

Creation of a new GRASS GIS startup mechanism

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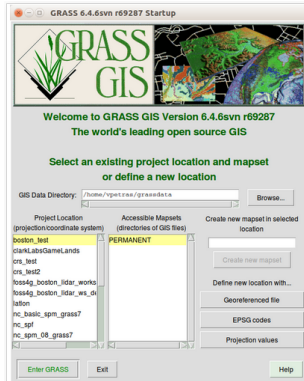
Table of Contents

- 1 Startup mechanism in the version 7.8
- 2 Startup mechanism after GSoC
- 3 Thesis objectives
- 4 Evaluate the changes made during GSoC
- 5 Propose the solution for the new startup mechanism
- 6 Propose and implement a special mode for first-time users
- 7 Conclusions
- 8 Questions

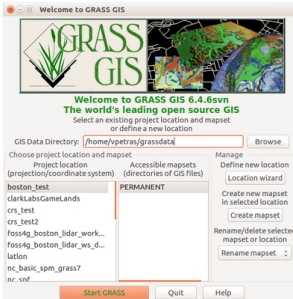
Startup mechanism in the version 7.8

Startup screen and data hierarchy

- Every GRASS GIS user was always redirected to the Startup screen
- Quite confusing without knowing what each of data hierarchy elements means



GRASS GIS 6.4 Tcl/Tk



GRASS GIS 6.4 wxPython



GRASS GIS 7.5

User complaints

#3474 closed enhancement (fixed)

Opened 3 lety ago

Closed 10 dny ago

Change the GRASS GIS start up to more beginner friendly

Nahlásil/a:	hellik	Vlastník:	grass-dev@...
Priorita:	critical	Etapa:	8.0.0
Komponenta:	Startup	Verze:	svn-trunk
Klíčová slova:	wxGUI, startup	Kopie:	
CPU:	All	Platform:	All

Popis

hi,

during the GCI contest with young students, we get following feedback:

GRASS GIS is a cool and nice software, but could you make it a little bit more beginner

the startup with choose location/mapset seems often to be confusing

therefore to broaden the user community, the startup should be changed to:

- start first layer manager and map display into a default ll-wgs84-location
- then offer the dialogue choose location/mapset-new location/mapset

Startup mechanism after GSoC

Google Summer of Code



Google Summer of Code

This is to certify that

Linda Kladivova

has completed

Google Summer of Code 2020

contributing to the open source project

OSGeo

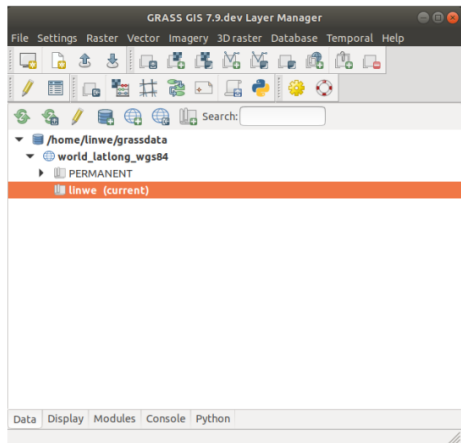
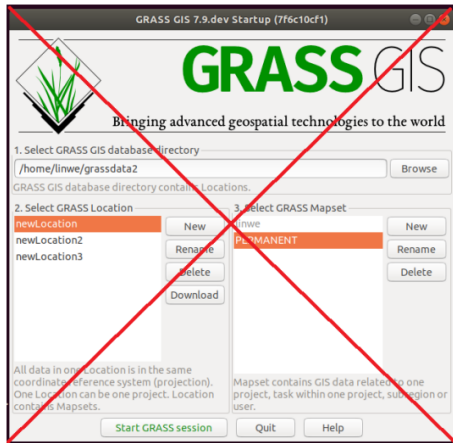
June 1, 2020 - August 24, 2020

A handwritten signature in black ink, likely belonging to Chris DiBona.

Chris DiBona
Director of Open Source

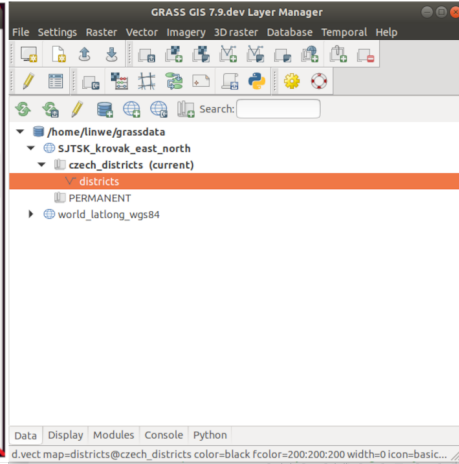
No more Startup screen for first-time user

- Launched directly in the Data Catalog with the prepared *default location* (*demolocation*) including world map in EPSG:4326



No more Startup screen when start in the last used mapset

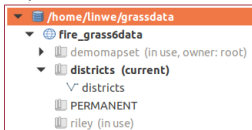
- Launched directly in the Data Catalog
- Used GRASS databases that had been stored in settings



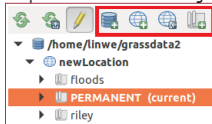
New functionalities in Data Catalog

- Data Catalog takes over the role of startup screen and offers even more!

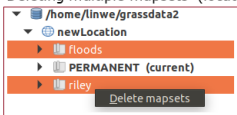
Mapset access info



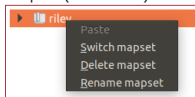
New management icons for adding GRASS database, location, and mapset and for downloading location



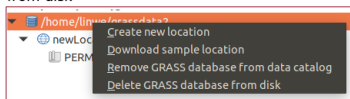
Deleting multiple mapsets (locations)



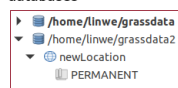
Creating, renaming and deleting mapset (or location)



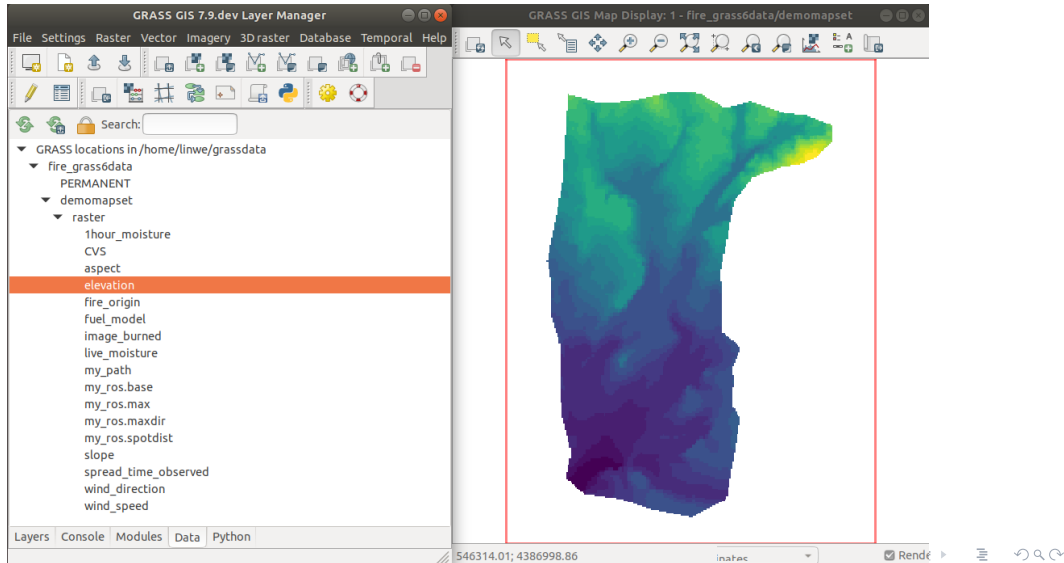
Removing GRASS db from Data Catalog / Deleting GRASS db from disk



Adding multiple GRASS databases



For comparison - Poor Data Catalog before GSoC



Lacks of the solution after GSoC

- Missing advice about how the first-time user should continue in data processing when he is in the default location
- Old startup screen is still used when the last used mapset is not available (deleted or used by another user)

Thesis objectives

Aims of the work

- Evaluate the changes made during GSoC
- Propose the solution for the new startup mechanism
- Propose and implement a special mode for first-time users

Evaluate the changes made during GSoC

Survey 1 Part 1: Help improve GRASS GIS startup mechanism and Data Catalog

General questions:

- Are users satisfied with the new solution after GSoC?
 - Which new functionalities do they like the most?
 - What are general user preferences regarding further development of GRASS GUI?
-
- Survey 1 Part 1 attended by 52 GRASS GIS users (all levels of proficiency)

Evaluation of changes made during GSoC

- Most of respondents like the situation after GSoC, however, there is also a minority of negative opinions.
- Users appreciate the new Data Catalog management icons, new small icons distinguishing mapsets, locations, GRASS databases and layers (vector, raster) and new context menu options to create, rename and delete a mapset or location.
- Users rate surprisingly low the new option of adding more GRASS databases (working directories).

Propose the solution for the new startup mechanism

Survey 1 Part 1: Help improve GRASS GIS startup mechanism and Data Catalog

Lack:

- Old startup screen is still used when the last used mapset is not available (deleted or used by another user)

General question:

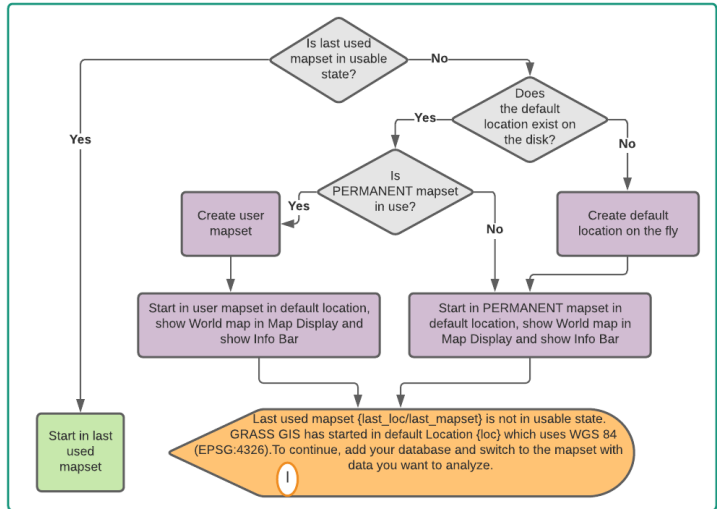
- How to improve the GRASS GIS startup mechanism?

Propose the solution for the new startup mechanism

- The author introduced two proposals
- both permanently remove the old startup screen
- both inspired by Infobar solution for first-time user mode

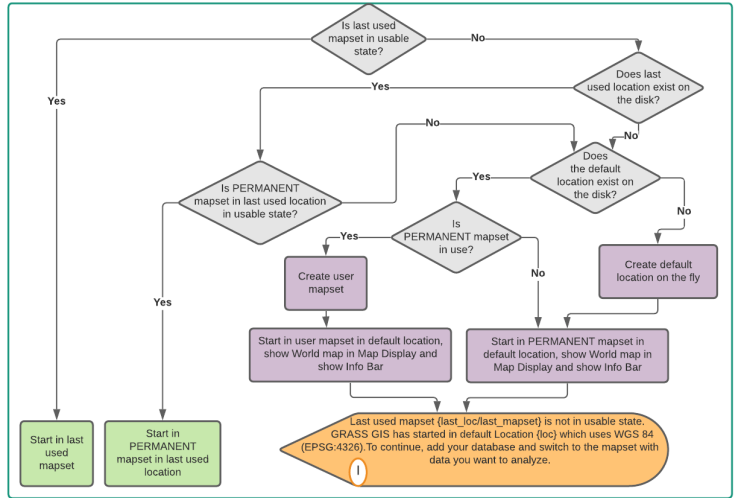
GRASS GIS startup mechanism - Proposal 1

- If the last mapset is not in the usable state GRASS starts into PERMANENT mapset in the default location with explaining infobar



GRASS GIS startup mechanism - Proposal 2

- GRASS starts into PERMANENT mapset of last used location if possible, otherwise into PERMANENT mapset in the default location as in Proposal 1



Propose and implement a special mode for first-time users

Survey 1 Part 2: Help create a better first-time user experience in GRASS GIS

Lack:

- Missing advice about how the first-time user should continue in data processing when he is in the default location

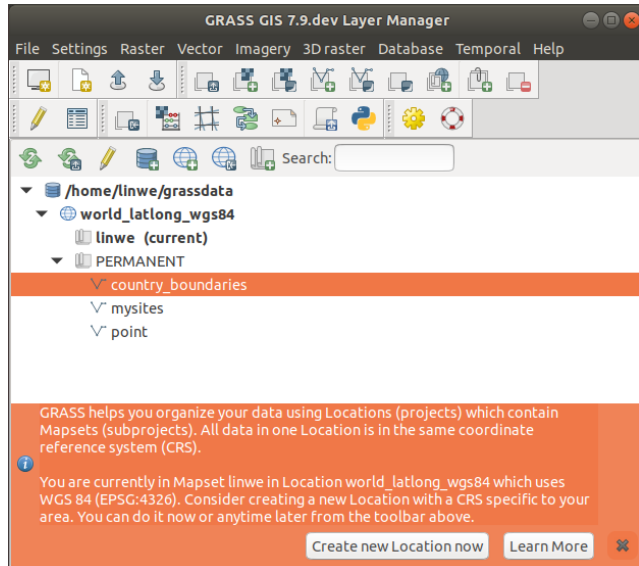
General questions:

- What information the special mode for first-time users should contain?
- Which implementation form to choose?
- Survey 1 Part 2 attended by 48 GRASS GIS users (all levels of proficiency)

Three key problematic first-time user situations identified on the basis of Survey 1 Part 2

- **Situation 1:** immediately after startup - a user needs to at least passively understand the principle of GRASS data hierarchy in order to create new Location with CRS of his data.
- **Situation 2:** once a user creates a new location he needs to know how to import his data.
- **Situation 3:** after importing the data, a user wants to either analyze data directly or change its display in the Map Display. So, he needs to know Display and Modules tabs.

Example of proposed infobar for first-time user after Survey 1

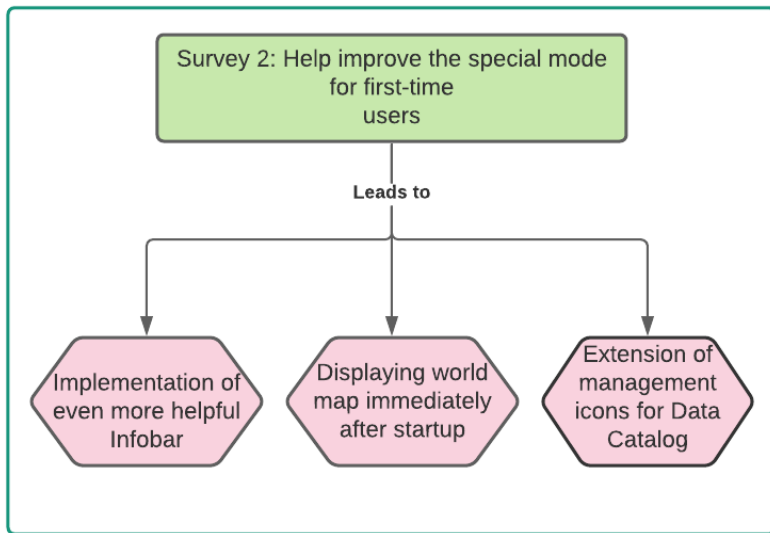


Survey 2: Help improve the special mode for first-time users

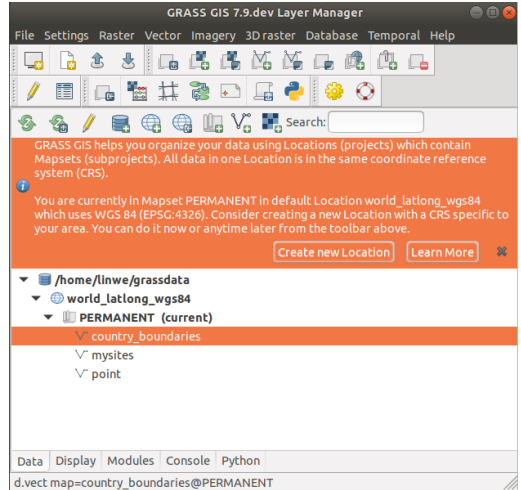
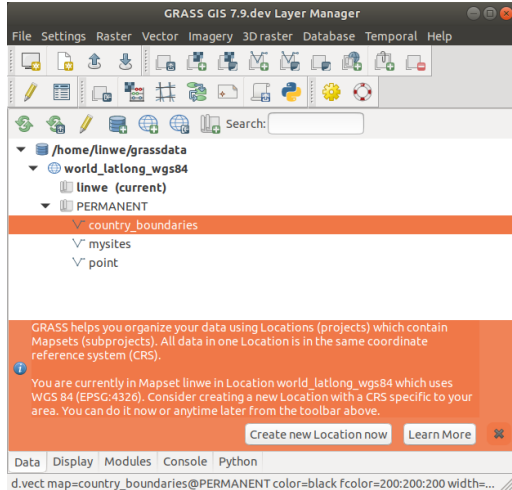
General questions:

- Do users like the proposed infobar?
- Do they have any other ideas so that the implemented solution is the best from an objective point of view?
- Survey 2 attended by 15 frequent GRASS users and 10 occasional GRASS users

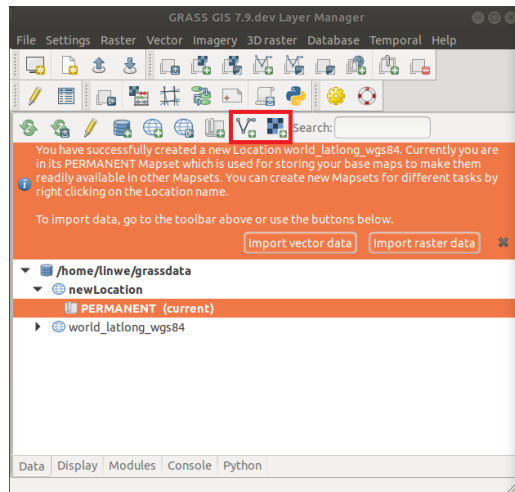
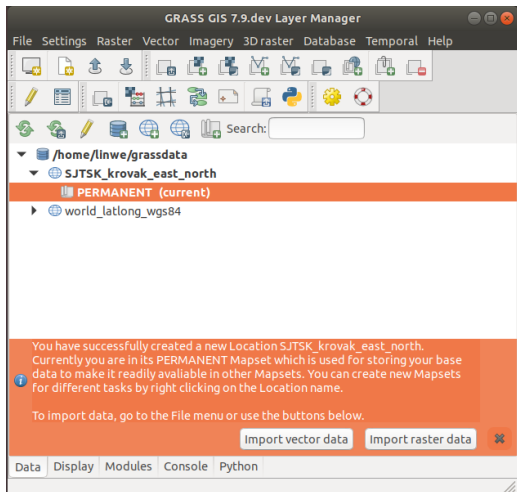
Impact of Survey 2 on the work



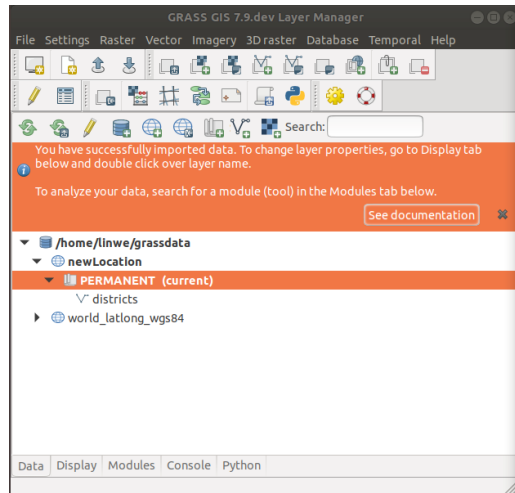
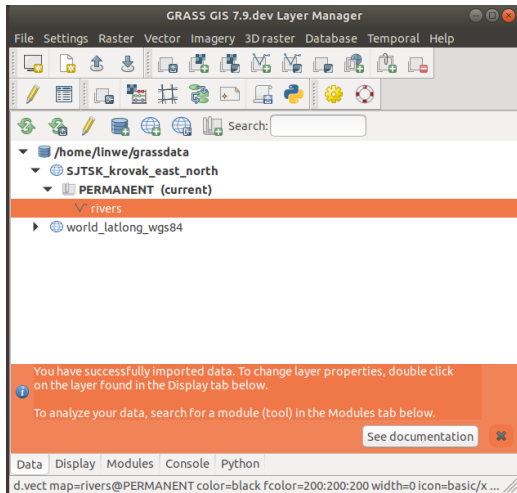
Situation 1 before and after Survey 2, User mapset removed



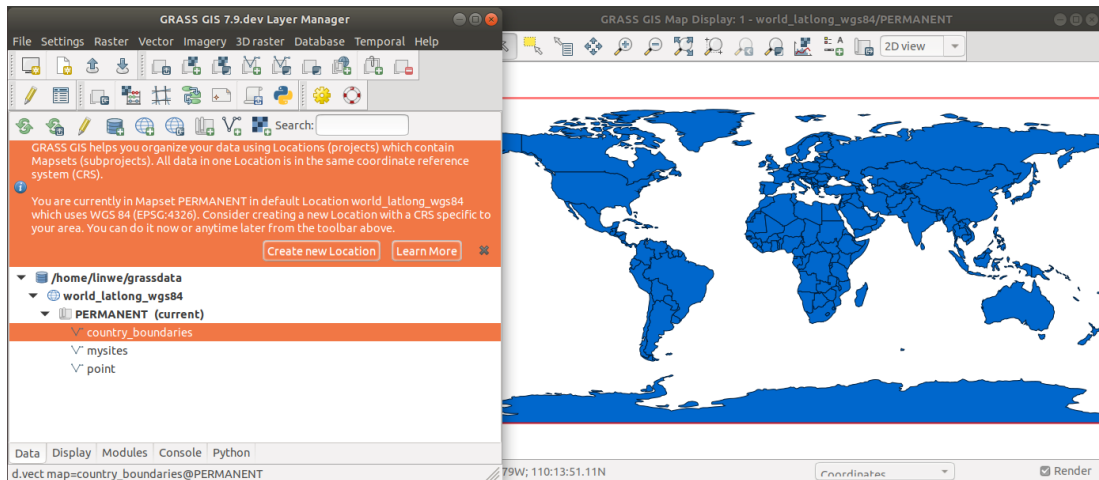
Situation 2 before and after Survey 2, New management icons for data import



Situation 3 before and after Survey 2



Displaying world map immediately after startup



Conclusions

Conclusions

- Most users like the partial removal of startup screen and improvements of the Data Catalog made during GSoC
- Proposals for GRASS GIS startup mechanism for normal users were introduced to GRASS community and they are now being discussed
- GSoC improvements and the special mode for first-time users are already in the development GRASS branch
- They will be part of the stable version 8.0 scheduled for the spring of 2021

Thank you for your attention

Questions

Supervisor's Question

- 1 Většina vámi navržených úprav byla začleněna do zdrojových kódů systému GRASS. Definitivní odstranění tradiční startovací obrazovky není nadšeně přijato všemi uživateli. Jak byste řešila snahu minimalizovat negativní ohlasy, které s sebou tento krok přináší?
- V průzkumu 70 % uživatelů pro začlenění modernizované startup screen, 30 % pro využití defaultní lokace
 - Hlavní důvodem pravděpodobně nedostatečné pochopení komunity, že Data Catalog převzal a dokonce rozšířil roli startovací obrazovky
 - Založena nová diskuze na GitHub platformě – podrobné vysvětlení a dialog ohledně obou představených návrhů

Opponent's Question 1

- ❶ You used a definition of usability as “to whether or not users can achieve specific goals with efficiency, effectiveness, and satisfaction”. How would that definition translate to the GRASS GIS startup? What would characterize a most user-friendly startup mechanism?
- The user is happy when GRASS GIS starts fast, without complicated dialogs and with right settings immediately enabling the user to start working.
- Efficiency (efektivnost) – complete the task fast
- Effectiveness (účinnost) – accomplish a purpose and produce the intended result
- Satisfaction (spokojenost) - the user is happy with the result

Opponent's Question 1

- ① You used a definition of usability as “to whether or not users can achieve specific goals with efficiency, effectiveness, and satisfaction”. How would that definition translate to the GRASS GIS startup? What would characterize a most user-friendly startup mechanism?
- A good user-friendly startup mechanism
 - opens the program
 - opens it fast
 - remembers the user's settings (in GRASS - start in the last used mapset)
 - can solve arisen problems (when last mapset not available (deleted, in use or broken))
 - leads new users
 - creates no burden for professionals

Opponent's Question 2

- ② What would be the five main topics on a long term roadmap for further UX development in GRASS GIS and why (consider effect and probably effort)?
- Complete the issue of the startup mechanism - medium effect, no consensus
 - Strictly semantically separate Data and Display tabs - big effect, medium effort
 - Design GRASS GUI as a single window application - huge effect as well as effort
 - Make the Location Wizard more pleasant - probably big effect as well as effort
 - Enrich the Data Catalog functionalities beyond changes made during GSoC - small effect as well as effort, but depends on functionalities

Opponent's Questions 3

- ③ How does the concept of the PERMANENT mapset affect user experience? Is it an asset, irrelevant or an obstacle to new users?
 - PERMANENT mapset - automatically created, visible from other mapsets, used for storing data common to all projects
 - For experienced users (and multiple users accessing the same location) asset, for new users rather confusing
 - Effort to bring the PERMANENT mapset closer to new users by explaining it in the *second infobar*

Opponent's Question 4

- ④ How does the search path concept integrate with the data catalog? Do you expect confusion among users when visible maps in the catalog are not available in modules interfaces?
- Modules offer maps contained in search path - maps from PERMANENT or current mapset
- Data Catalog does not respect search path, displays all maps in all mapsets
- It is definitely confusing for users that Data Catalog does not correspond to the options offered in Modules
- Possible solution - defaultly offer all maps in the current location in Modules, restrictions via search path offered only to more advanced users (for example, when a certain number of created locations is exceeded)