

Proctoring Service API

Steve Lay, Questionmark

Introduction

- ▶ Increasing interest in proctoring of exams delivered electronically
- ▶ A number of proctoring services to choose between
- ▶ Proctoring service typically separate from the *Assessment Management System*
 - Sometimes referred to as the *'Test Driver'*
- ▶ The Proctoring Service API aims to standardize the touch-points

Proctoring Service

Example Service Types

- ▶ Photo Capture and Compare
 - The proctoring service captures one or more photos of the candidate during the exam
 - Photos are compared with registration photos on file
 - Photos are available for later review
- ▶ Record and Review
 - The proctoring service captures a continuous audio and video stream of the candidate during the exam
 - Data is processed and flagged automatically for anomalies
 - Summary data and full streams are available for later review
- ▶ Online Proctoring
 - The candidate is connected with a remote human proctor at the start of the exam
 - The proctor monitors the candidate throughout the exam and records any anomalies
 - Summary data from proctor and sample frames are available for later review

Teddy Fung

ProctorExam

teddy@proctorexam.com

Launching into an Assessment from the Proctoring Platform

What we've learned at ProctorExam

What are we trying to achieve?

1. Security

- a. The exam should only be accessible through the exam platform
- b. The exam attempt should always be correlated with the proctoring session
- c. The exam should not be accessible after the attempt

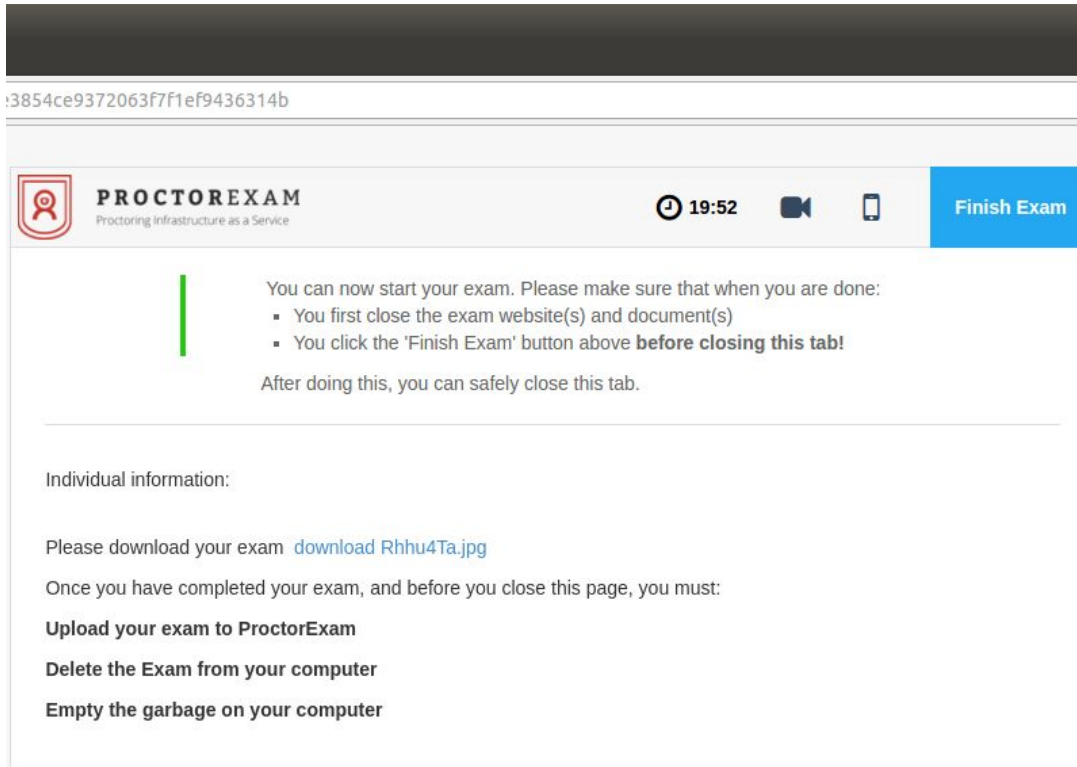
2. Ease of Use

- a. The student should take the least amount of steps to access the exam
- b. The student should have explicit instructions to follow

3. Universality

- a. The exam access procedure should be the same across exam platforms

The “Download Your Exam as a Document” method



The screenshot shows a web browser window with the ProctorExam interface. The browser's address bar contains the URL `:3854ce9372063f7f1ef9436314b`. The ProctorExam logo is visible in the top left corner, with the tagline "Proctoring Infrastructure as a Service". In the top right corner, there is a clock showing "19:52", icons for a camera and a mobile phone, and a blue "Finish Exam" button. The main content area features a green vertical bar on the left and the following text:

You can now start your exam. Please make sure that when you are done:

- You first close the exam website(s) and document(s)
- You click the 'Finish Exam' button above **before closing this tab!**

After doing this, you can safely close this tab.

Individual information:

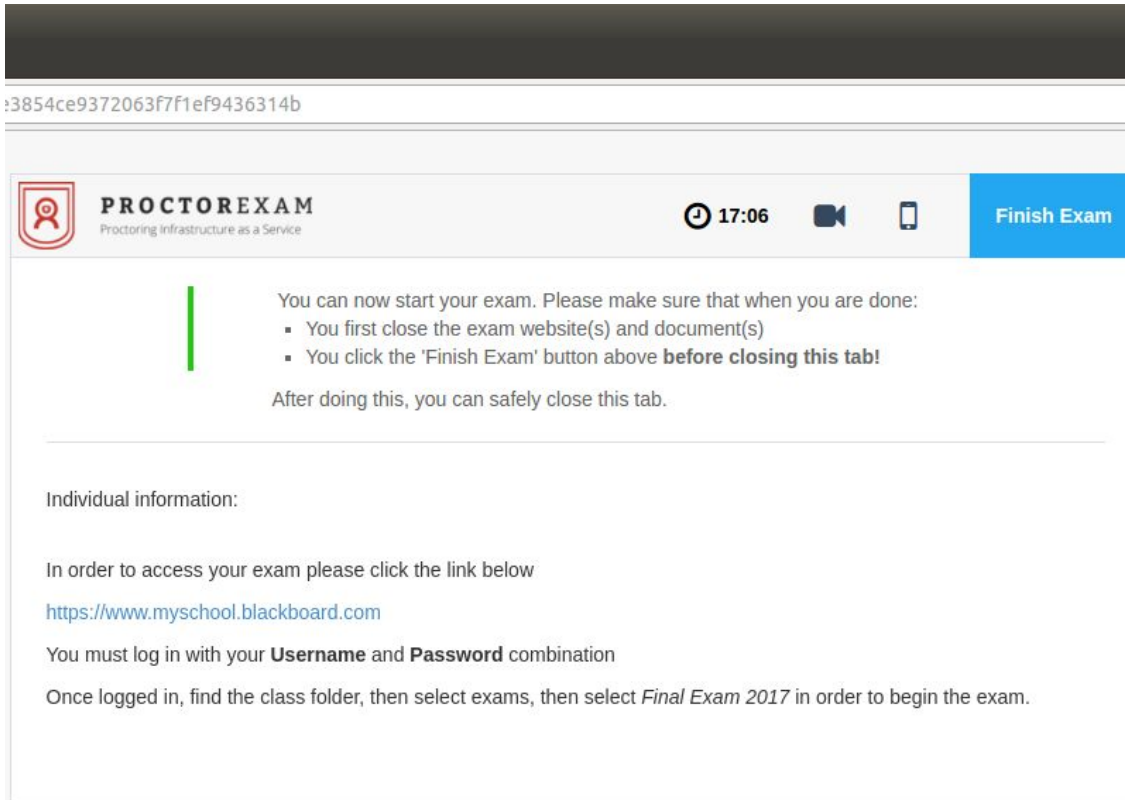
Please download your exam [download Rhu4Ta.jpg](#)

Once you have completed your exam, and before you close this page, you must:

- Upload your exam to ProctorExam**
- Delete the Exam from your computer**
- Empty the garbage on your computer**

- Student can keep a copy of the exam in any number of ways
- Teacher has to download exam document
- This isn't our core competency!

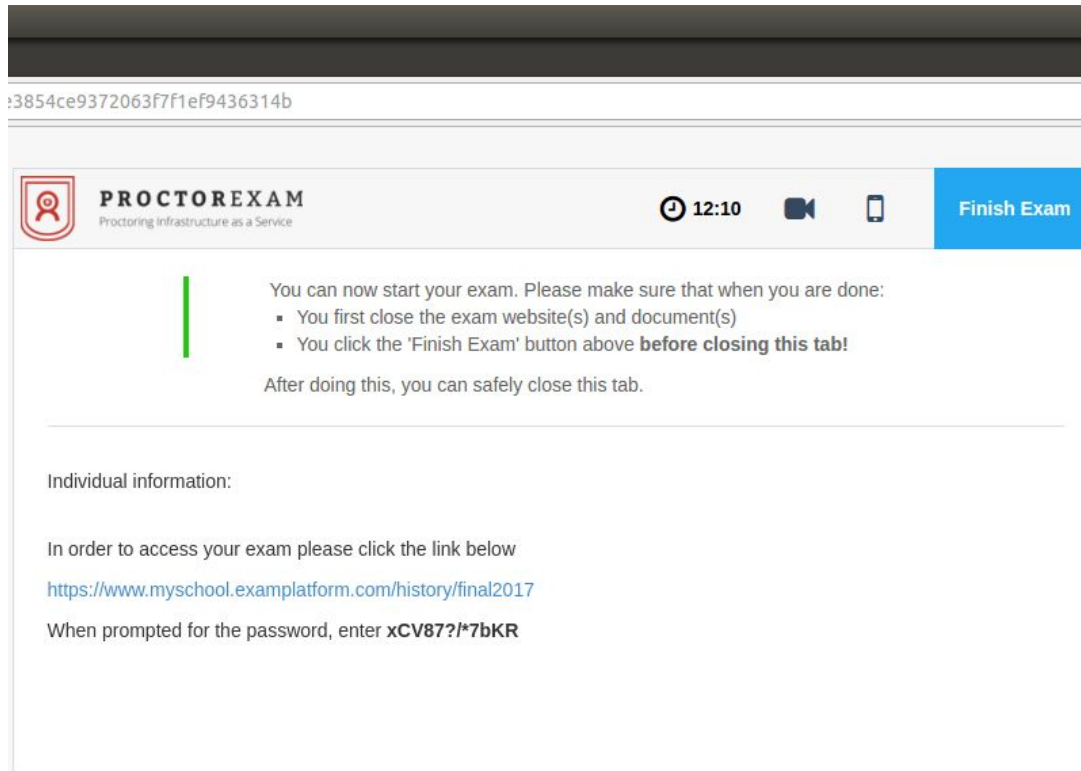
The “Sign in to Blackboard” method



The screenshot shows a web browser window with a dark address bar containing the URL fragment :3854ce9372063f7f1ef9436314b. Below the address bar is the Proctorexam header, which includes the Proctorexam logo (a red shield with a white figure), the text "PROCTOREXAM" and "Proctoring infrastructure as a Service", a clock icon showing "17:06", a camera icon, a mobile phone icon, and a blue "Finish Exam" button. The main content area features a green vertical bar on the left and text instructions: "You can now start your exam. Please make sure that when you are done:" followed by a bulleted list: "▪ You first close the exam website(s) and document(s)", "▪ You click the 'Finish Exam' button above **before closing this tab!**". Below this is the text "After doing this, you can safely close this tab." A horizontal line separates this from the "Individual information:" section, which contains the text "In order to access your exam please click the link below" followed by the blue hyperlink "https://www.myschool.blackboard.com". Below the link, it says "You must log in with your **Username** and **Password** combination" and "Once logged in, find the class folder, then select exams, then select *Final Exam 2017* in order to begin the exam."

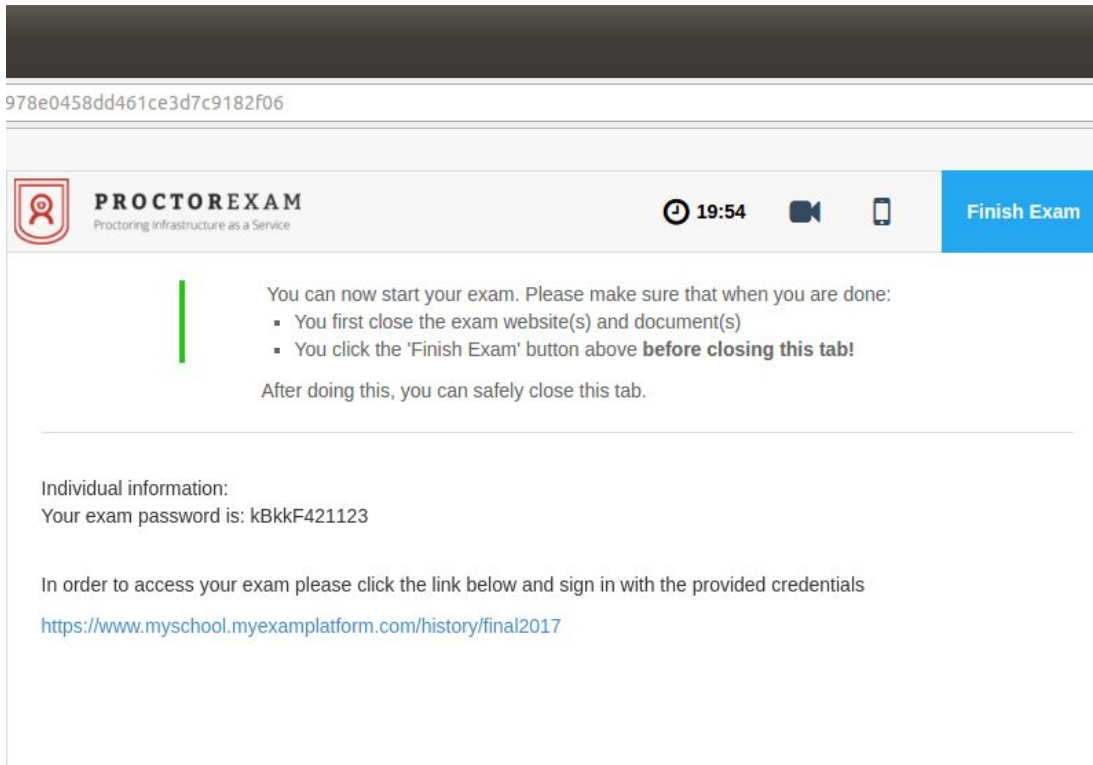
- The student can access the exam if the poke around blackboard enough
- The student can share their credentials with anyone
- Way too many steps!

The “Global Exam Password” method




- Once the password leaks, anyone can access the exam
- Exam session isn't automatically linked to the proctoring session

The “Individual Password” method



978e0458dd461ce3d7c9182f06

 **PROCTOREXAM**
Proctoring Infrastructure as a Service

🕒 19:54 📺 📱 **Finish Exam**

You can now start your exam. Please make sure that when you are done:

- You first close the exam website(s) and document(s)
- You click the 'Finish Exam' button above **before closing this tab!**

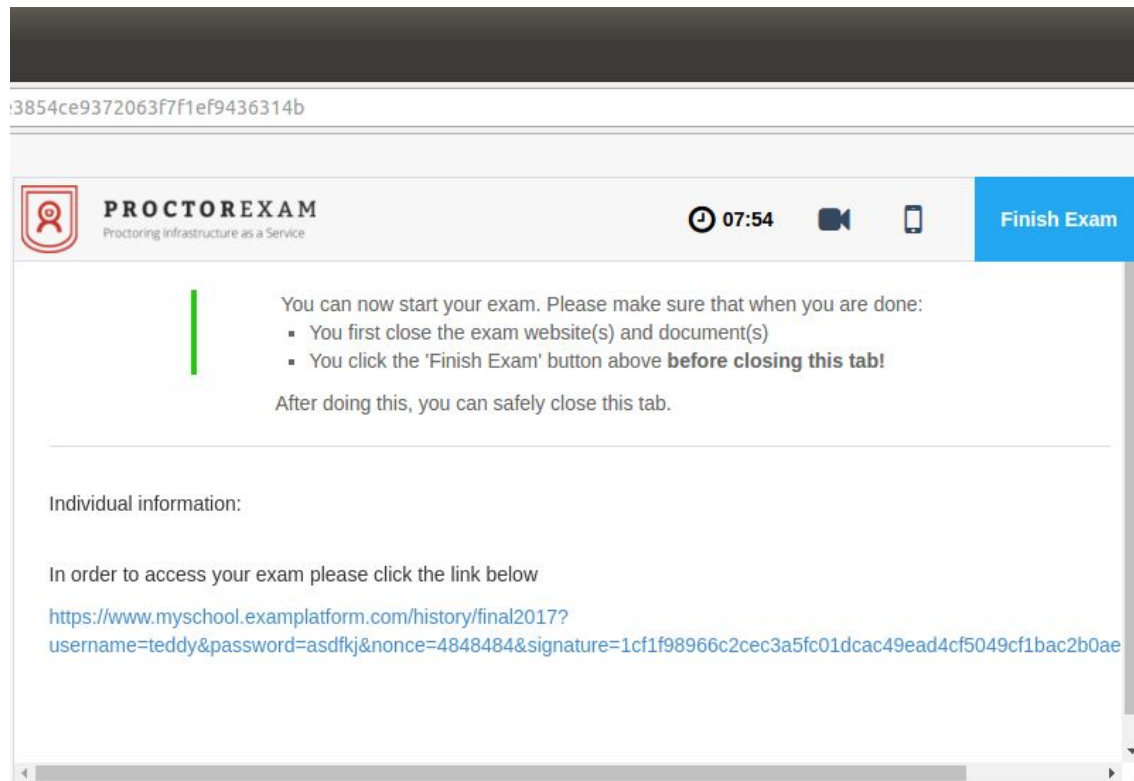
After doing this, you can safely close this tab.

Individual information:
Your exam password is: kBkkF421123

In order to access your exam please click the link below and sign in with the provided credentials
<https://www.myschool.myexamplatform.com/history/final2017>

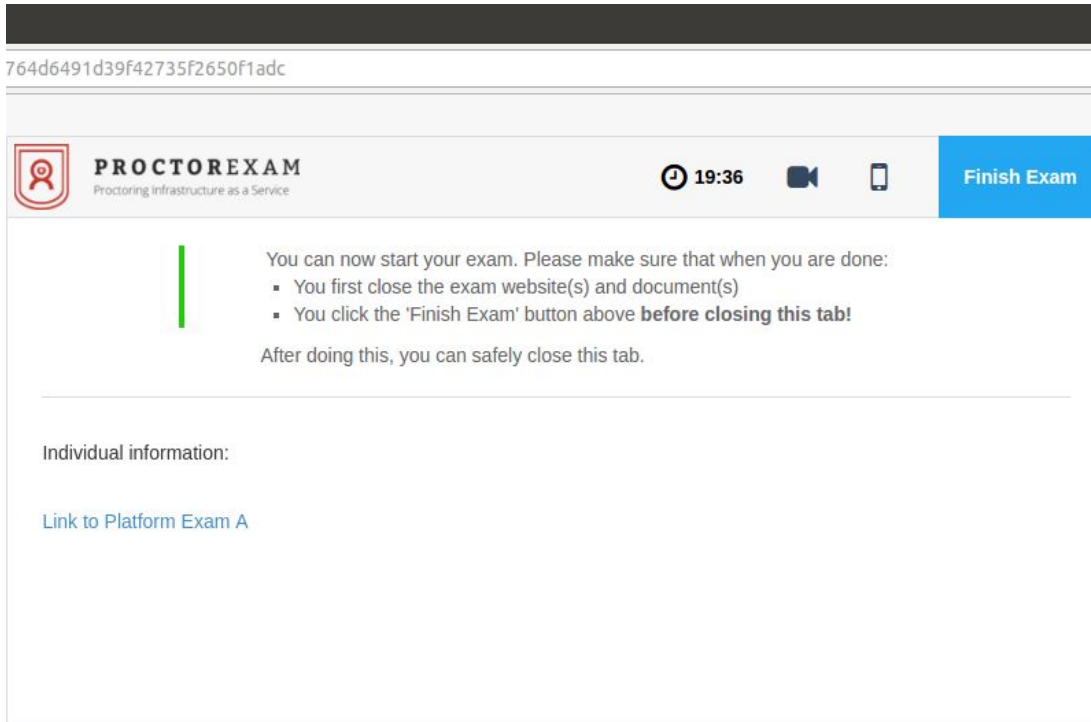
- Student can share their individual credentials out of band if they are sneaky enough

The “Signed Exam Link” method




- More difficult to communicate through a side channel, as the link is fairly long
- Technically minded students can access credentials to use if there is also a login page
- Requires exam platform to provide mechanism to sign links

The famous “LTI Launch” method



764d6491d39f42735f2650f1adc

 **PROCTOREXAM**
Proctoring Infrastructure as a Service

🕒 19:36 📺 📱 [Finish Exam](#)

You can now start your exam. Please make sure that when you are done:

- You first close the exam website(s) and document(s)
- You click the 'Finish Exam' button above **before closing this tab!**

After doing this, you can safely close this tab.

Individual information:

[Link to Platform Exam A](#)

- Link points to url on proctoring platform, which then redirects to a time limited(single use) signed LTI launch
- We can ensure that the student is sharing all streams before launching exam platform

Performance Data vs Exam Session Evidence

Performance Data

- ▶ Exam and Question content
- ▶ Candidate responses
- ▶ Detailed navigation paths
- ▶ Timing information

Exam Session Evidence

- ▶ Photos taken during the exam
- ▶ Audio/Video captured during the exam
- ▶ Screen captures
- ▶ Application usage information captured from operating system
- ▶ Proctor incident reports
- ▶ Flags from automated detection of anomalies

Roles



Program Administrator
Registers Candidates for
the Exam
Sets Proctoring
Requirements



Candidate
Takes the exam



Proctor
Oversees Exam Session
Helps collect Exam
Session Evidence



Reviewer
Reviews Exam Session
Evidence
Makes decisions about
outcomes

Use Cases: Pre-exam

- ▶ Site-wide Proctoring Options
 - Configuring proctoring options that will apply to all assessments delivered within the institution
- ▶ Add Proctoring Requirement
 - Add proctoring requirement to an assessment
- ▶ Assessment Specific Proctoring Options
 - Modify default proctoring options for an individual assessment
- ▶ Schedule an Appointment
 - Pre-register and/or schedule an appointment with a live proctor or other type of resource-limited proctoring service
- ▶ Schedule Blocking
 - Request a booking from proctoring system for a given number of candidates and time slot

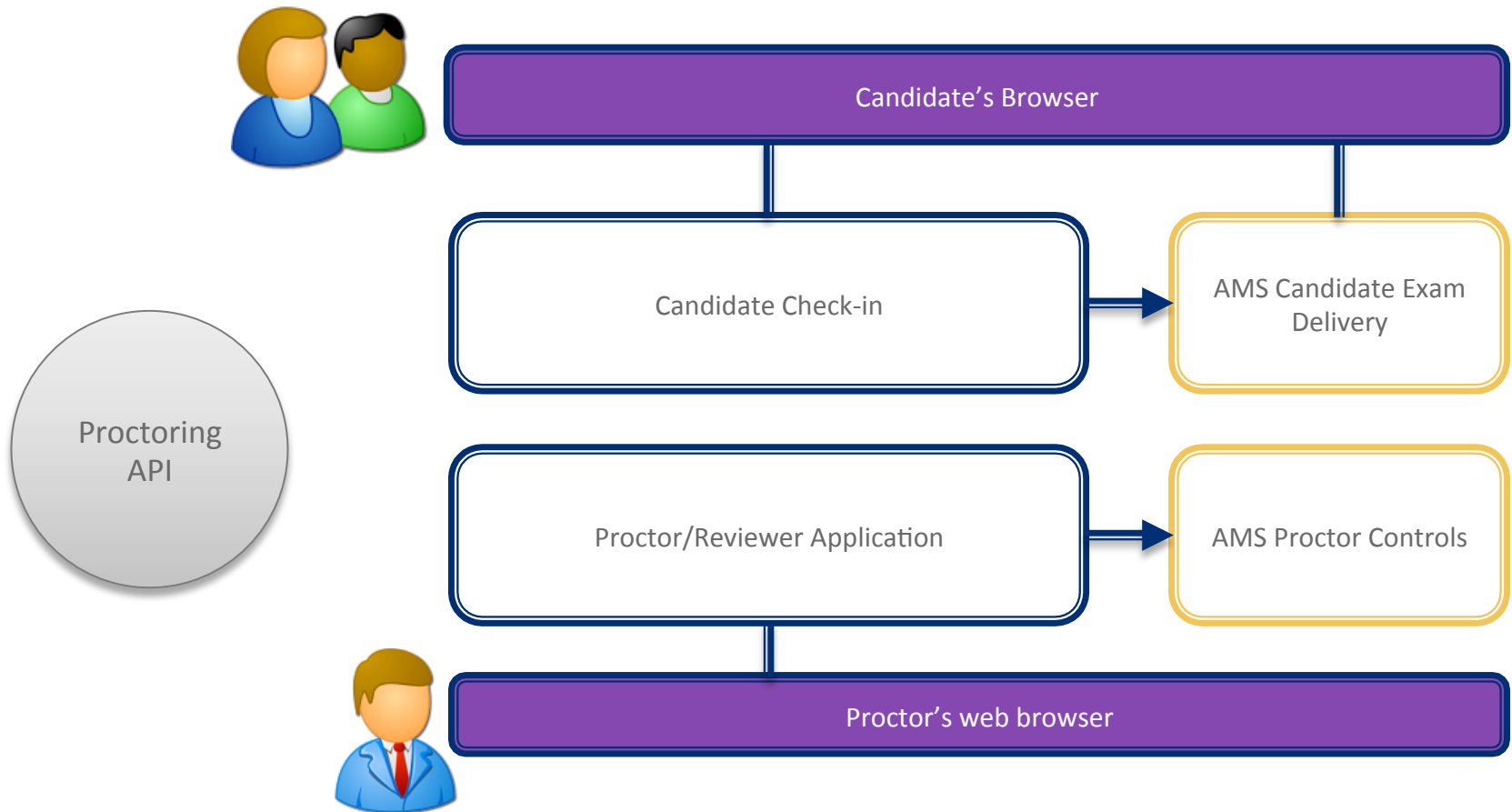
Use Cases: In-Session

- ▶ Validate User System
 - Check technology requirement for a specific PC, laptop or other device
- ▶ Launch the Exam
 - Launch the exam through the proctoring service
- ▶ Proctor Intervenes
 - Control a running exam to protect integrity of the process
- ▶ External Proctor Launch of Proctoring System
 - Users in the consumer system act as live-online proctors in the proctoring tool (agent provided own proctors)

Use Cases: Post-Exam

- ▶ External Reviewer Launch of Proctoring System
 - Review exceptions for an individual assessment
 - Review audit information for entire assessment program

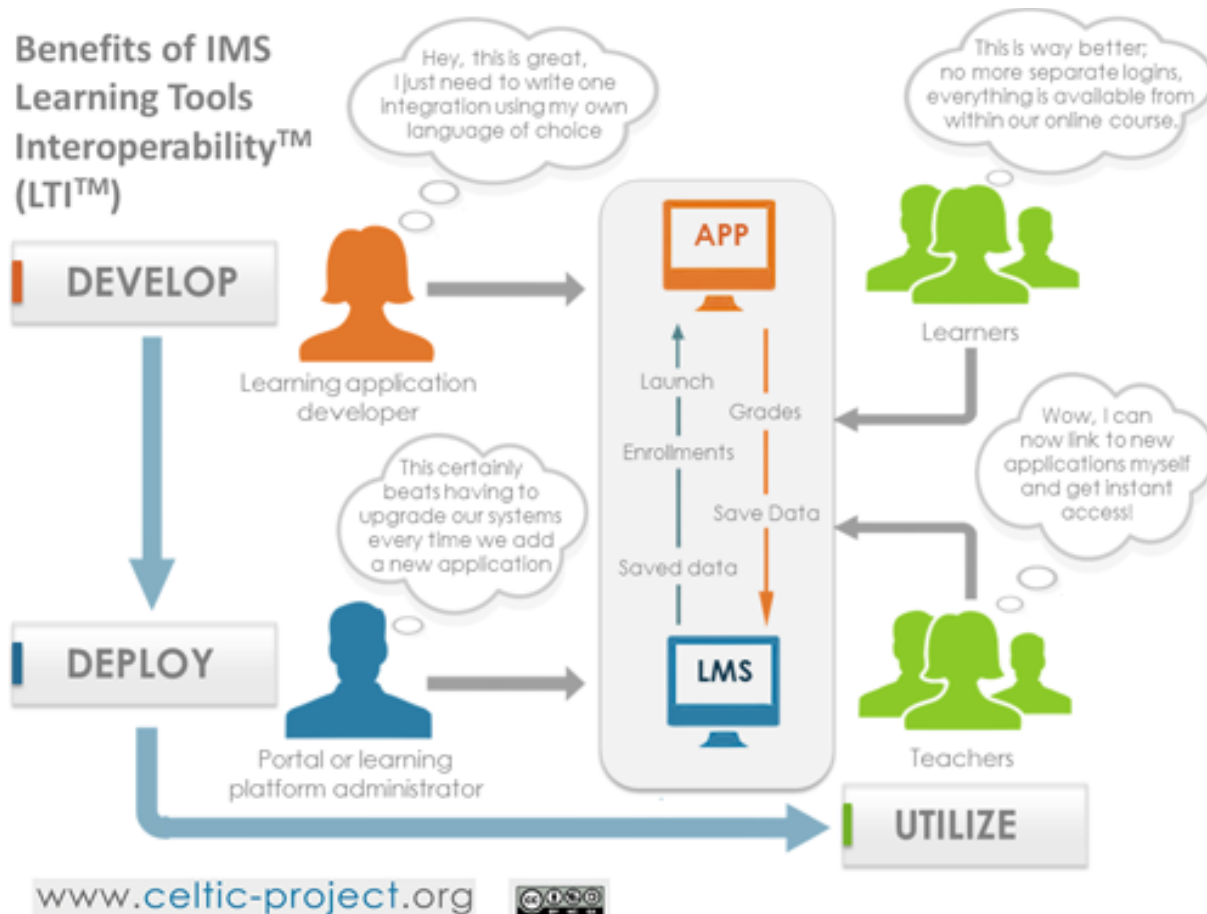
Anatomy of a Proctoring Solution



API Details

IMS Learning Tools Interoperability (LTI)

<https://www.imsglobal.org/activity/learning-tools-interoperability>

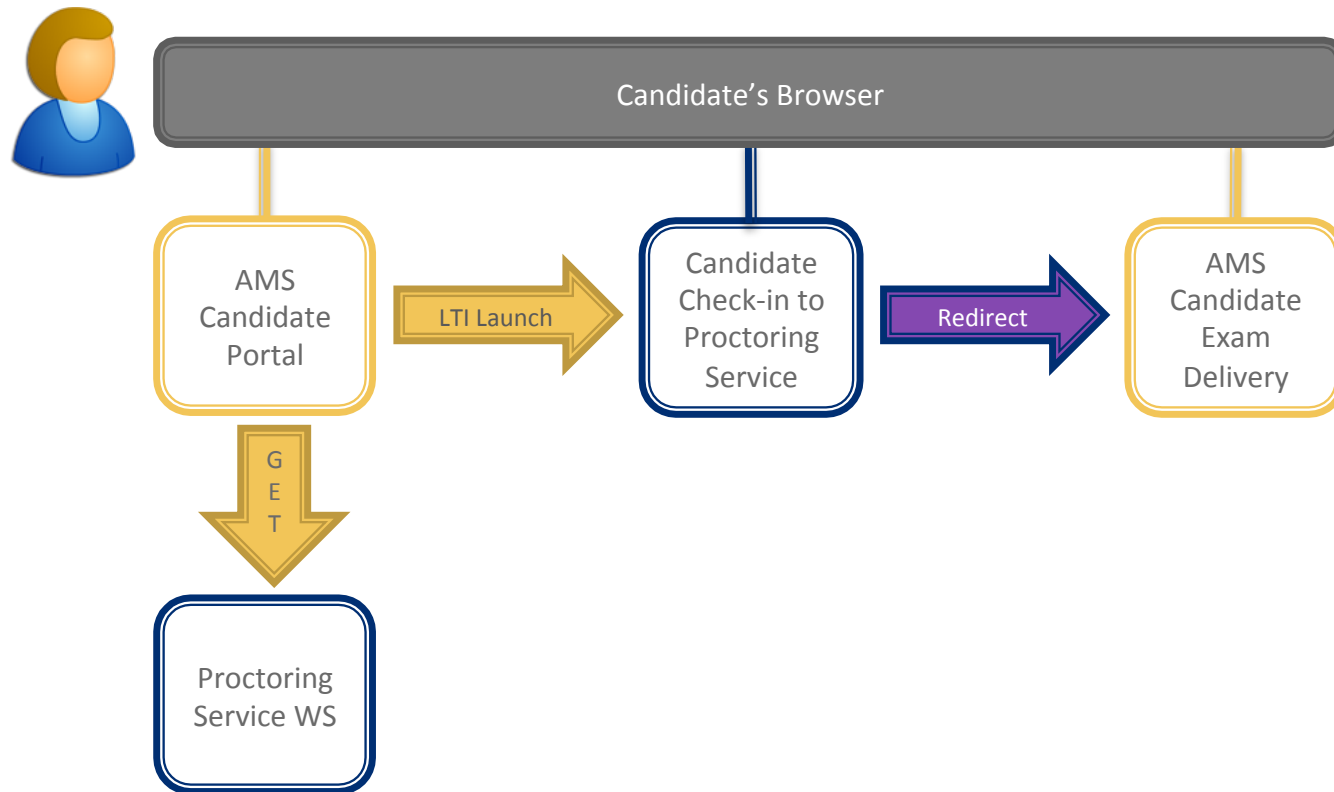


Why LTI?

- ▶ Already used by LMS community
- ▶ Designed to solve the problem of ‘launching’ one web app from another
 - *Tool Consumer* launches *Tool Provider*
- ▶ One stop-shop:
 - User, context and role information
 - Resource placement (e.g., multiple exams to same group)
 - Authentication via OAuth signing
 - Return links for smooth hand-back
- ▶ What’s missing?
 - Communication of workflow information:
 - Time constraints on resource (exam) availability set by AMS
 - State of proctoring service, e.g., appointment booking phase, appointment readiness
 - Safe way to communicate the Exam Launch information

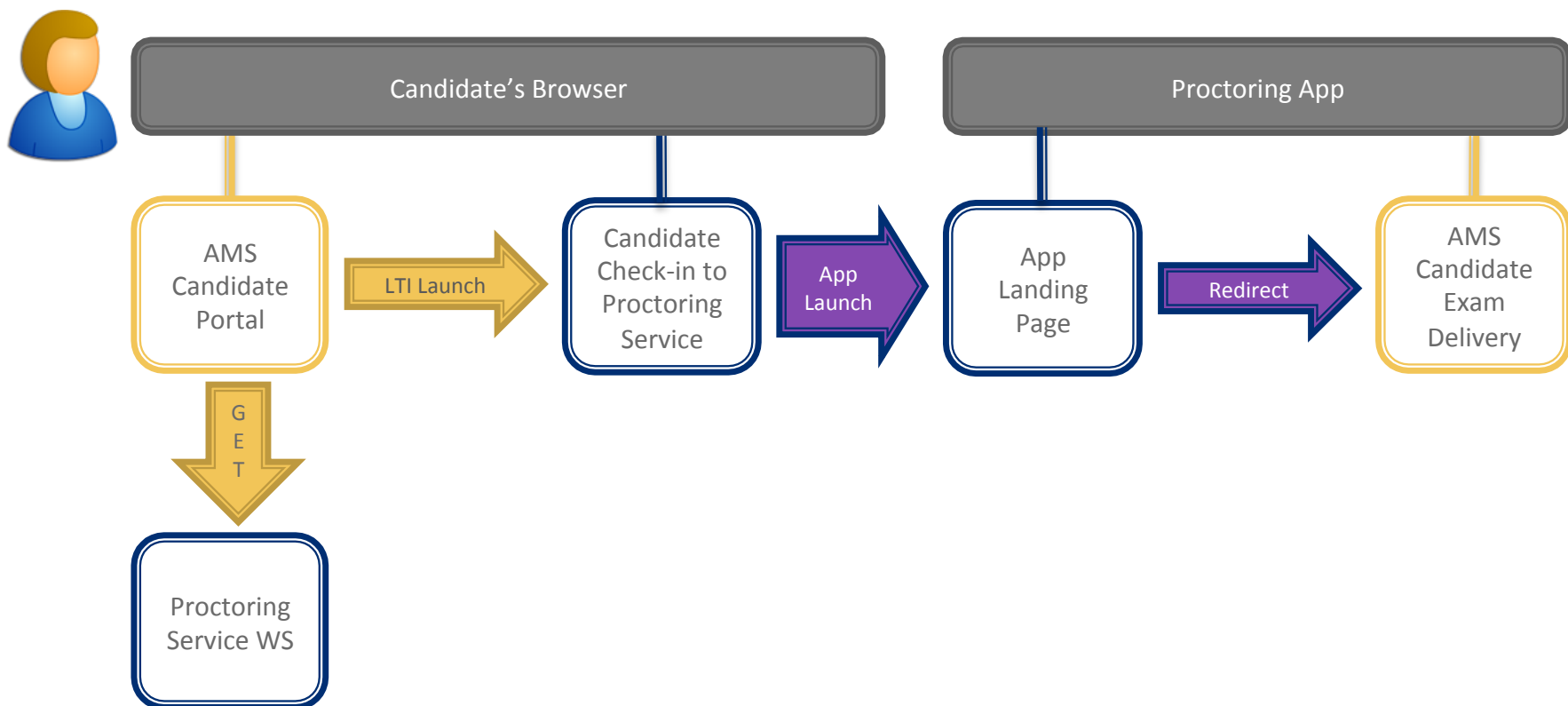
Proctoring Solution

Candidate flow in Web Browser



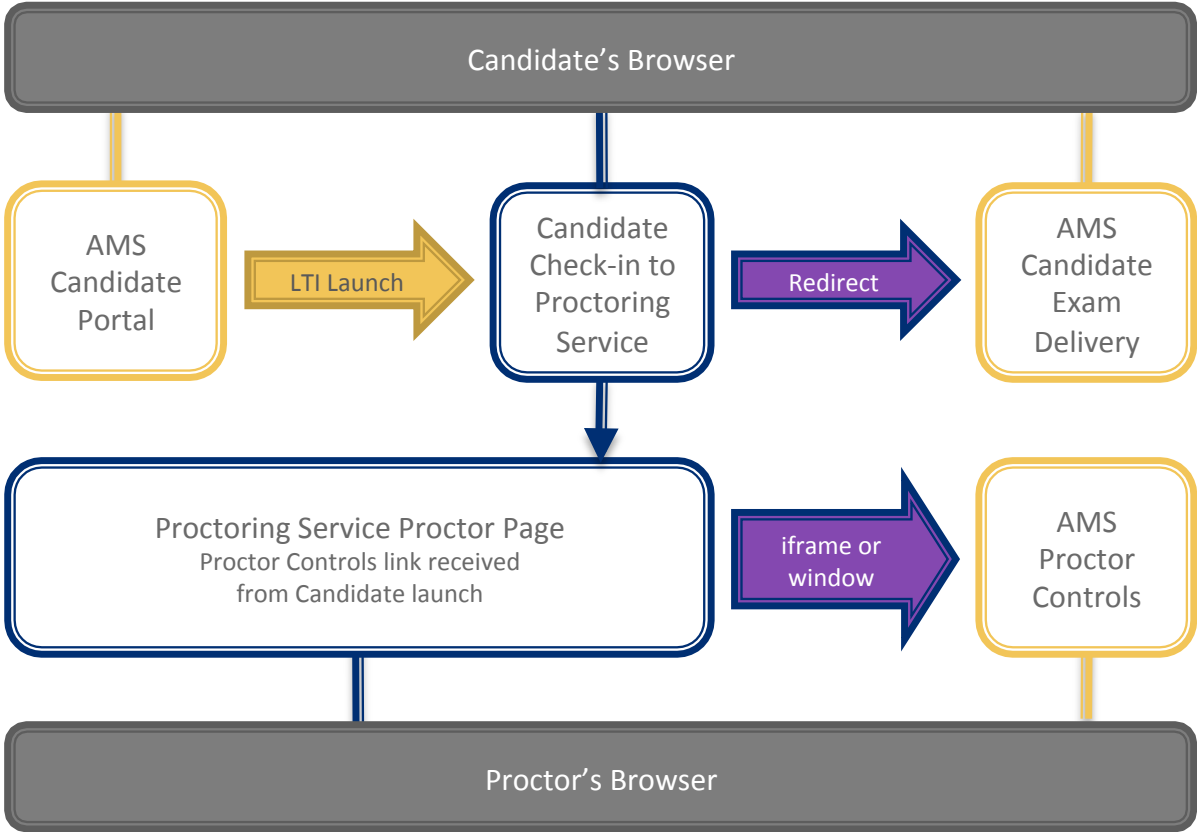
Proctoring Solution

Candidate flow with Special Proctored App



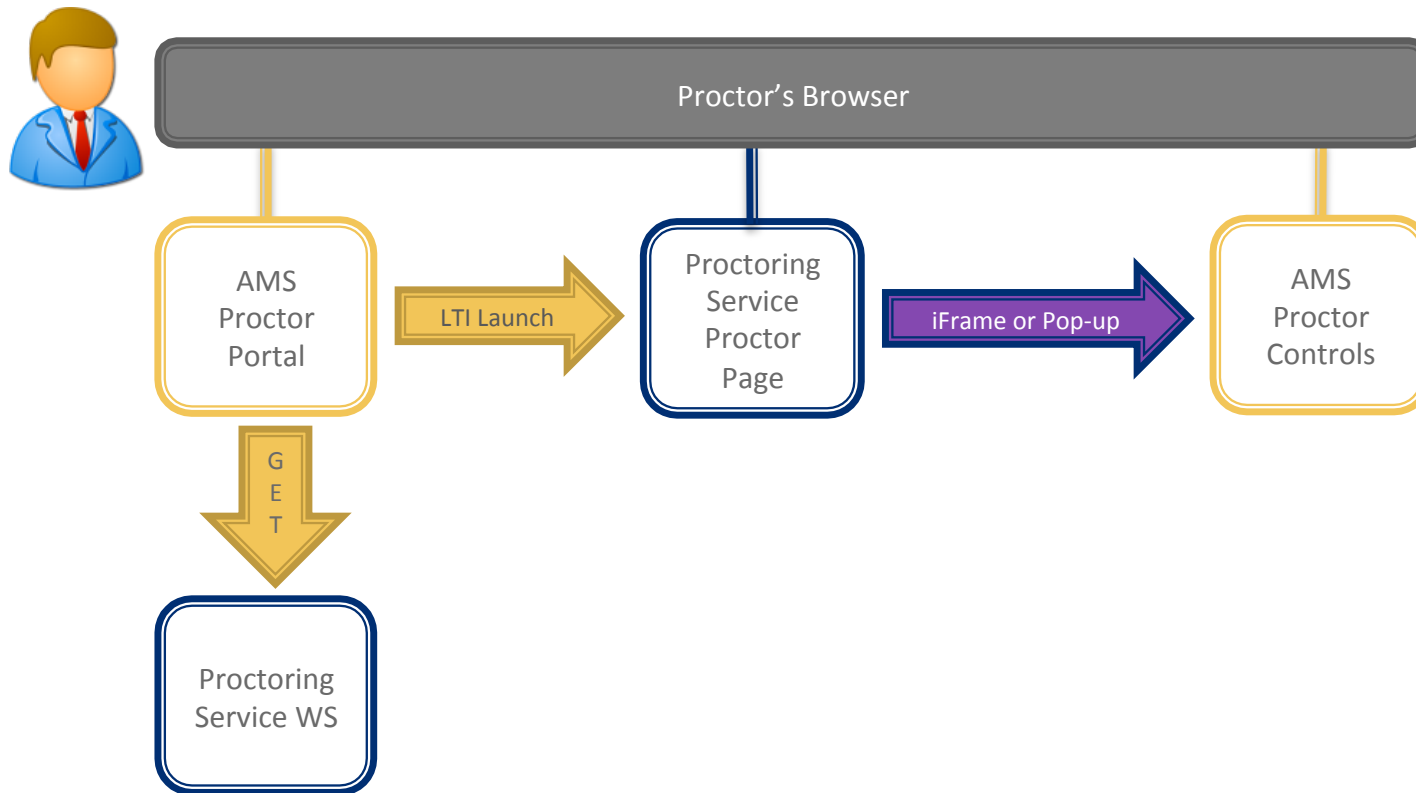
Proctoring Solution

Proctors registered with Proctoring Solution



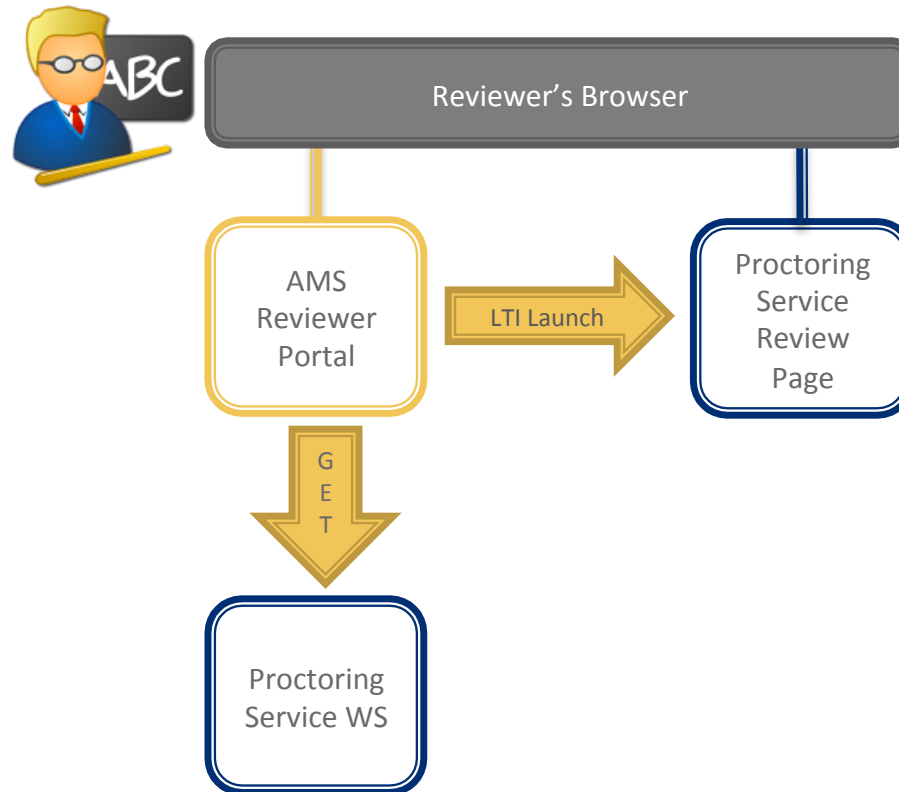
Proctoring Solution

Proctors registered with AMS



Proctoring Solution

Reviewer flow



What next?

- ▶ Review use-case document:
 - <https://drive.google.com/file/d/0B-xMrCxugbJxUDJHaHVXaUtoRmM/view>
- ▶ Fill in your priorities:
 - <https://docs.google.com/spreadsheets/d/1I6Dg6sqysumQk1XVGaX6FPfu2ramAsi804B2hGPbu1Q/edit?usp=sharing>

Join the team...



The screenshot shows the IMS GLOBAL Learning Consortium website. The header includes the logo and navigation links for INITIATIVES, DEVELOPERS, CERTIFIED PRODUCTS, and LEARNING IM. The main content area features a large heading for 'Proctoring Task Force - Minutes and Agendas' and an orange button labeled 'ADD NEW FORUM TOPIC'. Below this is a table with two rows of forum topics.

	Topic	Replies	Last reply
	2017-11-15 Proctoring Task Force By mmckell 1 week 6 days ago	0	n/a
	2017-11-01 Proctoring Task Force By mmckell 1 month 1 day ago	1 1 new	By mmckell 3 weeks 3 days ago