DevConf Usability Test Results

for Anaconda 19.8

&

Fedora 19 Beta RC4 Review

Content

Transition into GUI

The transition installer into the graphical user interface is accompanied by a short appearance of a colored grid. Projection of this grid caused negative comments from several users. (**P.№ 1**) The aforementioned grid has no effect on the installer itself, but influences the first impressions of the user and therefore deserves to **be removed**.

Welcome screen and language selection

The welcome screen contains three basic faults. The lengthy process of language selection, the incomprehensibility of the label of the check box, and the incorrect ways of screen confirmation.

The time-consuming process of language selection

Some of the participants took more than 30 second to find the right language, which is, considering the number of languages available, disproportionate amount of time. There were also many complaints and incorrect usages of the menu, which negatively affects the usability of installer. These problems are mostly caused by the usage of a different language than the default one (*US English*), and are therefore related to installer localization.

Immediate keyboard input

Two participants started their language selection by typing the first letters of the language on keyboard, expecting this procedure to filter the list of available languages or scroll down the list to languages beginning with these letters. (**P.№ 2.2**)

This problem can be solved easily. On screen, there is a text box for searching, which can be used for interactive filtering of the available languages. It would suffice to **switch focus to this box when the screen appears**. It would also be appropriate to catch the event caused by pressing of navigation keys (arrows, Page Up, Home, End, etc.) and implement these with the appropriate movement in the languages list.

Searching and filtering of languages

From the total of five users, who decided not to use the default language for installation, only two

used this method of search. Rest of the users searched the whole list of languages. One of these users even thought that Czech was not included in the list but did not use the search box anyway.

From this it can be assumed that **majority of users did not even notice the search box**. I would recommend **moving this box to the upper part of the window**, above the language list, which is a well-known feature from internet browsers, web search engines, websites and should therefore be intuitive. Both the old and new solutions could be tested and compared.

Searching without diacritics

I already mentioned that only two participants used the search box and one of them encountered problems. He did not realize that the default language of installation was not Czech. Therefore he could not even use the Czech keyboard layout for looking it up, which was the main cause for his three invalid inputs (see the transcription in my report). (**P№ 2.3**)

If characters without diacritics were taken into account, then the problem above would not occur and the participant would succeed with his first input "ces".

Because it is not clear which national keyboard layout to choose, it is not possible to ensure the typing of specific Czech characters (while the name of Czech language does begin with a specific character). In this specific case, it is possible to avoid this problem by **ignoring the diacritics during the search**.

Language sorting does not take diacritics into account

On the other hand, the alphabetical sorting of languages does not take diacritics into account and so **"Čeština (Česká republika)" is filed under the letter "C"**. (**P№ 2.4**) This flaw should be removed. Particularly if the aforementioned search without diacritics is not modified, because then the approach of the installer to diacritics could be thought of as inconsistent.

Displayed part of the languages list

Three users changed the language setting directly in the search box. Two of them went through the whole list and had to come back up again. Because of this, one of the users even thought that Czech was not available (**P№ 2.1**).

The testing shows that most users tend to search the whole list even though Czech is not located in that particular part of the list. This may be caused by the fact that English is listed as the first language on the list. Solution to this problem would be to change the way the user sees the list in the beginning. The term "English (United States)" should still remain pre-selected, but the **list should be scrolled down** so as to make it obvious that it is **not the first language on the list**. The user should be able to see a few languages above it and below it or it should just be right in the middle. Thanks to this, the user will have a much easier time understanding the layout of the list, while the default setting is maintained. Compare the pictures below.
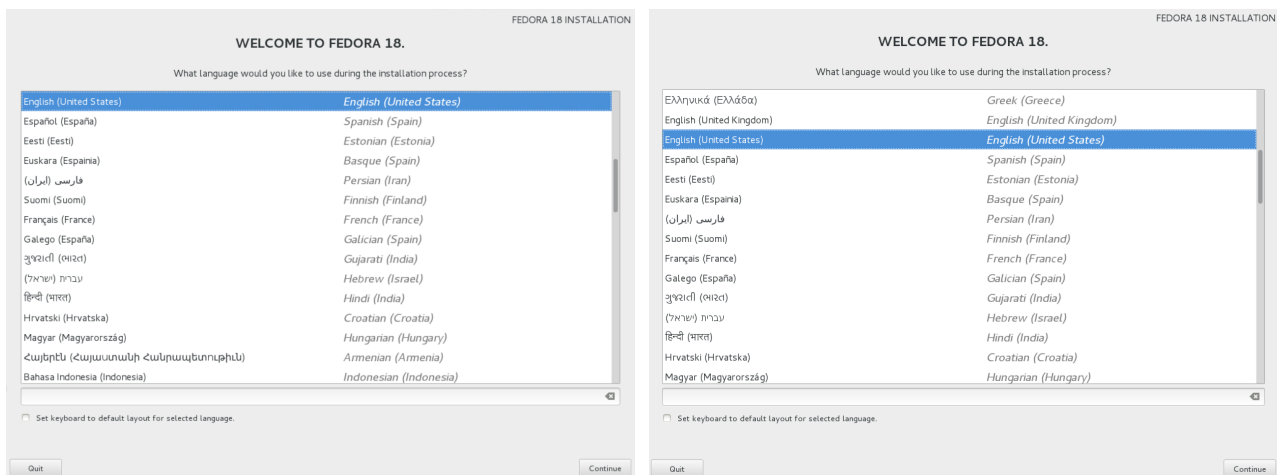
Incomprehensible label for default keyboard layout

Under the languages list there is a check box, which allows the setup of the respective keyboard layout for the selected language. Its label is „Nastavit klávesnici jako výchozí rozložení pro označený jazyk" (Set keyboard to default layout for selected language) .

Again I will focus on the five users who did not use the default language, but chose a different one: **(P№ 8)**

- Only two of these users used this setting, and one of them complained that the label was almost incomprehensible.

- Another user said that he did not understand the label and therefore would leave it unchecked.

- The remaining two users did not use the check box, even though one of them complained afterwards that he would appreciate automatic presetting of the keyboard. However, this user still did not use the check box during second/next installation.. All of these users changed the default keyboard layout to Czech manually afterwards.

As we can clearly see, two users found the label almost incomprehensible and other two either did not notice the check box or also did not understand the label. I can only evaluate the Czech label based on my testing and it seems that the whole sentence structure is wrong. It is certain, however, that the term "*rozložení klávesnice*" (keyboard layout) is the main cause. This is a technicality that is not widely used. The users themselves use the term "*jazyk klávesnice*" (language of keyboard), or combine this with the word "*nastavení*" (setting). Therefore I recommend the **change to „Použít označený jazyk také pro nastavení klávesnice"** (Use the selected language for your keyboard setting too).

Additionally it is possible that some users did not notice this setting at all. I would therefore recommend further testing after the proposed changes to the label.

Incorrect ways of screen confirmation

The last problem with the Welcome screen. Users came across a problem with final confirmation. Two users attempted to **confirm their setting by pressing the *Enter* key** and one of them tried to confirm his selection by *double clicking* the desired language. (**P№ 3** and **3.2**)

Even though this is an incorrectly executed action which can indicate a problem with usability, I would **not recommend a change** in installer behavior. The reason for this is to try to stop the user just clicking through the installer. For example: One of the users, who could not use Enter key to confirm the current screen actually checked the box "Nastavit klávesnici jako výchozí rozložení pro označený jazyk" (Set keyboard to default layout for selected language) afterwards, even though only two users used this feature correctly!

Installation Summary (Hub#1)

Using the navigational keys for control

One of the test participants tried to control the menu using the arrow keys. First he thought that this way of control was "not possible", and after a while changed his opinion to "chaotic". (**P№ 9**)

> **Note:** I found that it is possible to move in the menu using arrow keys but only after some item is selected; or after pressing the down arrow (causing the focus on '*Quit*') and then pressing the up arrow (causing the jump from '*Quit* to the last menu item).

The behavior of installer is not intuitive, so I would recommend a **change so that pressing an arrow key selects the first item in the menu**. This solution is a very simple alteration of installer behavior and should not confuse the user, because any other behavior from the arrow keys can hardly be expected.

Return to language selection

One user complained that he could not return from menu *Installation Summary* to language selection without exiting the whole installation process. I believe that **change is not necessary**, because it is possible to change the keyboard layout in this menu as well and I expect that users pay enough attention to language selection anyway. (**P№ 23**)

General problems

Misguiding warning icons and alerts

(P№ 4 (+42)**, 10, 17, 7)**

In the *Installation Summary* menu, items that require attention of the user are marked by an exclamation mark in an orange triangle.

Icon for process

One user was confused most likely by the fact that this symbol appears also next to items undergoing checking software dependencies and disappears afterwards. The warning on the bottom screen bar, however, says that items that are marked by this symbol require the user to finish them – „dokončete" (imperative is used in English localization as well). The user might be a bit confused, since this icon is also used with actions that are performed automatically without the need for any user input. **Another (animated) icon should be used, which would express an action taking place.** This icon could also be used when tackling the NTP server control problem. (see **P№ 42**)

Low communicativeness of texts

The same user (during his next installation) also complained that he could not understand, why is it not possible to click the *Begin Installation* button, when automatic partitioning was preset, which option is what he had used during his previous installation and now wanted to leave it selected. **(P№ 10**) Other two users also complained about the markings before pressing the *Installation Destination* button. One of these two said he felt like he had made some mistake while setting up the installer, even though he had not. The second user only said that the markings were weird. **(P№ 17**)

It happened during the test cases when the text „Vybráno automatické rozdělení" (Automatic patitioning selected) highlighted in red appears under the *Installation Destination* option. This text in combination with the icon for incomplete settings can be confusing for some users, as we can see with the first user. The problems that the other two users had might have been caused by the exclamation mark itself. Both of these problems can be eliminated if the icon is not used in conjunction with informative texts which act only as informative statements that do not require user interaction.

I would suggest changing the **texts of options that require user attention so that it is immediately clear what is expected** from the user (and that something **is** expected).

In case of the *Installation Destination* option, the problem would be solved together with another problem – **P№5** (when device is not pre-selected, then there will be another warning "No disks

selected". And this text corresponds to the recommended solution).

Similar approach is required for the text located under the *Root Password* option. Four participants out of five were to some degree not sure if it was even possible to set the password up. (**P№ 7**) In two cases it was just a slight hesitation. Another participant knew about the necessity of the password setup (it seemed as if he had done this installation before), even though he complained that instructions are unclear. Remaining two participants only mentioned this option after a few minutes of installation and mainly mention that they were afraid to set the password up. They were afraid that the process of password setup would interrupt the installation and so did not change the password at all.

This is another reason for the **texts to be changed so they inform the user better about the possibilities (not current status)**. E.g. text under the *Root Password* option can be changed to "(Now) It is possible to change the admin password".

Detailed labels

I have already addressed the problem with insufficient information. One participant was hesitating with the password setup, and moved his cursor over the corresponding option so he could see its label, where he probably expected additional information about that option. This label, however, contains the same text which is written right below the option itself. Another user complained about the very same situation that occurs in the main menu. (**P№ 14**)

Utilization of these **identical texts is rather redundant** and I would recommend placement of **more detailed information into the pop-up labels**. This will mean that the label will fulfill the role the users expect.

Placement of *Done* button

Five out of eight participants complained about the unusual placement of the *Done* button in the upper left corner. Four of these participants also said that they expected this button to be located in the lower right corner. Some users highlighted this problem in the final evaluation of the installer. Only three participants did not mention this problem, which does not mean, however, that they found this placement intuitive. This problem occurs across the spectrum of user experiences and operating systems. (**P№ 18**)

I recommend **moving the *Done* button to the lower right corner of the screen**. This move **also eliminates some problems with the dullness of warnings** (see below).

Dull warnings and user comfort

Important warnings are displayed in the orange bar on the bottom of the screen. This solution proved insufficient during the testing.

One or two participants completely ignored their erroneous proceedings for some time. This is mainly the case of one participant whose goal it was to preserve /home directory. He tried unsuccessfully to set up a reformatting of other partitions. He also forgot to set *Mount point*. He tried repeatedly to execute this incorrect procedure, even though from his first failed attempt, the orange bar was showing him a warning. (**P№ 10**) The warning orange bar also proved ineffective in three other cases, when participants tried to set admin password (six participants were tasked with this). One participant said that the weak password warning was dull. Other two users did not read the complete instructions. (**P№ 19**) This is therefore a problem with dullness of warning and user comfort.

Dull warnings

One of the causes of this problem is the already mentioned placement of the *Done* button. This is another reason why the proposed move of the button should be done.

This does not solve the first case, where participant overlooked the warning (**P№ 10**) while setting up an action that did not require pressing of *Done* button. This problem could be avoided by highlighting the incorrectly set items – by **changing the color of its label to red or by adding an icon next to/into it**, similarly to the main menu *Installation Summary*. See the picture which shows both.

This suggested solution should no longer be overlooked by users and would be consistent with the approach in the main menu *Installation Summary*. The warnings in the bottom bar alone could be highlighted as well. However, the size of letters is very limited if we want to keep the text single lined and allow sufficient length of warning. Change of background color is also very limited by the need to preserve good readability. I think that the first solution is better. In addition, it is also well-known from internet forms.

User comfort

Some users do not read the whole instructions (or do not read them at all). Two users did not read complete warnings and were later surprised by the behavior of the installer. (See **P№ 19**) This did not result in any unwanted settings or problems. I think that corresponding texts do not contain any redundant information and do not require any revision. I find the current state of installer sufficiently good.

Decimal point

One user used a comma instead of decimal point. Next he noticed that capacity of Mount point created this way did not correspond with his expectations and erased it completely (even though he could have just adjusted its capacity in the first pane). He then proceeded to make the same mistake with comma during the second input. This person was experienced and technically capable (he was a programmer) and therefore deduced on his third attempt that he needed to use the **decimal point and not the comma**. (**P№ 40**)

This user made this mistake even though he chose English as installation language. I did not notice similar situation occurring when Czech was selected as installation language.

But the usage of decimal point is not intuitive for Czech users and so I would recommend the use of a decimal comma when using Czech as installation language, or further testing that would determine the severity of this problem.

Labeling of Help

Further testing, that would require the use of *Help*, is required for better evaluation. One particular case does hint at **bad labeling of help**. A participant unskilled with Linux tried to add his own partition. He did not succeed, even though he claimed that he could perform this task in *MS Windows*. When he rated the installer, he highlighted that he would appreciate Help, but was not sure if it was available. (**P№ 24**)

Labeling of Help is therefore dull and probably confusing. This is also aided by inconsistent usage of a different button with the same pictogram. Symbol of keyboard is on a button which is used for preview of keyboard layout.

I recommend replacing this symbol for a different one, preferably a question mark in a circle which is a generally accepted sign for Help. Better distinction could be achieved by placing the circle on a blue background. The former button could be used for the current keyboard layout preview (see below).

Date & Time

This setting used four participants. Two of them chose Czech as the language of installation. It led to the fact that they did not need to change the setting. Only the other two participants made some changes (installing in English). These were users with deep technical knowledge and extensive experiences with GNU/Linux.

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Interactive Map

Both these users tried to use interactive map to set required location and both had **troubles to hit the right point on the map**.

First user made four unsuccessful attempts. Every time, he chose another location, but not Prague. Then he rather used select box. The other one did three installations and always set the location by using map. He chose the right city (Prague) twice. But he chose Berlin during his second installation. And then when changing the choice, he did not try to use the map, despite the fact that he had big problems with using the select box. From this behavior and his comments it seems that he considered a selection of city for Central Europe as default option performed randomly by installer (**P№ 24**).

Repeating failure can lead to frustration. It was useless operation in both cases. Second case resulted in mistaken idea about behavior of installer – it was not intuitive for user. **Orientation in the map could be easier by marking borderlines**. It is possible that thanks to this change the second user would not come to misleading conclusion.

Select box with cities

Invisible scrolling arrows

When the select box with cities was expanded, its **arrows (for scrolling) were not displayed** and it was confusing for both users (**P№ 26.1**). The arrows are displayed after another expanding of the select box. When it was expanded for the first time, there was **no possibility to scroll using navigation keys** on keyboard (**P№ 26.2**). These are probably related (implementing) faults and should be removed.

Direct keyboard input to search city

Both users tried to **scroll the select box by entering initial letters** of the required city, after the previous failure with this select box (**P№ 27**).

There is other way to achieve desired behavior – by clicking on the text box with currently selected city. But if the select box is expanded, than the text box is overlapped. It is really no intuitive way as the mentioned vain attempts showed. That is why I suggest **the entry (when it is a letter) to be implemented as a jump in the select box** (like in a browser), when the select box is expanded.

Checking NTP servers

One participant complained that he **did not know whether the installer responded** to change, after

entering a new NTP server. He wanted to see some status information because he was not sure whether he entered the right address of server. (**P№ 42**)

I suggested to create suitable icon for checking software dependencies (see above). This **icon could be used when checking NTP server**, too. Also, there may be appropriate text to inform user about the result of that check.

Keyboard

Participants often did not use the option for easy setting of default keyboard layout when choosing language. But this brought asset to the following testing. It made **six users** to visit the *KEYBOARD* option.

No intuitive control

Five participants met difficulties with their work in this menu. (**P№ 16**) The problem was an incorrect procedure they used to achieve required setting. There were two partial problems: incorrect procedure to change the default keyboard layout; and considerable confusion about the right button to its adding.

Adding another keyboard layout

Four users tried to add keyboard layout but two of them **chose wrong button** – the first one clicked on the *Options* button and another on button used for preview of selected keyboard layout.

Changing the default keyboard layout

Three participants had a problem to change their default keyboard layout. Two participants **thought that it was enough to click on the required keyboard layout to change it as a default one**. One of them had to return to the menu three times to reach the setting because of this expectancy. And the second one did not notice **incorrect setting** so he left the wrong keyboard layout. The last (third) participant said that he wanted to change his default keyboard layout to Slovak. Then he added that keyboard layout, but he did not set it as his default.

No intuitive control problems

Both problems point out that users expected different behavior – the current one was not intuitive for them. This even led to setting which was different from the required one.

Outline of possible solution is explained further. Initially, there is no keyboard layout selected in the list, so control buttons are not active. This may lead to their overlooking. The fact that there is not any pre-selected item may be the reason for the assumption that it is possible to set the default keyboard layout by its marking. Therefore, I suggest to **mark (pre-select) the default keyboard layout – the first item in the list**.

I also recommend to **reduce the left pane with the list** of keyboard layouts. This will lead to shift of the control buttons to the part of the screen where greater user attention have been proven. Also it will reduce space between items of the list and the relevant control buttons. The current space is useless because most participants left only two keyboard layouts (with maximum of three). The space reduction can help to reduce the risk of overlooking the buttons bellow the list or using of wrong buttons.

The only keyboard layout

One participant checked the check box "Set keyboard to default layout for selected language". Then he controlled his setting of keyboard layout in its menu and he mentioned that the **English keyboard layout was completely absent in the list**. But during his previous installation he did not use the check box and the US English layout was available there.

Five participants had both their national and US English keyboard layouts in the list during the usability testing. Only one of them removed the English layout from his list of keyboard layouts (leaving only *Czech Qwerty* there). The other **participants left the US English layout as their secondary** one. It is hard to say whether it was their intended purpose or laziness. From my personal experience I believe this was done on purpose, so I suggest to add the US English keyboard layout. Or some survey among Fedora users could be interesting and can be helpful.

Installation Destination

Installer requires that users select the devices (disks) which they want to include in the installation. Therefore all participants went through this screen. The following procedure was different depending on participant's task.

Pre-selected device as installation destination

If user has only one disk available, that **disk is pre-selected automatically**. This lead to the fact that the user is supposed to perform only a visual control and click on *Done*. It seemed to be not intuitive because most participant felt necessity of doing some action. Seven participants worked with one disk but only one chose the correct procedure. The others **clicked on their disk which**

caused deselecting the disk and they had to select it again. One participant did not even understand or notice that he deselected the disk and he left the menu. He **had to return back to the menu** because his previous procedure caused that there was no disk selected. (**P№ 5**)

On the other hand, **if there are more than one disk, these disks are not pre-selected**. It can be **confusing** and it can give the impression of inconsistency. Both the previous and this problem can be eliminated by **avoiding automatic pre-selecting**.

This solution will **not result in any additional difficulty in selecting of installation destination** because installer always requires the control of *Installation Destination* menu. This requirement was confusing for one participant, who was surprised that he was not able to proceed to the installation process although he agreed with the default setting. The reason for his confusion was just the pre-selected disk which gave him the impression that any additional interaction is not necessary.

Proceeding to the further setting

If user wants **to proceed to the further setting**, he has to confirm the first screen (*Installation Destination*) **using the *Done* button**. Then the installer displays the window which provides access to further storage setting. Two participants complained about the *Done* button on the *Installation Destination* screen because they had not completed their storage setting. And therefore they did not want to click on it although there is no other button on the screen. (**P№ 28**)

Experienced users had this problem as their tasks required advanced setting. Two of the four participants had a problem with these tasks that should be taken into account. The label *Done* was a cause for feel of discomfort, as these users concluded **that they had to click on the button which, in their opinion, was not the correct one**. This problem is caused by inconsistent usage of the *Done* button in comparison to the other screens where it is used for final confirmation and it returns user to the *Installation Summary* hub.

This screen is specific for tested version of the installer (*Anaconda 19.8*). There were two buttons – *Done* and *Continue* – in the released installer of *Fedora 18*. I do not think that it was appropriate solution either. The second button can be overlooked easily and if we move both buttons next to each other, less experienced user could be confused which button should be used.

I think that it was the good modification to **leave only one button** because it reduced the danger of an incorrect procedure. **But I recommend to change its label from *Done* to *Continue***. It could not be confusing because the installer always displays the window which provides access to further storage setting. (Also it is possible to add a button *Back (to...)* on the *Installation Destination* screen to ensure that the *Continue* button can not be connected with the situation when there is no disk selected and user wants to return to the hub (*Installation Summary*). But I prefer only one button.

The change of the label (from *Done* to *Continue*) could also prevent user from feeling an urge to take additional action before clicking on *Done* button – see *Pre-selected device as installation destination* above.

Unavailable space and its reclaiming

The installer contains a guided reclaim space tool. During the usability testing at DevConf.cz, this tool was almost unusable because of bugs which it contained. These bugs made impossible to finish the installation for most participants.

I made some tests of *Dual-Boot task* to find out how the installer Anaconda 19.8 (and 18) behaves. I discovered following problems:

1. When *Installation Options* appeared, it states that 3.47 GB is needed (for the current Fedora software selection). But this **value was invalid** (in fact, it was around 6 GB). **This caused the failure of most testers**, although their installation could be successful.

2. When you reopen the menu *Reclaim Disk Space*, you have to reclaim at least the same amount of space (e.g. 3.47 GB) again. **You can not reclaim the amount of space that is really necessary**.

3. The *Reclaim Disk Space* menu:When you click on '*Delete*' for selected (NTFS) partition and you confirm it (clicking on '*Reclaim Space*') then **you can not reverse this action**. Quitting the installation and starting from the beginning is the only option. The same problem is with the "shrunk" space etc.

I decided to regard this **tool as prototype** because it would a pity not to use the collected data. Using prototype is a common approach when testing usability. It allows to detect usability problems and take them into account for the future development. But it is necessary to take the mentioned bugs into account for the correct evaluation of data.

The tool informs user how much space is necessary to be reclaimed for installation and it does not allow to reclaim less space as well. But the referred value 3,47 GB was wrong. It was almost twice lower than the real requirement. The result was that the participants were confused, because even though they reclaimed enough space (usually around 5 GB), the installer required to reclaim space again. The warning that there is not enough space available, even though the value of required space for installation (still 3,47 GB) was lower than the value of free space available for use, was frustrating. That was the reason why I took into account only the procedure during their first attempt to reclaim space (before the bug had an negative impact on participants behavior).

There follow the usability problems of previously described thought prototype. It was necessary to work with the tool during the task when the participant had only one disk with NTFS partition (representing a situation when the operating system MS Windows is preinstalled on the disk).

This task was performed by four participants. Three participants were lower intermediate and intermediate users of Linux. It was their second task that day after they had performed the basic task (*Non English/US Installation*). The last (fourth) participant was an advanced Linux user who had this test case as his primary task when he installed Fedora 18 for the first time. He performed the installation in English, the others in Czech.

Unclear option to run the tool

After disk selection, a window with warning about lack of space was displayed. This window allows to run the guided reclaim space tool. But there were three buttons and other two options available.

All four participants read instructions in detail. But they really hesitated about choosing the button. Two of them looked and behaved embarrassed and they mentioned their confusion. The other two participants even clicked on a wrong button: the participant who installed in English decided to cancel window and return back to previous menu. He did the same procedure once more. After he displayed the window for the third time, he clicked on the right button. The second one decided to open Manual partitioning. Then he went back after stating that he did not understand the offer. After that, he clicked on the right button. (**P№ 11**)

It follows that **users are not sure how to continue with the installation**. This is probably due to the combination of **unclear instructions and too many buttons** (and options) from which it is necessary to choose one. Both these complications need to be eliminated. It will require testing of lots of variants before we reach form which will be understandable and clear enough for most users. I would try to integrate the following modifications into the installer:

The first button – *Cancel & add more disks* – should not be displayed in case when there is only one disk. Or its **label should be changed to "Cancel" or "Back" when one disk is available**.

Also there was a localization problem. In **Czech localization**, **different expressions** were used in instructions "*nástroj na získání volného prostoru*" ("tool for gaining free space") than what is used as a label on the button for reclaiming space "*Uvolnit prostor*" ("Reclaim space"). I suggest to unify the terminology and talk about "nástroj na uvolnění prostoru" ("tool for reclaiming space"), similarly to the English localization.

My last suggestion results from a comment one participant had before clicking on the button. He thought that the installer reclaim unspecified amount of his disk space **automatically without any subsequent interaction**. This concern can be eliminated when we **avoid to use a text of the label in the imperative**. Lable can be **change to "Reclaiming space"** ("Uvolňování prostoru"). Modification will be in accordance with the second button "Custom partition**ing**", which does not use imperative either. Similar change could be possible in both Czech and English localization.

Procedure of reclaiming space

Two of the four participants understood quite quickly that it was necessary to select NTFS partition, click on *Shrink to* and then they were able to use slider. The other two participants had problems with this procedure. One participant selected NTFS partition (after he had read instructions) and he moved the cursor over the slider. Finally, he clicked on the button but he complained about difficulty of this procedure and he mentioned that he would like to use slider without clicking on the button.(**P№ 12**) The second one selected NTFS partition and moved his cursor over the slider. Then

he read instructions (for quite a long time). But finally, he said that he did not know what to do and he left the menu! Then he tried to use *Manual partitioning*. (**P№ 15**)

The required **procedure was unclear and was not intuitive** for some participants. I suggest to make this procedure easier to understand by skipping slider activation. Or hiding slider completely, then users would not be confused – before clicking the button *Shrink to* – that it is not possible to use the slider. Better solution to this problem is **below**.

Shrinking to required value

One participant complained that it is not possible to set specific value using keyboard. Another one lacked some marking of values on the slider. And it seems that the other two participants probably tried setting a specific value (whole number) but it was unavailing.

Specific setting is difficult and uncomfortable. It could be improved if the slider has lower precision. Setting to hundredths of GB seemed to be useless during all tests. The change to tenths will make slider easier to use. Also it is possible to add a *text box* for input from keyboard.

I think that the best solution is to remove slider from the menu completely. And after clicking on *Shrink to*, a small new window will be displayed. In this window, user will be able to set exact value entering to a text box (and the slider could be available too). The solution corresponds to the similar window (for adding mount points) which is used in the Manual Partitioning menu. And it solves previous problem (when users were confused that they can not use the slider without clicking on *Shrink to*), too.

Manual partitioning

This menu enables advanced setting of the available disk space. It was necessary to use this menu in three tasks which required specific partition settings. These were performed by three participants who were very advanced users.

Problems with hidden setting options

Window *Installation Options* is used primarily to access further setting such as *Manual partitioning*. The window contains collapsed menu *Partition scheme configuration,* where LVM is set as default. Using this option causes automatic addition of the selected disks to one *volume group* (fedora). This caused troubles only to participant who had to work with LVM in his task. He repeatedly complained that he did not know how to make LVM. So he started with partition */boot* which did not use LVM. Then he continued with next partitions although he still complained about lack of clarity about LVM. After some time, he understood (from further setting) that volume group

is pre-selected. Finally, he considered that when he knew how the installer works it made sense to him. (**P№ 29**)
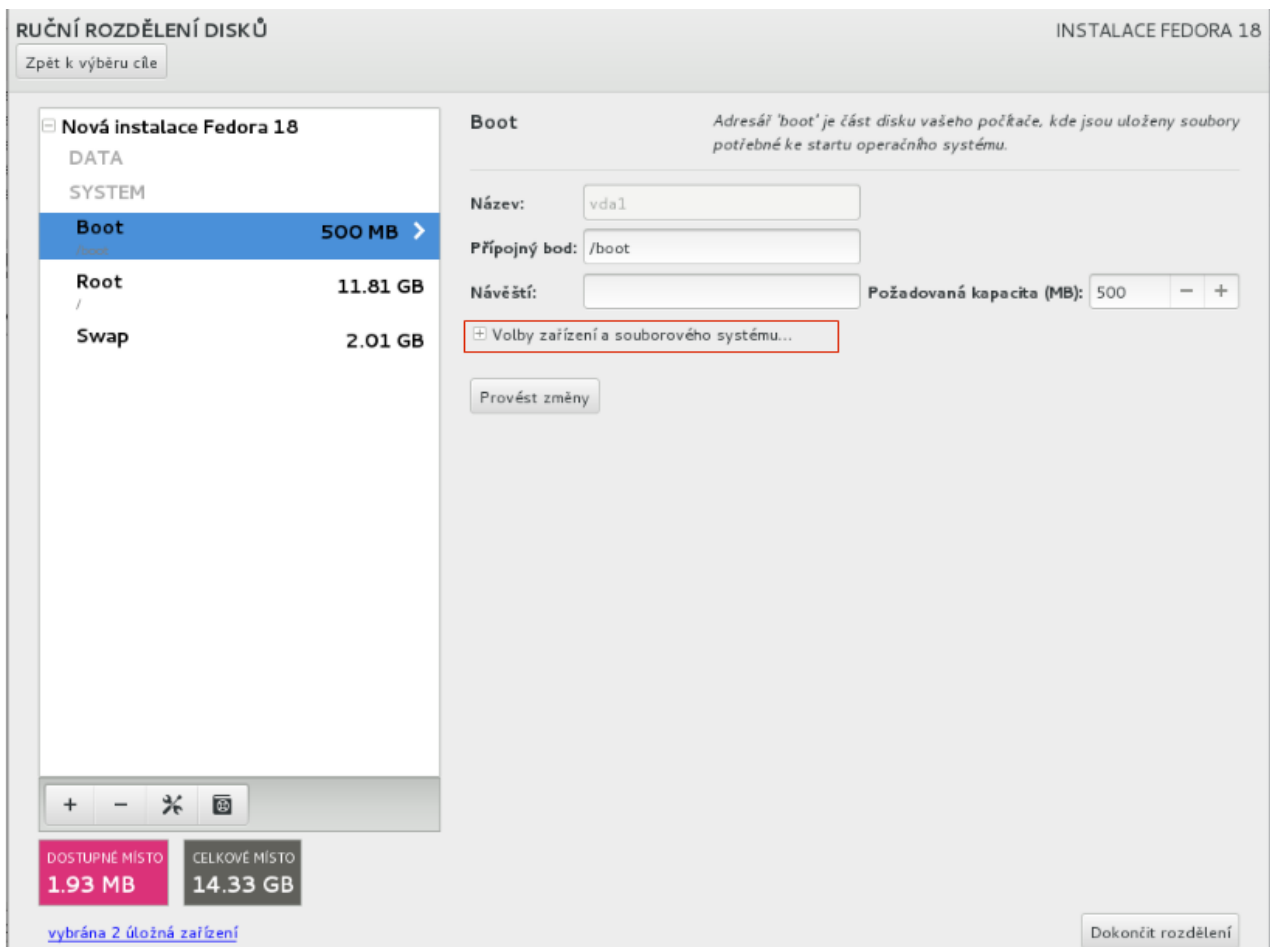
It is necessary to have larger sample of data for objective review of this problem. And for this reason, I will use the data from internal session of usability tests with the participation of employees of Red Hat. Two participants performed the task which required using LVM. One of them had no problem. The second one was confused where to set the volume group. Finally, that user made assigned partitions and after that he found required setting hidden in collapsed options. This surprised him.

All participants finally understood it. And it was mainly thanks to expanding of *Device and file system options* where pre-selected item volume group was hidden. If these options were not collapsed, it could reduce described problems. Also some preview of current settings could help to clarify this (see below).

The requirement to expand the advanced options results also from other problems which some participants had when looking for the other settings hidden there. For example, the participant who was looking for RAID complained about it. (**P№ 31**) The participants of internal testing in Red Hat experienced the same problem as well. One participant even thought that he was not in the right menu, he left it and then he tried to reformat partitions (from old installation) using reclaim space tool.

Unclear distribution of partitions on physical devices and work with more disks

Work with more disks at the same time

Two advanced participants performed the task which required to create RAID. Both had problems caused by work with both disks at the same time. The participants tended to work with disks separately when they used standard partitions (not LVM). But this was not possible and the installer did not inform enough about the fact that users work with both disks at the same time.

One of these two participants had so much trouble that he was not able to complete his installation. He thought that he was working only with one disk all the time. In vain he tried access the second disk to set it. He probably did not realize that using of RAID 1 (mirroring) reduces twice as much disk space as common partition. It might contribute to his problem.

The second participant realized that he worked with two disks at the same time. But he repeatedly complained that he did not know how to achieve work with some specific disk or (at least) how to find out where the created partition was located on physical devices. At the end he mentioned that the way of work with two disks could be confusing for novices. (**P№ 29**)

It seems that the most serious problem was that users may not be ale to realize that they work with both (or more) disks at once and not with only one disk. It is necessary to prevent it. This fact should be emphasized. Now the fact is indicated by information about the total space (which is a total capacity of the selected disks) and small hyperlink at the bottom of the screen (which reports how many disks were selected, e.g. "2 storage devices selected").

It was not enough although both participants used the hyperlink when they tried to work with specific disk. It makes me believe that the text in that hyperlink should be modified to inform users better – "You are working with 2 storage devices". Or/And the text may be highlighted (in larger font or with changed position etc.) to make the information faster noticeable. The information may be also added to the instructions. Scheme (see below) might help with better understanding, too.

Scheme of current settings

Three participants performed manual partitioning with more discs. Two participants realized that they were working with both disks (not just one disk) and after all they managed correct setting. But both of them complained that they lacked information how the data are distributed on physical storage devices. (**P№ 32**) Also some scheme (or preview) could help the other user who did not realized that he worked with two disks. Participants of the testing in Red Hat complained that they lacked some scheme too.

Therefore I recommend to create some sort of scheme or preview which shows current setting on their disks – especially distribution of partitions. It is an improvement of the installer which can

help many users to clarify and simplify work with the installer.

I recommended to change the icon for *Help* above. But the original symbol of *Help* button corresponds to labelling of another button which allows to display a preview of selected keyboard layout. So the original symbol of *Help* button could be used to display required scheme. The form of this scheme could be identical with the the representation of partitions in *reclaim space* tool.

Work with individual disks

A way to inform user better about things which installer allows him to do is suggested. After this is achieved, it is possible that further usability testing will prove a problem with the installer **not allowing** the work with disks. Previous testing indicates that this could be a possible problem.

Handling the partitions of old installation

The test case preserve */home* directory (from a previous Fedora installation) was performed by two participants. One of them had two problems with this task. They are described below.

Collapsing options of installations

The mentioned participant tried to reformat the other partitions which should not be preserved. After some other difficulties (associated with other problem) he reached the correct procedure with partition */boot*. But he thought that he had done something wrong and he mistakenly thought that he deleted that partition completely. This misunderstanding was due to the fact that the partition was moved to the collapsed option of the new installation. It led to him not trying to reformat the other partitions, but directly deleting them instead. Then he had to create them again. He was confused again that he was not able to see his new partition and he though that it was not created. When he found that both partitions are hidden in collapsed installation option he complained about it – especially that he deleted his partitions unnecessarily. (**P№ 34**)
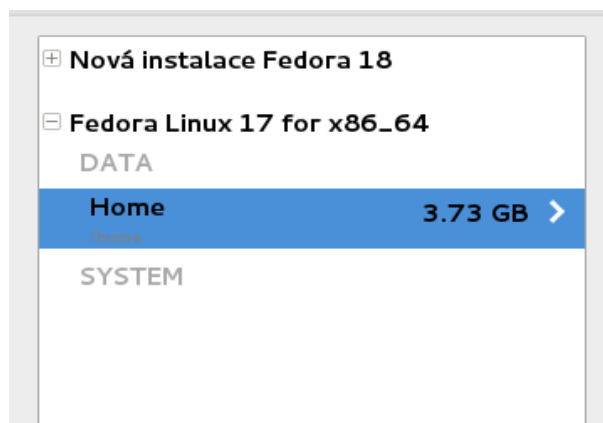
The participant from Red Hat who was only one to perform this task during the internal testing had

similar problem. He tried to create a new partition. Then he found that there was not enough available space and he expanded old installation. (His next procedure was completely chaotic because of another problem.)

Automatic collapsing of the options proved not to be intuitive and it caused significant problems with installation. It caused frustration that a procedure was incorrect, although the very opposite was true. Therefore I recommend to expand both installation options – not to collapse them. Or both items could be expanded initially and the current behavior could be changed – if one installation is expanded the second one should not be collapsed automatically.

Mounting old partition in new installation

This participant had another problem with his task. He did not mount the *home* directory in his new Fedora installation. He complained that he was not sure if he should perform this (it was not directly mentioned in the task) and he also complained that he did not know how to do it. (**P№ 35**) The second participant who performed this task mounted it correctly. But previously mentioned participant from Red Hat had problems with mounting, too. He said that he did not know how to mount old */home*. And he made various attempts to achieve this (for example he tried to use option for *Add a new mount point*) but he did not mount */home* successfully.

It means that procedure of mounting old partitions is not intuitive for users. Potential solution could be addition of a special option for moving mount point to their new Fedora installation to the right pane. The best way for this could be check box beside the option *Mount point*. The solution is shown on the picture below.
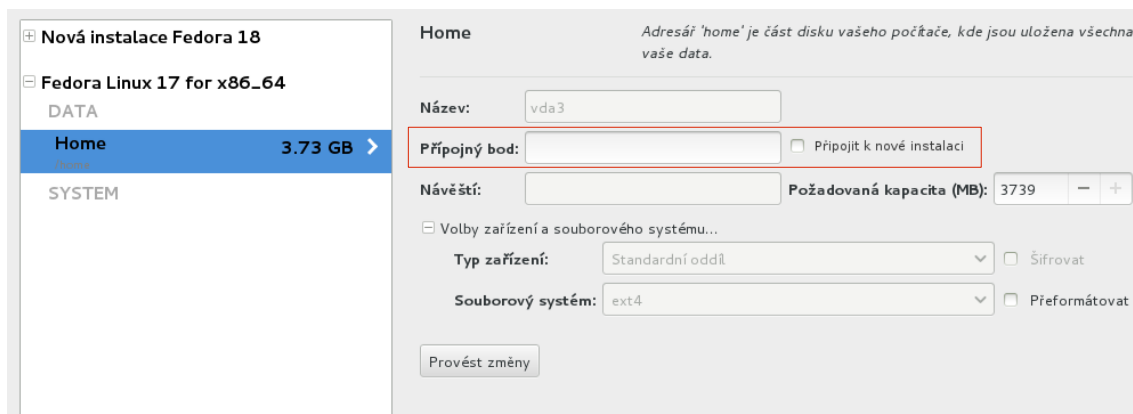
Připojit k nové instalaci - *Mount to the new installation*

Applying changes and total number of buttons

When setting manual partitioning, users had problems connected with Apply changes button. They were confused because they did not know when to use it. In other cases they omitted to use it and

changes were not applied. Or, after using this button to confirm incorrect setting, participants lacked some information that their setting was canceled. (**P.№ 33**)

I tested the button to find how it really works. Some settings applied automatically without clicking on Apply changes and others did not! For example if I set new Mount point (or modify its setting) and at the same time I change Desired capacity, then application of changes is bound to usage of the button. If I click on Apply changes, both settings will be applied. But when the button is not used (for example by clicking on another partition), then only Mount point is changed and Desired capacity is not. Such behavior is necessary to eliminate because it is not predictable.

It is necessary to unify its behavior:

a) *Apply changes* will be required and if user does not click on it, the changes will not be applied.

b) Or if changes are all right then they will be applied anyway.

One user was very confused when he wanted to confirm all his previous setting definitively. He was surprised by the number of available buttons (*Apply changes, Back to destination selection, Finish partitioning*). He got the impression that the buttons perform almost the same thing. Also he complained about number of similar buttons during his final rating of the installer. (**P.№ 36**) Taking into account that it is not usual to confirm changes by a special button (compared to MS Windows), it might be better to use option b). Then the button is not necessary and could be removed or changed to button for verification of changes in setting (*Verify changes* instead of *Apply changes*). It would allow informing the users about incorrect settings and it might help them understand what they did wrong (and how they could do it the right way). Current version of the installer does not apply incorrect changes but it does not inform the user about that and therefore users may not notice that the setting was applied in another way or they may not know what is the reason for that.

Skipping recommended settings

One participant did not create partition *swap* during manual partitioning. After he came back to the main menu (HUB #1) he noticed a warning and so he opened *Installation destination* again. A detailed description of the warning was available there. He found that he did not create swap which is recommended but not required. He decided not to change his setting and therefore he was surprised that he had to go through all steps of the further setting again.

This case points out that the installer does not allow to skip the next steps of setting even when the user does not want to change it. It makes the work quite uncomfortable. The problem was probably caused by the fact that the tested version of the installer contains a bug. (When reopening *Installation destination*, it informs user that there is not enough space available. And it makes it impossible to skip the further setting). The warning about swap was in the tested version of installer (*Anaconda 19.8*). The version of installer which is in *Fedora 18* does not warn user about the missing swap.

Structure of Help

Two participants tried to use Help. They opened it in Manual partitioning but they did not find required information and complained that Help is poorly arranged.

Help in *Manual partitioning* covers many setting options and so it is quite extensive. It is not possible to search in this Help. I recommend to add a search box (because of extent of Help) and/or make it better arranged – e.g. add content with hyperlinks to its parts.

Installation process (Configuration)

Every participant got to this stage at least once during the test. Primarily the participants had some extra time to set root password (see problems with root password above – chapter *Labeling of Help*).

Progress indication during the installation

After starting the installation, the participants were frustrated because the progress bar of their installation was quite static. The progress bar moved very quickly and then it did not change until post-installation setup tasks were completed (for several minutes).

Two participants complained about this. One of them wanted to add a percentage indicator which can specify the progress of the installation. The second one complained that only one real indicator of progress is little spinning wheel and small text which informs about number of installed packages. (**P№ 6**) Most participants were filling out questionnaire during the installation so they might not notice the static progress bar.

I recommend modification of the progress bar. It should change more frequently and it should better reflect the current installation state.

Information about successful installation

Two participants completed their installation. One of them said that the information about successful installation is quite dull and he said that it could be bigger for example over half of the screen. (**P№ 21**)

There is hardly any reason to disregard this requirement. The information is really basic for users and I think that it is necessary to inform them sufficiently that their installation is completed.

Anaconda 19 Beta RC4 Review

I think that many things were improved and I discussed it on my blog and I made a detailed review in my Master's thesis. This document is intended for people who should know about changes which were made in the installer Anaconda and therefore I focused on problems of installer (and not on its improvements). On the one hand, there are still many usability problems. On the other hand I think that a great job had been done and I believe that Anaconda was really improved. Below follow the problems that I found when I reviewing Fedora 19 RC4[1]

## Welcome screen and language selection

- To search box, there is text "Type here to search" added. It should be retested whether it is sufficient solution.

- There is a new information about current keyboard layout on the screen (which is great). But I think that **searching without diacritics** should be possible too (for more information, see above).

- User still can not search immediately without clicking on the search box. (see ***Immediate keyboard input*** above).

- There is a grammar mistake „Česká Republika" (it should say „**Česká republika**"). I had pointed it out in my report[2].

- And most importantly, the **label of the check box** to set the default keyboard layout has not been changed in Czech localization (see *Incomprehensible label for default keyboard layout*).

Installation Summary (Hub#1)

- Automatically processed menu items (e.g. checking software dependencies) are not active but they are still marked as the items which require user interaction ("Please complete items marked with this icon..."). I think that the automatically processed menu items **should not be marked in this way** (see *Misguiding warning icons and alerts*).

- On the other hand the icon has been moved and now it is a part of the menu item pictograms. I completely overlooked the icon during my first few installations! The icon is very dull and is not very consistent with the icon in the warning. I recommend to **use previous colorful icon**. Otherwise it is necessary to fix the missing exclamation mark in some icons (see *User Creation* on the picture)!

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1   http://dl.fedoraproject.org/pub/alt/stage/19-Beta-RC4/Fedora/x86_64/iso/
2   (http://visionplus.cz/anaconda/Report_Session1&2.pdf
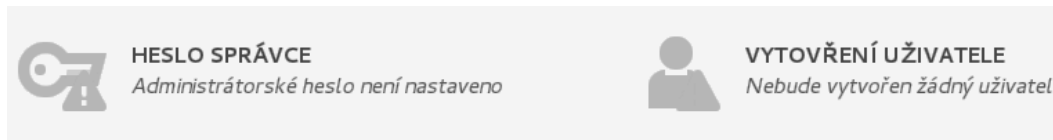
- The new gray menu icons are quite drab. I think that there is **not high color contrast ratio** which causes accessibility problem (Note: The contrast was increased on the demonstration picture above).
- Controlling the menu with the navigational keys is the same as in the previous version (see *Using the navigational keys for control*).

General problems

- Most of the problems in this category **were not removed**! There are problems such as the decimal point, label for Help etc. See the chapter *General problems* above.

Date & Time

- The problematic scrolling arrows from the previous version have been replaced by scroll bar. But in the new version (installer of Fedora 19 RC4), there is another problem. When I clicked on the select box, the list of cities appeared. But the list was **displayed only as long as I held the mouse button** and then the **list was collapsed**.
- Therefore I was not able to try whether it is possible to **search a city using letters** on my keyboard. I think that it is an improvement that should be taken into account (See *Direct keyboard input to search city*).
- I think that very important modification could be **addition of border lines in the map** (see *Interactive Map*).

Keyboard

- I did not notice any change important for improving usability. **See the chapter *Keyboard* above.**

Installation Destination

- I think that idea to use only one button (to continue) on this screen is great. But I prefer to use label *Continue* because *Done* was confusing for some users (see *Proceeding to the further setting*). The new button *Add a disk...* in that menu might increase the risk of confusion that the *Done* button is not the right choice to continue to further setting. It would be great to make some usability tests on prototypes.
- If there is only one disk available, it is selected automatically. In the new version, there is

better marking of the disks but I think that it may not be enough. See *Pre-selected device as installation destination*.

Unavailable space and its reclaiming

- The buttons in *Installation Options* are same as in the previous version – see ***Unclear option to run the tool***.

- In the new version, the slider for shrinking is invisible which is great because it was a source of problems. But there is still problem how to **shrink the space to the desired value** (see *Shrink to required value*)

Manual partitioning

- The most serious problems in the previous version were connected to this part. This screen has undergone many changes in terms of usability and UX and I believe that most changes will really improve the work experience with Anaconda!

- I think that important improvement was the change of installation options collapsing and expanding (see *Collapsing options of installations*). But in the new version, **a new problem appeared**. When I removed the partition from my old installation, the rest of the **partitions were collapsed** to installation option. I believe that it is quite common to remove several partitions and their collapsing will make the work unpleasant.

- There is still the problem when user creates partitions manually and then he reopens *Installation Destination*, the installer informs that there is not enough space available to install Fedora. It is caused by **subtracting the space of created partitions from an available space**.

Installation process (Configuration)

- The **progress bar is still too static** – see *Progress indication during the installation*.

- Also the **notification of successful installation is still quite drab** – see *Information about successful installation*.

Filip Kosík, the last modification on 8th June 2013