

Requirements for the Proposal Submission Tool (PST) and the VLA Exposure Calculator (ECT), for the 2015B proposal deadline (February 2, 2015).

PST:

Critical:

1. The printed/printable PDF document (proposal) has a number of problems, which need to be fixed. JIRA ?
2. For a submitted proposal, users (and reviewers!) should not be able to remove a calculator graphic. (Of course, admins should have this capability.)
3. When proposals are copied from old ones, we need some way to disallow Resources that were in the old proposal (unless they are still valid). It seems that somehow such Resources sometimes get through validation.
4. We need some changes to the Technical Justification section(s):
 - a. Either save the TJ page automatically when navigating away, or give a pop-up that asks if the page should be saved.
 - b. Technical Justification questions for VLA:
 - i. For item 1, add "radio" before "telescopes". Add the url <https://science.nrao.edu/facilities/vla/docs/manuals/oss/performance/comb-conf-mosaicing>
 - ii. For item 2, remove the text "and note whether the proposed observations will be combined with other VLA configurations or other telescopes (list which configurations or telescopes)", and remove the url shown in i).
5. For VLA Resources:
 - a. P-band defaults didn't get updated for 15A semester, so we need to do that now. "General and Shared Risk Observing – Wideband" default for P-band should be 16x16MHz, spanning 256 MHz. Center frequencies should be: 232, 248, 264, 280, 296, 312, 328, 344, 360, 376, 392, 408, 424, 440, 456, 472 MHz. The bandwidth per channel hasn't changed. And finally, this Resource should no longer be marked Shared Risk.
 - b. If "General and Shared Risk Observing – Spectral Line" is selected from the Backend, P band should not be selectable from the Receiver list.
6. For attached images (GOST or VLA or EVN exposure calculator) we need to verify the image file type, and raise a flag to users

when the length of attached image is zero (this can cause problems with creating a pdf of the entire proposal).

7. Old screenshots (exposure calculator or GOST) should be disallowed when a proposal is copied.
8. We check the word count in two places: (1) on the General Page; and (2) during validation. It appears that we are using third party software on the client and server (Javascript and Java, respectively) and they are doing the counting differently. We want this to be consistent. JIRA EVL-2841.
9. VLBA validation bug: If all components are not in the proposal at the validation step, we get a lot of messages like "VLBA cannot have more than 4 channels" or "VLBA cannot have bandwidth more than 16 MHz" (these are two examples). These messages are red herrings (false). All these messages go away when the root cause (e.g. no scientific justification) is fixed (the root cause is listed among all the other validation errors, but sometimes it's hard to find. JIRA EVL-2839.

Important:

1. Calculate Data Rate/Volume, and put (at least) Volume on cover sheet in top right-hand-side box (for multiple Resources, the total Volume is the sum of volumes for all Resources. Possibly could also be reported in Session Source/Resource Pair table.). For Resources that require GOST, currently the user would have to take the data rate calculated by GOST and input it into the PST (somewhere).
2. 1. Need better confusion numbers – we should incorporate Jim Condon's "universal confusion calculator" with his assistance. JIRA EVL-2483
3. If possible, move calculator images to after the cover sheet; also make them print from "Print Preview" (both VLA and VLBA).
4. When the Technical Justification cues are sent to the technical review, could we have a line in between each cue ?
5. Documentation: More examples of a good Technical Justification page.

To not lose track of:

1. It would be nice to get rid of all mention of the Legacy IDs for VLA (VLBA still requires them). JIRA EVL-2848
2. We need to think about plonifying the PST "Manual". What are the implications of, for example, in-line Help ? Should we re-institute fly-over help in the PST? JIRA EVL-2847

3. It would be nice to have the most recent proposals listed on top in the PST, rather than the oldest, in the left-hand panel tree view (i.e. default sorting to be newest to oldest).
4. We really need to fix sessions. Users are confused by the relationship between sources, resources, and sessions.
5. It would be nice to automate the min/max LST calculation, given sources in a session. It may not be possible in all cases, but we should do what we can. JIRA EVL-2849.
6. A read-only copy of the TJ on the review page would be nice, so reviewers don't have to switch back and forth.
7. Documentation: descriptive examples of providing sensitivity (from science goals).

ECT:

Critical:

1. Boundaries between receivers need to be rationalized, as well as noted (pop-ups?). The bandwidth selected must be checked against the center frequency and the edge of the band. For example, if 8 GHz bandwidth is selected, and the center frequency at Q band is selected as 48 GHz, then +4 GHz (half the 8 GHz bandwidth) gets the frequency edge to $48+4 = 52$ GHz, which is past the edge of the 40 – 50 GHz range of the Q band receiver.
2. Version number of the ECT should be on the pdf, with semester (e.g. 15A) in it.
3. Entry of rms brightness temperature doesn't "stick", i.e. when it is entered, it immediately gets changed. We should be able to enter this number, as we would enter the rms noise.
4. New SEFD (System Equivalent Flux Density) numbers need to be put into the calculator. They go in, I believe, as tables of T_{sys} and η (the antenna efficiency), as functions of frequency for each receiver band. For example, it appears that for any frequency in X band one gets the same SEFD. Some data is already available for this.

Important:

1. We need a more complex overhead algorithm. 3-bit vs. 8-bit, multi-frequency SBs, length of SB, etc. JIRA EVL-2484.

2. Values in the pdf (e.g. rms numbers) should have the same number of significant figures as in the tool itself, and times should be in the same format.
3. Display overhead fraction (perhaps to right of Total Time?), and note there that it assumes 2h SBs. (In the future, this field could be writeable.)
4. Automatically put in the “effective” bandwidth for a given low frequency receiver continuum observation. For example if L band is selected, automatically put in 600 MHz for the bandwidth.
5. Documentation: explanation of brightness temperature sensitivity.

To not lose track of:

1. In P-band, we probably need to reduce the available bandwidth in the C- and D-configurations, since there is more interference on these shorter baselines. JIRA EVL-2485.
2. Need a day/night indicator (both for low and high frequencies). JIRA EVL-2487.
3. Need to include atmospheric absorption (science input needed).
4. Eventually, we really should incorporate the exposure calculator directly into the PST.
5. Need a tool separate from ECT for P-band sensitivity calculations, especially near the Galactic plane. Data (i.e. observations) are required as table input for this tool (more science input needed).