - Cause, facts and victim' s information
  - EMS (NFIRS-6)- Cause, facts and patient information
  - Hazardous Materials (NFIRS-7) - Chemical, container and factors
  - Wildland Fire (NFIRS-8)- Cause, weather and other factors
  - Apparatus or Resources (NFIRS-9)- Apparatus, people and times
  - Personnel (NFIRS 10)- Responders information and actions
  - Arson (NFIRS 11)- Facts about suspect, fire and case
  - Supplemental Form (NFIRS 1S)- Entity involved information and remarks

Database will Guide the User

- Everyone starts with the basic module and the key entry is the series number.
  - 100= Fire
  - 200= Overpressure Rupture, Explosion, Overheat (No Fire)
  - 300= Rescue and EMS
  - 400=Hazardous Condition (No Fire)
  - 500= Service Call
  - 600= Good Intent Call
  - 700= False Alarm and False Call
  - 800= Severe Weather and Natural Disaster
  - Special Incident Type

Series 100 Broken Down (Example)

- Series 100 (Fire)
  - There are 41 possibilities. (They will appear in a pull down.)
  - Examples:
    - 111- Building fire
    - 112- Fire in structure other than in a building (bridge, tunnel, transformer)
    - 131- Passenger vehicle fire other than a motor home (136)
    - 134- Water vehicle fire (Boat, barege, etc.)

Some answers may lead to an additional form(s) being required, but it will let you know.