

# Critical Needs Request: May 2019 - Ally

## Description

The Accessible Technologies team in TLOS recommends **full funding** for Blackboard Ally, an LTI integration within Canvas. Ally provides feedback to instructors for improving course accessibility and fostering proactive accessibility by design. Upon enrolling in a course, students have independent access to alternative accessible formats, reducing the institutional accommodation burden. At the institutional level, on-demand reports are available regarding campus-wide, college, and course-level accessibility of content within the LMS. These capabilities will inform targeted improvements in digital accessibility across **all campuses** of the university.

Internally, Ally directly supports the TLOS mission by fostering faculty digital fluency and developing inclusive digital learning experiences for traditional, distance, and hybrid courses. A fully scaled implementation of Ally would contribute to an increase of the percentage of faculty using Canvas to deliver course-related materials. It is anticipated that the ease of use and comprehensive solution offered to those faculty who use Ally will be a significant motivator. Lastly, Ally directly supports IT through its alignment to WCAG 2.0 AA, central to IT Policy 7215, and increases the university's success rate of certifying the accessibility of online courses.

## Cost

Tables 1 and 2 outline the costs associated with different funding models for Ally, one based on a 5-year contract and one based on a 3-year contract. These prices assume the contract length as well as a contract completed and signed prior to June 27, 2019. A further description of what each funding level would contribute is included after the tables.

Table 1. 5-year contract annual cost (AY 2019-2023)

	2019	2020	2021	2022	2023
Minimally Funded	/	/	/	/	/
Partially Funded	/	/	/	/	/
Fully Funded	/	/	/	/	/

Table 2. 3-year contract annual cost (AY 2019-2021)

	2019	2020	2021
Minimally Funded	/	/	/
Partially Funded	/	/	/
Fully Funded	/	/	/

1. Minimally Funded (2,000 - 4,000 student enrollment):
  - a. Institutional Impact: Gives Accessible Technologies (AT) data to develop targeted

- improvements in training and outreach.
    - b. Faculty Impact: approx. **30 to 100 faculty** per year provided access to accessibility training and support needed to engage in LED course design and certification. It also supports ongoing partnerships with the University Libraries to remediate inaccessible documents. Any remaining seats could be made available to faculty upon request up to seat limit.
    - c. Student Impact: approx. **4000 students** would have direct access to request alternative text through enrollment in select courses (beyond SSD accommodations)
  - 2. Partially Funded (8,000 - 15,000 student enrollment):
    - a. Institutional Impact: In addition to AT data driven training and outreach, we can do targeted improvements to courses within a single degree program.
    - b. Faculty Impact: approx. **90 to 300 faculty** supported through TLOS efforts as well as partnering with a specific degree program, such as MIT, to improve accessibility across the curriculum and thereby increase overall enrollment in the program.
    - c. Student Impact: approx. **15,000 students** would have direct access to request alternative text through enrollment in select courses and programs (beyond SSD accommodations)
  - 3. Fully Funded: (25,000 - 50,000 student enrollment):
    - a. Institutional Impact: Proactively demonstrates the university's commitment to Universal Design, meets our needs to **continuously assess our compliance** with IT Policy 7215 and deliver tools appropriate to **support institutional accountability**. Additionally, it aligns with existing work of the Campus Accessibility Working Group (initiated by Dwayne Pinkney) and will drastically reduce Virginia Tech's risk of OCR complaint.
    - b. Faculty Impact: **8,000+ faculty** supported through TLOS efforts as well as partnering with a specific degree program, such as MIT, to improve accessibility across the curriculum and thereby increase overall enrollment in the program.
    - c. Student Impact: approx. **32,000+ students** would have direct access to request alternative text through enrollment in any courses (beyond SSD accommodations)

## Timeline

Implementation is dependent on the scope of deployment. The Accessible Technologies team will be responsible for facilitating the creation of all documentation, training, and promotional material. Minimal funding would require little to no additional effort since it does not increase our capacity beyond the pilot investment.

Table 3. Implementation Timeframe

	Minimally funded	Partially Funded	Fully Funded
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TLOS: Learning Systems Administration	N/A	5 - 10 hours	1 hour
Support and Documentation Development	N/A	2 - 5 hours	5-7 hours
Accessible Technologies	N/A	15 hours	20-30 hours

## Risks

There is little to no risk associated with moving forward with Ally; relevant FERPA and security reviews are on file. The risk of not moving forward with Ally leaves the university open to legal complaint, places an undue burden on faculty and staff to remediate inaccessible documents, and requires all students to officially request accommodations in order to access alternative text.

# Assessing and Remediating Accessible Educational Materials

## Introduction

Accessible Technologies is tasked with supporting the accessibility needs of teaching and learning for Virginia Tech. Through our efforts with peer institutions and conversations with accessibility professionals across the nation, we've determined that **proactive and preventative measures** for achieving accessibility compliance depend largely on the availability of **automated and functional testing tools**. The learning management system (LMS) is the most likely source of teaching and learning related content that needs the support of such tools. In our exploration of tools to support the testing and remediation of LMS content, we discovered that the LTI Ally by Blackboard is capable of both testing and remediating inaccessible content. Additionally, it is the only tool currently available that runs reports on the accessibility of all content in the LMS AND the only can provide timely access to accessible alternative text formats (e.g., a PDF document can be rendered as audio or HTML).

Our pilot test of Ally, which began January 2019 and finished at the end of May, included an exploration of the following:

1. Testing the overall level of compliance of our content
2. Determining the areas of the greatest risk by type of content
3. Determining if the tool will allow us to develop targeted risk mitigation
4. Determining the interest level of students for timely access to alternative text

## Research Questions

Several testable questions were used to determine if the pilot test was successful and if we would recommend the acquisition of Ally in the future.

1. How does making the level of accessibility visible by default (via a gauge of fails, partially meets, or meets) on every document created in or uploaded to the LMS, influence instructors' content creation/usage of accessible educational materials?
2. How does the visible indication of accessibility influence instructors' perception of accessibility from the beginning to the end of a course?
3. Does the availability of alternative text formats affect students' self-reported engagement with the course?

## Methods

Using the Institutional Accessibility score data, we determined that in the 2017-2018 academic year, **prior** to introducing Ally, Canvas contained 15056 course shells (including project sites and templates) and 1,367,420 individual documents.

Using the primary dashboard we determined that the most **severe violation** is Image Only PDF Documents which accounted for approximately 10% of all PDFs in the system. We were also able to determine the **most frequent errors**. In priority order, we found inaccessible PDF

documents, insufficient text to background contrast, and missing alternative text descriptions. Additionally, we were able to use the dashboard to determine that PDF is the most common file format type. Lastly we determined that the dashboard does not natively allow for running reports based on college or department. Table 4 provides more detailed information.

In the process of onboarding instructors to the tool and its capabilities, each instructor was asked about their familiarity with accessibility, current process for developing accessible content and knowledge of techniques for creating accessible content by design. Ally was then enabled in a previously taught class to identify the top 3 errors based on severity and frequency. From those errors, a “Plus One” goal was established by each instructor as their key focus for improving the accessibility of an upcoming course. All instructors received a short email once per month reminding them of their goal and offering personal assistance.

## Analysis

### Institution Evaluation

Table 4 represents a high level view of the type of institutional data that can be found using Ally. It lists all files present in Canvas for each semester of course offerings, as well as the count per type of file and the overall accessibility of the courses within the LMS.

Table 4. Institutional file data within Canvas LMS

Year (Fall and Spring Semesters)	Number of Files Scanned	Estimated rate of compliance	Most Frequent File Type
2018 - 2019	850,918	62.24%	PDF - 209,506
2017 - 2018	797,068	60.64%	PDF - 200,686

Additionally, Ally makes available a distinct breakdown of accessibility issues based on the level of severity and frequency. Having access to this information affords Accessible Technologies the opportunity to more strategically direct efforts related to remediation, targeted training, and campaigns. A summary of findings based on frequency and severity are in Table 5.

Table 5. Overview of Severe and Major Accessibility Issues

Year	Severe Issues		Major Issues		
2018 - 2019	Seizure: 4	Scanned: 32,281	Contrast: 117,968	Image Description: 65,893	Headings Presence: 77,957
2017 - 2018	Seizure: 3	Scanned: 31,935	Contrast: 110,196	Image Description: 61,774	Headings Presence: 73,468

**Key:**

Seizure: Number of images that can cause seizures.

Scanned: Number of PDFs that are scanned.

Contrast: Number of items that have contrast issues.

Image Description: Number of images that don't have an alternative description.

Headings Presence: Number of PDFs and documents that don't have headings.

## Individual Instructor Evaluation

In general the results of the pre- and post- data collection indicate that instructors were able to make accessibility improvements to their course or maintain their current level of course accessibility. Prior to using Ally, 1 out of 13 instructors indicated they proactively design for accessibility, 2 out of 13 only think about course accessibility when an accommodation requires, and the remaining 10 try to design accessible content but often do not know where to start. After using Ally, many said that they would be unlikely to make further progress on developing accessible content without Ally. Their post-pilot feedback indicates that 11 out of 13 instructors used the tool at least once/week to make improvements to the accessibility of their course material. When asked if the tool supported them in making the changes, they reported using a mixture of accessibility checkers to make corrections, Ally, Canvas' rich content editor checker, and the Microsoft office accessibility checker.

As an example, we analyzed an individual instructor who set a goal at the beginning of Spring 2019 to work on "color contrast within powerpoint slides" - the changes within Canvas from the previous offering and the latest offerings are highlighted below in Table 6. While the overall file contrast score marginally increased, the overall number of "perfectly" scored files for contrast nearly doubled. Additional gains were recognized in the use of the Ally tool to quickly integrate image descriptions ("File Score Description") into course materials.

Table 6. Sample Pre/Post Course Comparisons

<b>HNFE</b>	<b>Total Files</b>	<b>% Files Score &gt;0.7</b>	<b>Course Files w/ Score 1.0</b>	<b>File Score Contrast</b>	<b>#Files "Perfect" Contrast</b>	<b>File Score Description</b>	<b>#Files "Perfect" Description</b>
Pre	220	55%	90	0.93	18	0.0	0
Post	371	66%	177	0.95	35	0.21	53

Note: Ally analyzes the pass rate on a 0 to 1.0 scale

File Count: Number of Files analyzed by Ally

% Files Score >0.7: Percentage of files with an overall score greater than 0.7 (out of 1)

Course Files Score 1.0: Number of files in course with score of 1/1

File Score Contrast: Average score of files checked for contrast issues

#Files "Perfect" Contrast: Files with a 1/1 score for contrast

File Score Description: Average score of files checked for image descriptions

#Files "Perfect" Description: Files with a 1/1 score for image descriptions

This faculty member previously attended trainings from our office, and has some familiarity with different types of assistive technologies. This has not always translated to specific ways to incorporate universal design principles into course materials to ensure their accessibility to students, though they recognize the importance of doing so. During our post-Ally focus group, this faculty member stated that the indicators acted as a motivator, with the Ally she was able to exceed her goal for improving accessibility and that the tool reinforces the habit of accessibility by design.

Overall, faculty had a very positive experience with Ally - when asked about her interest in continued use, multiple faculty advocated for purchasing the tool and indicated that it made a measurable impact on their practices.

## Alternative Format Functionality Testing

A key feature of Ally is the alternative file format functionality. This allows a student to download any file in a preferred format. For example, a PDF can be downloaded in an audio format. variety of alternative formats were tested using two different internet networks, eduroam/campus and a home wireless network. The various formats included HTML, ePub, Audio, OCRed PDF and Tagged PDF. The original file types that were tested on were PDF and DOCX files ranging in length from 1 to 41 pages. In total, 38 documents were used in this test, 32 PDF files and 6 DOCX files, generating 122 samples of alternative format files. Out of the sample of 122 alternative format files, 71 documents took above 1 sec/page to download. In that sample size, 15 documents were forced to quit downloading due to an excessive amount of time required to download documents. When documents took more than 5 min total to download, they would result in a force quit. Out of the 15 documents that resulted in a force quit, seven documents were HTML files, four were Audio files, and four where ePub files.

Given the 122 samples, the average download time per page was 1.94 sec (Table 1). One of the samples, a PDF file, took exactly the mean time that was calculated over the samples. The

minimum time to download a document was 0 sec and the max average time to download was 93.40 sec/page.

	Original File Type	Download Type	Time to Download (Sec)	Number of Pages	Average Time to Download (Sec/Page)
<b>Min Time</b>	PDF	HTML	0	11	0
<b>Max Time</b>	DOCX	ePub	280	3	93.40
<b>Mean Time</b>	PDF	Audio	60	31	1.94

Table 1: Min, max and median download time averages per page

The general accuracy of each sample was graded and recorded with a rating scale from worst to best: “Inaccurate”, “Poor Quality”, “Some Errors”, “Good Overall”. Within a total of 122 samples, three alternative files received a rating of “Inaccurate”; these three samples originated from the same document. Thirteen documents received a rating of “Poor Quality”, 27 were rated as “Some Errors”, and 64 documents received a rating of “Good Overall”. In comparison, over half (52%) of the converted documents received the highest rating of “Good Overall” and 2.5% of the documents received the lowest rating of “Inaccurate”.

The ratings that were considered acceptable were “Some Errors” and “Good Overall”. Contrary to that, the ratings that were considered unacceptable were “Poor Quality” and “Inaccurate”. In total, about 75% of the documents were deemed acceptable and about 25% of the documents, unacceptable.

## Conclusions

Ally can support Virginia Tech in moving from a primarily reactive accommodation model environment to a proactive universal design driven environment. Ally can also provide faculty, staff, and graduate students with tools and guidance to increase accessibility of content, both in terms of files and the Canvas LMS. Finally, Ally can provide audits on the quantity, variety, and accessibility of materials used for instruction using multiple different timeframes (yearly, by semester, etc.)

## Recommendations

1. Virginia Tech should purchase an enterprise wide implementation.