



SIL SOFTWARE DEVELOPMENT

HOW IT WORKS AND HOW USERS CAN HELP

Project prioritization

- What is most important to work on over months and years)?
- Ideas are written up by anyone who has an idea
 - Template: https://docs.google.com/document/d/1lrpp-rxb1gMcFRF4DVMGHCivIkUQJ2oDETnKWbxjhWg/edit?usp=sharing_cil&ts=5abb9e4f
 - Should be done in collaboration with LsDev. In Africa contact Kent Schroeder to get started.
- Groups evaluate the value to SIL's work and the costs (especially development time)
- The most cost-effective projects are selected to be worked on by available staff
- Issue: not many staff available; many committed to ongoing projects
- Issue: maintenance of projects without new features prioritized

Choosing major features

- Some are determined by prioritization process
- Some are determined by agreements with partners
- Some are requested by users (and voted on by others)
 - <https://community.software.sil.org/c/bloom/featurerequests>
- Some are suggested by the development team
- Some may be suggested by domain leaders
- Usually one “product owner” or “analyst” makes the final decisions for each product

Daily work: pick a card to work on

The image shows a Kanban board with columns representing different stages of work. The columns are: Open (8), Ready For Work (16), Needs Rework (1), In Progress (1), Ready For UI Review (2), and Ready For Code R... (2). The 'Ready For Work' column is highlighted with a green circle. The cards in the 'Ready For Work' column are:

- BL-5813 Critical: Lanna Script not showing in Bloom (2)
- BL-5412 Normal: [Enabling Writers] Add country to meta.json during upload
- BL-5509 Normal: Figure out Device CSS system
- BL-5780 Normal: Hierarchical Bookshelves in... (3) - Includes 'Bloom Library X' tag
- BL-5699 Normal: Pan/Zoom issues when display is zoomed in/out (2) - Includes 'Animated Storie... X' and 'U' tags
- BL-5689 Normal: Remove Page Numbers & Margins from Devic... (1) - Includes 'waiting on PM X' tag
- BL-5763 Normal: Old Music Files Hang Around (1) - Includes 'Animated Storie... X' and 'WG' tags
- BL-5777 Normal: Upgrade to latest stable Node (1) - Includes 'Infrastructure X' tag
- BL-5753 Normal: Lookup Language Code dialog has overlapping fields (7)
- BL-5761 Normal: Fix line breaking when using Thai script with word spaces (1)

Move to “In Progress” and assign to me

The screenshot shows a Kanban board with the following columns and task cards:

- Open (8):**
 - BL-5813 Critical: Lanna Script not showing in Bloom (2 assignees)
 - BL-5412 Normal: [Enabling Writers] Add country to meta.json during upload
 - BL-5509 Normal: Figure out Device CSS system
- Ready For Work (16):**
 - BL-5780 Normal: Hierarchical Bookshelves in... (3 assignees, tag: Bloom Library)
 - BL-5699 Normal: Pan/Zoom issues when display is zoomed in/out (2 assignees, tag: Animated Storie...)
 - BL-5689 Normal: Remove Page Numbers & Margins from Devic... (1 assignee, tag: waiting on PM)
- Needs Rework (1):**
 - BL-5763 Normal: Old Music Files Hang Around (1 assignee, tag: Animated Storie...)
- In Progress (1):**
 - BL-5777 Normal: Upgrade to latest stable Node (1 assignee, tag: Infrastructure)
- Ready For UI Review (2):**
 - BL-5753 Normal: Lookup Language Code dialog has overlapping fields (7 assignees)
 - BL-5761 Normal: Fix line breaking when using Thai script with word spaces (1 assignee)
- Ready For Code R...**

Develop it



Someone checks the code

The image shows a Kanban board with five columns representing different stages of a task's lifecycle. The columns are: 'Needs Rework' (1 item), 'In Progress' (1 item), 'Ready For UI Review' (2 items), 'Ready For Code R...' (0 items), and 'Ready For Testing' (2 items). A green arrow points from the 'In Progress' column to the 'Ready For Code R...' column, indicating a transition.

Needs Rework	In Progress	Ready For UI Review	Ready For Code R...	Ready For Testing
BL-5763 Normal ● B... Old Music Files Hang Around Animated Storie... X WG	BL-5777 Normal Task... Upgrade to latest stable Node Infrastructure X [Avatar]	BL-5753 Normal ● B... Lookup Language Code dialog has overlapping fields +		BL-5605 Normal ● B... Thumbnails made from jpeg covers take way t... Bloom Reader X +
		BL-5761 Normal ● B... Fix line breaking when using Thai script with word spaces +		BL-5632 Normal ● B... png thumbnails in edit mode not displaying full size +

Then someone tests it...maybe more work is needed

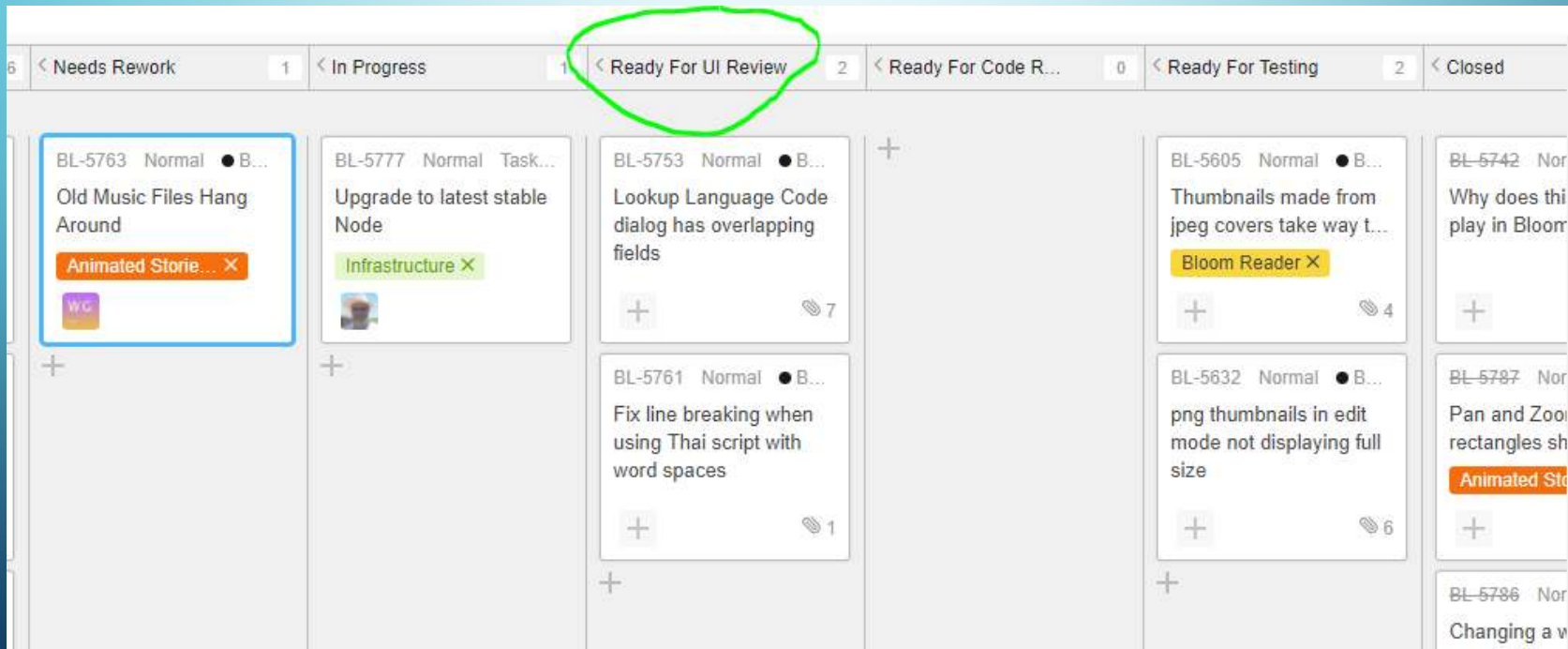
The image shows a Kanban board with five columns: Needs Rework (1), In Progress (1), Ready For UI Review (2), Ready For Code R... (0), and Ready For Testing (2). The board contains several task cards with titles, IDs, and status indicators. Hand-drawn red and green arrows illustrate the flow of work between columns.

Column	Count	Task ID	Task Title	Category	Other Info
Needs Rework	1	BL-5763	Old Music Files Hang Around	Normal	Animated Storyline X, WC
In Progress	1	BL-5777	Upgrade to latest stable Node	Normal Task	Infrastructure X
Ready For UI Review	2	BL-5753	Lookup Language Code dialog has overlapping fields	Normal	
Ready For UI Review	2	BL-5761	Fix line breaking when using Thai script with word spaces	Normal	1
Ready For Code R...	0				
Ready For Testing	2	BL-5605	Thumbnails made from jpeg covers take way t...	Normal	Bloom Reader X, 4
Ready For Testing	2	BL-5632	png thumbnails in edit mode not displaying full size	Normal	6

Hand-drawn arrows indicate the following flow:

- Red arrows point from the 'Ready For Testing' column back to the 'Needs Rework' column, indicating that tasks requiring testing may need to be reworked.
- Green arrows point from the 'Ready For UI Review' column to the 'Ready For Code R...' column, indicating that tasks ready for UI review move to the next stage.

Some things are checked by the designer



Release process: alpha

- Changes which pass code review are checked into a version control system
- They are built automatically (by a TeamCity server)
- They immediately become part of Bloom's *alpha* release (mainly used by testers, sometimes by brave users)

Release process: beta

- Every few months when significant improvements are complete...
- We stop work and spend several days testing everything we can think of
- We fix any problems that need it
- Then a new beta version is released. It's available to download from bloomlibrary.org. It gets a new minor or major version number (4.1->4.2)
- We count on people like you to try it out and let us know about problems

Release process: final

- After a few months of beta testing...often when we are ready to release the next beta...when we are not hearing about a lot of new problems...
- A beta is promoted to Release.
- Nothing much changes except that everyone is now encouraged to upgrade to this version

Dealing with bugs

- When a problem is reported, we try to determine the first version that has it.
- We develop a fix, usually for that version
- When we've fixed a serious problem or several minor ones, a new revision is released on the appropriate channel (e.g., Release 4.1.0 -> 4.1.1; beta 4.2.100->4.2.101)
- Fixes usually must also be made to any later versions

Dealing with bug reports: a typical report

- Report reads: BL-5693 JavaScript Error: "Error: Network Error"
[a long mess of stacks, state, etc]

To Reproduce: I'm deleting pages from the book The Gospel of John, 1:19-34, John the Baptist identifies Jesus as the Messiah.

- Result: email: "Sorry you're having this problem. Do you get this all the time, or was it just once? If you get it regularly, can you possibly attach a book in a state where it happens when you delete a particular page?"
- Report used about 10 minutes of my time. The program was not fixed.

Dealing with bug reports: another example

- Report reads: BL-5799Exception: Cannot switch recording devices while recording is...
[a long mess of stacks, state, etc]

To Reproduce: my microphone wont turn off.

- Result: email: “Sorry you're having this problem. Can you be a little more specific? Do you mean that you press Record and then when you release the mouse button you get this dialog box? Did Bloom ever get into a state where you could play back the recording? If so, did it actually continue recording after you released the mouse button?

Do you have more than one recording device connected? (e.g., laptop built-in microphone plus headset)

Were you in any way trying to change recording device (e.g., clicking the input device picture in the talking book tool, unplugging a device, plugging in a new one)?

Do you get this whenever you try to record, or only sometimes? If only sometimes, can you identify anything special about those times?”

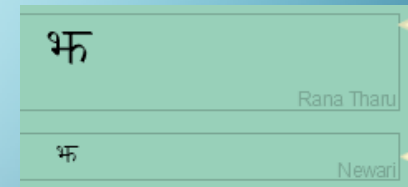
- Report used about 15 minutes of my time. The program was not fixed.

A better report, but...

- I made a font with TypeTuner and tweaked it with feature settings in customCollectionStyles:

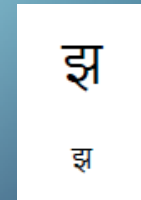
```
[lang="thr"] {font-feature-settings: "jhav" 1;}
```

This works in edit mode as you can see in the screenshot:



The problem comes when creating the PDF. This is what I get:

- Result:
 - Can you give us the book that has this text?
 - Can you give us your customized font?
- Problem may get fixed sometime, if they send us the information...



Sometimes even a good report fails

- BL-5811 Cannot remove text over picture text box
- Problem description: I try to delete the text box from the picture by right click and delete, It is not removing
- Report included the book! I could find the page and the box
- But when I tried, the text-over-picture box was deleted normally.
- All I could do was ask a few questions, like “Is it just this box on this page of this book, or does it always happen? Does restarting help? Do you know anything unusual about your system?”
- An even better report would try to anticipate these questions.

What if there's no response?

- Problem is no longer read for work!
- It's tagged to indicate we are waiting for a user response
- After a month or so it just gets closed.

The screenshot displays a Kanban board with four columns: 'Open' (10 items), 'Ready For Work' (8 items), 'Needs Rework' (0 items), and 'In Progress' (2 items). The 'Open' column contains several task cards, each with a yellow 'waiting on user' tag and a green 'User' tag. Red arrows point to these tags, indicating the state of the tasks. The tasks in the 'Open' column are:

- BL-5800: Normal ● B...
Exception: Cannot switch recording devic...
waiting on user × User
- BL-5811: Normal Awai...
Cannot remove text over picture text box
waiting on user × User
- BL-5812: Normal ● B...
Page expired: Server no longer has this page in...
waiting on user × User
- BL-5817: Normal ● B...
Exception: Out of memory. in...
waiting on user ×

The 'Ready For Work' column contains two task cards:

- BL-5759: Normal ● B...
Exception: Out of memory. in...
waiting on user × User
- BL-5783: Normal ● B...
Exception when publishing to ePub...
waiting on user × User

The 'Needs Rework' column is empty. The 'In Progress' column contains two task cards:

- BL-5830: Normal ● B...
Exception: This PalasoImage was use...
UserNeedsHelp ×

Dealing with a good bug report

- BL-5628 Page Thumbnail list scroll messed up after page reordering

Make a new Vaccinations

Make your Bloom window short so that you have to scroll down to see all the pages.

Swap the last two pages.

Result: After the swap, Bloom resets the scroll position to the top, which is disorienting and then annoying.

- This was fixed

What makes a good bug report?

- We can repeat what you did and make it happen!
- We clearly understand that what happened wasn't right

What lets us make it happen?

- We can get our system into a similar state to yours
 - Running the same version of Bloom
 - On the same operating system
 - Looking at the same book
 - On the same page
 - With the same thing selected
- We need the book!
 - Much of this can be sent when you ‘report a problem’ or create an email from a crash dialog

What else is needed?

- Describe what you did.
 - Even if it seems to happen “all the time” give one example as precisely as you can
- State what actually happened
- State what you expected to happen
- It’s also very helpful to know whether it always happens when you follow these steps, or whether it just happened once and you’re trying to remember what you did.

Problems are often limited to precise situations

- Problem only happens with a very large image
- Problem only happens with an image with a transparent background
- Problem only happens when using two different images with the same filename
- Problem only happens if the book title contains ?, &, <, or >
- Problem only happens if the user name contains a single quote character
- Problem only happens if the Bloom folder is on a network drive
- Problem only happens if the Bloom folder is in a Dropbox folder

Problems are often limited to precise situations

- Problem only happens if the talking book tool has been opened but no recordings were made
- Problem only happens if someone got leveled reader settings from someone else in a BloomPack and then modified them
- Problem only happens in negative timezones
- Problem only happens in countries which use comma instead of period for decimal places in numbers
- Problem only happens in Turkey. (Really! Their alphabet has an unusual lower-case conversion for the letter “ı”, a special dotless letter)

Problems are often limited to precise situations

- Problem only happens if the string gets longer in Unicode normalization
- Problem only happens with a Graphite font (or non-Graphite)
- Problem only happens when using Keyman
- Problem only happens on Linux (Windows 7...Windows 10...)
- Problem only happens with text pasted from Word (not if the same text is typed or copied from Notepad)
- Problem only happens if you paste with shift-Insert, not ctrl-V

Problems are often limited to precise situations

- Problem only occurs if there is a space after the final period
- Problem only occurs in bilingual books
- Problem only occurs in right-to-left scripts
- Problem only occurs when the text in a box has overflowed and the selection is moved until it scrolls

Exercise: try to reproduce some bugs

- Go to <https://silbloom.myjetbrains.com/youtrack/issues/BL>
- Try to find a bug report that you can reproduce

Exercise: in pairs:

- Each write a description of how to get some program into a particular state. If it's helpful, you can create a folder with any files you think might help.
 - If you know of a current bug, try to describe how to make it happen
 - Keep the window open showing the final state
- Swap folders. Each see if you can follow the other's directions.
- Compare results. Were the instructions followed successfully?
- Discussion: what was helpful and unhelpful?

Real life exercise (after conference)

- The next time someone comes to you with a problem you think is a bug...
- Have them write it up
- See if you can follow their instructions to make it happen
- If not, and if they are patient enough, see if you can ask questions and get them to improve the description so you can.
 - Ideally do NOT have them just show you
- When the report is clear enough so you can reproduce it, send it in.

Real life exercise (after conference)

- The next time YOU discover a bug
- Write your best description of how to reproduce it
- Give it to a colleague and see whether they actually can make it happen
- Improve it until you can give it to someone who hasn't tried before and they succeed
- Submit it