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Sandia National Laboratories

USER INTERFACE STORYBOARDS

Defining States UIS Component

SANDXXXX-XXXX

Overview

- Several Analyst-focused storyboards (e.g., Refines Event Location, Refines Event Magnitude…), employ the concept of System-determined and Analyst-overridden defining behavior for location, magnitude, and other calculations.

- This storyboard outlines how defining state information is presented to the user throughout the System.

Key concepts

- The defining behavior for a signal detection, etc. is automatically set by the System to Defining/Non-defining based on a configurable set of defining rules

- In some circumstances, the Analyst can override individual defining states associated with an event hypothesis

- Defining states are stored each time an event hypothesis is saved, retaining a history of how those defining states change over time
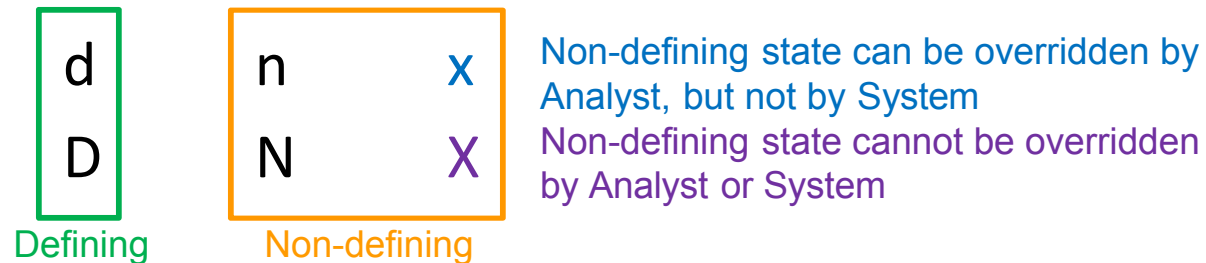
Key concepts (cont.)

- Displays convey the following information to the user for each defining attribute:

  1. Whether the current defining state is Defining or Non-defining
  2. Whether an Analyst is permitted to override the defining state
  3. A history of whether the defining state was set by the System to be Defining/Non-defining and if the defining state was subsequently overridden

Existing paradigm

- This solution replaces the existing paradigm of using a single letter (d, D, n, N, x, X) to communicate defining information

Lowercase = set by System (default)

d	n	x
D	N	X
Defining	Non-defining	

Non-defining state can be overridden by Analyst, but not by System

Non-defining state cannot be overridden by Analyst or System

Uppercase = overridden by Analyst

Viewing/editing the defining state

- Defining states appear on displays in the following configurations:

☑	Defining, editable by Analyst	d/D
☐	Non-defining, editable by Analyst	n/N
☐	Non-defining, editable by Analyst, not editable by System	x
☐	Non-defining, not editable by Analyst or System	X

- The checkbox state (checked or not) indicates the current defining state
    - Left-click on an editable checkbox to change the defining state
- A checkbox rimmed in red is editable, but alerts the Analyst that the System cannot make this state Defining
- The checkbox is disabled (i.e., non-editable) if the Analyst is not permitted to edit the defining state

Viewing the change history

- The Analyst can view the change history for a defining attribute by right-clicking on the checkbox component

- Examples:

1. The System set the defining state to Non-defining and it was never overridden

History	Defn.
System	

2. The System set the defining state to Defining. The AL1 analyst then changed the defining state to Non-defining. Finally, the AL2 analyst changed the defining state back to Defining.

History		Defn.
System	Reset	✔
AL1 (username)		
AL2 (username)		✔

Viewing the change history (cont.)

- Examples:

  3. The System set the defining state to Non-defining. The Analyst is alerted that the System cannot set this state to Defining. However, the Analyst chooses to override this state and set it to Defining.

History	Defn.
System Reset	
AL1 (username)	✔

- Any time the defining state has been overridden, the Analyst has the option to reset the defining state back to the System default setting.
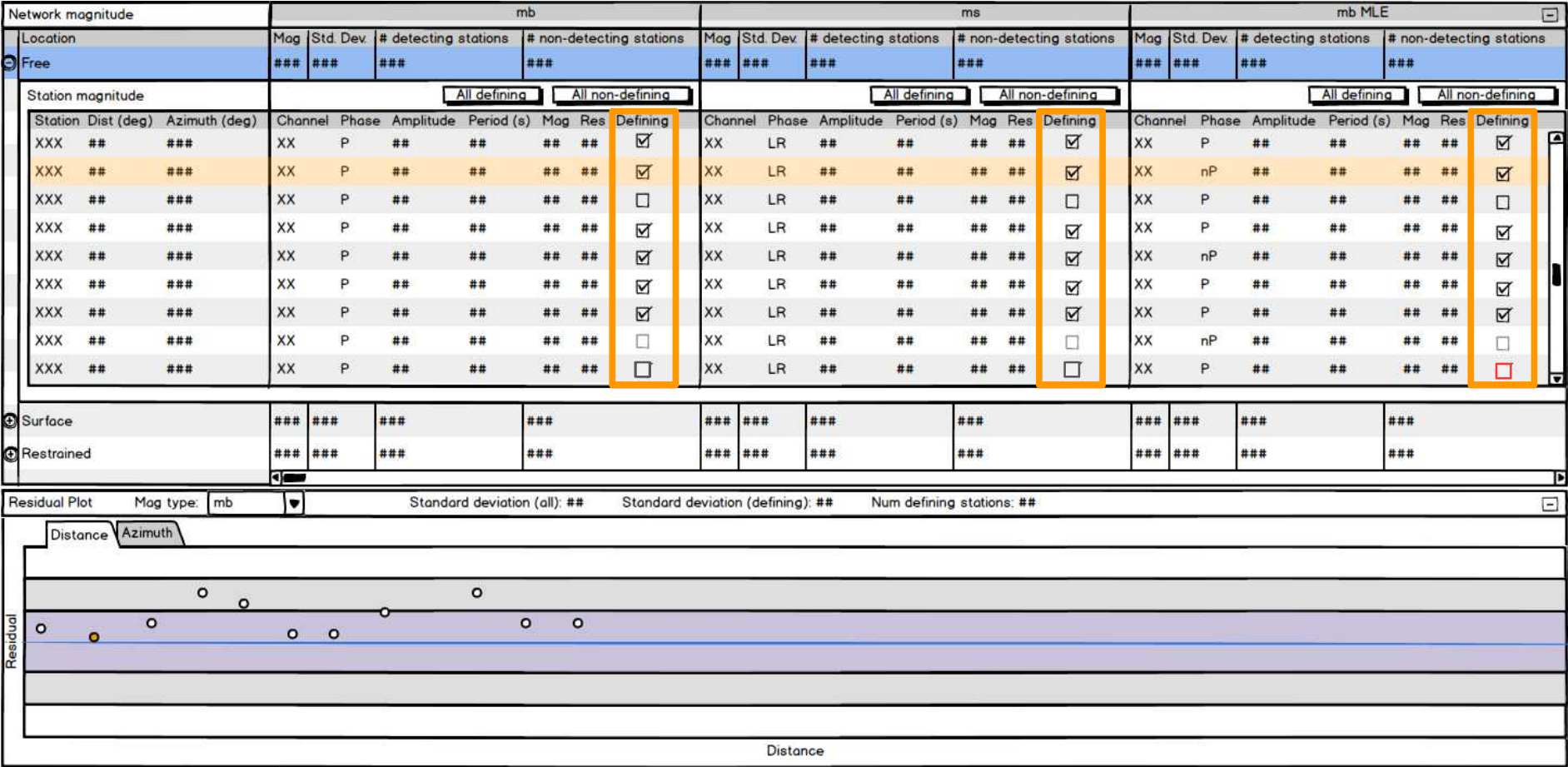
Defining states for Event Magnitude

Network magnitude			mb						ms						mb MLE				

Location			Mag	Std. Dev.	# detecting stations	# non-detecting stations	Mag	Std. Dev.	# detecting stations	# non-detecting stations	Mag	Std. Dev.	# detecting stations	# non-detecting stations
Free			###	###	###	###	###	###	###	###	###	###	###	###

Station magnitude — All defining — All non-defining — All defining — All non-defining — All defining — All non-defining

Station	Dist (deg)	Azimuth (deg)	Channel	Phase	Amplitude	Period (s)	Mag	Res	Defining	Channel	Phase	Amplitude	Period (s)	Mag	Res	Defining	Channel	Phase	Amplitude	Period (s)	Mag	Res	Defining
XXX	##	###	XX	P	##	##	##	##	☑	XX	LR	##	##	##	##	☑	XX	P	##	##	##	##	☑
XXX	##	###	XX	P	##	##	##	##	☑	XX	LR	##	##	##	##	☑	XX	nP	##	##	##	##	☑
XXX	##	###	XX	P	##	##	##	##	☐	XX	LR	##	##	##	##	☐	XX	P	##	##	##	##	☐
XXX	##	###	XX	P	##	##	##	##	☑	XX	LR	##	##	##	##	☑	XX	P	##	##	##	##	☑
XXX	##	###	XX	P	##	##	##	##	☑	XX	LR	##	##	##	##	☑	XX	nP	##	##	##	##	☑
XXX	##	###	XX	P	##	##	##	##	☑	XX	LR	##	##	##	##	☑	XX	P	##	##	##	##	☑
XXX	##	###	XX	P	##	##	##	##	☑	XX	LR	##	##	##	##	☑	XX	P	##	##	##	##	☑
XXX	##	###	XX	P	##	##	##	##	☐	XX	LR	##	##	##	##	☐	XX	nP	##	##	##	##	☐
XXX	##	###	XX	P	##	##	##	##	☐	XX	LR	##	##	##	##	☐	XX	P	##	##	##	##	☐

Surface			###	###	###	###	###	###	###	###	###	###	###	###
Restrained			###	###	###	###	###	###	###	###	###	###	###	###

Residual Plot   Mag type: mb   Standard deviation (all): ##   Standard deviation (defining): ##   Num defining stations: ##

Distance / Azimuth

Residual

Distance

Defining states for Event Magnitude

Defining states for Event Magnitude

Analysts can quickly apply defining state changes to all signal detections in a list using the "All defining" and "All non-defining" options in the column header

Notes

- The Analyst can set a System-defining state (for example) to be Analyst-defining by clicking the checkbox twice – once to set it to Analyst-non-defining and then a second time to set it to Analyst-defining.

- This solutions assumes that it is not important for the Analyst to immediately see whether each defining state was set by the System or overridden by an Analyst. This information is available via the popup history but is not automatically visible for each defining attribute on the display. We arrived at this assumption through discussions with AFTAC.

- The Analyst can also view a history of defining state changes by viewing the full history of saved event hypotheses for a given event (see UC Views Event History).