

# Links

Tuesday, June 14, 2016 2:09 PM

## General

- <https://blog.molecular-matters.com/>
- <http://preshing.com/>
- <http://www.hanselman.com/>
- <https://simpleprogrammer.com/>
- <http://www.geomerics.com/blogs/quaternions-rotations-and-compression/> - quaternion compression!?
- MMO Server Architecture: <https://gameserverarchitecture.com>
- Networking: <http://gafferongames.com/>
  - <http://gafferongames.com/2016/05/10/building-a-game-network-protocol/>
  - <http://gafferongames.com/networking-for-game-programmers/what-every-programmer-needs-to-know-about-game-networking/>
- <http://highscalability.com/>
- <http://journal.stuffwithstuff.com>
- <http://blog.cryptographyengineering.com/>

## Work

- CorpNet Only:
  - <http://start> - First time stuff
  - <http://aka.ms/msv> - MSV homepage
  - <http://aka.ms/msw> - General company homepage.
  - <http://lcaweb> - Legal help
  - <http://hrweb> - HR help
- <http://channel9.msdn.com> - MSDN blog?

## Misc

- <http://www.impactlab.net/2016/07/13/were-going-to-put-a-carbon-nanotube-computer-in-your-hand/>
- Data Mining class: <http://www.stat.cmu.edu/~cshalizi/350/>

# Modern Conversations

Thursday, June 16, 2016 3:27 PM

## Accessibility

- Conversation Stack View
  - Description should mention:
    - Number of messages in the conversation
    - *People involved in the conversation?*
  - Contains Single Message Views:
    - Description should be the following information:
      - ☐ Sender
      - ☐ Receiver(s)
      - ☐ Date received; abbreviate if possible.
      - ☐ Message content

# Tasks

Thursday, June 16, 2016 10:58 AM

## Signoff

- We need Sierra testing; put the Sierra beta on your laptop.
- If testing acts up with "Opening for first time", rebuild LaunchServices DB with: "`/System/Library/Frameworks/CoreServices.framework/Frameworks/LaunchServices.framework/Support/lsregister -kill -r -domain local -domain user`"

## Bugs

996982: Item list sorting criteria no longer uses sorting order defaults

- Bug cause is change #12911020. Have the ribbon button perform the same action as the "By: [x]" bar. [\(In Review\)](#)

909997: Typing in compose window is very slow, especially with large images

- Do a profile comparison of some Word builds to see what's going on on their side. **(Not Started)**
  - Prereq: build the Word ship builds! [\(In Progress\)](#)
    - ◻ March@11963286 [\(Done\)](#)
    - ◻ August@12892574 [\(Building\)](#)

861945: Watson Crash in -

[OLAutoLayoutAddressingAutocompleteController  
updateAutocompleteTable:]

- Looks like you have a fix but no way to repro it; check with Satayu. **(Not Started)**

## Features

### Modern Conversations

#### Calendar

- Model:
  - ◻ Is integrated into Outlook, meeting responses are spawning new threads.
  - ◻ Split the functionality change into a refactor and add:
    - ◆ Refactor change [\(In Review\)](#)
    - ◆ Functionality add change [\(Adjust, Rebuild, Send to Review\)](#)
  - ◻ Before you submit the model integration, adjust the placeholder cell. **(Not Started)**
  - ◻ **Make sure cell behavior is maintained before submitting each change!**
- View must be adjusted to new redlines. **(Not Started)**

## General

### Making New Project Experience

- Write some stuff on team notebook about necessary steps to create and add new project to build system.
- Also the testing steps, since those were kind of separate from the code creation.

### Other

- Satayu knows about how projects used to be managed, can ask him about what's changed.

# Horizon

Wednesday, July 27, 2016 5:07 PM

## CloudBuild/CloudTest

- ATM this doesn't have much Mac attention, needs teams to get involved with the initiative.
- Also - searching on change info. Do we have a tool that does this? reSearch lets you search on sources but not on changes.

## WKWebView

- May not be so far off; 64-bit only decision is being decided tomorrow. Check out Albert's Hackathon demo.

## Connect with Research

- Does Research do events/lectures that non-Research members can attend? In particular, what's going on with machine learning at Research?

# Signoff

Tuesday, June 28, 2016 10:07 AM

## Alerts:

- Entry points to test
  - Launch Outlook and go to Preferences Pane | Notifications & Sounds.
- Dialogs to run
  - "Notifications and Sounds" dialog from Pref pane.
- End-to-end scenarios to work through
  - Check / Uncheck sound for "New Message", "Message", "Reminder", etc options in the Sounds section. Verify the sound is correctly played / disabled when the scenario happens.
    - ☐ New Message? **On. Off.**
    - ☐ Message Sent? **On. Off.**
    - ☐ Reminder? **On. Off.**
    - ☐ Sync Error? ***Doesn't seem to make a sound on sync timeout.***
    - ☐ No new? ***Doesn't seem to make a sound. May be doing it wrong (sync/Send&Receive when there are no new messages).***
    - ☐ Welcome? **On. Off.**
  - Check "Reset Alerts" and verify "Don't show this message again" will come up again in scenario it was dismissed (Not finding a dialog/sheet that actually has "don't show this message") **Yes**
- Account types to work against
  - Any
- Interesting edge cases worth checking

## Recipient:

End to end scenarios:

Recipient testing when seeing an email or meeting request:

Compose a new email

Type in the TO/CC/BCC fields

Choose contacts from people picker, or type the full email address, or type alias and check names

Verify: Recipients gets resolved properly. **Yes**

Verify: Contact groups and DLs get recognized properly. **Yes**

Verify that the presence card has correct info when hovering over the recipients. **Yes**

Presence testing:

When a messaging app such as lync/msn messenger is open, Outlook should be able to provide information of the contact - online status, picture, contact information via a presence icon or presence card. **Yes**

1) launch Outlook and add your corp account

2) launch msn message/lync app with your corp credentials such that contact information is present/related

Click on the presence icon on a contact, which will in turn bring up the flyout Presence card - this displays current photo, personal status message, email address and phone number **Yes**

Mail - click on the mail button in the presence card and send a mail to contact **Yes**

Instant Message - click on the IM button and send a message to contact **Yes**

Voice Call

Schedule a meeting - go through the flow of setting up a meeting with contact. **Yes**

Outlook contact Card - open the contact information and make sure relevant information is displayed. ie. there's a current issue where if you bring up the contact via the context menu, not all information is shown. **Yes**

If msn messenger/lync is not connected then these functionality is disabled - (review this)

*Unclear? Anything requiring Lync is disabled.*

\* Presence card should come up if you hover over a contact and disappear when moving away.

**Yes**

\* Clicking a contact should also bring up the presence card **Yes**

If possible setup a 2nd account where you can change the status, and message of the contact so that you can see that it changes when the Presence card information comes up. **Yes**

Adjust screen resolution, to lowest supported to highest and confirm that buttons in Presence card are still viewable. **Yes**

# Scratch Space

Wednesday, September 7, 2016 2:48 PM

## MoCo: Accessibility Points

In addition to creating a more comfortable user interface, we want to also create a more comfortable accessibility experience - the two go hand in hand and improve the other. @Albert and @Jeff have been a massive help here, finding areas we can improve and specifying what users expect from the different interface elements. @Vivek has also suggested making an "ax-improve" label to indicate that an issue has AX concerns to address; in that case we could move these points to their respective issues and use this issue as a hub to reach labeled threads.

With that said, here are accessibility points that would be valuable to address as we move into Dogfood:

- For the conversation timeline as a whole...
  - a. *What elements should be ignored or navigationally merged into a message cell?* This will affect how screenreaders render the conversation and how keyboard navigation flows.
  - b. *What elements can be aggregated* - multiple meeting responses, for example? Reading out all of the information as visually displayed can be very overwhelming, but aggregating too much creates an effect similar to putting disclosure buttons on every field.
  - c. *What order do we traverse timeline elements?* The timeline model means this is probably very straightforward, and we just specify the order to catch any small exceptions to the overall "down is newer" concept.
- For individual message cells...
  - a. *What order do we traverse message elements?* Cells are more visually active and having an intuitive path through the cell will be vital for screenreader users.
  - b. *What elements should be ignored?*
  - c. *Conversely, what elements should be highlighted when screenreading?* If a message has an attachment we mark it with a paperclip, but in the screenreader should we also say "message with [x] attachments"? If a message is unread, should we also say "message is unread"?

If other points come to mind as you use MoCo, feel free to add them to this list. Thank you!

# Outlook

Wednesday, June 29, 2016 10:24 AM

We'll probably do these kind of reviews monthly.  
So, onto the details:

## Goals for FY17

- We want to grow to 10M MAU by end of FY17
  - You just graduated; is there anything you could do with the university connection?  
*Especially since a lot of art majors are required to use Macs.*
- We're probably the fastest mail app on macOS.
- We're connecting a lot more with customers; how do we increase that connection and feedback response? We're no longer just talking to one representative per client, we're talking on Twitter and forums and such.
- We have a huge, huge space to expand - there's 52M macOS users, 2M of those use Outlook at the moment. A lot of opportunity here.
  - Important to note is that 46M of those are consumers. This is the definition of Blue Ocean; *get the people who aren't really using anything.*
  - Apple Mail is still big @ 53%; Outlook 2016 @ 26%, Outlook 2011 @ 17%.
- Tons of people need something that integrates with Gmail and other outside systems; everything we do there gives us an advantage.
- 64 bit conversion very important, that gets us on the App Store.
- UI PMs are most on Github.
- UI Refresh is huge deal - proposed interface looks totally different in a very nice way.

## Getting New Customers

So how do we get people who don't have an app?

- There's marketing, which Alessio's side is handling.
  1. Get people aware that mail apps - and Outlook in particular - are something that can help them. **Buy this because it gives you an edge.**
    - Particularly that they beat the crap out of webapps, and are worth paying for.
  2. Make the product cost less - not monetarily, that's not sustainable against open source products - but cost less in stress and time to the customer.
- There's engineering, which you're part of.
  1. Make the UX more useful for consumers, since most people using macOS are consumers. **Buy this because it makes you feel awesome.**
    - Diagnostics and error handling (*especially* automatic error resolving for things like "too many attachments") is essential here to avoid making people feel dumb. **Never make the user feel dumb.**
  2. Make the program integrate with things consumers already use, like Gmail.
  3. Make the program perform better, so more consumers can use it on their hardware.



# Performance

Wednesday, June 29, 2016 3:10 PM

## Summary

We want to improve UI responsiveness that exceeds customer expectations

## Measures

- Zero beachballs (app lagging out so bad OS window messages pile up)
- Lowered Force Quit rates (*by how much?*)
- Make following instantaneous (take < 250ms to run):
  - Previewing message (*should we include compose?*)
  - Switching views
  - Scrolling

## Areas of Interest

1. App responsiveness
2. Intelligent sync (in addition to sync slider work)
3. Batching tasks in fast-processing chunks (see OAB)

## Actionable Tasks

1. Identify DB queries/network calls happening on main thread
2. Move those calls off main thread
3. Move SQLite files into separate folders
4. Preload messages above/below one currently view
5. In debug builds: display time to complete UI actions
6. Measure and visualize more performance telemetry (*specifics?*)
7. Dogfood with *slow* machines!
8. Make a performance dashboard

## Slogan

No Beachballs

# Fit and Finish

Wednesday, June 29, 2016 3:22 PM

## Summary

Reduce complexity and increase discoverability in order to delight customers

## Measures

- Measure usage of entry points
  - Telemetry
  - Direct feedback (forums, etc.)
- Measure usage of features
  - Telemetry
  - Direct feedback (forums, etc.)
- Measure being unable to complete task
  - Direct feedback (forums, etc.)
  - Usability study

## Areas of Interest

1. Data gathering
  - a. Identify redundant entry points
  - b. Identify complicated windows and dialogs
2. Analyze data
  - a. Identify low-hanging fruit vs. feature-level rewrites
3. Implement elements
  - a. Improved UI
    - i. Paper prototypes
    - ii. PPT prototypes
    - iii. Usability studies
    - iv. Insider Fast
  - b. Flighting for A/B testing
  - c. Teaching callouts for new UI/X
  - d. NPS-style surveys on new UI/X

## Actionable Tasks

1. Telemetry for following:
  - a. Identify existing UI and entry points
  - b. Legacy feature usage (recurring meeting, OOF)
2. Set up gates and flights for new elements

## Slogan

Effortless

# Growth Ideas

Wednesday, June 29, 2016 3:27 PM

## Summary

Be best in class mail app on macOS.

Simplify, be easy to use, be platform appropriate. Not just like Apple Mail, but not confusing for Mac users

## Measures

- Performance/reliability metrics
- Barrier to entry metrics - MAU, user conversion metrics
- NPS

## Areas of Interest

1. Do CalDav/CarDav
2. Implement features consumers want
  - a. Photo sharing, My Day, Templates, Callouts, Stickers
3. Add-ins: integration with external services like Gmail, Salesforce (in progress)
4. UI redesign (in progress)

## Actionable Tasks

1. TBD

## Slogan

Growth is Coming!!!

# Support

Wednesday, June 29, 2016 3:19 PM

## Summary

Delight customers with simple and engaging experience.

## Measures

- Quality of support
  - Reduce number of questions asked of the customer (reduce to 5)
  - Information sent to support
  - Using language users understand
- Reduce amount of information requested
  - User should need to send no logs whatsoever.
- No noise to engineers; should only be dealing with big-issue bugs.
- Reduce IPC by 10-50% - make product better, reduce bug count

## Areas of Interest

1. ?

## Actionable Tasks

1. Prototype a solvebot to help people with basic issues.
2. Have everyone on helpshift!
3. Expectation of SLA - that we respond within X amount of time to an issue.
4. Identify areas of confusion, like how Focused Inbox might not always pick everything the user wants.
5. Make Aria logging informative.

## Slogan

Don't be DMV!

Skynet but friendly

# Resources

Friday, July 15, 2016 2:31 PM

## Work Blogs

Accessibility (AX) blogs

<https://www.marcozehe.de/tag/voiceover/>

<https://medium.com/@LeonieWatson/>

UI/UX

<https://www.nngroup.com/>

Debugging and Profiling

<https://www.bignerdranch.com/blog/hooked-on-dtrace-part-1/>

## GCC Flags and Xcode Shenanigans

- -Werror=unused-parameter makes the "unused parameter" warning an error.

# Accessibility

Monday, July 18, 2016 10:58 AM

Project page for accessibility: <http://a11yproject.com/>

Contrast ratio between text and a text's background should be at least 4.5 to 1.

Accessible color scheme designer: <http://colorsafe.co/>

Remember: "We're all just temporarily abled."

Web accessibility tools: <https://www.pacielogroup.com/resources/?q=node/20>

# Accessibility Testing Guidelines

Thursday, July 14, 2016 2:01 PM

**From:** Jeffrey Kalvass <[jeffkalv@microsoft.com](mailto:jeffkalv@microsoft.com)>

**Date:** Tuesday, June 21, 2016 at 6:16 PM

**To:** Office Apex Outlook Team <[apxolk@microsoft.com](mailto:apxolk@microsoft.com)>

**Subject:** Accessibility Testing Guidelines

Team,

I've been asked: "What needs to be tested for Accessibility?" by a few feature teams.

Here's what you need to know:

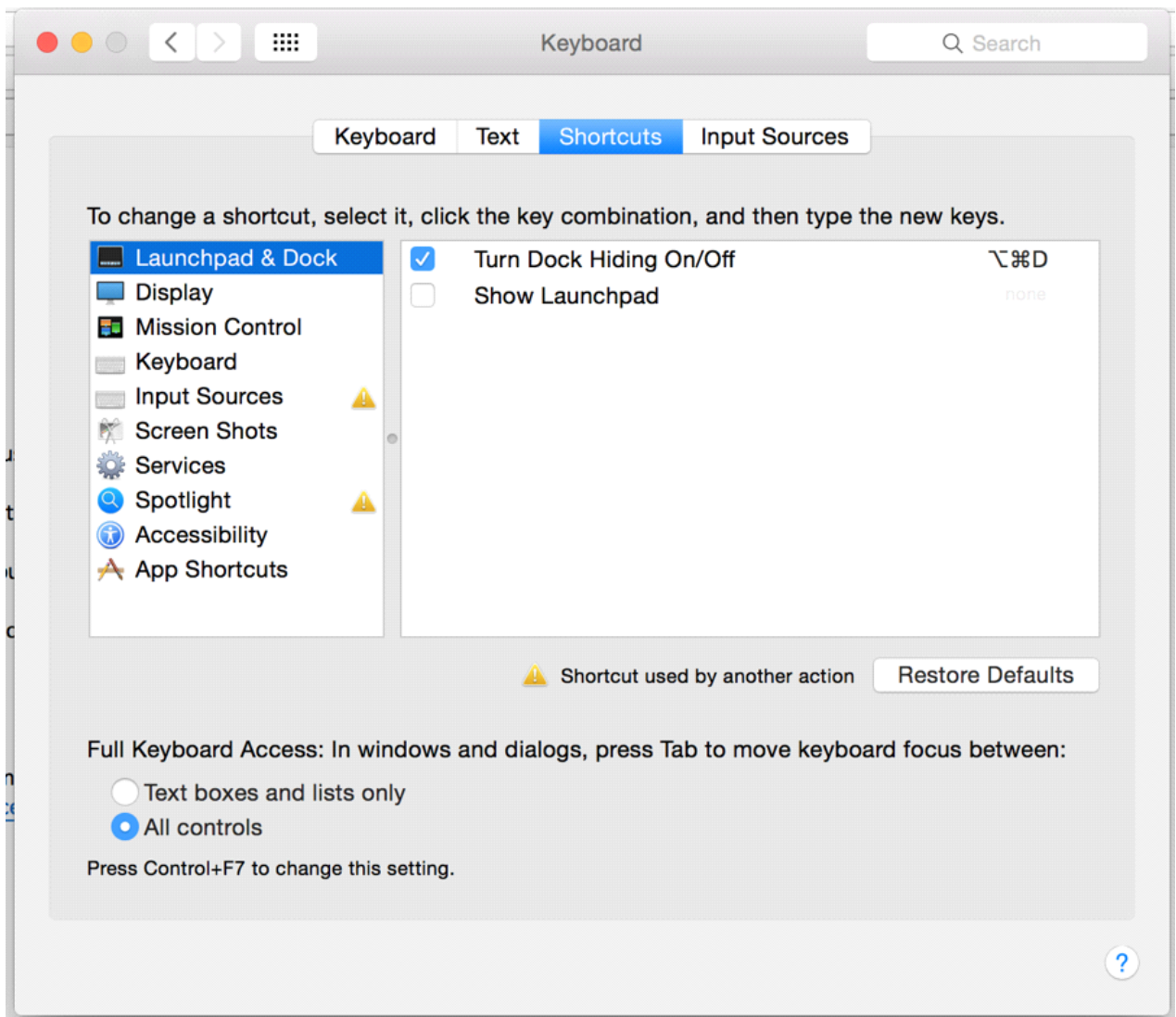
1. Keyboard
  - a. Perform all tasks in feature with the keyboard only (aka without using the mouse)
2. VoiceOver
  - a. Perform all tasks in feature with VoiceOver enabled, without using the mouse, without looking at the display
3. Contrast/Colors
  - a. Perform all tasks in feature with high contrast and invert colors controls enabled
4. Contrast Ratio
  - a. Verify a minimum of 4.5:1 contrast ratio between text and background in all feature UI
5. Zoom
  - a. Perform all tasks in feature with 20X magnification; verify zoom follows keyboard and speak items under zoom
6. Dictation
  - a. Perform all tasks in feature using dictation

Here's the doc with the official testing guidelines and scenarios used by all Outlook endpoints. It's mostly written with Desktop in mind, but some other platforms mentioned:

[https://microsoft.sharepoint.com/teams/Outlook\\_Team/Shared%20Documents/Accessibility/Outlook%20Accessibility%20Testing%20Guidelines%20-%20For%20Internal%20Use%20Only.docx?web=1](https://microsoft.sharepoint.com/teams/Outlook_Team/Shared%20Documents/Accessibility/Outlook%20Accessibility%20Testing%20Guidelines%20-%20For%20Internal%20Use%20Only.docx?web=1)

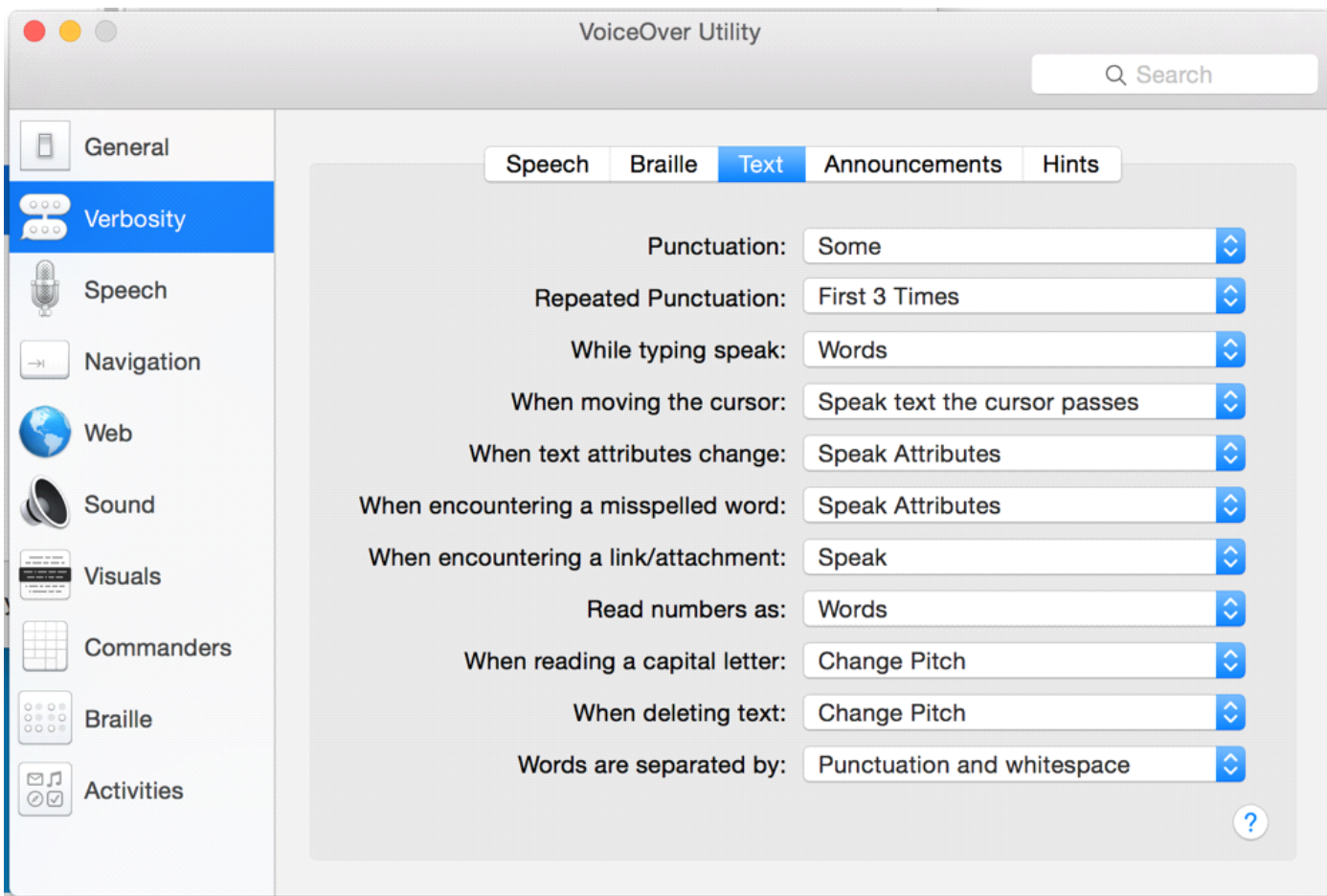
Also, here's a quick look at the system prefs for the six items mentioned above (this is using my Yosemite machine, so some may look different in El Capitan and Sierra):

1. Keyboard
  - a. Set **Full Keyboard Access** to **All controls**:
  - b.

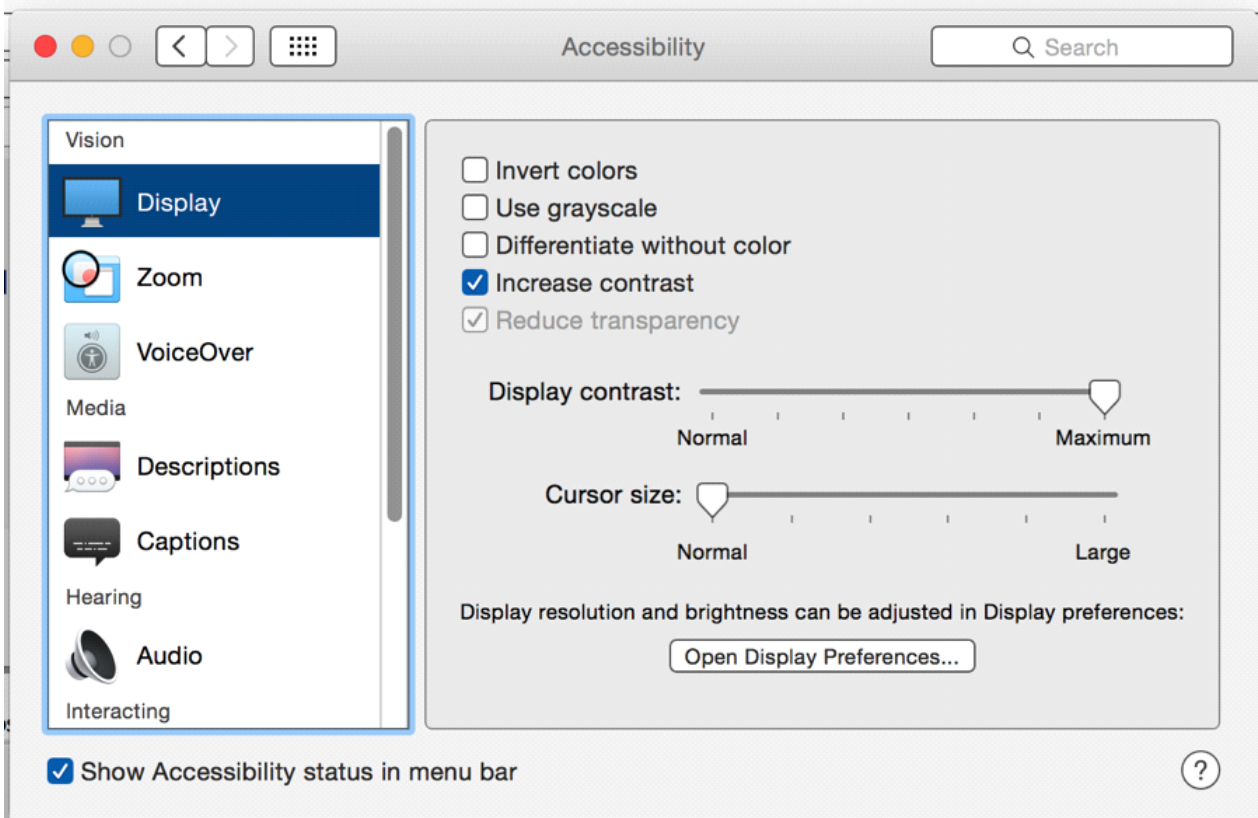


2. VoiceOver
  - a. Too many to name, but worth pointing out some of the **Verbosity > Text** settings here:
  - b.



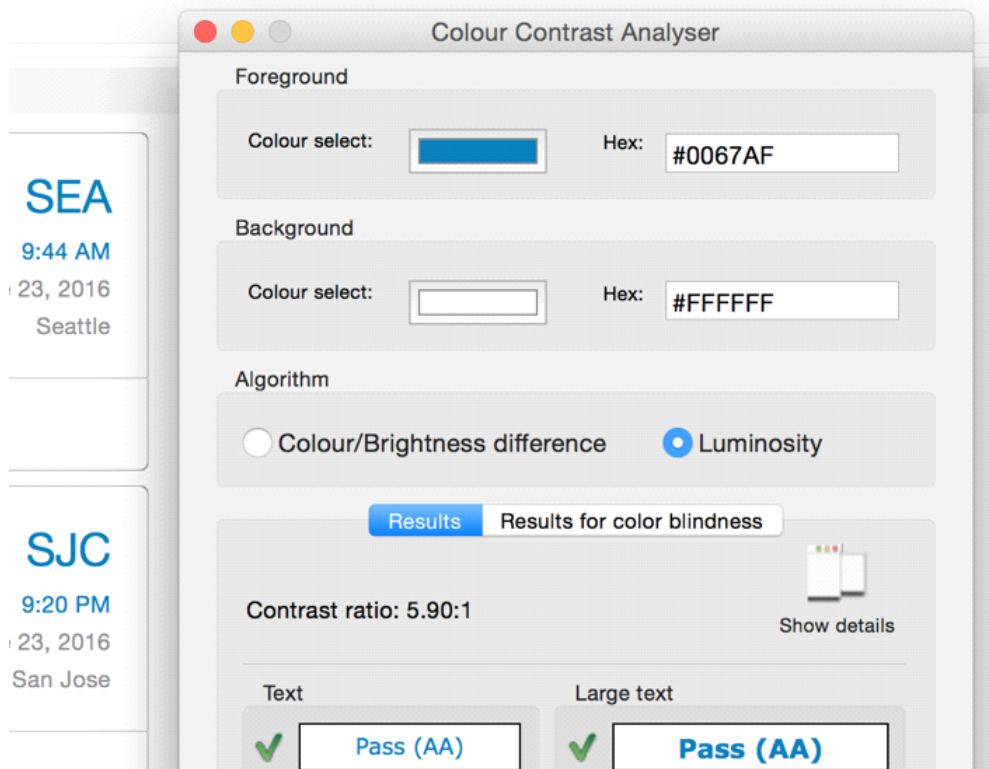


3. High contrast & invert colors
  - a. **Invert colors** at top, and combine **Increase contrast** with the **Display contrast** set to maximum:
  - b.



4. Minimum contrast ratio

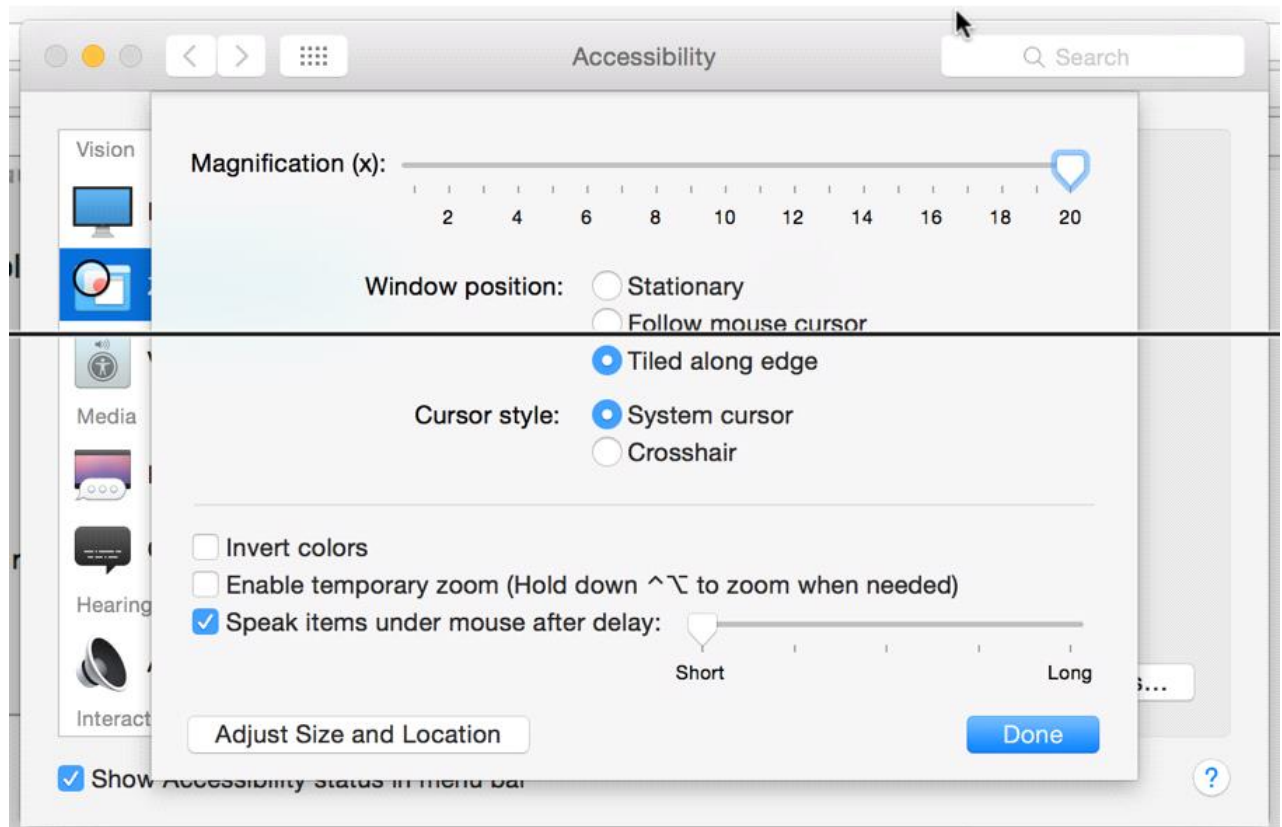
- a. I use a simple app called Colour Contrast
- Analyser: <https://github.com/ThePacielloGroup/CCA-OSX/releases/>
- b.



- c. Note: I have noticed some variance in sampling colors from different displays, but gives a good idea of pass vs. fail

5. Zoom

- a. **Magnification** to 20X and **Speak items under mouse after delay**
- b.

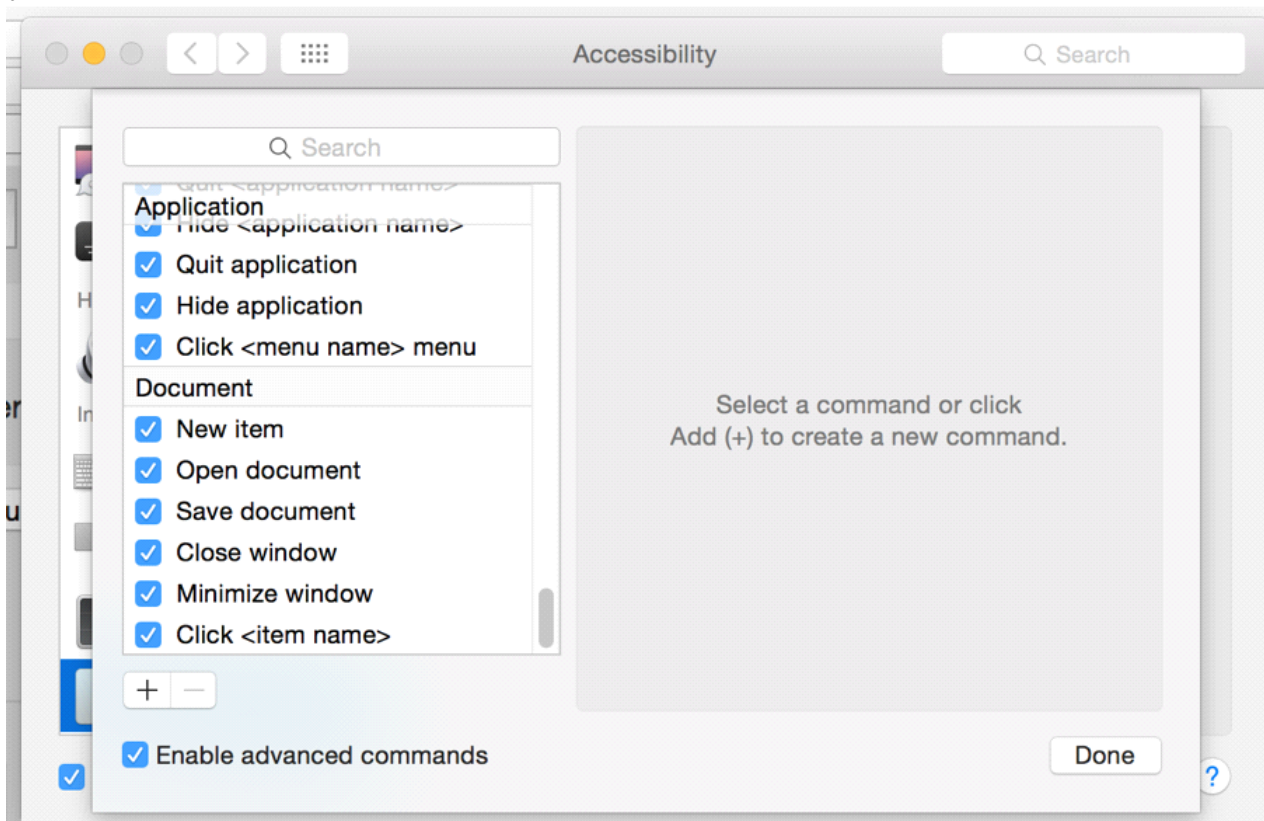


- c. **Zoom follows keyboard focus** is on the main pref (once clicking Done above)

6. Dictation

- a. Ensure **Enable advanced commands** is checked

b.



c. See attached for Dictation demo

A friendly reminder that each feature team owns Accessibility!

Please let me know if you have any questions.

Thanks,

Jeff

—

Sent from Outlook for Mac: 15.24 (160620)

# Dashboard

Thursday, September 8, 2016

4:00 PM

## General Remarks

- Feature prefix is **OlkConversation\***, not OLMC.

## Calendar

### View

- Handle displaying accept/reject/etc. from attendees. **(Not Started)**
- Popovers should:
  - ◆ Close if clicked outside. **(Not Started)**
  - ◆ Close if their parent button is clicked again? **(Undecided)**
- Redlines are in!
  - ◆ There's a new pulldown button design, and its behavior is different from NSPopoverButton:
    - If the field is clicked, perform a standard action (in this case Reply Without Comments).
    - If the disclosure is clicked, show menu options.
  - ◆ **If OlkUIKit doesn't have a acceptable pulldown, how should we implement it?**
    - Invisible areas on the two sections, manually trigger NSPopoverButton?
    - Custom view deriving from NSPopoverButton composed of two NSButtons?

### Model

- Calendar cells we see currently are ECMessages that have an indicator that they're calendar-related. Use this flag to detect initial meeting invitations and display them as calendar event cells rather than message cells. **(In Review)**
- Similarly, responses aren't going to have a body, but they will have a status flag. Use this to fill in the body. **(Not Started)**
- Before you submit the model integration, adjust the placeholder cell:
  - ◆ Put labels on the location/time fields. **(Not Started)**
  - ◆ Put the Quick Action buttons back (Reply/Reply All/Forward). **(Not Started)**
  - ◆ The conversation title is blank; fix that! **(Not Started)**
  - ◆ Move the meeting response actions to a horizontal stack under the location/time. **(Not Started)**
  - ◆ The meeting should delete after you do a response. There's probably a post-step after the meeting response call. **(Not Started)**
- Make sure cell behavior is maintained!
  - ◆ Attachments are visible and work.
  - ◆ Meetings are visible and work.
  - ◆ All fields in a cell display proper data.
  - ◆ All buttons perform their specified action.

## Accessibility (c.f. [github.com/outlook/mac/issues/125](https://github.com/outlook/mac/issues/125))

- We at least need message cells to be readable with VoiceOver, and there are other accessibility milestones that we're (federally?) required to meet in order to ship; look at Github and ask team/Albert for details on the milestones. **(In Progress)**
  - Do senders/receivers need to be a separate accessibility group (so we can access their contact card)?
  - Conversations should have their title in their label. **(In Review)**
  - Sender presence should be skipped; just setting [accessibilityEnabled] isn't working, though. **(Not Started)**
  - Infobars like low priority/high priority aren't describing their contents in screenreader?? **(Investigate)**

- New buttons need AX labels: **(Not Started)**
  - Expand Message
- There's a Next/Previous Panel command that lets you move from folder to msg list to msg content; MoCo should hook into this. **(Not Started)**
  - It sorta already does! Not perfectly, but it is navigatable.
- Unread message highlighting doesn't have a colorblind option. **(Not Started)**
- Put web content on the WebView label. **(Not Started)**
- Sender/recipient should display the name and the email, not just the name. **(Not Started)**
  - If the From/To labels are put back in, make them not accessibility enabled.
- Don't need to present the control description, label is fine for sender/recipient. **(Not Started)**
- Sender address box saying you're in a group when you're not??? Fix this. **(Not Started)**

#### *Keyboard Control*

- Address containers need to show that they have keyboard focus. **(Not Started)**
- The recipient container should be expandable/contractable via keyboard. **(Not Started)**
- We should have visual indicators of what has keyboard focus; this means using native controls and not links/webviews. **(Not Started)**

#### *Dictation (lower priority)*

- Scroll up/down doesn't seem to be working? Move up/down seems to not do anything either, stackview needs dictation handlers. **(In Progress)**
  - ◆ Related to Albert's keyboard issues, patch should fix this.

#### *Performance*

- If we know incoming data is small, it may be worth skipping the loading spinners. Not high priority but see if you can try this out on your own. **(Not Started)**

#### *UI*

- Message cell unit tests? **(Not Started/Obviated)**
- Currently the cells are styled in code; see if you can work with this rather than throwing another workflow over it.
  - Outlook has font styling info in OLFontUtils.h/m; it'd take some doing, but could we move this into OlkUIKit? **(Not Started/Obviated)**
- We now have multiple views with common drawRect calls; move the message border/shadow/background render into a common function. **(Not Started)**

# AX Details

Thursday, September 8, 2016 4:06 PM

- Splitters actually aren't supposed to be AX-visible, but It's a legacy thing; remove if you have time.
- VO in our AX documentation = control+option (the VoiceOver prelude). VO+J cycles through the message info in Outlook; it cycles through linked objects. MoCo should hook into this too.  
**Absolutely make sure this completes a circuit; failing to do this is called trapping and is very bad.**
- When testing, no mouse is allowed when using keyboard!
- There's no way to rightclick via keyboard if VO is off (internally shift-F10 does this in WordMail views). This means presence pills don't have a clear way to access their internals.
  - ◆ Are we absolutely sure the OS doesn't have a shortcut?
  - ◆ We may need to add this in manually; in that case we need to know what people expect as a shortcut.
- There's not really a good way to go to a specific message and send a response to it.
  - ◆ Can we implement a select/action hierarchy in Dictation? It'd be a lot of work.



# Dashboard

Thursday, September 8, 2016

4:04 PM

## Bugs

### 996982: Item list sorting criteria no longer uses sorting order defaults

- You misunderstood the desired behavior - the *Conversations ribbon* was doing the wrong thing.
- Bug cause is change #12911020.
- Have the ribbon button perform the same action as the "By: [x]" bar. **(Not Started)**

### 909997: Typing in compose window is very slow, especially with large images

- Once you have profiles to compare, send to Vivek. Ask Satayu/Tommy about observed numbers if it doesn't seem noticeably clustered in WM.
- Remarks:
  - ART, GEL, GfX are all Word rendering work; WM is doing *something*, just not consistent between builds.
  - Do not bother with Feb builds, there was too much going on back then. Use **late March/early April** builds. Present build is 160822.
  - Trace files aren't guaranteed to be machine portable! Send flamegraphs when collaborating!
  - One-line way to remove the ribbon: try adding `-[hasRibbon]` to the `composeWindowController` and return NO. Note window doesn't have a ribbon and uses this to prevent installation, so it might be worth a try.
- Test March (**160330**, sync **@11963286**) and present (**160822**, sync **@12892574**) builds with a profile with **no** accounts; use repro .eml to test the compose window.
  - Build once; possibly build versions with ribbon hardcoded on and off:
    - March **@11963286**
      - ◆ Outlook: Ribbon ON **(Ready)**
      - ◆ Outlook: Ribbon OFF **(Ready, Don't Test)** Turns out compose window needs a ribbon or it will kill the whole app.
        - ◇ ~~Verify that this doesn't have a ribbon on compose. (Ow)~~
      - ◆ Word **(In Progress)**
    - August **@12892574**
      - ◆ Outlook: Ribbon ON **(Ready)**
      - ◆ Outlook: Ribbon OFF **(Ready, Don't Test)**
        - ◇ ~~Verify that this doesn't have a ribbon on compose. (Ow)~~
      - ◆ Word **(Not Started)**
  - Test variables:
    - VO on and off, since AX tools add overhead that the customer may have been using. **(Done)**
    - Ribbon on and off. Might make this a plist read. **(Ow)**
- Do a profile comparison of some Word builds to see what's going on on their side. **(Not Started)**

### 861945: Watson Crash in `-[OLAutoLayoutAddressingAutocompleteController updateAutocompleteTable:]`

- Looks like you have a fix but no way to repro it; check with Satayu. **(Not Started)**

# General

Saturday, August 13, 2016 9:57 PM

## Put Books On Dell Laptop! (Not Started)

### Groceries (Not Started)

- Electrical tape to obscure lights (Not Started)

### BCL - Listener Counter (Not Started)

- Number can be randomly generated
- Make custom stylable (CSS? Can it have its own sheet/derive from server sheet?)
- Make sure clientside can't see the code

### Get Replacement License

- Email Absent From State Unit:  
**MVA Absent from State Unit / Driver Services Division**  
6601 Ritchie Highway, NE  
Glen Burnie, MD 21062  
Fax: 410-787-2988  
Email: [mvacs@mdot.state.md.us](mailto:mvacs@mdot.state.md.us)

### Change phone number! (In Progress)

- Tell people that need to know:
  - Extended Family (Not Started)
  - Doctors (In Progress)
    - Stanford (Not Started)
    - Dentist (Not Started)
  - Microsoft (In Progress)
    - Anybody else? (Investigate)
  - Apartment (Not Started)



# Long Term

Tuesday, June 14, 2016

2:07 PM

## Pain

- You need to resolve the pain issue; do not wait for the doctors, call them and speak about it **ASAP**. This is a factor in your work, certainly, but more importantly it is dramatically damaging you outside of the office. Right now you are completely incapacitated outside of work. You may have come to expect the pain, but you will not be able to keep this up without losing something.
  - For now pain relief alone is acceptable - a non mood-affecting/addictive analgesic is first priority in the coming months. If they can't find something with both properties, at least find one that doesn't affect mood.
  - If the medication is addictive, you will also need to take the medication despite the addictive potential; do not exceed prescribed limits, and **keep in at least half-weekly contact with people**.
  - For reasons on why this is so high priority, see [https://web.archive.org/web/20130426124844/http://headrush.typepad.com/creating\\_pasionate\\_users/2006/04/angrynegative\\_p.html](https://web.archive.org/web/20130426124844/http://headrush.typepad.com/creating_pasionate_users/2006/04/angrynegative_p.html) . Your disrupted attitude is probably making others uneasy.
- After that, you need to figure out your response cycle to the pain. For the most part you're not actually being burdened by the medical effects of the cysts - you're being burdened by the *pain* from the cysts, and by how you respond to that pain. When the pain is especially intense it causes several common reactions: dread that the pain won't stop, begging for the pain to end, and an urge to stop and hunker down. Resistance seems to increase those reactions, but **acceptance is much more beneficial**; just thinking about how the situation won't last forever has a noticeable effect. Similar alternatives are unclear since you haven't done much research. **It looks like Buddhism is a start.**

## Books

- Donald Norman: The Design of Everyday Things
- Team culture: <https://web.archive.org/web/20130617215449/http://www.nancydixonblog.com/2013/05/creating-a-culture-in-which-teams-and-workgroups-can-engage-in-collective-sensemaking.html> .
- Learning and AI: <https://www.amazon.com/Scripts-Plans-Goals-Understanding-Intelligence/dp/0898591384?ie=UTF8&redirect=true&v=glance>
- [https://www.amazon.com/Designing-World-Class-Learning-University-Succeeding/dp/0071377727?ie=UTF8&qid=1104110729&redirect=true&ref=sr\\_1\\_1&s=books&sr=1-1&v=glance](https://www.amazon.com/Designing-World-Class-Learning-University-Succeeding/dp/0071377727?ie=UTF8&qid=1104110729&redirect=true&ref=sr_1_1&s=books&sr=1-1&v=glance)
- Writing: <https://web.archive.org/web/20130112004446/http://www.amazon.com/Sin-Syntax-Craft-Wickedly-Effective/dp/0767903099>
- No Asshole Rule: <https://www.amazon.com/Asshole-Rule-Civilized-Workplace-Surviving/dp/0446526568>
- Management: <https://www.amazon.com/Halo-Effect-Business-Delusions-Managers/dp/0743291255?ie=UTF8&redirect=true&tag=bobsutton-20>
- Why Some Ideas Thrive: <https://www.amazon.com/Made-Stick-Ideas-Survive-Others/dp/1400064287>
- Influence: <https://www.amazon.com/Influence-Psychology-Persuasion-Robert-Cialdini/dp/006124189X>
- Sales - Harbingers of Failure: [https://marketing.wharton.upenn.edu/mktg/assets/File/Anderson-Eric%202015\\_02\\_05\\_Harbingers.pdf](https://marketing.wharton.upenn.edu/mktg/assets/File/Anderson-Eric%202015_02_05_Harbingers.pdf)

## Misc. Blogs

<https://toni.org/>

## Forums

- The Chaos Engine - general game dev industry; is a private forum!  
<http://www.thechaosengine.com>

# Machine Learning/Data Mining

Friday, July 29, 2016 5:47 PM

<http://highscalability.com/blog/2016/3/16/jeff-dean-on-large-scale-deep-learning-at-google.html>

Machine Learning for Game Balancing - feasible as a research topic? Ask Charles Nicholas on Facebook.

- Big question: any public data sets for this?
- [www.arxiv.org](http://www.arxiv.org) for paper, [gitxiv.com](http://gitxiv.com) for source

At a for-profit level, privacy concerns become a priority:

- [https://en.wikipedia.org/wiki/Differential\\_privacy](https://en.wikipedia.org/wiki/Differential_privacy) is about making queries accurate while avoiding any PII. Notably it doesn't work well at small scale.

# General Tasks

Saturday, July 16, 2016 2:49 PM

- Bitbucket repo remotes are no longer valid now that they've moved to the private team; update remotes as needed.

# Dev

Thursday, July 28, 2016 5:29 PM

- PhysX 3 is open source and has been for a while now. Use that and not Bullet if possible, since Bullet's API is all over the place. ODE is also possibly acceptable?
- If you're going to do any multiplayer **and** you want large numbers of units (more than a couple hundred), there's a couple of options:
  - If player count is small (2-4?), you'll need deterministic lockstep, which means you need deterministic physics. There's no good, reliable way of doing this cross platform, but people have tried and you can look at their remarks: <http://gafferongames.com/networking-for-game-programmers/floating-point-determinism/>
    - **Important Metric:** How much bandwidth given some number of units?
  - If player count is large, you'll need a client-server system with interpolation. Lockstep is as slow as the slowest player. Again, blog entry: <http://gafferongames.com/networked-physics/snapshots-and-interpolation/>
- Binaural audio is really, really immersive. Not clear how good vertical or depth positioning sounds, but it sounds vastly different from just having 5.1/7.1. Main problem is that you have to configure for speaker or headphones, can't have a transformer that does both. Secondary issue is that you might need to make a transformer yourself if the available libraries aren't compatible.
  - Without this you basically can't make the game accessible.
- Make the game visually accessible? Is this even possible?
  - Implies that all important state needs sound cues:
    - Your ship
      - Velocity
      - Health
      - Weapons
        - ◆ On target/displacement from target
        - ◆ Ammo
    - Other ships
      - IFF
      - Position
      - Velocity (does position imply velocity?)
      - Health
      - Are they attacking (or give ordinance sound cues?)
    - Mission objectives
      - Objective succeeding/failing
      - Objective about to fail
  - A lot of those properties could be encapsulated by one sound and the distortions on the sound (sound type indicates IFF, binaural for position, pitch for health?)
  - How would you handle large numbers of entities in the space?
  - How would you handle collision warnings?

# Physical Scale

Friday, September 9, 2016 2:35 PM

- [NASA-STD-3001 VOL 2](#) spec: Humans can take ~3 seconds of 17g eyeballs in, which translates to 500 m/s delta-V. This can be considered this world's version of a "boost". We can take sustained accelerations of 4g, or  $39.2 \text{ m/s}^2$ . **Movement is on the scale of kilometers for strike craft at the very least**, but without something to dampen experienced acceleration it'll be very jousty: you boost boost boost to the target, hit, then boost boost boost away. There's very little space to change your mind since the initial approach forces any course correction to use up lots of time with more boosting.
  - This is raw g, before adding inertial dampening. How much does an actual fluid chamber dampen inertial effects?
  - Eyeballs out is a bit better at 3 seconds and vastly better at 1 second, but you'd experience rotational forces backwards which would be incredibly disorienting.
  - What are the caps for thrust at different size classes? Remember that all of this generates heat too.
  - **Is it possible for ships of one size to move at speeds expected one size lower (in exchange for huge heat/supply issues)?**
- <http://worldbuilding.stackexchange.com/questions/32549/attenuation-of-a-laser-in-space> thinks ~200km effective range for single large beam that generates similar effect as 1.3 PW laser array (<https://web.archive.org/web/20080614224504/http://newton.ex.ac.uk/aip/physnews.401.html#3>).
- Most likely basic ranges will be dictated by the range at which a laser turret can track and instakill a bomber; that in turn decides what weapon a bomber carries. The range and time to impact for the bomber's weapon then decides how much engine power can be dedicated to the bomber's attack run, and the time taken for the bomber to reach the launch point after enemy detection decides how quickly an interceptor must be able to move.

# Entity Classes

Friday, September 9, 2016 5:17 PM

- Ships (mobile)
  - **Important: Are interdictors something that only a dedicated ship can do?**
  - Strike craft. Do not have an interstellar drive.
    - Bomber. Attacks ships larger than strike craft.
      - Maximize damage.
      - Maximize *forward* agility.
    - Interceptor. Attacks bombers and other interceptors.
      - Maximize agility.
  - Subcapital. Have an interstellar drive and perform one specific role.
    - Artillery. Attacks structures.
      - Maximize range.
      - Maximize damage.
      - Minimize mass.
    - Defender. Protects an area from strike craft and missiles.
      - Maximize tracking speed.
      - Maximize one of the following:
        - ◆ Range
        - ◆ Agility
    - Destroyer. Attacks point defenders and artillery.
      - Multiple roles:
        - ◆ Sniper
          - ◇ Maximize range.
          - ◇ If needed, maximize *rotational* agility for fixed weapons.
        - ◆ Brawler
          - ◇ Maximize agility.
          - ◇ Maximize one of the following:
            - ▶ Armor
            - ▶ Damage
    - Light Carrier. Launches strike craft.
      - Minimize time to ingress for launched craft.
      - Minimize time to egress from combat zone.
      - Maximize hangar size.
      - In general you have no room to defend against enemy attack, so your only response is to run after dropping your ships and come back when the fight's over.
  - Capital ships. These all have point defense like a defender and do *one* extra role.
    - Siege Carrier. Launches strike craft and has point defense.
      - Maximize hangar size.
      - Minimize time to ingress for launched craft.
    - Dreadnought. Anti-subcapital like a destroyer and has point defense.
      - Doing both jobs makes the ship massive; it has to be a sniper.
      - Maximize range.
      - Maximize two of the following:
        - ◆ Agility
        - ◆ Armor
        - ◆ Damage
      - Being massive means slow dreads are vulnerable to artillery!
    - Classes that are probably bad ideas:
      - Combat Carrier. Anti-subcapital and launches strike craft.

- Maximize agility. Anti-subcapital role means weapons are either short ranged or are fixed. Means you need to...
    - Minimize mass, which means you need to...
    - Minimize hangar size.
    - Problem: What happens when this needs to fight a defender and a destroyer at the same time? Or artillery and a defender?
  - Siege Vessel (come up with better name!). Anti-structure like artillery but has point defense.
    - Problem: Why have the ship come close enough that it needs point defense?
- Supercapital ships. Have point defense and do two extra roles.
  - Having all these parts generates lots of heat, so now they're easily detected and can't operate quickly. Two options:
    - Focus on the payload, which makes you horribly slow in realspace at least.
    - Focus on the thrust, which makes you even easier to see and costs even more in supplies.
  - Classes that are probably bad ideas:
    - Siege Supercarrier. Anti-structure with carrier capability.
      - Problem: Suddenly has a minimum operation range (the anti-structure weapon's max range).
      - Problem: Anti-structure means it's not agile, but at the same time you're reducing range???
    - Combat Supercarrier. Anti-subcapital with carrier capability.
      - Problem: Everything with a siege supercarrier, and now the primary weapons probably have bad tracking since the ship's so big.
- Structures (immobile)
  - Each category can be represented by a station that has the given structures in it.
  - Industry
    - Power plants/collectors
    - Mines
    - Factories
  - Military
    - Defense towers
      - Being immobile means these things can have insanely high damage and ranges. If hooked up to an asteroid it has a large heatsink to dump into to make it even bigger, **so asteroids may be a strategic resource.**
      - Weapon limits are mostly down to tracking speed.
    - Barracks/Hangars
    - Strategy centers
    - Detection systems (radar, etc)
      - **Does FTL detection exist?**
  - Communications
    - Com relays. See BlueDot design info for this.



# Weaponry

Friday, September 9, 2016 5:17 PM

There's definitely going to be:

- Lasers
  - Good range.
  - At combat ranges, is a hitscan weapon.
  - Attenuates with distance!
- Missiles
  - Great, possibly best range...
  - But the delta-V is a problem.
  - Can carry all sorts of payloads, so it could be good for armor, for shields if that's a thing, or for EW.
  - Where it gets sensor data is also important, since if it's all onboard it may have trouble in a crowded environment.
  - Targets can also warp away if the missile takes too long!
  - Extra mass to the ship, so it may not get a lot of ammo at small sizes; big ships don't need to worry so much. How does this affect balance?
    - **How does losing the mass of the missile affect combat?**
- Railguns
  - Good range.
  - Many options for messing up armor.
  - Generates a lot of heat!
  - Rails take a beating launching payloads, may not have good fire rate.

There might be:

- Ballistics
  - Not definite since it's not clear if their effective ranges are large enough for any type of combat.
  - But would have much better fire rate than a railgun.

# How Warp Works

Friday, September 9, 2016 6:35 PM

# Electronic Warfare

Friday, September 9, 2016 6:39 PM

# Engine Milestones

Friday, September 9, 2016 11:52 PM

## Engine Subsystems

Highlight key:

- **Green** items have been completed.
- **Blue** items have an untested implementation.
- **Yellow** items are incomplete.
- **Magenta** items require more information before work can be done.
- Non-highlighted entries have not been worked on.
- Optional items are in *italics*.
- (Comments are in parentheses.)

### 1. **Platform Independence**

#### 1. Datatypes

1. (Sorta have this in the f32, i32, etc. types.)

#### 2. **OS Dependent Wrapper**

1. **File System.** Use existing library if possible.

1. **File Open/Close** (std::fs)

2. **Directory Enumeration** (std::fs)

2. **Timer.** Must be performance counter.

1. (Not really a good speed guarantee for this; crate chrono can do this, but is focused on time correctness. You will probably have to implement this yourself.)

2. Windows: QueryPerformanceFrequency()/QueryPerformanceTimer()

3. OSX: mach\_absolute\_time()

4. Linux: clock\_gettime(CLOCK\_REALTIME\_HR)

3. Input Device I/O (Raw Input). No existing library found.

1. Input API Specification

4. Supported OSes

1. Windows

2. *Linux*

3. *OS X*

3. **Threading System.** Use existing library if possible. May be OS dependent, may not. Very hard to tell right now.

1. (Rust appears to have a threading system; [see docs](#). Make a thread object with std::thread::spawn(), which takes an anonymous function of the format "move || {...}". Join the thread with [thread name].join.)

#### 4. **Graphics Wrapper**

1. Specification

1. Function Loader - if wrapper needs to load functions, do so before marking as ready.

2. Function Wrappers - renderer makes these raw calls and doesn't see the actual implementation.

2. **Supported Frameworks.** Use existing libraries if possible.

1. **OpenGL.** Either Glum or gfx-rs will handle this.

2. *DirectX*

5. Audio Wrapper. Check <https://github.com/RustAudio>.

6. Physics System/Wrapper. May need to hook to C++ library if none in Rust is viable.

### 2. **Core**

1. Memory Allocation
2. Module Startup & Shutdown
3. **Assertion System.** Use existing library if possible.
  1. (std::assert!() provides basic functionality with custom comment.)
  2. **Comments**
  3. Failure Location
  4. Failure File
  5. *Failure Function*
4. **Debug Logging.** Use existing library if possible.
5. **PRNG.** Use existing library if possible.
  1. (**Crate rand is supposed to handle this**, but it hasn't been updated in half a year. But then you really just need a Mersenne Twister, nothing cryptographically secure.)
6. **Math Libraries.** Use existing library if possible.
  1. **High speed functions:**
    1. Square root
    2. Power
    3. Logarithm
    4. Sin/Cos/Tan
    5. Arcsin/Arccos/Arctan
    6. (**Holy crap, the standard library just has it on the numeric type**; not clear how fast the implementation is though, so we need to consider implementing this ourselves.)
7. Strings & Hashed Strings. Use existing library if possible.
8. Engine Configuration
9. **Profiler/Stat Gatherer.** Use existing library if possible.
  1. (**Remotery can do this, and it has a Rust binding through remotery-rs.** Displaying in-game requires us to do some wrapping for our own implementation though.)
10. Object Handles & IDs. Intend a DoD design; this implies a component system and sparse arrays.
11. *Curves & Surfaces*
12. *Reflection*
13. **Serialization**
  1. Available via crate rustc-serialize.
14. *Localization*
15. *Async File I/O*
16. *Movie Player/Replay System*
17. *Debug Menu/Console*
  1. (Could just be a literal ~~lua~~ Squirrel interpreter.)
3. **Resource Manager**
4. **High-Level Input**
5. **Collision Detection/Physics** Try to use an existing library for the backend.
6. **Low-Level Renderer**
7. **Scene Graph**
8. **Front End**
9. **Gameplay Base**
  1. Game Flow System
  2. **Scripting**
    1. (Incomplete, see LeEK 1: "Scripting Notes". **Will likely redo with Squirrel.**)
  3. Static World
  4. Dynamic Object Model (Actor and Components)
  5. Agent System (AI hooks)
  6. Event / Messaging System

1. (Need to get this right the first time; just using a notification hub leads to a tangled mess.)
7. World Loading

# Graphics Wrapper

Saturday, September 10, 2016 12:59 AM

1. Function Loader
2. Wrapped Functions

## General

Tuesday, August 30, 2016 12:48 AM

- **DO NOT PLAY IN OPEN/NON-OP PRIVATE UNTIL OP IS OVER**
- **DO NOT SHOOT SEPP SHIPS/NPCS YET**

- Haul literal Biowaste to Walters in the op region (may not be in OPSYS, possibly Eleu?). Low demand cargo like this futzes with the controlling faction's control level.



# Possible Sothis/Ceos Replacements

Friday, August 26, 2016 10:48 PM

((17.1, 9.3, 0.0), ('Vodyakamana', 'Maruti', 'Wariangga')),  
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((17.2, 8.1, 0.0), ('Kamur', 'Purukuna', 'HIP 42174')),  
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((17.2, 5.8, 0.0), ('Aknango', 'Diabozo', 'Lumaragro')),  
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((17.2, 14.8, 0.0), ('Futeno', 'Muan Qingga', 'HIP 88595')),  
((17.3, 11.8, 0.0), ('Sochet', 'Col 285 Sector WE-Q d5-137', 'Argenoi')),  
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((17.3, 13.0, 0.0), ('Lozin', 'HIP 99139', 'Conven')),  
((17.3, 11.2, 0.0), ('Bokwala', 'HIP 39417', 'Lesovices')),  
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((17.5, 6.4, 0.0), ('Kurutis', 'HIP 13257', 'Hareg')),  
((17.5, 9.3, 0.0), ('Col 285 Sector AY-N b21-2', 'Alourok', 'Aegir')),  
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# BLU EUQ OI-W B43-7

Thursday, September 01, 2016 10:58 PM

# Empire Grinding

Monday, September 5, 2016 4:19 AM

- Aditi
- HIP 10716
- Quince

# The G 240-11 system has every surface material in the game.

Friday, September 9, 2016 9:04 AM

Although there's most likely more systems than this in the game that have every material, and other systems that have higher percentages of individual materials, I just thought I'd share this here for the sake of convenience, so you have a system you can go to if you don't know where to find a specific material. The planet/moon with the highest concentration of a material has bold text, and if you at some point need to restock SRVs, the outpost orbiting A5 has restock facilities, but no large landing pad. Very common materials aren't included since all of them are always present on every planet, but if you need them, the planets with the highest concentration of them are: Carbon on A5A (23.5%), Iron on A1 (37.1%), Nickel on A1 (28.1%), Phosphorus on A5A (15.1%) and Sulphur on A5A (28.0%). A1 may have a higher concentration of Carbon, Phosphorus and Sulphur, but they show up as bugged at 0.0% on the system map.

## Common

Chromium: **A2 (9.5%), A3 (9.5%)**, A4A (8.7%), A5B (5.5%), A5C (5.6%), A5D (5.5%), A6A (5.5%), A6C (5.5%)

Germanium: **A4A (5.6%)**, A5A (3.7%), A5B (3.5%), A6C (3.5%)

Manganese: **A1 (15.3%)**, A2 (8.7%), A3 (8.8%), A6A (5.1%), A6B (5.1%), A6C (5.0%)

Vanadium: **A1 (9.1%)**, A3 (5.2%), A5A (3.2%), A5D (3.0%)

Zinc: **A2 (5.7%)**

## Standard

Arsenic: A5C (1.6%), A6A (1.6%), A6B (1.6%)

Niobium: **A1 (2.5%)**, A3 (1.4%), A4A (1.3%), A5C (0.8%), A5D (0.8%), A6A (0.8%)

Selenium: A4A (2.9%), A5B (4.2%), A5C (4.2%), A5D (4.2%), **A6B (4.3%)**

Tungsten: **A3 (1.2%)**, A5C (0.7%), A6A (0.7%)

Zirconium: **A1 (4.3%)**, A5A (1.5%)

## Rare

Cadmium: **A5A (1.0%)**, A5B (0.9%), **A6B (1.0%)**, A6C (0.9%)

Mercury: **A2 (0.9%)**, A5D (0.5%), A6B (0.5%), A6C (0.5%)

Molybdenum: **A1 (2.4%)**, A2 (1.4%), A5A (0.8%)

Tin: **A4A (1.2%)**, A5B (0.7%)

Yttrium: **A2 (1.3%), A3 (1.3%)**, A6A (0.7%)

## Very rare

Antimony: **A5C (0.8%)**

Polonium: **A1 (1.1%)**

Ruthenium: **A5D (0.8%)**

Technetium: **A5A (0.5%)**, A5B (0.4%), A6B (0.4%)

Tellurium: **A4A (1.4%)**, A6C (0.9%)

In case anyone's wondering, A1 is a 1.2 G metal rich planet 9.3 Ls from the star. A2 and A3 are close binary HMCs at 1.1 and 1.0 G respectively, located 27 Ls from the star. The rest consists of sub-0.1 G rocky and icy moons orbiting three gas giants. A4 is 1200 Ls from the star, A5 (has outpost with restock) is 1800 Ls and A6 is 2300 Ls. All planets and moons have pristine resources, and the terrain is relatively flat on most of them.

From <[https://www.reddit.com/r/EliteDangerous/comments/51y0a7/psa\\_the\\_g\\_24011\\_system\\_has\\_every\\_surface\\_material/](https://www.reddit.com/r/EliteDangerous/comments/51y0a7/psa_the_g_24011_system_has_every_surface_material/)>

# Backup: L.A

Monday, August 29, 2016 11:24 AM

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