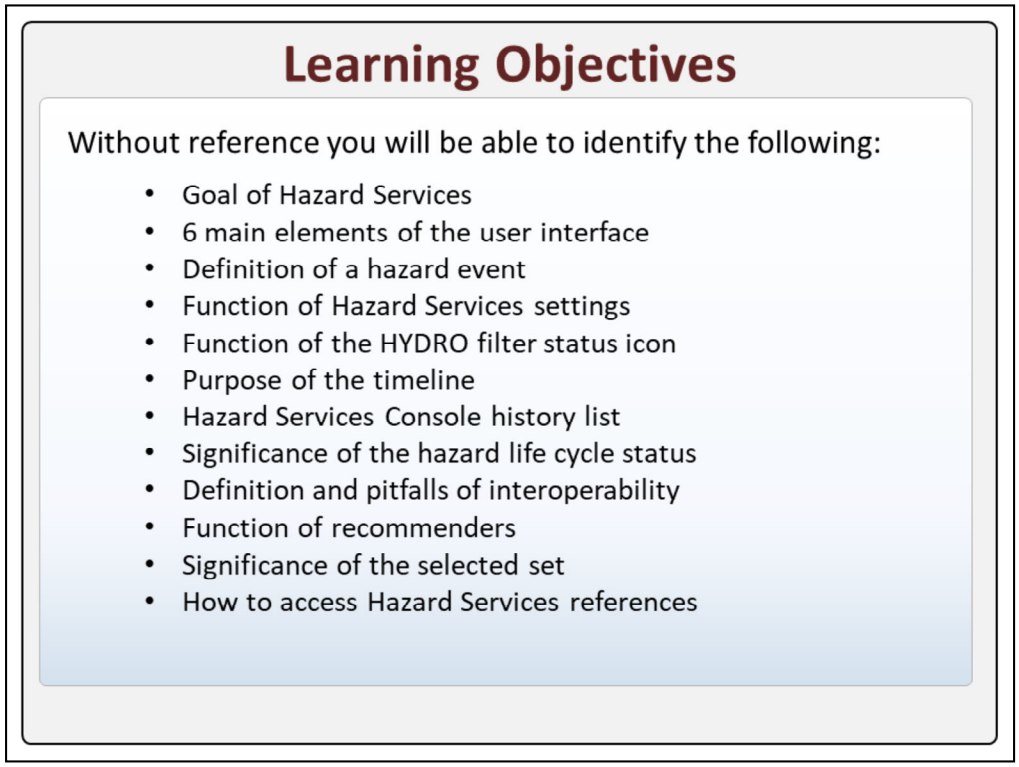
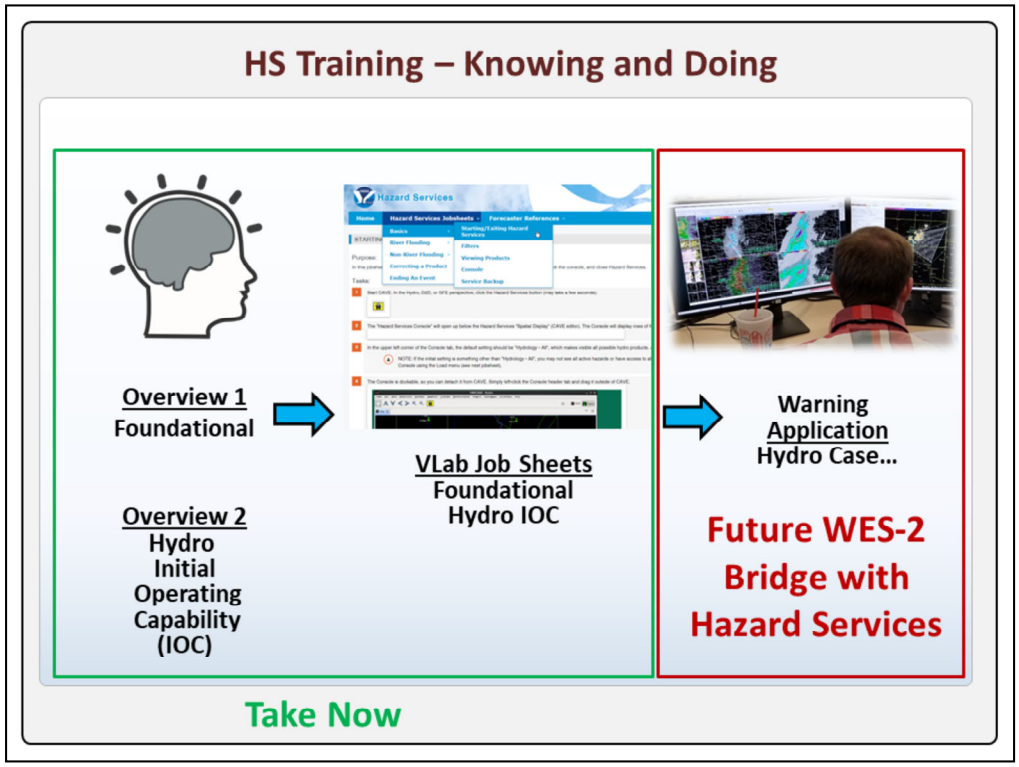
Welcome to the Hazard Services Introduction for the 19.3.1 Beta Test. I'm Mike Magsig from WDTD, and I will be introducing you to the AWIPS watch, warning, and advisory generation software called Hazard Services.



Here are the learning objectives for this training. In this module we will review all of the important components of Hazard Services and how it functions to prepare you for hands on learning with some jobsheets. When you are done reviewing these, advance to the next slide.



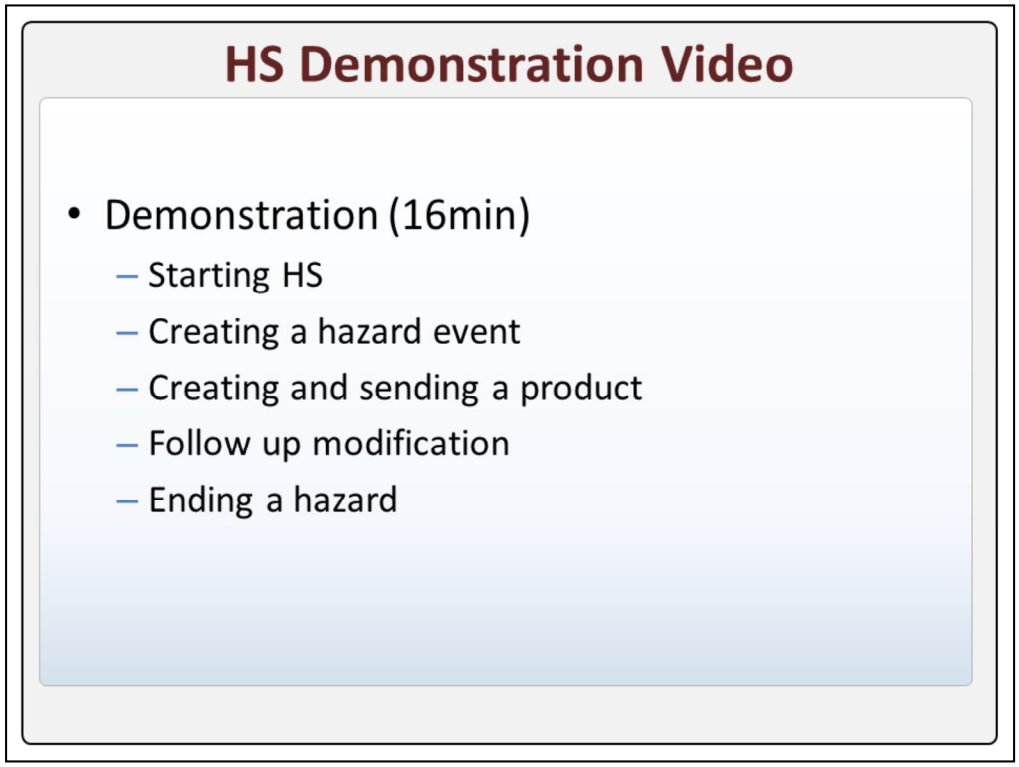
Before we get into the details of Hazard Services, let's review a road map of the training.

The few things you need to know about Hazard Services will be addressed in this overview module and the hydro IOC modules.

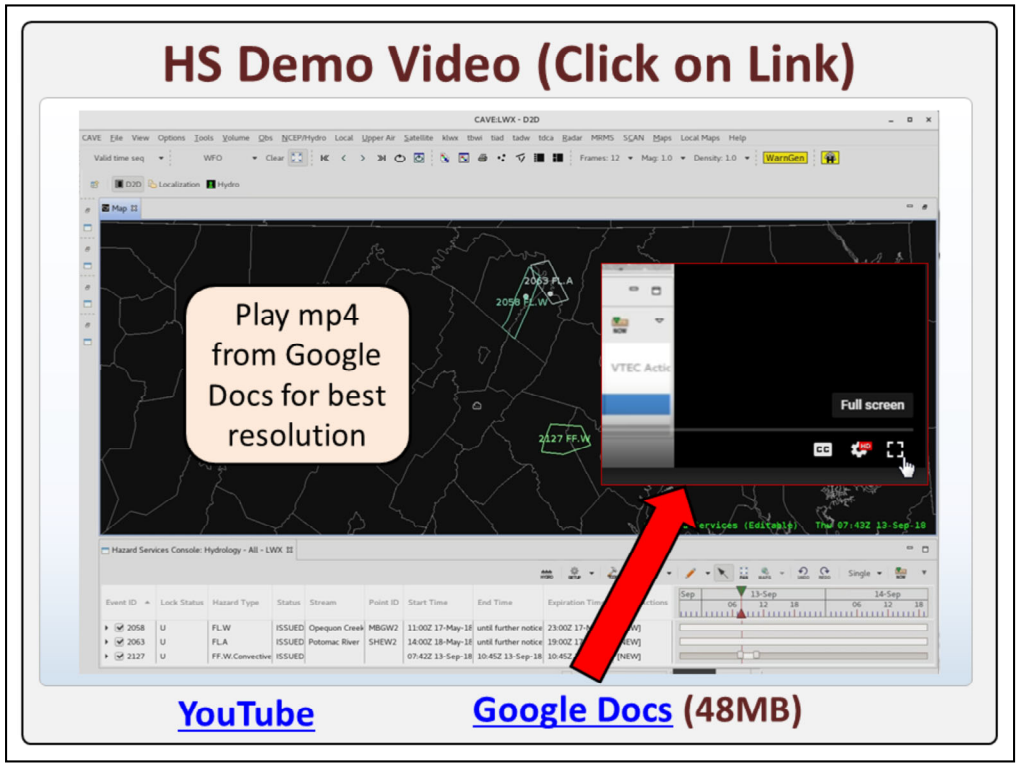
The bulk of the **procedural** training (namely specific mouse clicks and menu and tool navigation) will be addressed using VLab job sheets that can be conveniently taken in practice mode on your live AWIPS. The jobsheets can also be a reference when you need to refresh your skills.

This is what you can **take** now.

In the **future** when Hazard Services is integrated into WES we will have a hydro case to practice with. Because that future could be near or after 19.3.1 deployment, everyone should plan on making the most out of using practice mode on the live AWIPS to develop skill with Hazard Services.

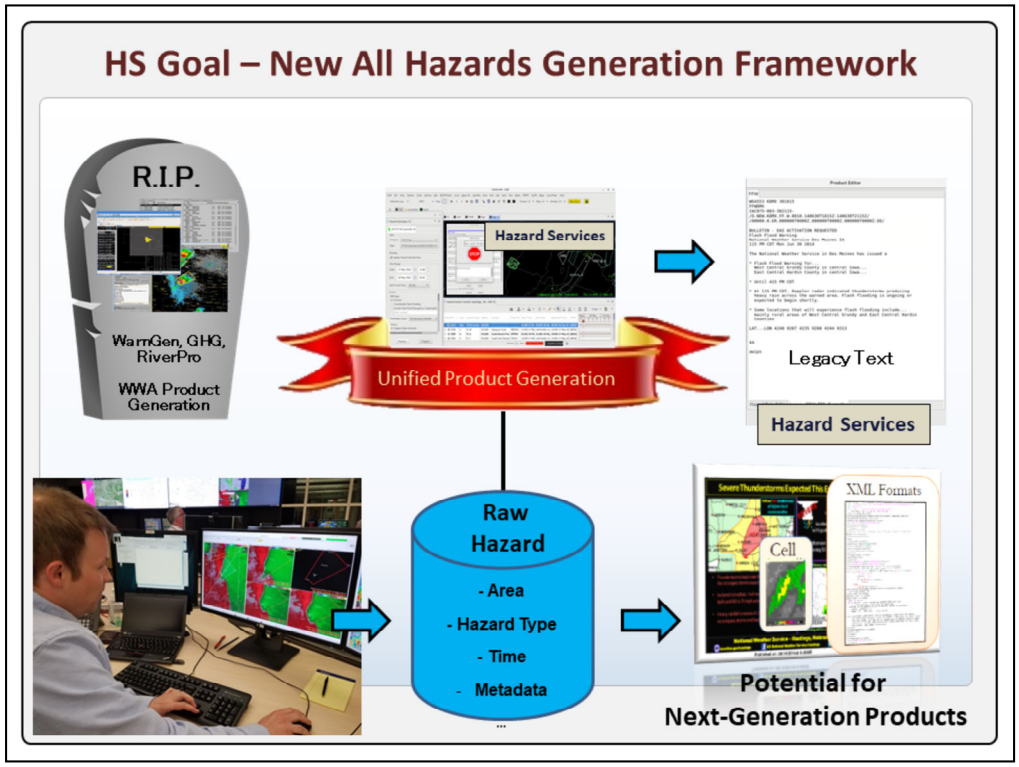


On the next slide I will step through a video demonstration of Hazard Services covering starting Hazard Services, creating a hazard event, creating and sending a product, following up with a modification, and ending a hazard.

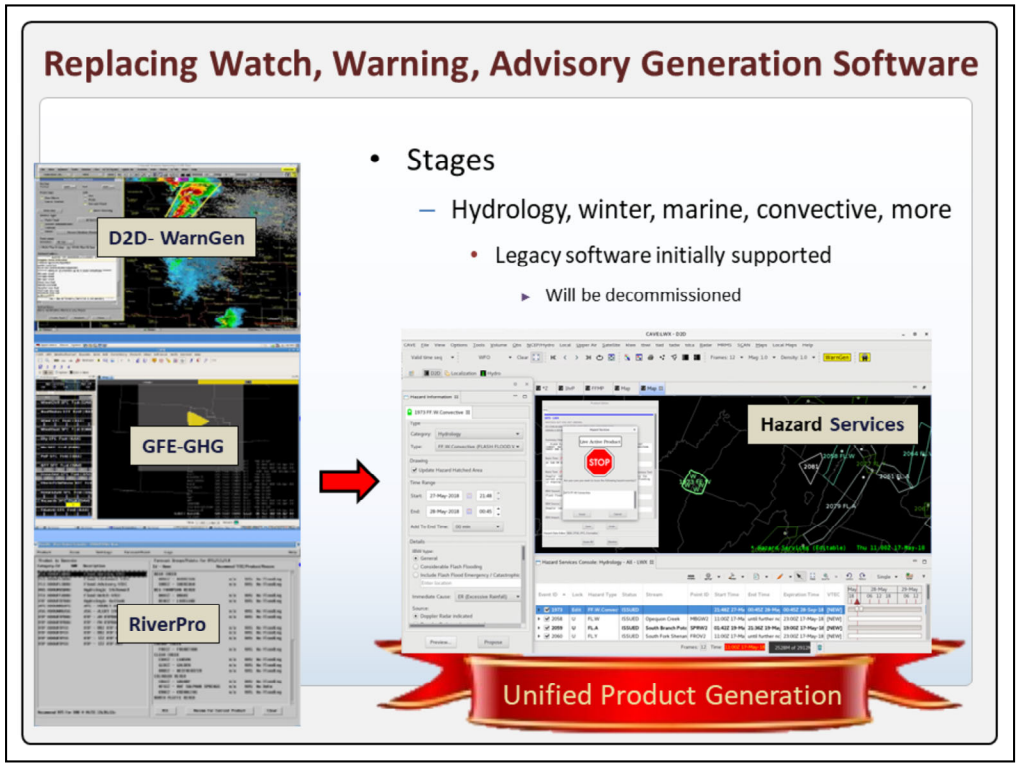


Click on the video link to see a Hazard Services demonstration to show you what it is and how it is used. Note that when you use the hi-res Google Doc, when you click on the **full** screen view box it will give you a crisp high-resolution video.

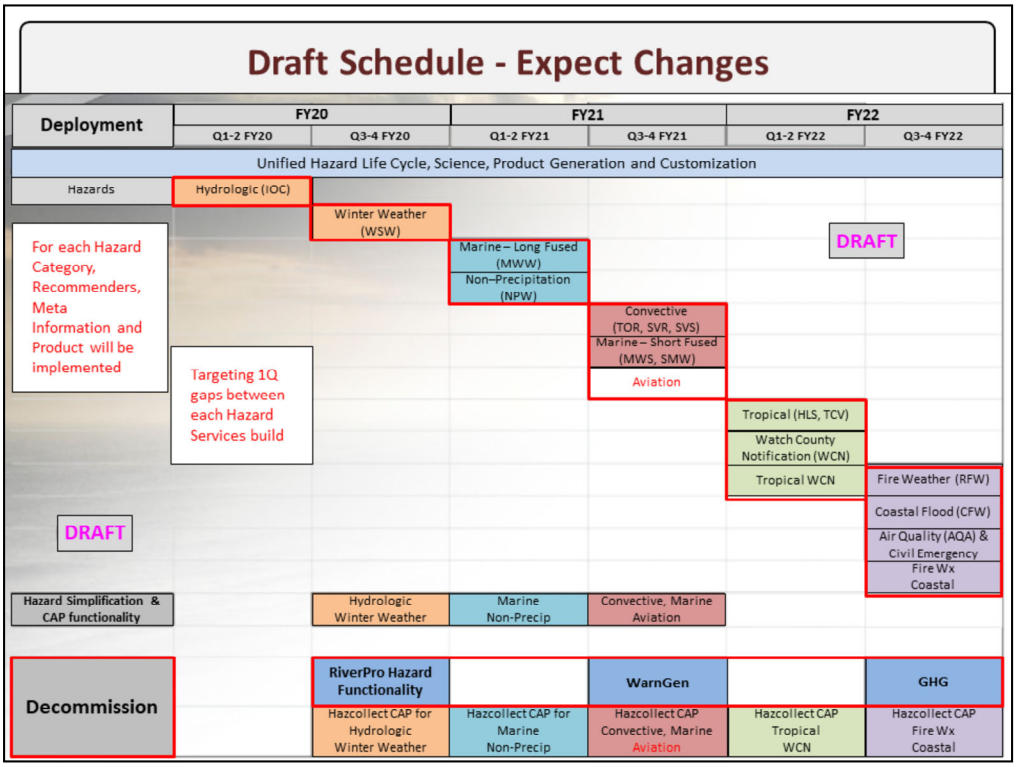
If the high-res Google Doc doesn't work for you due to limited bandwidth, then you can try the Youtube lower-resolution video, but some of the text will not be as sharp.



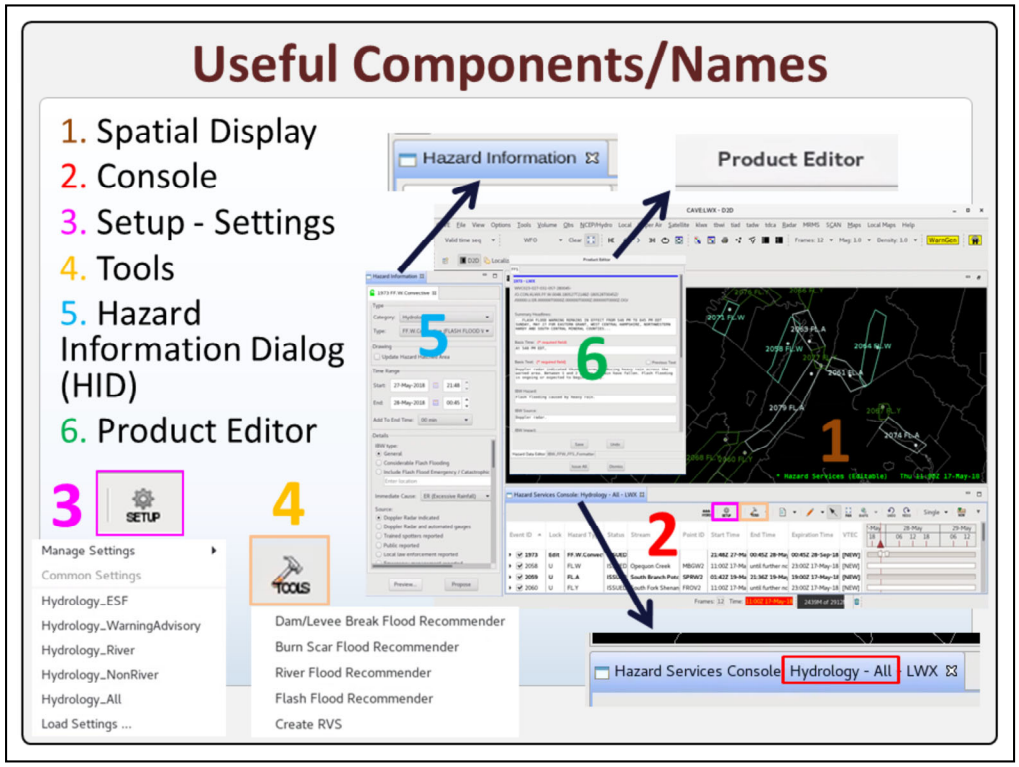
Hazard Services is designed to establish a new hazard generation framework that will unify WarnGen, GHG, and RiverPro product generation into one common platform for all types of hazards. The philosophy is for the forecaster to interact with the **raw** hazard information such as area, hazard type, time, and other metadata, and allow the software to generate products which will include today's **legacy** text formats and has the potential to one day drive the **next** generation products when they are defined.



The replacement of the Legacy watch, warning, and advisory generation software will take many years, starting with hydrology, followed by winter, marine, convective and more. When Hazard Services is deployed, **initially** the legacy software will be supported, but it will be decommissioned shortly after full deployment.



While the specifics of the dates on this draft schedule will likely change, you can get a rough sense for the **multi-year** deployment and decommissioning schedule. Expect routine significant changes in product generation over the multi-year rollout and expect to fully transition to using Hazard Services prior to the Legacy software decommissioning.



There are six main elements in Hazard Services that you need to be familiar with. This vocabulary will be used a lot in Hazard Services, and it will be the basic language you will need to speak when using Hazard Services.

The **first** element is the Spatial Display. This is simply the CAVE editor you load Hazard Services into, in either the D2D, Hydro, or GFE perspectives. This is where the spatial information is displayed.

The **second** element is the Console. This is the table full of hazards that is technically referred to as a CAVE view, like GFE's grid manager, and it's dockable within CAVE, so you can pull it out of CAVE if you want. The Console has lots of buttons that manage the product generation and also what goes on in the Spatial Display. Note that the **tab** name contains Console, which can help you get these names down.

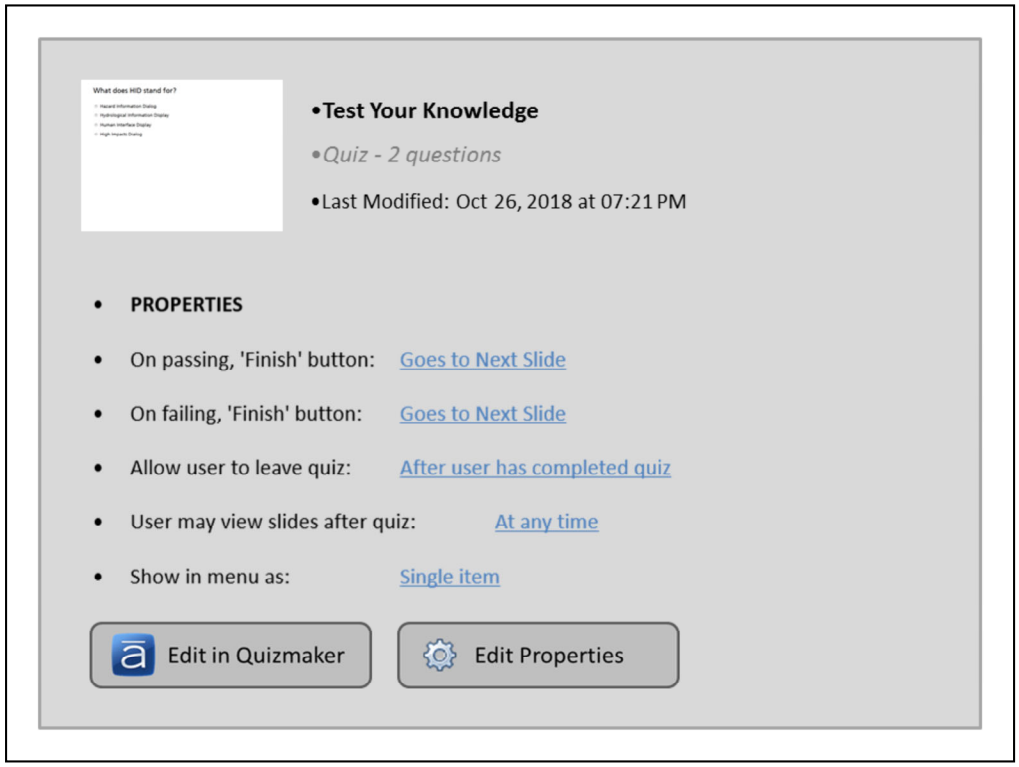
The **third** main element is the settings icon in the Console with the label SETUP. Settings are really important in Hazard Services because they allow you to filter the display of different hazard types and the tools you have access to. For example there are different settings for river flooding and non-river flooding, and the Hydrology_All setting works on all hazards. Hazard Services is inherently customizable, and you can create your own settings. Note that the current **Setting**

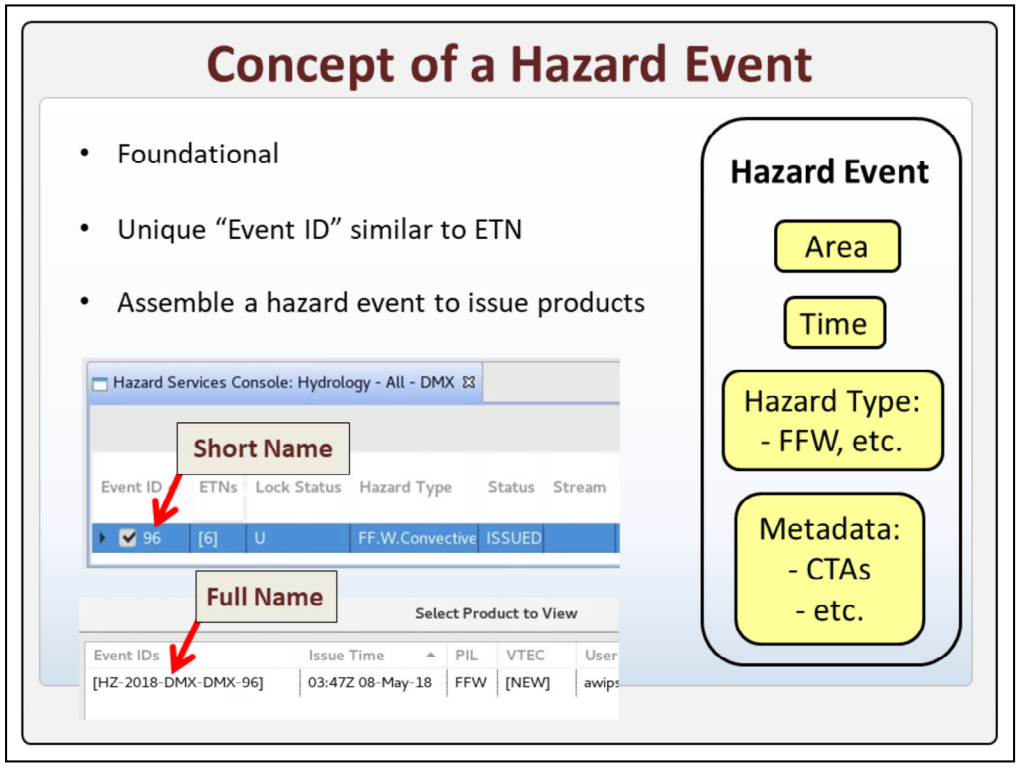
name is also reflected in the Console tab name.

The **fourth** main element is the TOOLS icon. The TOOLS icon provides access to recommenders and other tools that are used to generate initial hazards and create products. Some of the hydrology recommenders include dam/levee break, burn scar, river flooding, and flash flooding. Recommenders will be covered more in-depth in the hazard-specific overviews and job sheets.

The **5th** main element is the Hazard Information Dialog, or HID. This is where you define all the core components of the hazard event. From the HID you can Preview the hazard text or Propose the hazard for someone outside your office to access and collaborate on. Note the text, Hazard Information, is in its tab name.

Once you preview your text, the **Product** Editor launches is where you modify and send text. It also has a convenient Product Editor label in its tab name.

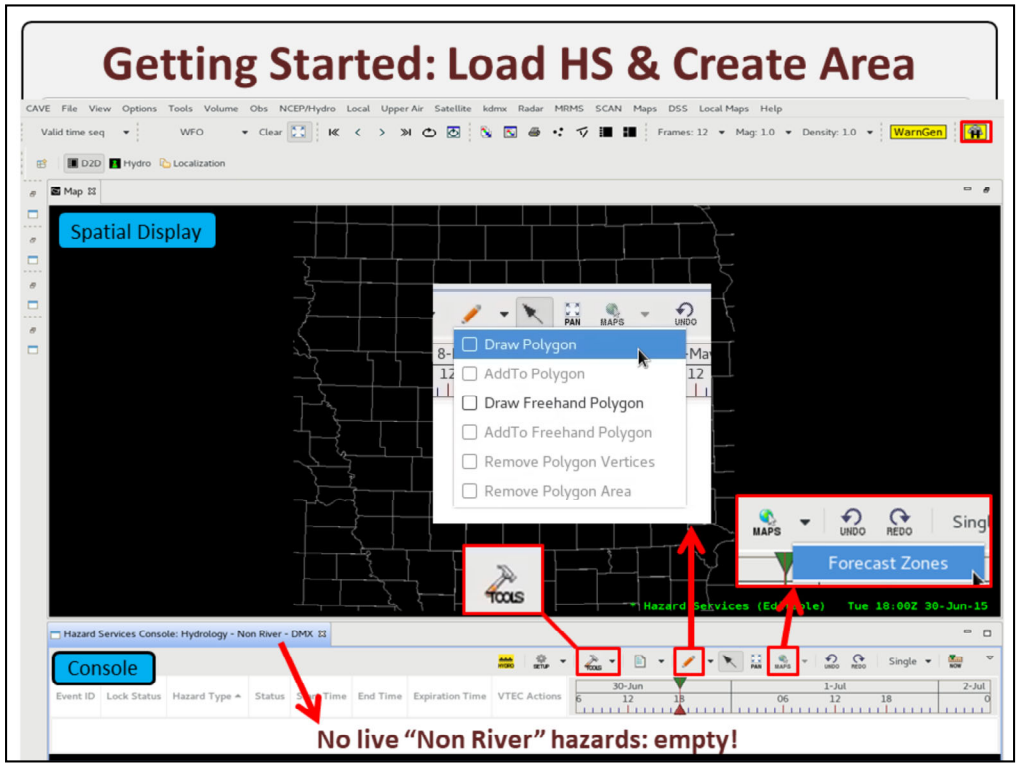

What does HID stand for?
•Test Your Knowledge
•Quiz - 2 questions
•Last Modified: Oct 26, 2018 at 07:21 PM
PROPERTIES
On passing, 'Finish' button: Goes to Next Slide
On failing, 'Finish' button: Goes to Next Slide
Allow user to leave quiz: After user has completed quiz
User may view slides after quiz: At any time
Show in menu as: Single item
Edit in Quizmaker
Edit Properties



In Hazard Services the hazard event is a foundational concept. The hazard event is composed of an area, time, hazard type, such as flash flood warning or river flood advisory, and specified metadata such as calls to action and immediate cause.

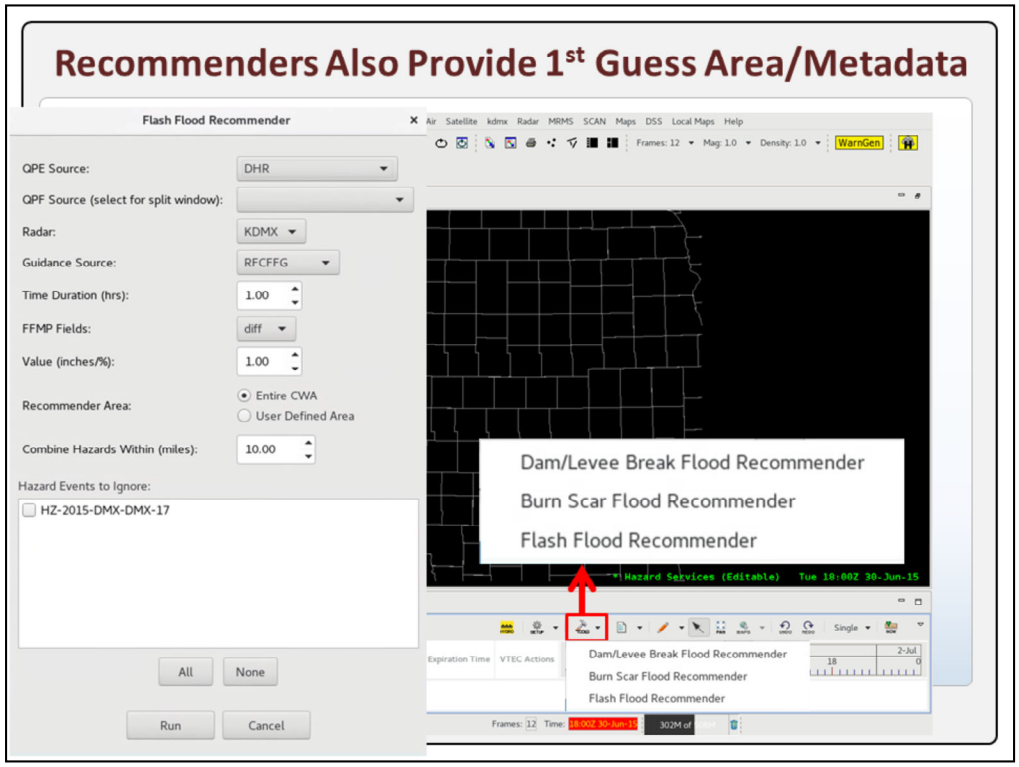
Every hazard event has what's called an **Event** ID, similar to the Event Tracking Number in VTEC. The Event ID is only **used** within Hazard Services to organize the hazard events, and it is not distributed in any legacy products. The actual Event IDs are quite long, but you will generally see just the integer value, like 96 in the example shown here.

With Hazard Services, forecasters assemble a hazard event in order to issue products, and we will step through that process in the next slides.

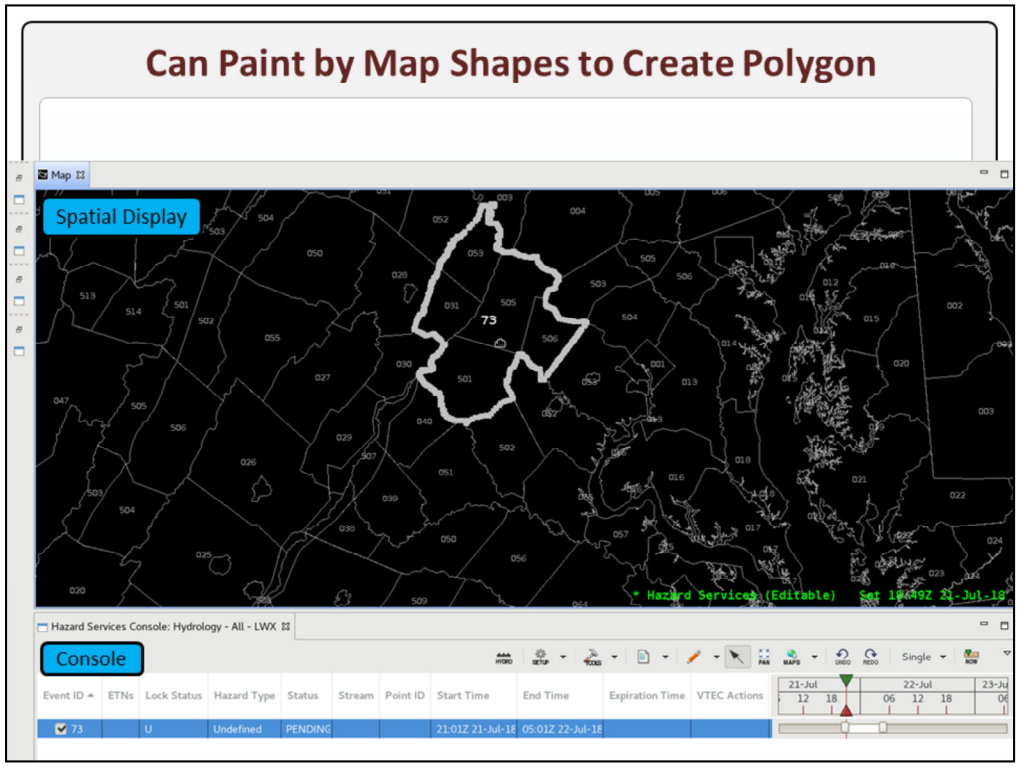


The **yellow** H button on the top of CAVE loads Hazard Services over whatever you have in your CAVE editor. The CAVE editor then becomes the "**Spatial** Display", and the dockable **Console** appears. The Console loads with a default setting, in this case the Non River setting, which only displays non-river hazards and will only provide access to the non-river recommenders.

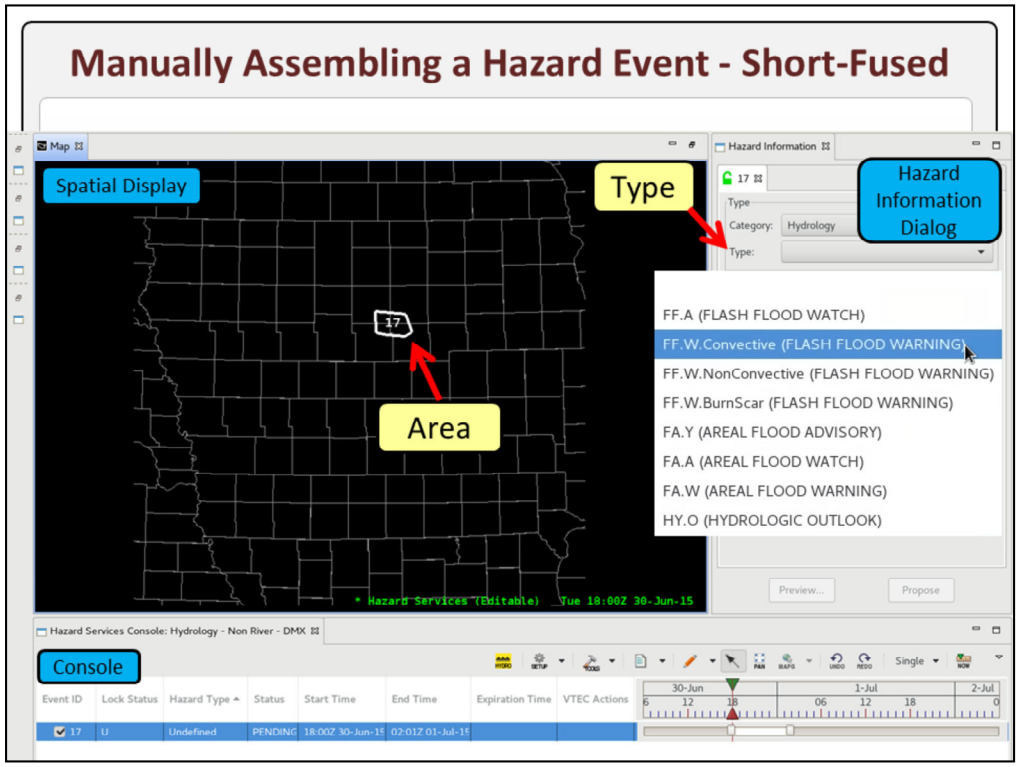
In this example since there are **no** current live non-river products issued, the spatial display and console is empty. Once Hazard Services is loaded you can create a hazard event area by clicking on the **pencil** icon in the Console and selecting the drawing tools, or by using the **TOOLS** button to select and run a recommender, or by selecting the **Maps** icon to select an area from a map.



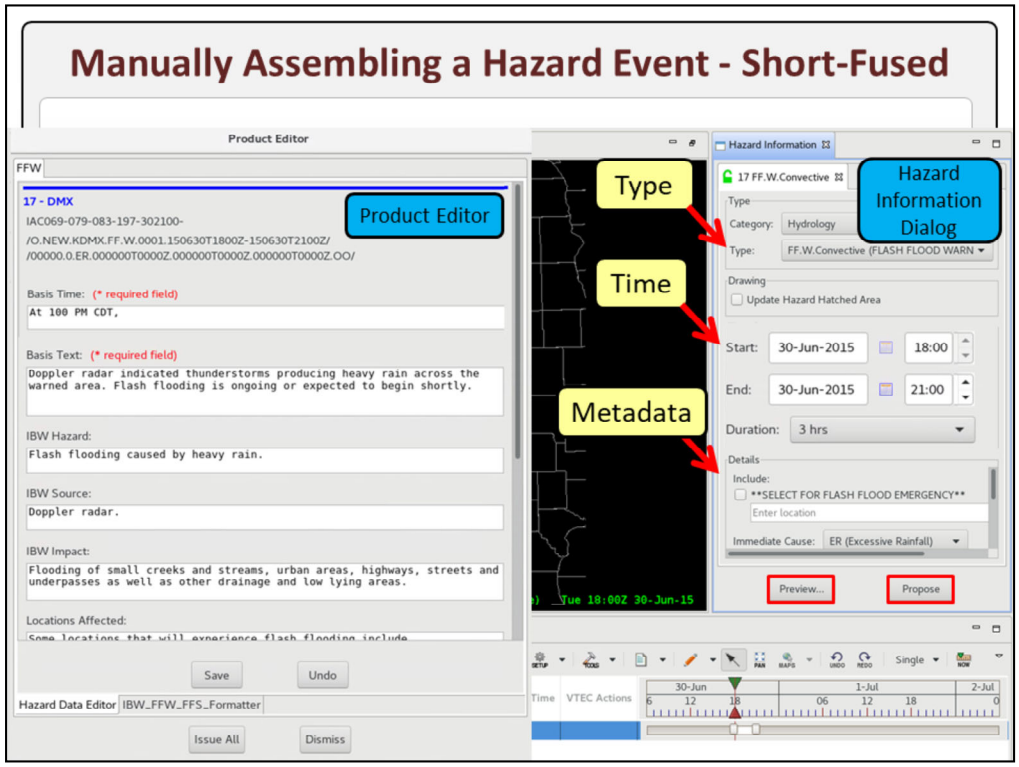
Recommenders generate a 1st guess area with default metadata for forecasters to start with upon request by the forecaster. They don't automatically run. The recommenders displayed under the **TOOLS** button are configurable in the settings, and in this example the Non River setting only contains recommenders for Dam/Levee Break, Burn Scar, and Flash Flood. Here is an example of what the **flash** flood recommender interface looks like. The recommenders will be covered in subsequent overviews and applied exercises.



The select by area “MAPS” button allows you to choose from the loaded maps and left click in the Spatial Display on the map shapes to “paint by map”. A simple **right** click after mult-selecting converts the selected shapes to a complex polygon with lots of vertices. This replicates the capabilities of the Graphical Hazard Generator in selecting forecast zones.

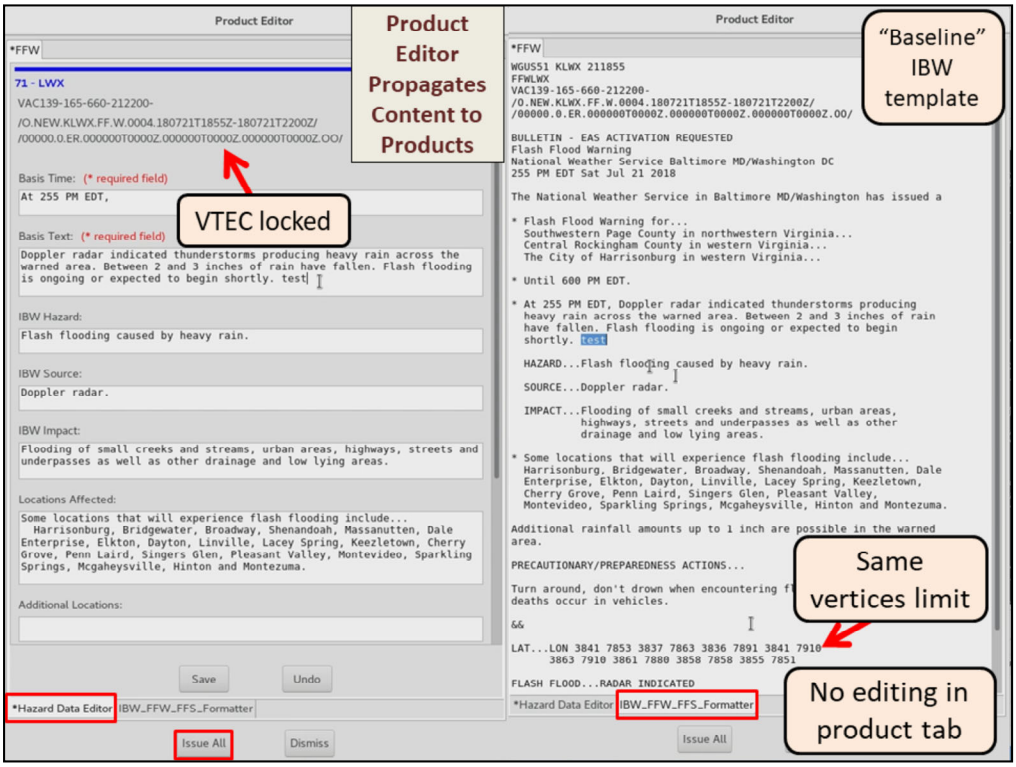


Returning to our manual assembly of a hazard event from drawing a polygon with the drawing tools, once the user completes the area generation in the Spatial Display, the Hazard Information Dialog launches and allows the user to specify the **hazard** type, like a **flash** flood warning.



The HID then populates with flash flood warning defaults, like 3hrs for the duration. The user modifies the **time** and other **metadata** such as immediate cause and calls to action, just like is done currently in WarnGen. Once the metadata is defined in the HID, all the essential components of the hazard event exist, and the **Preview** button will launch the Product Editor to allow the forecaster to modify text. The HID also has a **Propose** button next to the Preview button to allow saving a draft to share with others.

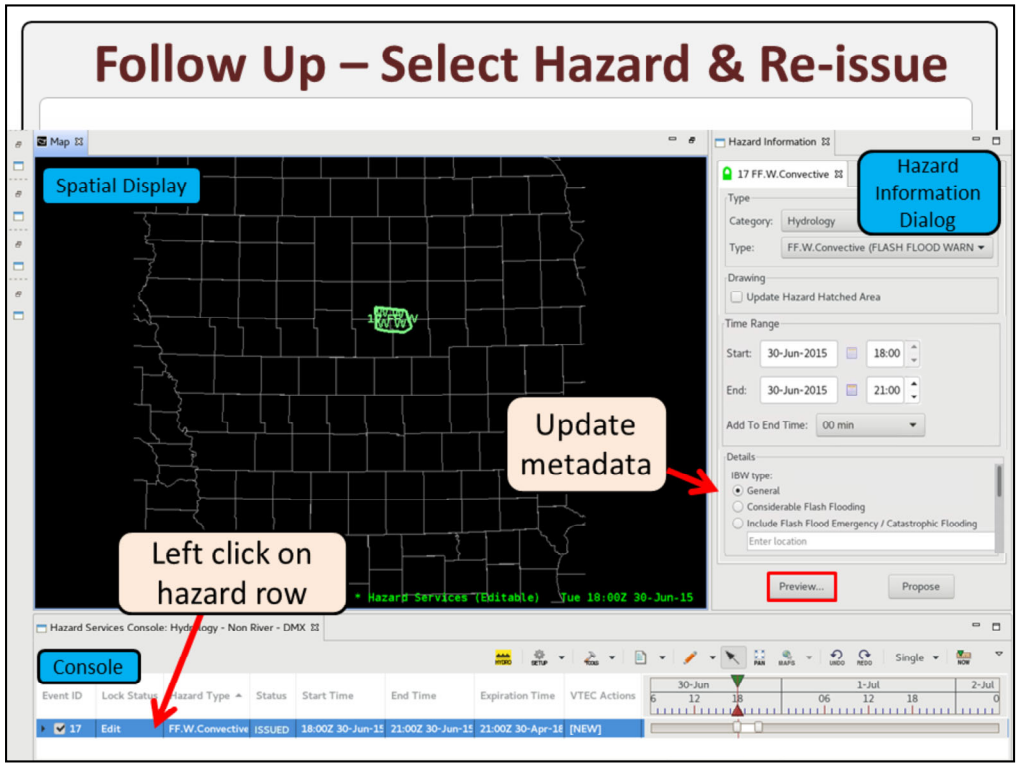
Once you click the Preview button you are entering into product generation which will trigger product-specific changes like the downsampling of the vertices to the 20 vertices limit.



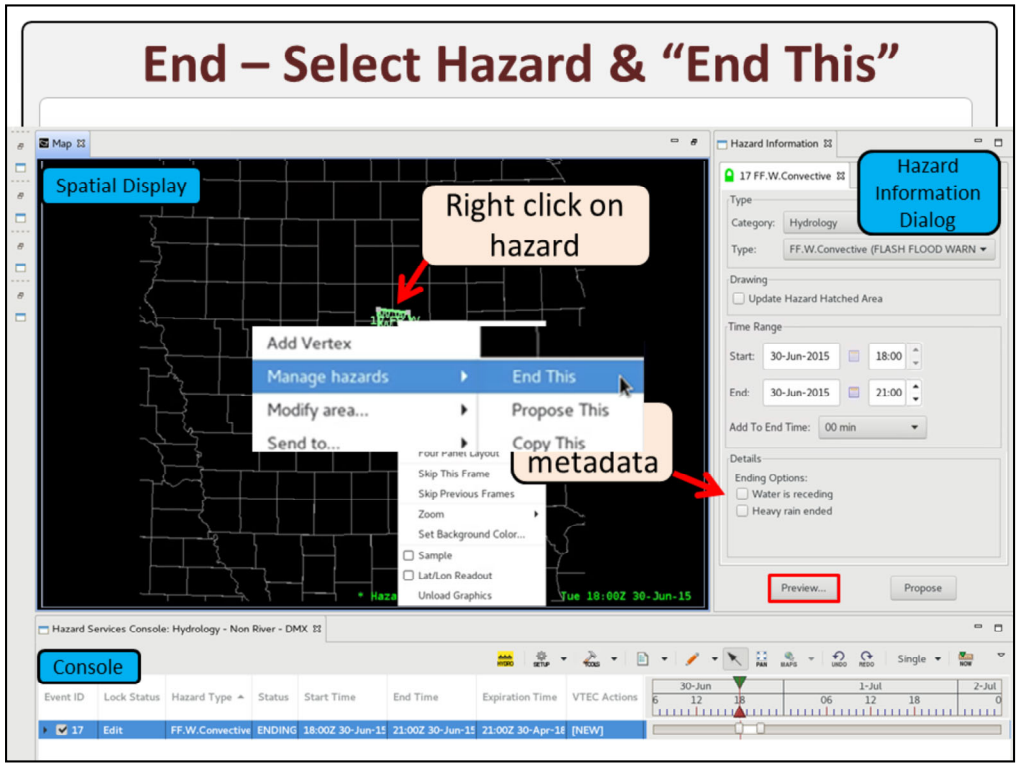
The function of the Product Editor is to allow the forecaster to modify text information and propagate that content to products. In the initial rollout of Hazard Services there will likely be a single Legacy text product formatter, but in the future, one Hazard Data Editor will spawn multiple products.

All text modification in the Product Editor is done in the main **Hazard** Data Editor tab, where some information, like **VTEC**, is locked. You can preview a product by clicking on its **Legacy** formatter tab on the bottom, but you **can't** edit the product in the product formatter tab.

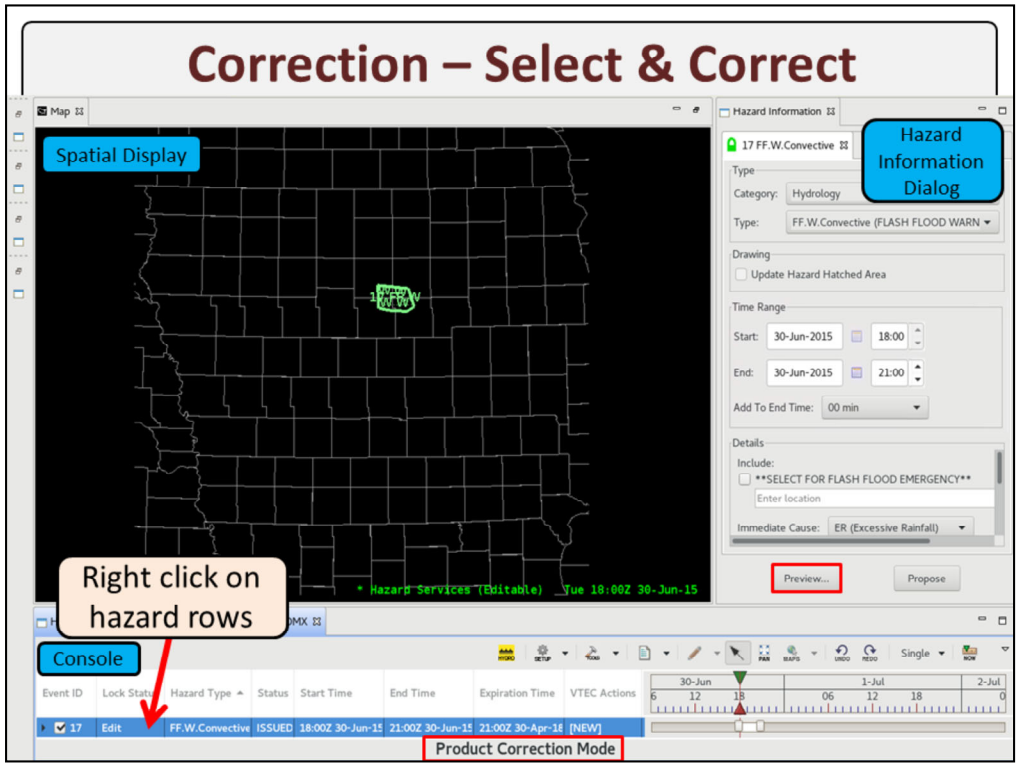
Since there are no new products or new policy changes planned for the initial rollout of Hazard Services, issues like the **vertices** limit will remain the same for now, and clicking on the final Issue All button will push legacy text products out the same way the legacy software does.



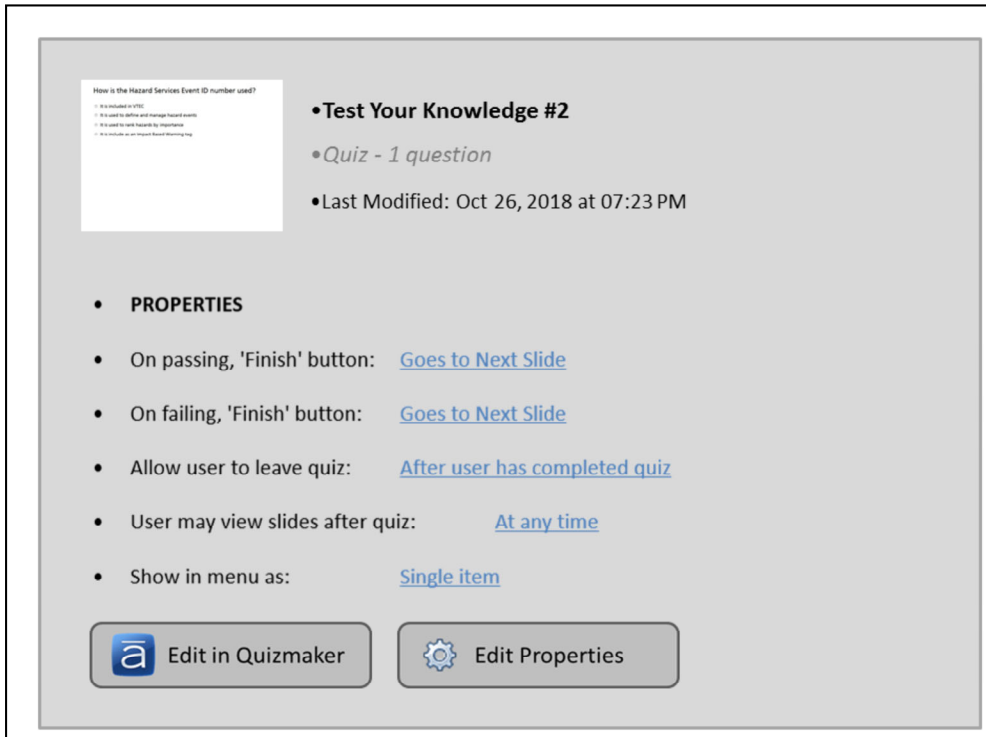
Issuing follow-up statements is easy in Hazard Services. Once you **select** a hazard from the spatial display or console, the HID pops up with the previous configuration. Then you can reduce your polygon size in the spatial display, **update** the metadata, **preview** the text, and re-issue the product in the same manner as before. When you reissue the product it automatically takes care of partial continuation and canceling in VTEC.



Canceling is also easy in Hazard Services. Just **right** click on a hazard in the spatial display or console and select "**End** This" from the menus. The HID will populate with the **cancel** metadata, and you just modify, **preview**, and issue.



Corrections are also easy in Hazard Services. Just select a hazard in either the Console or Spatial Display and then right click anywhere in the rows of hazards in the console to access the correction menus. Then you can **preview**, modify, and issue. You will notice the words "**Product** Correction Mode" at the bottom of the console when you are correcting a product to raise extra attention to this state because there are limitations on interacting with other hazards while in this mode.


How is the Hazard Services Event ID number used?
•Test Your Knowledge #2
•Quiz - 1 question
•Last Modified: Oct 26, 2018 at 07:23 PM
• PROPERTIES
• On passing, 'Finish' button: Goes to Next Slide
• On failing, 'Finish' button: Goes to Next Slide
• Allow user to leave quiz: After user has completed quiz
• User may view slides after quiz: At any time
• Show in menu as: Single item
Edit in Quizmaker
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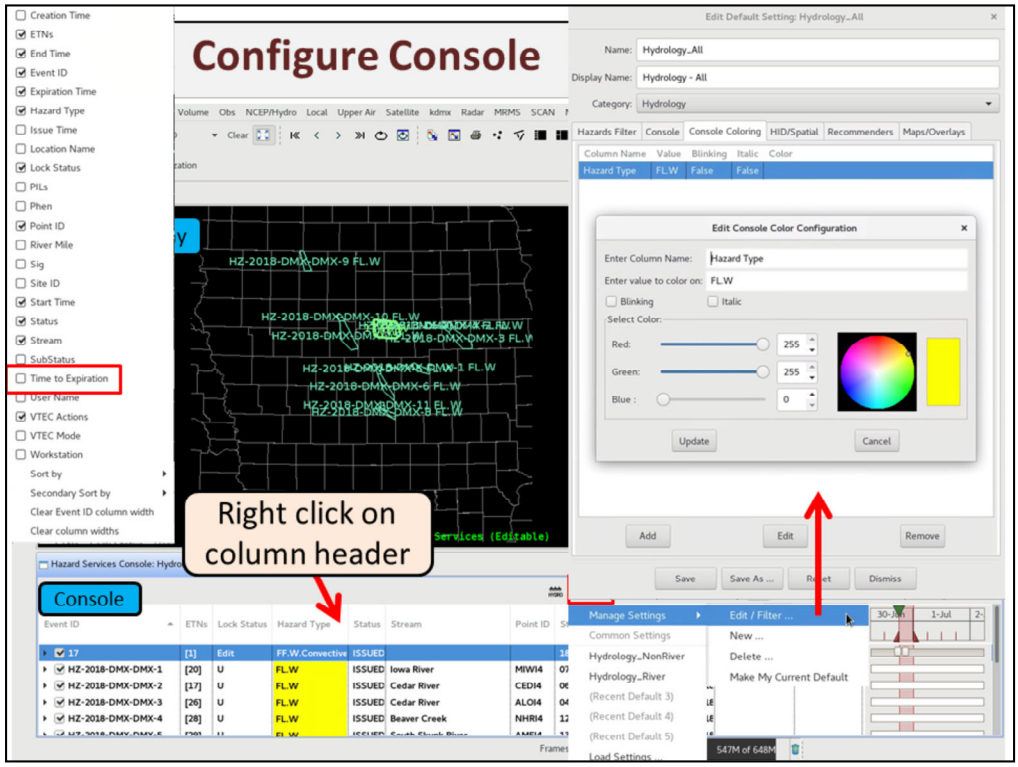
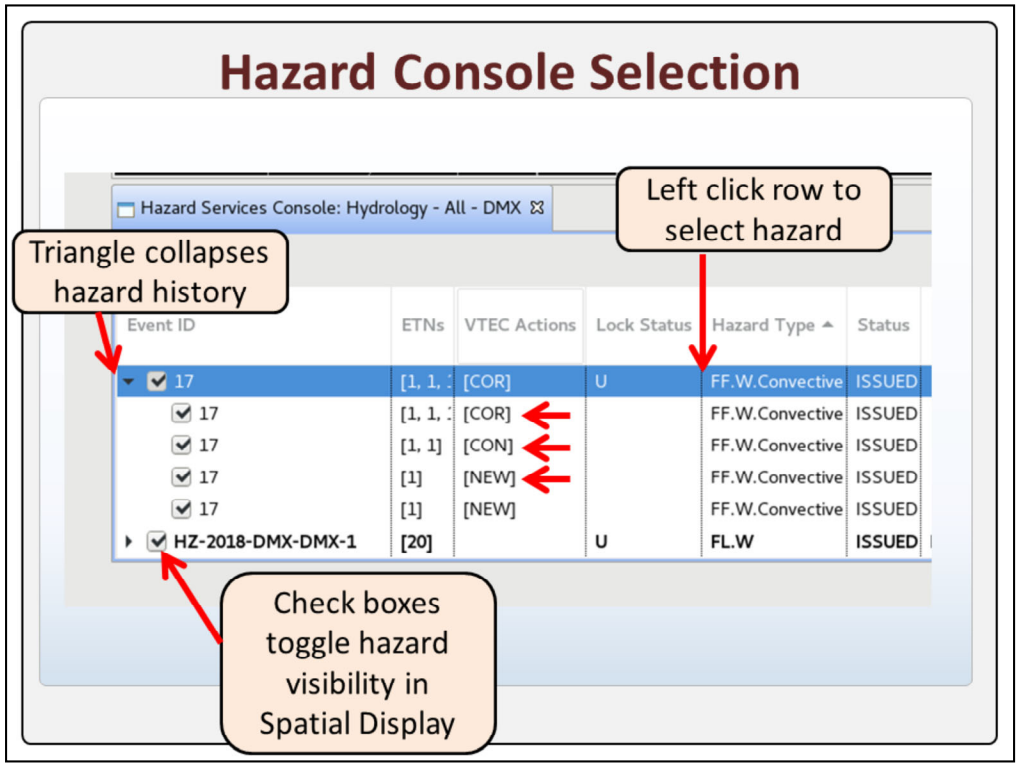


The Console columns are configurable with a simple **right** click on the column header. One of the neat new features is a **Time** to Expiration column that will count down the time remaining for the product associated with a hazard after they are issued. Note that this is the time left until the product ends and not the time left until expiration, which can be much different for long-fused products.

You can also sort the column with a simple left click on the column header, and you can drag and drop columns in any order you choose.

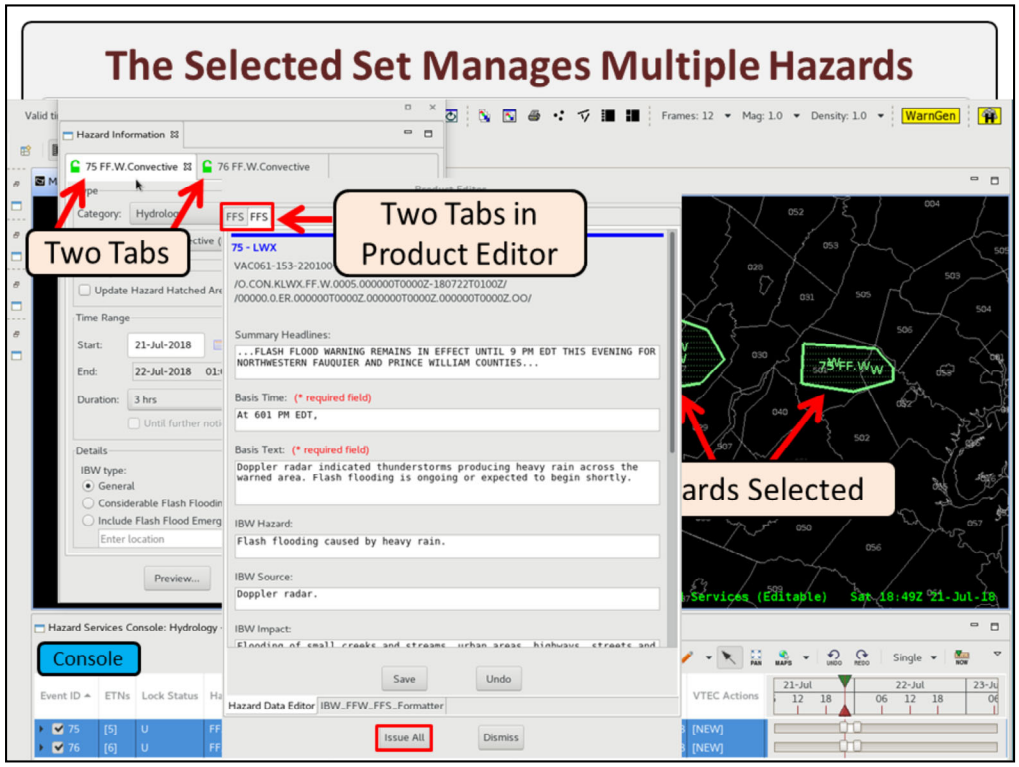
The Console **settings** configuration also **has** a capability to **color** code some of the contents in the column by value. There are a lot of console actions to practice when you get to the jobsheets.



The main way to interact with hazards in the console is to **left** click on a row in the console. When you select a hazard, the row turns blue, the spatial display will highlight the polygon selected, and the HID will update with the metadata for that hazard.

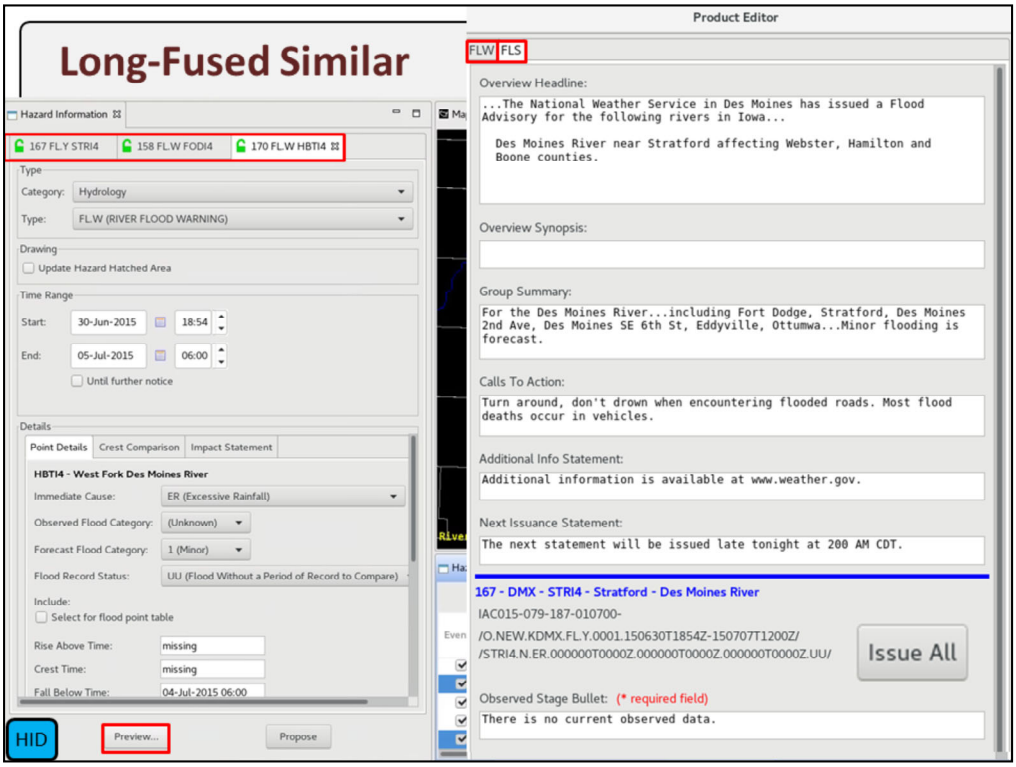
The **checkboxes** toggle the display of a hazard on and off in the spatial display.

The **triangles** next to the hazards expand the hazard history of the product. In this example, the **NEW** flash flood warning was followed by a **continuation** flash flood statement, which was followed by a **correction**.



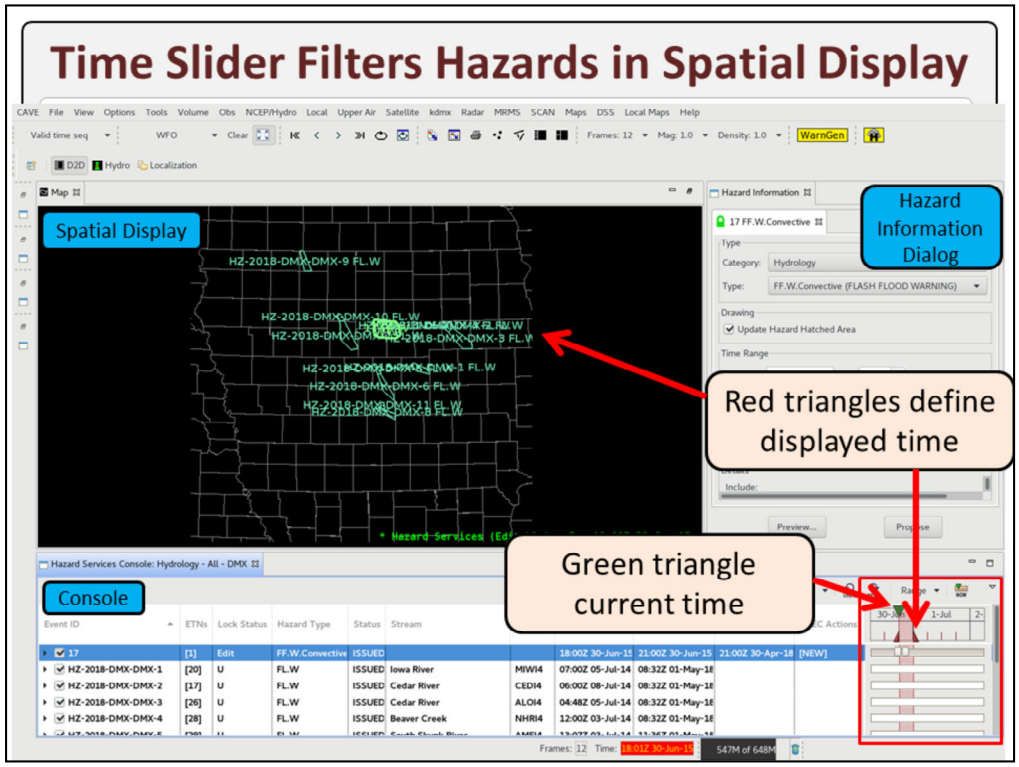
If you select more than **one** hazard in the Spatial Display or Console using the Ctrl button and left mouse button, you will receive a **separate** tab for each hazard in the HID. Multiple selected hazards are called a selected set.

You need to remember to modify both hazard's metadata before previewing the products. In the **product** editor you can also see **separate** tabs for each hazard, like these two FFS tabs for the FFW 75 and 76. When you **Issue** All, all products in the selected set are issued at the same time, so it is real important to pay attention to your multiple tabs in the HID and Product Editor when leveraging the selected set.

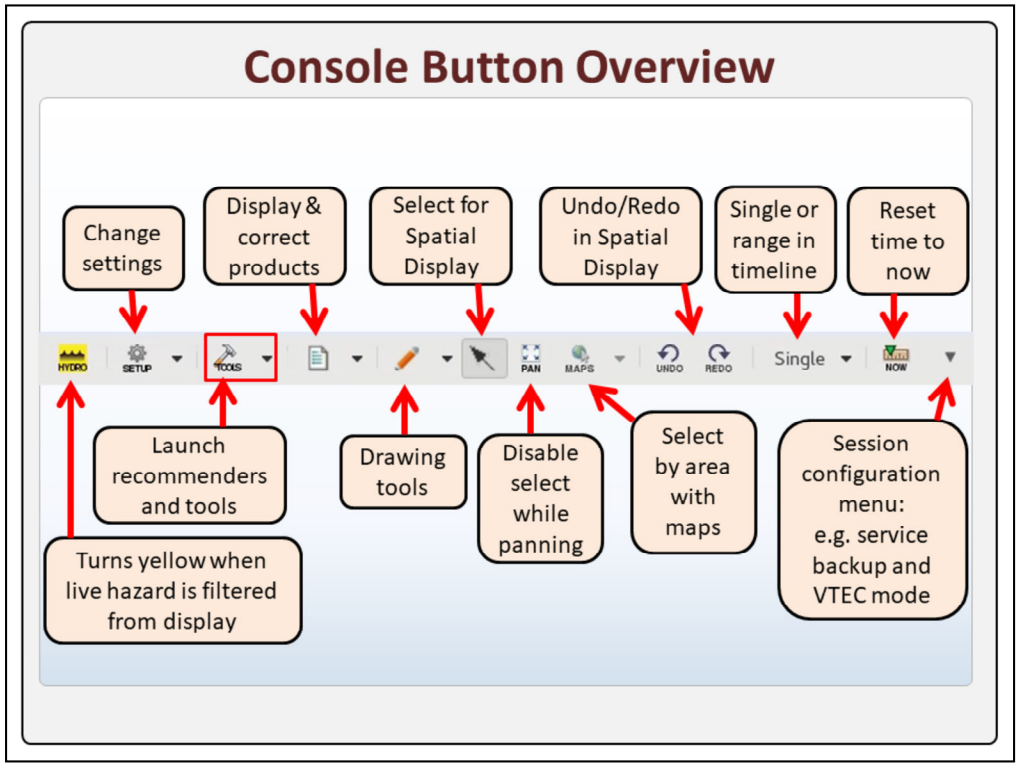


Some long-fused events are a little different than the short-fused events, though they share a similar workflow. In river flooding events you have to use the river flood recommender to give you the first guess based off the river stage values from the hydro database. This will be covered more in they hydro overview and job sheets.

Here is another example of the **selected** set, where there are two tabs for the flood warnings and one tab for the advisory. You modify each hazard's metadata separately, and when you **preview** the hazards, there are separate **tabs** for the different hazard types, and when you **issue**, you issue all selected hazards at once.

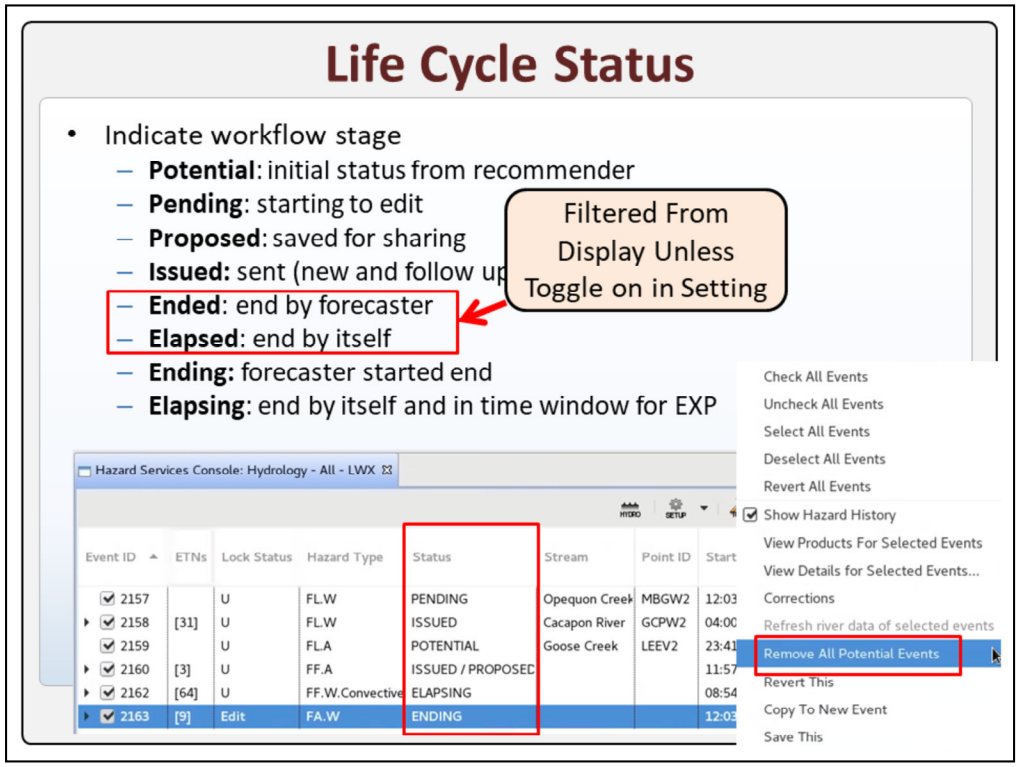


The **time** slider in the console controls which hazards are displayed in the Spatial Display. The selected time can be configured to be a single time or a time range. The **green** triangle reflects the current time, and the **red** triangles can be moved to intersect the time ranges of the hazards. This can be helpful when you have hazards that cover significantly different times and you want to filter some of the hazards from the display.



The console has a lot of buttons that you will need to practice with in the jobsheets to get a feel for. The **HYDRO** button turns yellow when live hydro hazards are filtered from the display by the settings. The **SETUP** icon is used to select and modify settings files that configure the Console and Spatial Display. The **TOOLS** button is where you run recommenders and other tools from. The **products** icon can be used to display and correct products. The **pencil** icon accesses the drawing tools. The **arrow** is the select tool for the Spatial Display. The **pan** button disables the Spatial Display selector and allows only panning, so you don't accidentally grab and move a polygon. The **MAPS** button is used to select by areas using maps. The **undo** and redo buttons are for the Spatial Display edits only. The **Single/Range** button specifies whether a single time or time range is used in the Console timeline. The **now** ruler resets the Console timeline to now. And the **triangle** on the far right pops up a menu that controls a lot of general view configuration such as choosing a service backup site and VTEC mode.

You will notice a lot of the buttons have a redundant **triangle** icon next to them, but you can choose to either click on the icon or the adjacent triangle to trigger the pullout menu.



The life cycle statuses of Hazard Services reflects the different states of the hazards which can control their visibility and indicate relative position in workflow.

When you first initiate a new hazard with a recommender, it starts as **potential** only on your workstation. If you have lots of potential events, you can **right** click in the Console and "**remove** all potential events" which is a handy way of cleaning up from an overly generous recommender.

Once you start to edit a hazard, it changes to **pending**, so you can keep track of what hazards you have started to work with on that workstation.

If you **propose** a hazard in the HID, that status is clearly reflected in the consoles on other machines to assist in collaboration. If you **Issue** a new product or a follow up, they share a single status called Issued.

There are two main types of ending states, elapsed and ended. Hazards canceled by the **forecaster** are labeled as ended, while hazards ending on their **own** are labeled as elapsed. Both Ended and Elapsed hazards are filtered from the Console and Spatial Display by default, though you can edit your settings to toggle them back on.

Ending reflects when a forecaster has started down the path of ending the hazard.

Elapsing is for the special time window after a product ends where it can still be updated with an expiration VTEC message.

- **Test Your Knowledge #3**
- *Quiz - 2 questions*
- Last Modified: Oct 26, 2018 at 07:25 PM

- **PROPERTIES**
- On passing, 'Finish' button: Goes to Next Slide
- On failing, 'Finish' button: Goes to Next Slide
- Allow user to leave quiz: After user has completed quiz
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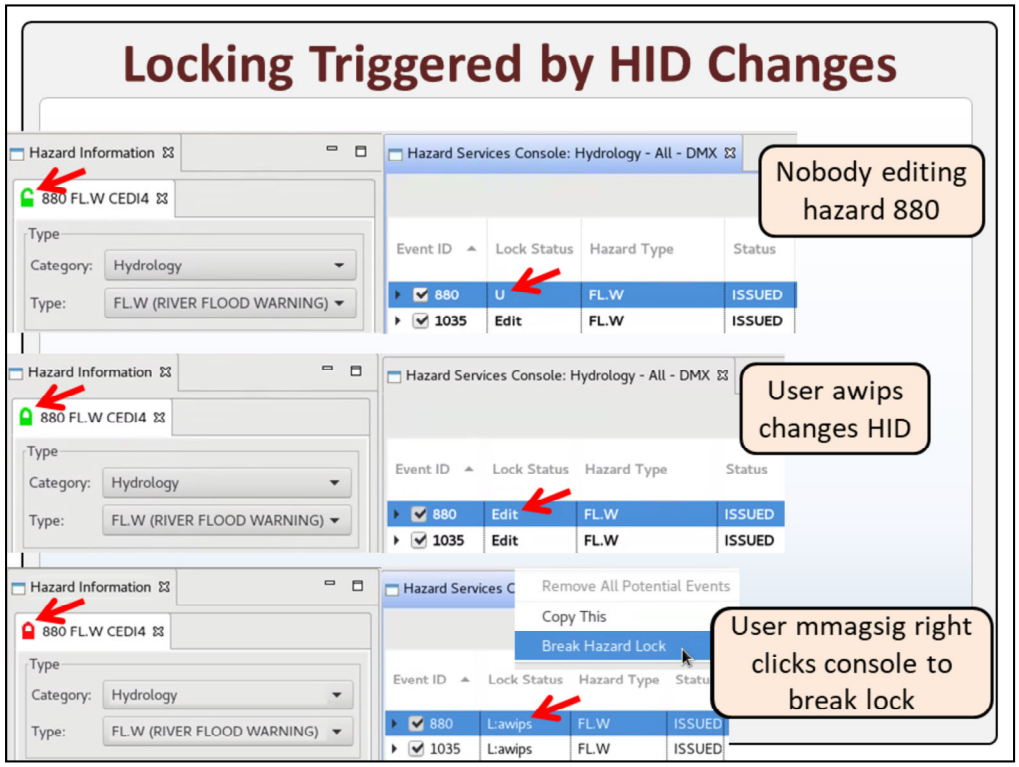
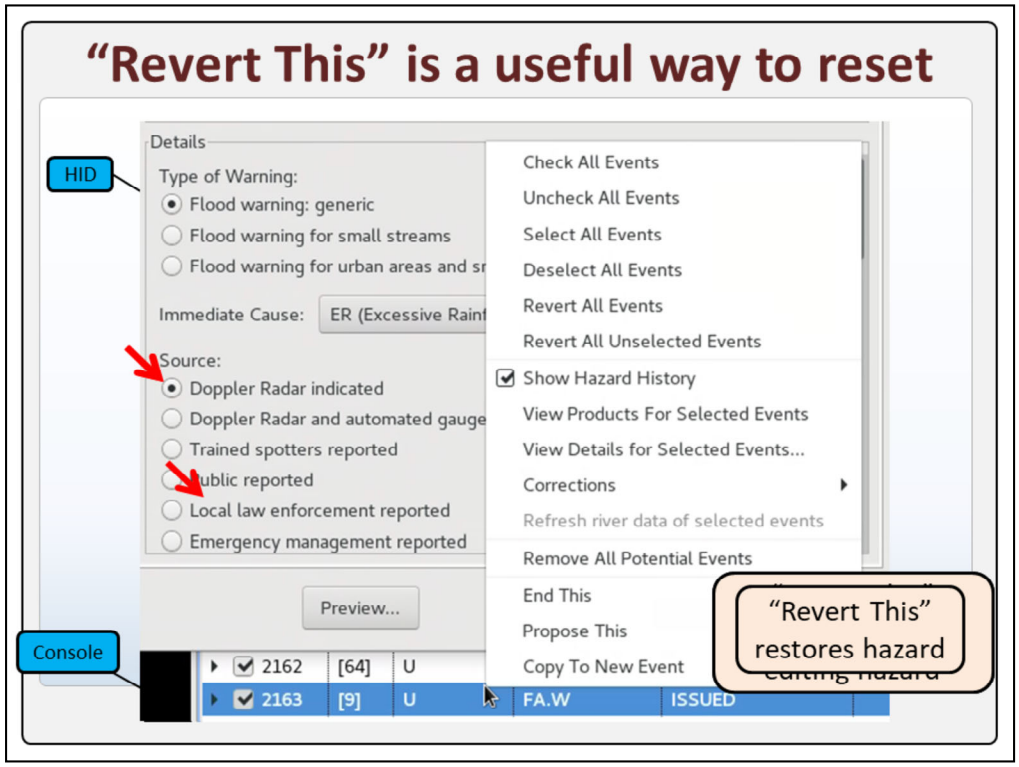
Edit in Quizmaker | Edit Properties



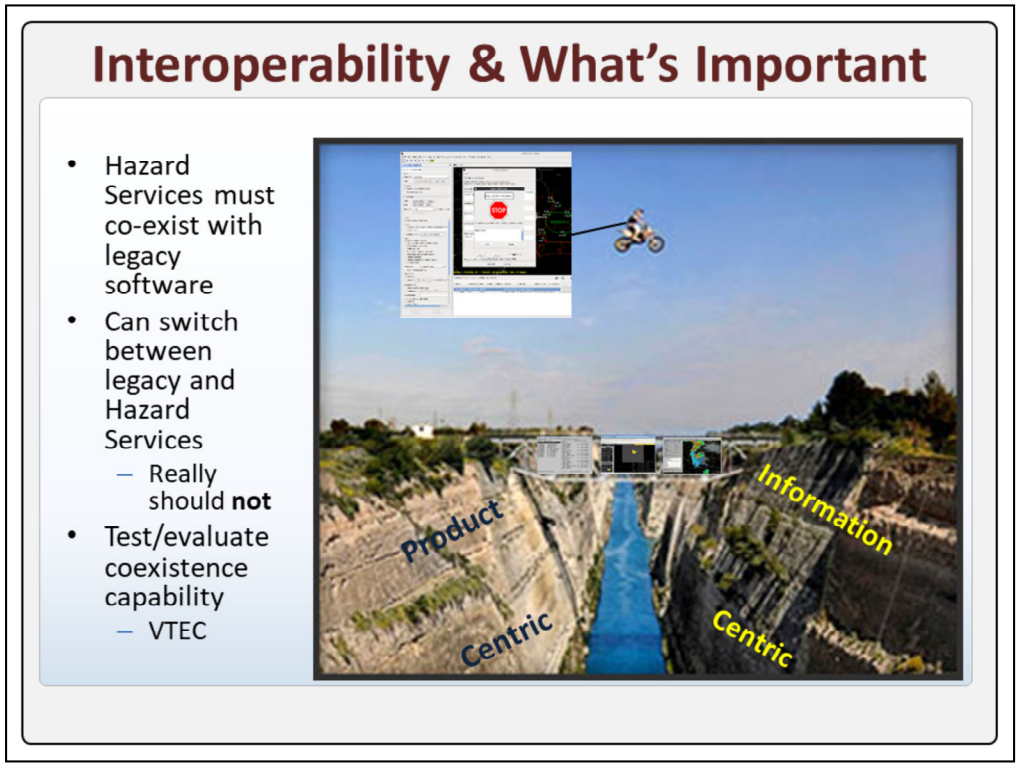
Hazard Services has implemented hazard locking, and the lock icon in a hazard's tab in the HID will initially display a **green** open lock when the Lock Status is **U** in the console and the hazard is unlocked. When someone starts **editing** a hazard by changing the HID, the Lock Status changes to **Edit** and the **green** lock becomes closed. In this example when user awips locks hazard 880, then if mmagsig selects hazard **880**, mmagsig's HID then displays a closed **red** lock and mmagsig's console displays an **L** in the Lock Status column with the user who has locked the hazard. To break the locked hazard mmagsig can **right** click in the console and select Break Hazard Lock.



There is a Console right click menu called "Revert This" that comes in real handy when you want to reset your hazard once you have started making changes to an issued hazard in either the HID or the spatial display. If the hazard hasn't been edited then if you right click on the hazard in the console, you will not see "Revert This" on the bottom of the menu.

So let's say I start with a Doppler Radar indicated source. Once you significantly change the hazard like changing the **Source** to "Public reported", the lock status changes to Edit, and you will see the Revert This option when you right click on the hazard in the console. Once you **revert** this, it restores the hazard to its original previously issued state, both in the HID and the spatial display.

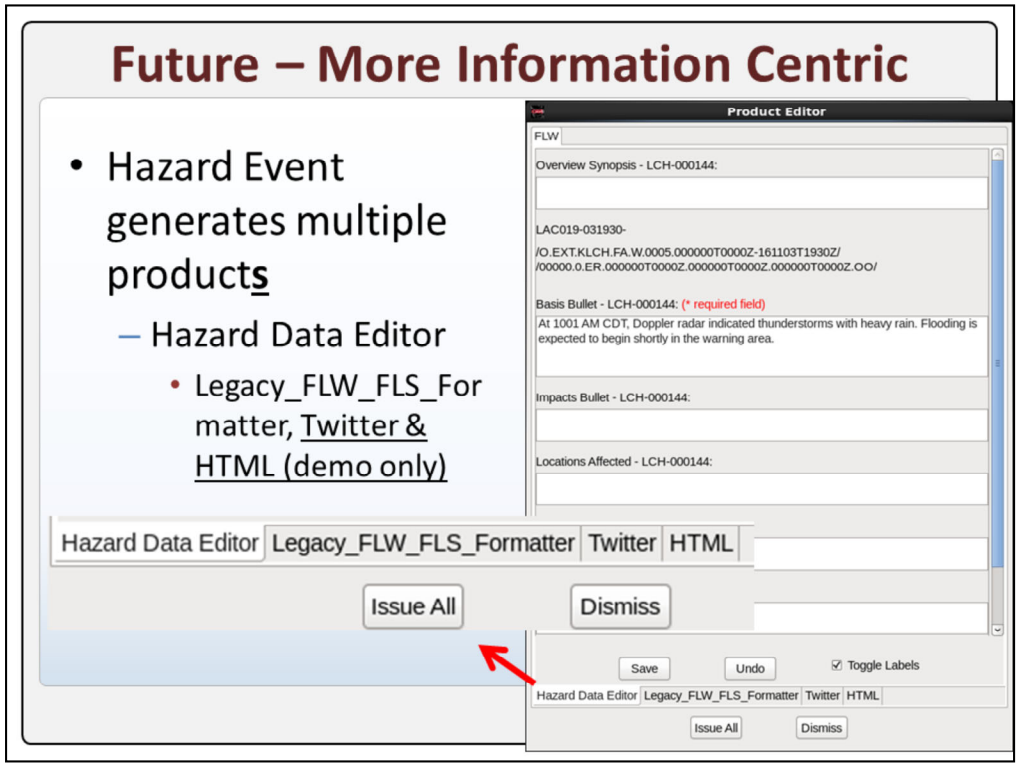
Hazard Services does tend to have a pretty strong memory when making changes to hazards, so whenever you get in a bind in Hazard Services and want to reset a hazard, Revert This is your friend.



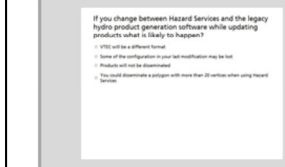
Interoperability is an important concept in Hazard Services. When Hazard Services is initially deployed, it needs to support working with products that were generated from Hazard Services or legacy hydro product generation software. Interoperability is the ability for Hazard Services to be able to **work** along with the existing Legacy product generation tools.

Under the hood there is a pretty large gap between today's product-centric approach and the information-centric approach of Hazard Services. And although you **can** switch between legacy apps and Hazard Services, you really **shouldn't** do that if you don't have to because there's going to be some differences that will crop up. For instance, applications like WarnGen can remember what was previously selected in the GUIs, and the WarnGen GUI settings won't be retained when loading Hazard Services.

During **testing** it is important to switch between Hazard Services and the Legacy applications to verify the laws of VTEC have not been violated and to make sure everything works, but expect a few bumps in the road.



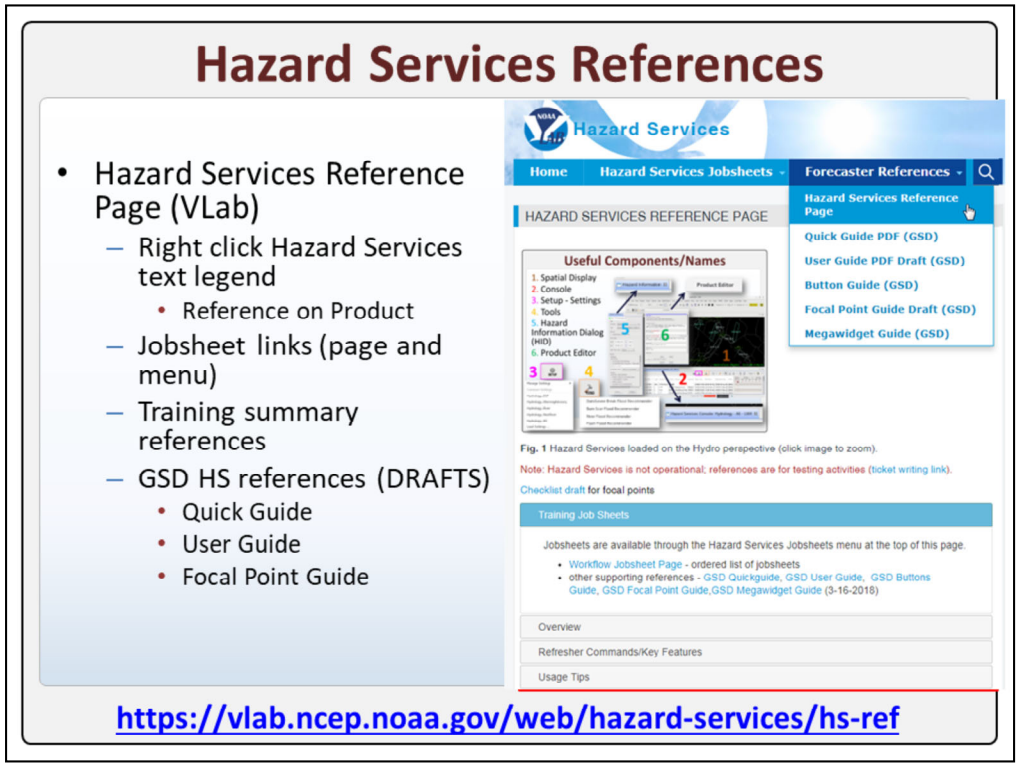
Here is a glimpse of what the information-centric future could look like from one of the early prototypes. Remember from earlier that the Hazard Data Editor is where the text content is modified, and this information could be propagated to the legacy format product, a twitter format product, and an HTML format product. So while today we live in a more product-centric world where there is only one legacy format tab, seeing how the software was designed to support a new paradigm can help make sense of the design.



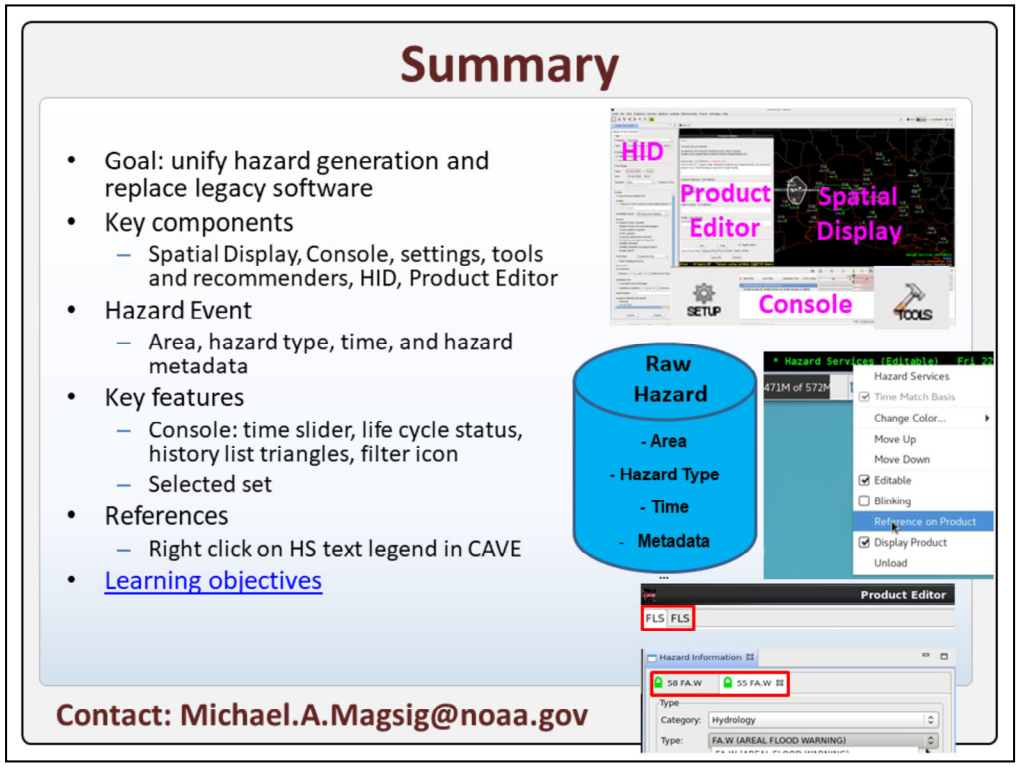
- **Test Your Knowledge #4**
- *Quiz - 1 question*
- Last Modified: Oct 26, 2018 at 07:28 PM

- **PROPERTIES**
- On passing, 'Finish' button: Goes to Next Slide
- On failing, 'Finish' button: Goes to Next Slide
- Allow user to leave quiz: After user has completed quiz
- User may view slides after quiz: At any time
- Show in menu as: Single item

Edit in Quizmaker | Edit Properties



All the references you need from this training are at your fingertips in CAVE. All you have to do is right click on the Hazard Services text legend and select Reference on Product. From the **main** VLab page you will find the links to the jobsheets as well as other **quick-reference** information such as refresher commands and usage tips. We also have **links** to other useful PDF guides for Hazard Services.



In summary, the goal of Hazard Services is to unify hazard generation in AWIPS and replace legacy software.

There are **six** main components in Hazard Services. The **Spatial** Display is the CAVE editor used to load Hazard Services and display and interact with the polygons. The dockable **Console** is used to organize and manage hazard events, and the settings in the **SETUP** icon control what hazard types are displayed as well as a potentially filtered list of recommenders and tools from the **TOOLS** button. The **Hazard** Information Dialog, or HID, is where the forecaster assembles the fundamental Hazard Event components. And once a Hazard Event is defined, the **Product** Editor uses the Hazard Event to generate watch, warning and advisory products.

The **Hazard** Event is a key concept in Hazard Services, and it has four main components: an area, hazard type, time, and hazard metadata.

There are a number of **notable** features in the Console. The **time** slider is used to filter hazards from the Spatial Display. The life cycle **status** is used to filter Ended and Elapsed hazards from the display by default and clean up “Potential” events from the recommenders. The hazard event history is revealed using the **triangles** on the left side of the Console, while the **Hydro** filter status icon will turn yellow

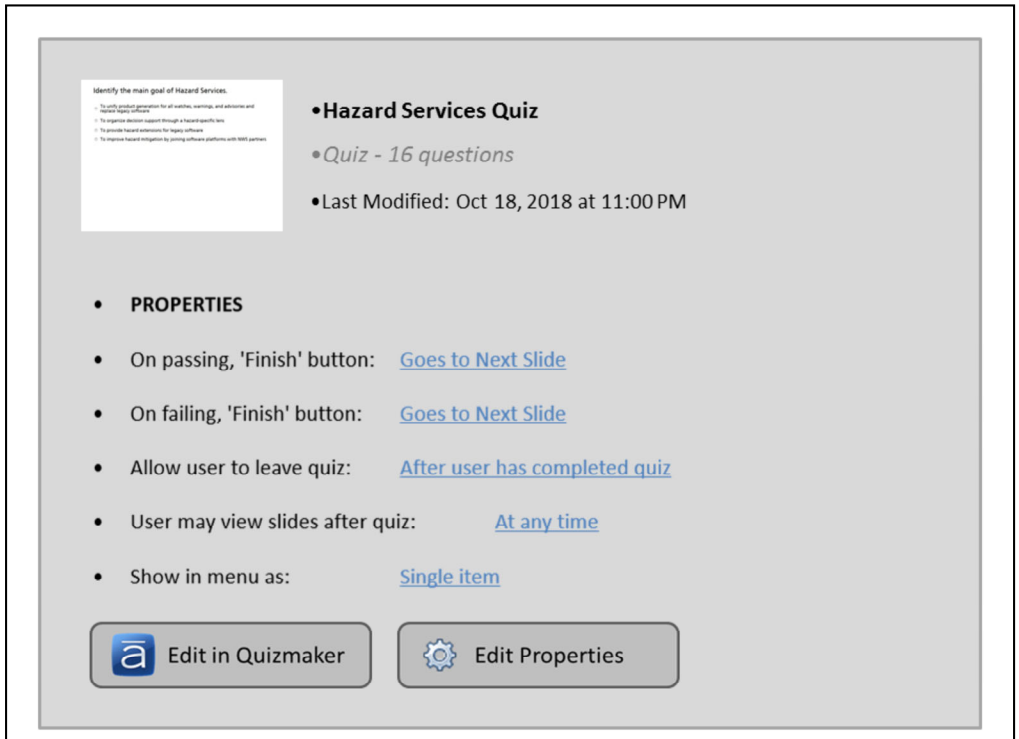
when live hydro products are filtered from the display.

The **selected** set allows forecasters to select **groups** of hazard events and generate and distribute multiple products simultaneously.

And lastly, all the **reference** information you need to spin up on Hazard Services is a right click away on the Hazard Services product legend in CAVE.

If you have any **questions** about this training or Hazard Services, please contact me. I'd like to hear from you.

When you are ready to take the quiz, advance to the next slide. You can **click** on this link if you want to reflect on the learning objectives one last time.


Identify the main goal of Hazard Services.
•Hazard Services Quiz
•Quiz - 16 questions
•Last Modified: Oct 18, 2018 at 11:00 PM
• PROPERTIES
• On passing, 'Finish' button: Goes to Next Slide
• On failing, 'Finish' button: Goes to Next Slide
• Allow user to leave quiz: After user has completed quiz
• User may view slides after quiz: At any time
• Show in menu as: Single item
Edit in Quizmaker
Edit Properties