## Simple Use Case for GUI

## By a simple use case we are talking about Research Scientist (RS) who is searching for one specific type of data and want to visualize it and download either the whole dataset or just part of it.

### Story description

As an example we have chosen seismologist (as RS) searching for earthquakes in a specific area (bounding box) and in specific time period. Once the earthquake catalogue (list of earthquakes with other specific parameters) is chosen (there could be more RI/agencies providing regionally overlapping catalogues) the RS wants to do some filtering of earthquakes:

* + - select earthquakes only (i.e. not explosions)
    - select events larger than a specific magnitude threshold (e.g. M>3)
    - select only those which have been recorded by at least 5 stations within 150 km distance (all stations must be within that range)

For this selection the RS wants to

* + - visualize the cataloque in a map
    - save the map view as a figure for publication - e.g. PNG, PDF, SVG, PS
    - download the complete earthquake catalogue (locations, phase readings, MT solutions, ...) in QuakeML format
    - download waveforms starting 2 minutes before origin time (time of earthquake) and ending 10 minutes after that time

## Expected discovery - basic sequences and needed steps (user view)

#### LOG IN

1.   <Research Scientist> logs into EPOS-ICS portal and navigates to the search interface. (After successful login is redirected to EPOS Discovery page. The map can show the RI in EPOS as a default view.)

#### ****SEARCH****

**Task: Find the proper earthquake catalogue / DDSS element by browsing and searching. Further analysis of data is performed later from the workspace.**

2.1 <RS> searches for "earthquake catalogue" using the free text search box.

* + - result is list of DDSS elements organized in a list or grid (similar to GeoNetwork prototype). A map is shown aside with all bounding boxes (polygones) of shown DDSS elements - DDSS element is highlighted in the map when selected.

2.2 <RS> uses the faceted search to narrow down the list of DDSS elements by choosing specific RI / agency (or other category/criteria)

2.3 <RS> selects the EQ catalogue from list/grid and adds it to its own workspace/basket

The individual elements (RIs, DDSSs) can be added to personal workspace/basket at any level of the search. User can also explore details of individual element at any time. User can also navigate further using the "full connectivity" of CERIF.

#### ****VISUALISATION****

**Task: Visualize the item(s) from the workspace**

3.1 <RS> navigates to its workspace (Q: Workspace as a new tab?)

3.2 The earthquake catalogue (DDSS element) allows several actions (buttons) which are specific for this element, e.g.

* + - Download EQ catalogue (in QuakeML format)
    - Analyze EQ catalogue (= visualize + filter data)
    - Download waveforms
    - etc.

3.3 The "Analyze" tool allows visualizing EQs in map with filtering options (panel on left side of the window) for dedicated parameters (magnitude, depth, bounding box coordinates, time interval, minimum number of stations, etc.  - basically all information which is in the EQ catalogue

3.3.1 There is a map interface allowing interactive selection of EQs by a bounding box

3.3.2 Earthquakes are plotted as points and their size corresponds to magnitude, color corresponds to depth or time (optional)

3.3.3 Other additional tools for checking the catalogue are present, e.g. completeness check, magnitude-frequency distribution, etc. (as a new window ?)

3.3.4 Filtered catalogue (i.e. selected part of the "earthquake catalogue") can be saved to workspace as a new EQ catalogue for later processing.

3.3.5 All derived results can be saved in RS's workspace (i.e. not published back into CERIF)

#### DOWNLOAD

4.1 <RS> goes back to workspace and **requests**

4.1.1 download of earthquake catalogue as QuakeML

4.1.2 extracts of waveforms using the self-defined time window (2 min before origin time and 10 minutes after that) - the extraction is separated from download because the extracts could be saved in the workspace for later use

4.1.3 download of waveforms in MSEED format and station configurations as StationXML (this may require an independent service related to download of waveform data)

4.4 <RS> gets some feedback on the time required to process the request and download the data (as large amount of waveform data will take time) and approves the execution.

4.5 The sytem then starts downloading and delivers data in the standard formats (i.e. MSEED, StationXML and QuakeML).