Sprint Zero Return Brief

THEM - Typed HTML5 Evaluation Machine

Carl Hattenfels
Scott Heiner
Shen Yong Lau
Robert Meyer
Brendan Miller
David Uebergang

August 7, 2013

Return Brief

Our team plans to implement a web based application that allows users to evaluate HTML5 files and entire website structures. This brief was provided by Lorna MacDonald, the course co-ordinator of the University of Queensland (UQ) course "Introduction to Web Design" (DECO1400). Specifically, this application will be utilised by the students of that course, providing them with an application to check the validity of their files. This external factor, however, will have little bearing on our final product, as Lorna has allowed us freedom in how we choose to implement her specification. This application aims to provide an easy way for students to check their code quickly and efficiently, and the web application allows for this to be conducted independent of the user's platform. However, the use of this application is broad, and could be utilised by anyone needing verification of HTML files and websites to high standards.

The application will analyse the HTML content of individual pages and determine how closely the file's style conforms to "best practice" criteria. The common issues this program will check for are:

- Structural / syntactical
  - Multiple instances of singular tags - html, head, body, footer
  - Incorrect page structure (html, head, body, footer - where tags are missing or in the wrong order)

  - Form elements not being contained in a form object
  - Failure to close tags that require a closing tag
  - Incorrect nesting of tags - resulting in overlapping html tags
  - Incorrect table structures - cells not in rows, different numbers of cells in rows where colspans are not specified
  - Missing title tag in head
  - Missing required attributes (src for img, href or name for a, href for link etc)
  - Use of short tags - self-closing tags not having forward slash
  - Use of PHP in a html file (that is, not using php extension)
  - Form elements
    * incorrect or misspelt type attributes for inputs
    * missing value attributes,
    * radio inputs with the same id,
    * inputs missing name attribute - causes issues when accessing via JavaScript or PHP

- Deprecated elements:
  - Use of frames
  - Use of deprecated presentational tags (b, i, small etc)

- Accessibility:
  - Form elements not having labels
  - Missing alt tags on images - accessibility standards not followed

- Poor practice/Miscellaneous:
  - Using tables for layout
  - Semantic issues - multiple H1's, incorrect use of headings
  - Multiple elements with the same value for the id attribute - causes issues when they begin to work with JavaScript and the DOM.
  - Special characters used or non-ASCII character used.

Users can also upload zipped files of entire websites that the application checks for correct files linkage. The application will be able to recognise:

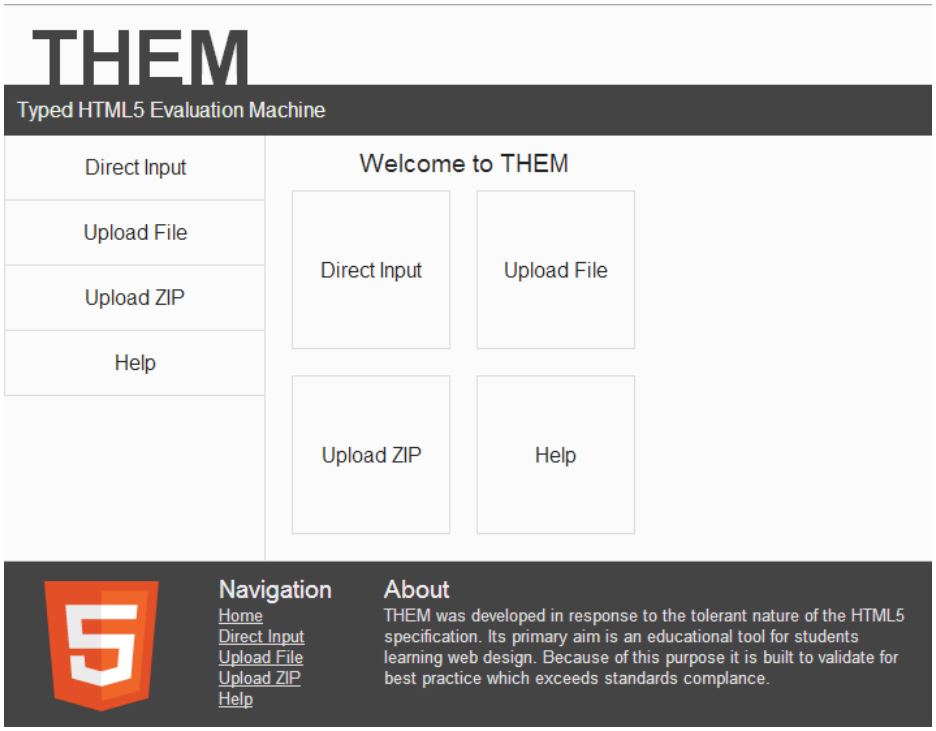
- Incorrect linking to local files - images, CSS, JavaScript and other HTML files. This could be due to files being in a different location to the link specified or due a mismatch in the case used in the filepath. In this case, the application will look into the files provided and give a possible correction.

- Presence of an index.html file. This is something that students regularly forget which causes issues when they publish to a web server.
- Cleanliness of file structure - placement of CSS files into a CSS directory, of image files into an images directory etc.

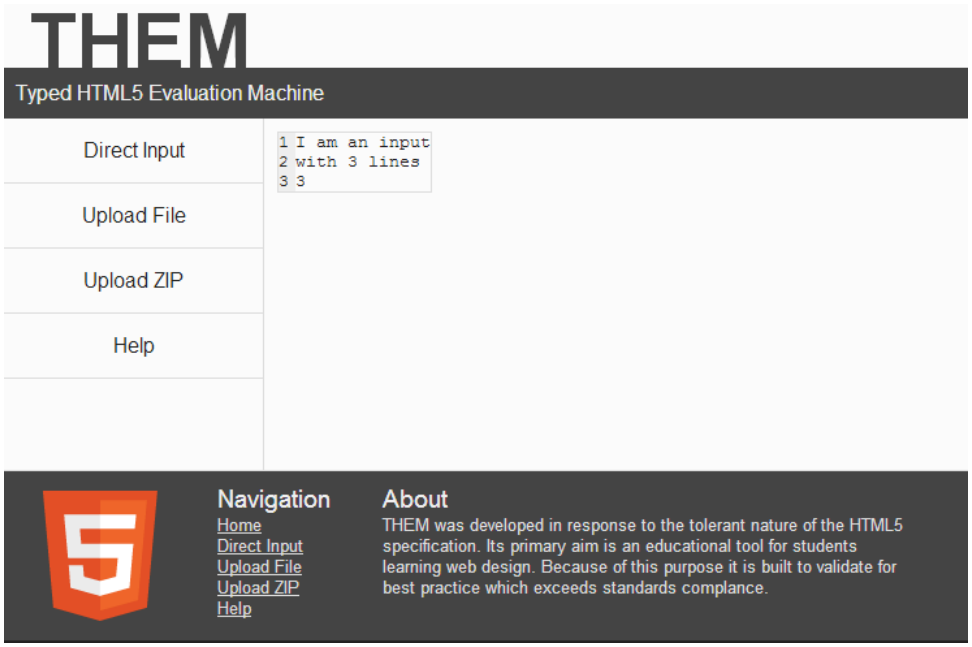
The application will utilise HTML5, CSS, PHP, as well as Python for parsing the files. The Python program locates the errors of the uploaded files and returns a JSON object (through JSON-RPC) which the website parses and displays to the user. Javascript will be utilised to provide more detail - when the user clicks on an error, it will expand to reveal more information about that error. For the duration of development, it will be hosted on a personal server, but after development may be placed on a UQ web server. These constraints make it feasible for us to develop this application, based on the team's knowledge in these languages.

Two scenarios where this application will be utilised are validation of individual files and validation of websites. In the first case, a typical user of the application navigates to the website before clicking either "Direct Input" or "Upload File". On the Direct Input page, the user can copy in a single page of HTML for the program to verify, while on the Upload File page, the user can select multiple HTML files to be uploaded and validated. For validation of websites, the user navigates to the website and then selects "Upload ZIP", after which they may upload a zip file of their website for analysis.

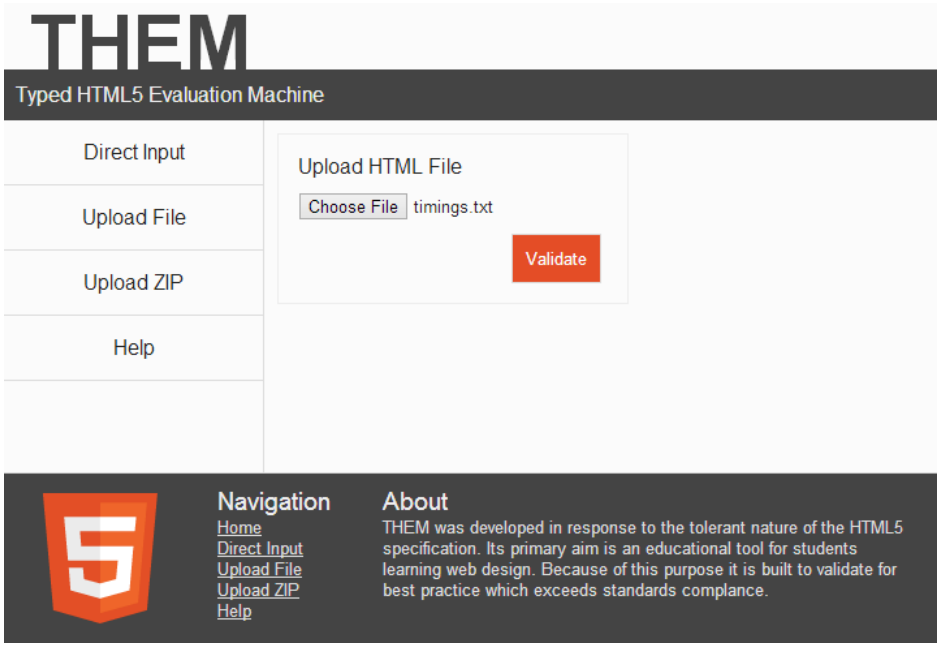
To show our team is capable of implementing this solution, we have created an early prototype of the web application. This prototype can be viewed at http://underwaterfall.com.

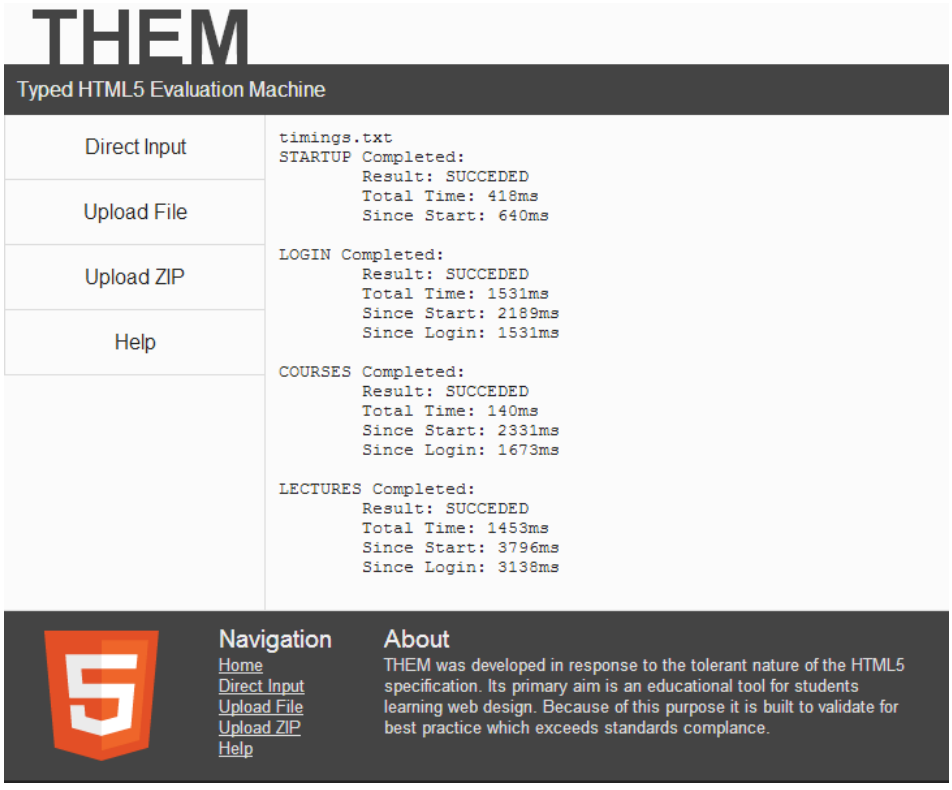


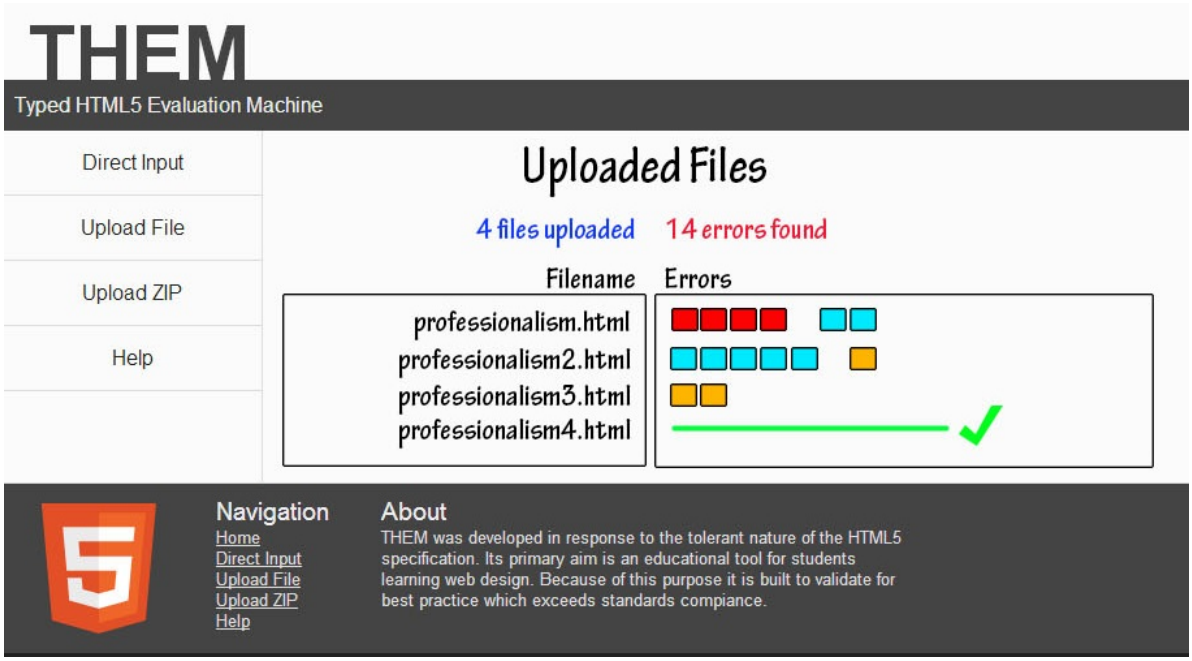
We have connected the website to a Python program via JSON-RPC, such that when a user types some text into the form provided on the "Direct Input" page, they are sent to a page which returns what they wrote, along with how many lines they sent (provided by the Python program). This can obviously be extended to any parsing of the text using Python, which is the focus of the application.



Also, uploading a file or a zip will currently return information about that file or zip, but in the future will display information about the errors in the files.


THEM
Typed HTML5 Evaluation Machine
Direct Input
Upload File
Upload ZIP
Help
Upload HTML File
Choose File
timings.txt
Validate
Navigation
Home
Direct Input
Upload File
Upload ZIP
Help
About
THEM was developed in response to the tolerant nature of the HTML5 specification. Its primary aim is an educational tool for students learning web design. Because of this purpose it is built to validate for best practice which exceeds standards complance.


THEM
Typed HTML5 Evaluation Machine
Direct Input
Upload File
Upload ZIP
Help
timings.txt
STARTUP Completed:
Result: SUCCEDED
Total Time: 418ms
Since Start: 640ms
LOGIN Completed:
Result: SUCCEDED
Total Time: 1531ms
Since Start: 2189ms
Since Login: 1531ms
COURSES Completed:
Result: SUCCEDED
Total Time: 140ms
Since Start: 2331ms
Since Login: 1673ms
LECTURES Completed:
Result: SUCCEDED
Total Time: 1453ms
Since Start: 3796ms
Since Login: 3138ms
Navigation
Home
Direct Input
Upload File
Upload ZIP
Help
About
THEM was developed in response to the tolerant nature of the HTML5 specification. Its primary aim is an educational tool for students learning web design. Because of this purpose it is built to validate for best practice which exceeds standards complance.



The above is an initial digital prototype of the planned "Uploaded Files" page. It shows a clear view of the number of errors and types of errors, and allows users to click on the name of files to delve further into the errors contained in their code.

Quote

Work Breakdown

TASK	DOUBLED HOURS
Initial Upkeep	
Server Set-Up	2
Library Searching	2
Python Familiarisation	4
HTML Familiarisation	4
PHP Familiarisation	4
Initial Charter Documentation	4
Design Mockups	6
Profile Scoping	14
	40

Implementation	
Front End	
Upload Page	
HTML/PHP	2
Javascript	2
Direct Input Page	
HTML/PHP	2
Javascript	2
Single File Upload	
HTML/PHP	2
Javascript	2
Zip File Upload Page	
HTML/PHP	2
Javascript	2
Help Page	
HTML/PHP	2
Javascript	2
Errors/Warnings Overview Page	
HTML/PHP	6
Javascript	6
File Structure Overview Page	
HTML/PHP	4
Javascript	4
CSS (Sitewide)	20
	60
Back End	
Python JSON-RPC Server Functionality	8
Python HTML5 Parsing Functions	
StructuralErrors	20
Syntactical Errors	60
Deprecated Elements Errors	10
Accessibility Errors	10
Poor practice/Miscellaneous Errors	20
Documenting Error Messages	10
File Structure Parsing (Python)	40
Unzip Folder Structure (Python)	20
PHP JSON-RPC Functionality	8
Database Setup	4
Database Temporary File Storage	8
	218

Testing	
User Testing	
Initial Website Navigation	10
Understanding Errors	20
Understanding Multiple Files	30
Understanding File Map	40
Help Page Testing	6
	106
Functional Testing	
Uploading Files	8
Error Highlighting and Display	24
Multiple File Uploading and Display	16
Unzipping Files	24
Display of File Map	40
General Website Functional Tests	20
	132
Documentation	
Sprint Zero Return Brief	12
Updated Test Plan	12
User Guide	20
System Installation Guide	10
Final Report	30
Marketing Report	6
	90
Marketing	
Marketing Scoping	10
Completing Marketing Materials	6
	16
Total	662

Supplementary Costs and Total Cost

The only supplementary cost related to this project is server hosting costs, and possible maintenance in the future. In general, this is an ongoing, but inconsequential cost (about $10/month for hosting, specifically, with variable rates for maintenance decided by the university themselves). We expect UQ to provide this server space. At the costing rate of $50/hour for a project manager and $35/hour for everyone else, the total cost of this project comes to $24,820.

Risk Analysis

A project of this nature brings with it some inherent risks. The first and inevitable risk is related to the heavy workload from other subjects during the semester. This workload may influence the work progress of the team members. Consequently, the final product might not meet the client's expectations or even achieve our own benchmark. In order to ease the tension and pressure of every member, the distribution of task allocation and frequency of team meetings has been considered thoroughly. For each job task, there will be at least two people assigned to not only distribute the work but ensure the task can still be completed even when one person is busy. Meetings plays a crucial role here, since this task description and distribution will be discussed at these events. In addition, the project manager will also work as a mediator between members in order to fine-tune the different jobs carried out between the team members such as programming, user interface and documentation.

The difference in our team members' understanding of HTML5 and the understanding of the target audience is another potential risk. It involves the knowledge gap between the creators and those who learn from it. In this case, it is likely that we might create a tool that cannot be understood by the target audience but does meet our client's basic expectations. For instance, the presentation of errors and types of errors the users encounter may be confusing to interpret. Therefore, our project manager has ensured our production timeline involves necessary collaboration with not only our client but also users along the way. This will be covered in more depth in the next paragraph.

Whilst on the topic of our application's compatibility, it is also challenging for our team to deliver a final product that validates HTML5 code completely and efficiently. Since DECO1400 has not yet included HTML5 in its curriculum, we are reliant on previous assignments (which are based on HTML4) to use in our functional testing. In this instance, the worst case scenario would be that the tool issues incorrect errors to end users. In order to mitigate this risk, working closely with our client is necessary. We plan to utilise not only past examples but newer examples provided by our client and examples we personally program. As previously mentioned, our team also plans to conduct user testing in both a laboratory environment and an open area environment. Through consistent user testing of this nature, we can better improve the compatibility of this application with regards to the HTML5 standard.

There is a chance for conflict of ideas, as well as the chance that a large number of concurrent ideas are proposed to solve the same task. This risk most likely can delay our success and progress. Therefore, we have implemented a voting system within our team as well as included policies behind the voting system to ensure these conflicts do not arise. For example, the project manager will have the final decision on the matter if any decision reaches a tied vote. Furthermore, all

voting will be most likely be conducted through Facebook, as this is our primary communication method beyond phone messaging and face-to-face meetings.

Supplementary Materials

As previously mentioned, the prototype can be viewed at http://underwaterfall.com.

Transcripts of Client Meetings

Initial Client Meeting

From: Lorna Macdonald [lorna@itee.uq.edu.au] Sent: 29 July 2013 17:54 To: Mr Brendan Miller Subject: Re: HTML Learning Tool - DECO3801

Hi Brendan, That will work fine. See you then. Cheers, Lorna

On 29/07/2013, at 4:38 PM, Mr Brendan Miller [brendan.miller@uqconnect.edu.au] wrote:

Ok, how about 11-12 on Thursday?

Thanks, Brendan

From: Lorna Macdonald [lorna@itee.uq.edu.au] Sent: 29 July 2013 16:36 To: Mr Brendan Miller Subject: Re: HTML Learning Tool - DECO3801

Hi Brendan, Unfortunately not - have a meeting then. Cheers, Lorna

On 29/07/2013, at 4:23 PM, Mr Brendan Miller [brendan.miller@uqconnect.edu.au] wrote:

Hi Lorna,

Are you free this Wednesday between 9-10 for a meeting with the team?

thanks, Brendan Miller

From: Lorna MacDonald [lorna@itee.uq.edu.au] Sent: 29 July 2013 09:51 To: Mr Brendan Miller Subject: Re: HTML Learning Tool - DECO3801

Hi Brendan, I won't be in today due to unforeseen circumstances. Please accept my apologies. I'm happy to reschedule for later this week. Cheers, Lorna

Lorna Macdonald Associate Lecturer - School of Information Technology and Electrical Engineering The University of Queensland St Lucia, QLD

Ph. 3365 3335 — E. lorna@itee.uq.edu.au

On 26/07/2013, at 2:24 PM, "Mr Brendan Miller" [brendan.miller@uqconnect.edu.au] wrote:

Hi Lorna,

Excellent. We'll see you then.

Thanks, Brendan Miller

From: Lorna Macdonald [lorna@itee.uq.edu.au] Sent: 26 July 2013 13:17 To: Mr Brendan Miller Subject: Re: HTML Learning Tool - DECO3801

Hi Brendan, Certainly, I have a meeting that finishes at 2, so if I'm a little late that's where I'll be. My office ok? 78-325 Cheers, Lorna

On 26/07/2013, at 12:09 PM, Mr Brendan Miller [brendan.miller@uqconnect.edu.au] wrote:

Hey Lorna,

Can we meet with you this coming monday (29th) at 2 for an hour? I can organise a space if your office doesn't suit, as our team is 6.

thanks, Brendan

From: Lorna Macdonald [lorna@itee.uq.edu.au] Sent: 26 July 2013 09:05 To: Mr Brendan Miller Subject: Re: HTML Learning Tool - DECO3801

Hi Brendan, Glad to hear it. Best times for me are Monday after 2pm, Tuesday after 3, Wednesday before 11 and after 3, Thurs mornings and Friday mornings. Cheers, Lorna

On 25/07/2013, at 4:30 PM, Mr Brendan Miller [brendan.miller@uqconnect.edu.au] wrote:

Hi Lorna,

I'm writing to you on behalf of my 3801 team. We're going to be building the html learning tool. We're discussing the design brief amongst ourselves and we'll be in contact when we want to discuss it in greater detail. Are there certain times of the week that suit you more than others for consultation?

thanks, Brendan Miller

Return Brief

Wednesday, August 07, 2013 9:27 AM Lorna Macdonald [lorna@itee.uq.edu.au] To: Mr Scott Heiner

Hi Scott, I'm around until 12. Cheers, Lorna

Wednesday, August 07, 2013 9:15 AM Mr Scott Heiner [scott.heiner@uqconnect.edu.au] To: Lorna Macdonald

Hi Lorna,

Is there any time today before 1pm when you're free? I wanted to pass the return brief by you before we submit it. Sorry for the late notice on this.

Sincerely, Scott Heiner