Interview Report

Alex Heilgeist

Goals and Context

The interview I conducted was designed for the purpose of gaining better understanding of the usage cases and functionality of the XMC application. Primarily I was interested in seeing what features of XMC were most helpful. Additionally, knowing in what settings the application is used will help to design an effective application which has the features required for the platform it is built on. As the end goal of this project is to develop a mobile version of the XMC application, deciding which features would best translate to a mobile platform is an important step. Ideally, in analyzing the strengths and weaknesses of the current system allows for a better utilization of limited screen space of a mobile system, and helps prioritize the essentials of the program.

Previously, I began with an observational period in order to determine the component features of the XMC Application. My finding were generally that of informational redundancy, clarity of information, and useful report tools for managerial level decision making. The results of the interview phase produced similar results, detailed below. Overall, Many of the design decisions in the XMC System work effectively, thus a major overhaul of the interface is likely unnecessary, and many components of the application can be emulated in a mobile version.

Plan

My interview was conducted with several questions, the design and rationale of which will be detailed here. Additionally, the design of the Interview utilizes the semi-structured technique. While I had pre-prepared questions, I adapted to the interviews through asking clarifying questions, or asking participants to expand upon their answers. I did not wish to conduct a structured interview, as there may be questions I have not considered asking, which a semi-structured interview allows for me to ask. Conversely, a fully unstructured interview would make it difficult to reliably ask the questions I am trying to get answered.

Question One was designed to help me develop a sense of how the XMC application is incorporated into a typical day's workflow. Specifically, I asked my subject to describe how the XMC Application is used in his and others' daily routines. This question was meant to illicit a sense of how the application is used, who uses it, and what functions it serves.

Question Two dived deeper into the questions of how effective of an application XMC is. Specifically the question was asking in what ways is XMC most useful for saving time or labor. This question gives me a more specific sense of the application's strengths and what focus its functionality should be designed around.

Question Three probed my subject about faults he has found with the current XMC system. The question read 'When using the XMC application, which aspects do you find are more difficult to use than you would like?', and mainly focused on finding small nitpicks and annoyances. Finding these problems will allow for better design in the future.

Question Four was designed to give me insight as to what features of XMC are essential and should remain untouched. I want to be able to know where not to mess, with the ideal of avoiding creating a worse product than the current application.

Question Five asked how easy the XMC application is to introduce to new users. I wished to get a sense of if the application only worked well once you got used to it, or if it is easy to pick up intuitively. This sort of question can help me determine how readily apparent certain functions are, versus how much explanation functions require.

Question Six delved a bit into specifics. I noticed during the observational phase that certain displays tended to be under-labeled. I wished to ask my subject whether labels would be helpful or simply clutter. This question overall helps gauge the degree of information density which is useful to the user.

Question Seven was a general catch-all question for feature ideas. Asking, 'Are there any features you believe are missing from XMC?' allowed me to view the application as a whole instead of in parts. This question asked for any gaps in the functionality of the application rather than simple annoyances.

Question Eight was designed to get a sense of expectations for a mobile version of XMC. This question primarily is for deciding which features to prioritize in a mobile version, and the kind of usage scenarios a mobile application would encounter.

Finally, Question Nine asked my subject if he had any comments yet to be addressed, in an attempt to further collect any data I may have missed or been unable to properly articulate into a question, but my subject would feel was relevant.

Results

Typical usage and benefits of XMC

My subject described his position as an administrator in the maintenance division. In his day to day work, the XMC application is primarily used in order to check the status of connected machines, such as looking for idle statuses or hardware failures. The features of XMC are primarily used in an uptime-optimization capacity, where users can look at large chunks of time, and determine when and for how long machines were in various states. By looking at the distribution of downtime, it can be determined what the greatest contributors to downtime are, which can then be targeted as areas of improvement appropriately. Additionally, the software tracking is more reliable than relying on on-site operators to self-report any problems. My subject explained that often, an operator will pick up how to quick common issues without making a full maintenance report. XMC monitoring allows for accurate monitoring that does not rely on complaint humans. Additionally, errors during off hours can be quickly spotted, and the effect of fixes can be quickly monitored by comparing pre and post-fix error logs. Email notices round out the functionality of XMC by allowing for prudent alerts. Overall, the benefits of XMC are in preventative rather than reactive maintenance.

Political Pushback

The implementation of XMC has been met with various political obstacles. Primarily, the resistance comes from two factors. Firstly is the upper-management implementation of competing software, and the clash of that larger scale vision with the smaller scale XMC product. This resistance does not appear

to be an issue with and deficiencies of XMC Products, but rather than different focuses between competing products, as well as simple top-down interference.

Secondly is pushback from older workers. Initially, XMC was seen as a piece of threatening monitoring software, which could be used to monitor employee performance and be used for targeted discipline. My subject explained that he believes this kind of resistance has been reduced greatly with the advent of smartphones and social media, which tend to have even much more intrusive monitoring and data collection capabilities, desensitizing workers to possible XMC based data collection. Additionally, a factor in the resistance is that of older workers used to routine and older methods. My subject explained that many older workers practice reactive maintenance, and will often not preemptively fix or choose to monitor machines. Without large incentives to start, older workers will often not incorporate XMC into their 'time-tested' methods.

Application Deficiencies

My subject pointed out several areas of the XMC application which caused confusion or difficulty in their use. Firstly was an issue with the radio buttons for in the report screen. The report screen allows the user to select different views of the same type of data. The three options presented are a graph, a pie chart, and a table, all showing different views of the same sort of information. Additionally, a set of calendar fields are used to select the time period to be viewed. Problems arose when my subject attempted to change between the different information views while having previously outlined a range of time. Changing views would reset the time previously imputed, and it was difficult for my subject to remember the proper order of interactions to get his desired result.

A second annoyance was the initial clutter and overload of information when selecting data from the KPI Box. My subject described that he wished for the data to be initially unselected, rather than selected. Adding memory of selected data over view changes was also a suggestion.

Another problem was the inability to run multiple reports simultaneously. My subject expressed that he felt generating reports for each machine individually was tedious and clunky.

Occasionally, a large, obtrusive error box would appear, stating 'Disconnected from server'. While usually remedied quickly, my subject expressed he felt the error was to obvious, and that he would dislike if the error was to appear when de was demonstrating the software to a potential user, or upper management.

An additional issue I observed was in the maximum results displayed in the reports screen. My subject explained that he was unable to get all the reports available, and had resorted to exporting multiple subsections of a single report then combining them in excel. Upon inspection, I noticed an option to increase the number of results displayed, but this option was not readily apparent to my subject, preventing its usage as a feature.

It was also mentioned multiple times over the course of the interview that an increase in labeling flexibility would be valuable for the program. Mainly, this was manifested in the desire to rename tabs and other labels to better align with internal company standards.

Additional Findings

The above findings were not the full extent of answers I received, but rather the best actionable data I gathered. Some answers to my questions indicated that my subject did not wish to see some features change, or that most features should be ported to a mobile application. As these answers do not represent a change from the current application design, I have chosen to include them as their own separate section.

Discussion

For understanding these results, It is important to note that my data only came from a single subject. This single subject is at a managerial level of the Boeing Maintenance department, and thus may not be representative of all users of XMC systems. Unfortunately, due to the difficulty of multiple interviews, this is the best data I am able to collect. In an idea situation, I would interview multiple people at multiple hierarchical positions from multiple companies in multiple departments. That being the case, I believe my single interview was very informative and has provided a great degree of quality data. Ideally the next phase of research, the Survey phase, will allow for a broader range of users, and a more representative idea of how people use XMC.

I am quite satisfied with the questions I chose to ask. Some of the questions about how XMC is used in a typical work day were very informative and afforded a great deal of insight to me. In my questioning, I attempted to avoid asking leading questions which would suggest certain solutions over others. I believe I have achieved this goal, and instead have a good balance of subject-generated suggestions, and observations of problems which would be turned into solutions later.

Implications for design

Desktop

As I have researched the desktop implementation of the XMC System, the data I have collected would be of most use in fixing problems in the desktop XMC application. The data I have obtained have led me to a few points where quality of life improvements could be implemented. Primarily, these places are in the transitioning between data views, and the effect the transitions have on calendar dates, as well as confusing implementation of maximum shown results in the log view. Additionally, I would recommend greater customization options and the addition of modifiable labeling in order to allow users to better fit XMC's labels to company terminology.

Mobile

The focus of this research overall is to design an effective mobile version of the XMC application. The data I have collected has allowed me to find the most important aspects of the XMC application's functionality, and get a good idea of how a mobile application may best implement certain features. Specifically, I believe that the status and alerts systems are the most important aspects for a mobile system. Generating and exporting logs tends to not be useful on mobile devices, so focusing on quick at-a-glance viewing of machine status, as well as receiving mobile notifications to certain errors, appears to be the best approach.

Going Forward

The next step is user surveys. With the surveys, I hope to reach a broader group of users than I could with my single interview, and hopefully determine If problems I observed in my interview are widespread, or if problems exist which I was unable to notice during my interview. I currently have pure observational data, and a few anecdotes and stories from the interview study. My main problem at the moment is a lack of repeatable data, and a lack of a large quantity of data on users' habits. Any study typically requires large numbers of participants to get an answer that is consistent. Conducting a survey using questions designed through my observational and interview data should allow me to get concrete quantitative data from a larger number of people.

Appendix 1

Q1: Could you describe how you use the XMC Application in your daily routine?

As a admin maintenance, morning- open application, check status, look for unconnected machines, failures. Then calls diferent server, for another window. Server gets turned off occasionally(Hardware)

Q2: In what ways is XMC most useful for saving time or labor?

As maintenance, expose equipment failures, look at big chunk of time, take action. Getting actionable information, can see faults, etc, bring up to maintinence to fix. Some won't run, but others need reset, but does not fix problem. Fault shows 1 min, but reset 10. Needs total reset, redoes work. Tells errors that are not called in.

Tell is failures occur overnight after repairs. Enjoys email capabilities.

Predictive and preventive maintenance is better than reactive maintenence

Production:

Time analysis, see breakdown of how machine time operates

Time to build part a lot less than rolling out, can look at time breakdown, and sight what is happening during unplanned downtime, idle time, setup time, etc.

--People who dislike product

Resistance over 10 years fell off. Initilly seen as threatening, monitoring employee performance. Resistance fell off, because other technology already tracks, data monitoring.

Political pushback, competing software(GE)

Old school maintenance waits on tickets, not software. Not connected to computerized maintenance management system (CMMS)-

Problems with adoption, culture, not many incentives

Needs way to rename tabs – greater customizable abilities

Q3: When using the XMC application, which aspects do you find are more difficult to use than you would like?

Changing radio buttons resets time

Select things wanted in KPI rather than don't want, memory of wants

Have to run report for every machine, need all machine reports. Grouping?

Disconnected from server errors

Maximum results changer is not very visible, causes need to workaround

Q4: Is there an XMC feature you feel is very vital, and does not need changing?

Everything,

Q5: How easy do you find it to introduce XMC to new users?

Very easy, compared to others. 90% of thigs wanted. Don't need long training. Just people who ignore it have problems.

Q6: Would an increase in labeling of functionality help your experience or clutter the window?

Tab Issues, Like Color coding, dislikes busyness of shift bars. Dislike time clunkiness, bad time box selection, odd values received.

Direct labeling not neccissary, may be useful

Part program name means nothing,

Lookup table or custom labeling

Q7: Are there any features you believe are missing from XMC?

Duration of Alarms

Pie Chart of Alert Distributions, NOT combo alerts, idle, maintenance

Subscribe to any alert from any machine

Q8: When would you expect to use a mobile version of XMC?

Machine status most important, reporting.

Pacer

Alerts, notifications

Q9: Are there any other comments about XMC you feel have not been addressed?

Competition: GE Prophecy

XMC gets lots of details, others don't. Meaningful data is important.

Others have a plant-scale view. Process monitoring.

Hire 1000 people