



**Cambridge  
Assessment**



# **Global Listening**

## **UX Deliverables**



# Summary

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# Choosing the right audio file format

It is important to understand what benefit each audio file format has to offer, what they mean, and when it is best to use them to allow us to choose the right one for our solution.

Four audio formats which offer different benefits have become the golden standards.

- **WAV** (Waveform audio files)
- **AIFF** (Audio Interchange File Format)
- **MP3** (MPEG-2 Audio Layer III)
- **MP4 – M4A** (MPEG-4 Part 14)

# Choosing the right audio file format

## WAV vs. AIFF

WAV and AIFF can both offer the same highest studio-quality audio. WAV files are more popular on Windows, whereas AIFF files keep their ground on Macs. The great news is, regardless of which of the two formats is chosen, you will achieve exactly the same superb audio quality will be ac.

## MP3 vs. M4A

For higher quality results, I recommend M4A, which can offer higher sonic results at the same settings, all while still resulting in smaller file sizes than MP3. On the other hand, if guaranteed compatibility is what we need most, MP3 will probably be the wiser choice of the two.

# Choosing the right audio file format

## Lossless VS Lossy Compression

When deciding which audio format is right for the project, the first question we have to ask is whether the file needs to provide uncompressed audio or can it be in a compressed audio format?

### Uncompressed lossless

To provide an ultimate listening experience that equal a CD-quality audio, we should use uncompressed audio files at 44.1kHz and 16-bit depth. **Wav** and **AIFF** will be the best format to use to maintain this level of quality for audio content.

### Compressed lossy

On the other hand, if the intent is to make sharing CA digital content easy and fast, it will be preferable to choose a compressed audio format like **MP3** or **M4A** that will provide a smaller file size.

# Choosing the right audio file format

## Lossless VS Lossy Compression

Uncompressed lossless

**PROS:** Studio audio quality without compromise.

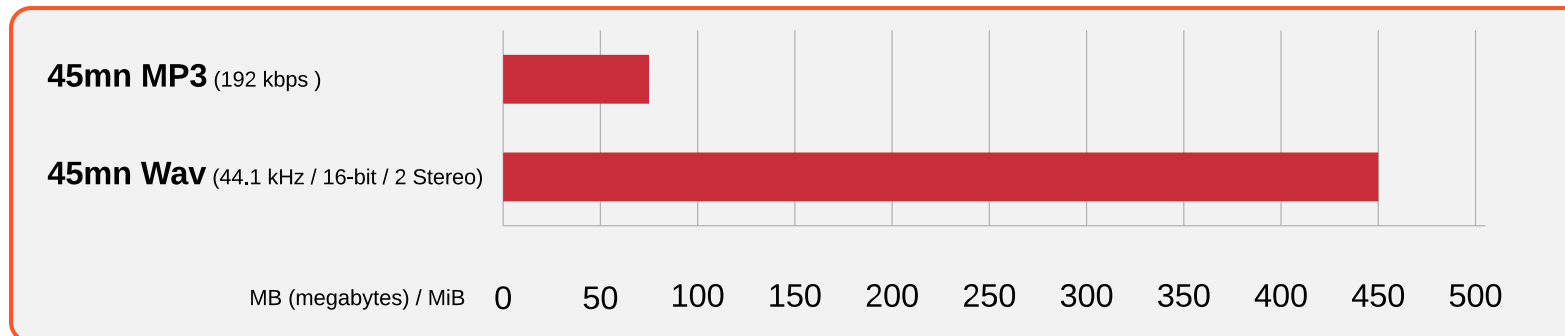
**CONS:** Large File Size that can be troublesome when trying to share digitally.

Compressed lossy

**PROS:** Small file size, perfect for downloading on devices with limited storage space or slow connection.

**CONS:** To achieve smaller files, audio quality is compromised. The smaller the file, the worse the audio quality will be.

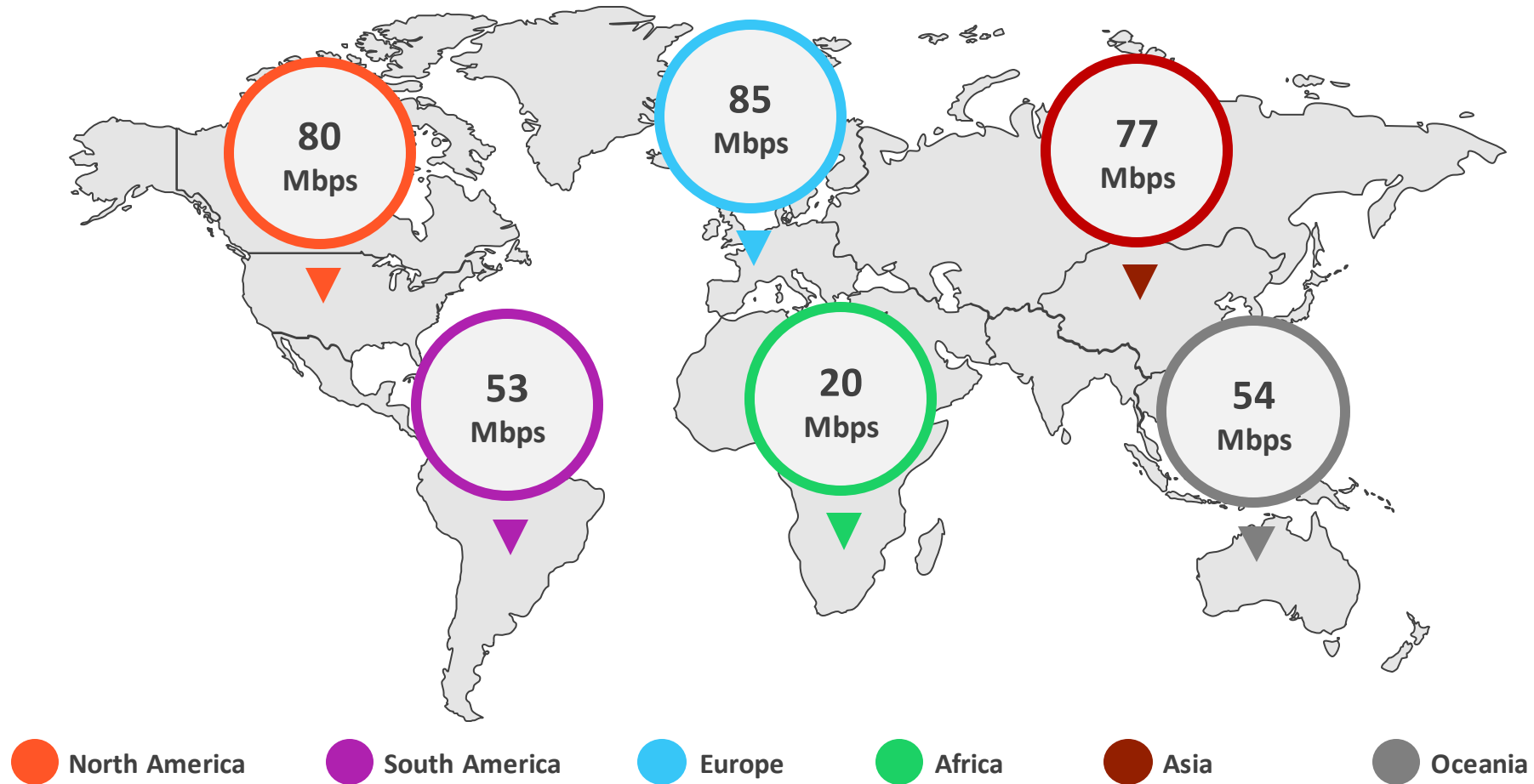
An exam compose of 8 tracks (questions) will have an average length of 45mn



1 minute audio would in average be 10MB in WAV or AIFF format, where converted to MP3 it would be only around 1MB.

# Worldwide broadband average speeds

## Average fixed broadband speeds



Data from Speed test global index 2019. <https://www.speedtest.net/>

# Worldwide broadband average speeds

Selected Associate centres and Ministry Customers	Mobile broadband	Fixed broadband	Time to get a 45mn audio recording file 60 MB Mp3. / 450 MB Wav.	
Argentina (ESSARP)	25 Mbps	34 Mbps	Mobile: <b>2.4s</b> Fixed: <b>1.7s</b>	Mobile: <b>18s</b> Fixed: <b>13s</b>
Egypt (British Council)	16 Mbps	26 Mbps	Mobile: <b>3.7s</b> Fixed: <b>2.3s</b>	Mobile: <b>28s</b> Fixed: <b>17.3s</b>
Greece (British Council)	39 Mbps	25 Mbps	Mobile: <b>1.5s</b> Fixed: <b>2.4s</b>	Mobile: <b>11.5s</b> Fixed: <b>18s</b>
Jordan (British Council)	17 Mbps	50 Mbps	Mobile: <b>3.5s</b> Fixed: <b>1.2s</b>	Mobile: <b>26.5s</b> Fixed: <b>9s</b>
Kuwait (British Council)	46 Mbps	65 Mbps	Mobile: <b>1.3s</b> Fixed: <b>0.9s</b>	Mobile: <b>9.7s</b> Fixed: <b>6.9s</b>
Pakistan (British Council)	14 Mbps	9 Mbps	Mobile: <b>4.2s</b> Fixed: <b>6.6s</b>	Mobile: <b>32s</b> Fixed: <b>50s</b>
Saudi Arabia (British Council)	55 Mbps	52 Mbps	Mobile: <b>1s</b> Fixed: <b>1.1s</b>	Mobile: <b>8.1s</b> Fixed: <b>8.6s</b>
Spain (British Council)	35 Mbps	122 Mbps	Mobile: <b>1.7s</b> Fixed: <b>0.4s</b>	Mobile: <b>13s</b> Fixed: <b>3.6s</b>
UAE (British Council)	86 Mbps	90 Mbps	Mobile: <b>0.7s</b> Fixed: <b>0.6s</b>	Mobile: <b>5.2s</b> Fixed: <b>5s</b>
Brunei (MOE)	24 Mbps	20 Mbps	Mobile: <b>2.5s</b> Fixed: <b>3s</b>	Mobile: <b>18.7s</b> Fixed: <b>22.5s</b>
Maldives (DPE)	24 Mbps	15 Mbps	Mobile: <b>2.5s</b> Fixed: <b>4s</b>	Mobile: <b>18.7s</b> Fixed: <b>30s</b>
Mauritius (MES)	24 Mbps	18 Mbps	Mobile: <b>2.5s</b> Fixed: <b>3.3s</b>	Mobile: <b>18.7s</b> Fixed: <b>25s</b>
Singapore (SEAB)	57 Mbps	200 Mbps	Mobile: <b>1s</b> Fixed: <b>0.3s</b>	Mobile: <b>7.9s</b> Fixed: <b>2.2s</b>

Average mobile and fixed broadband speeds on a monthly basis. 2019 <https://www.speedtest.net/>



# Worldwide broadband average speeds

Selected Associate centres cities	Fixed broadband	Time to get a 45mn audio recording file 60 MB Mp3. / 450 MB Wav.	
Catania (Italy)	26 Mbps	<b>2.7s</b>	<b>17.3s</b>
Jakarta (Indonesia)	17 Mbps	<b>3.5s</b>	<b>26.4s</b>
Mumbai (India)	12 Mbps	<b>5s</b>	<b>37.5s</b>
Oundle (UK)	516 Mbps	<b>0.11s</b>	<b>0.87s</b>
Granada (Spain)	48 Mbps	<b>1.25s</b>	<b>9.75s</b>



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A background image showing a person's hands gesturing during a meeting. The person is wearing a blue and red plaid shirt. In the background, there is a laptop displaying a website and a smartphone on a desk.

# Internal Users Research CE, CI, OCR.



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# Internal Users Research

CE Interview



# CE Internal user research. PAIN POINTS

JOB ROLE	STREAM	RESPONSIBILITY	PAIN POINTS:	Ext user	Int user
CEQ team	CE	Work in assessment	Security issues when physical CD dispatched to sub centres - Out of our control		X
			Many exam rooms - Many CDs requested so many to produce		X
			Duplication problems - Time consuming to identify and resolve		X
			Warranty soon to be over for the CD production equipment - Cant reply on CD		X
Senior operation manager	CE	Process entries	CD sometimes need importation tax - More money and delay for centres		X
		CD production - liaise with Cannon	Production of CD expensive for CA		X
		Dispatch materials	Centres sometime don't know how many CD the need - They don't have the flexibility to increase order up to point of entry	X	
		Special requirements	Centre needs to figure out the venue distribution on their own - Time consuming for centres as they are just given the CDs ordered	X	
		FTP upload	Faulty CD that affect sound quality and user experience	X	
Customer support	CE	In charge of help desk of CEQ centres	CD stuck in customs - Inconvenience of delay and the expenses involved	X	
			Damaged CD at arrival - Low sound quality and poor user experience	X	
			Not enough CD ordered - Last minute resolving with dfd which is labor-intensive and time consuming		X
Studio Manager	CE	Receiving the recording from the studio	Long process to produce master disk - Requires many burnings onto a CD.		X
		Archiving the content of audio	Duplication issues - Time consuming to identify and resolve		X
		Ensure audio is complete and goes to the right people - gets order form assessment manager	Long process to rip CD from approved audio to archive it		X

# CE Internal user research. REQUIREMENTS & CONCERNS

JOB ROLE		HIGH-LEVEL REQUIREMENTS (External users)	HIGH-LEVEL REQUIREMENTS (Internal users)	THEMES OF REQUIREMENTS	CONCERNS
CEQ team	CE		Backup system (reputational damage - we still need to deliver)	Contingency plan	Very high Security demands with digital - exams very high stakes as qualifications are prestigious - security to prevent malpractice
		Simultaneous access of audio file for many exam rooms		Accessibility	
		Ease to use		Usability	
		Accommodate many centres of different size		Scalability	
		Phase introduction - some may have invested in CD players		Introduction	
			Much control with audio file - accessibility of it	Security	
		Users ability to check if file is correct		Verification	
Senior operation manager	CE		Need to communication with other systems - SAP	Intergrations	
		User need to know what they are sitting to check correct audio is available		Verification	
Customer support	CE	Compatible with many devices		Device agnostic	
		Offline playback		Flexibility (Playback)	
		Ease of use		Usability	
			Password protected to give access to user	Security	
			Scalability - need to work on many centres of different sizes	Scalability	
			Not allow file transfer - have the file protected if so.	Restricted file access and transfer	
Studio Manager	CE		Audio quality in solution (player?) similar to studio quality	Player	Security - if download that can be worse than CDs. Easy to transfer files.
			Prefer streaming than download to maintain control	Restricted file access and transfer	



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# Internal Users Research

## CI Interview



# CI internal user research. PAIN POINTS

JOB ROLE	STREAM	RESPONSIBILITY	PAIN POINTS:	Ext user	Int user
Digital dispatch team	CI	Responsible for uploading file to DFD	Dealing with unplanned centres issues on top of the planned centres issues which were not foreseen (centres known for having issues) - Stressful and puts more pressure, many things to sort out last minute as there is not flexibility.		X
			Check the unplanned centre is set up to receive digital file - Password, internet, updated web browser		X
Test production	CI	Test production	Long time taken to get CD produced		X
			Security - Physicality of CD puts content at risk of being exposed		X
			No version check for the checked copies when we tell Cannon to get audio from studio - Risk of selecting wrong version to be duplicated		X
			Security - Examiners download the file to listen to it to approve it - despite there is trust, the audio file is still saved onto someone system		X
Customer service manager	CI	Identifying customer trends and issues	Dispatch problems - Customs, government checks, importation tax, duty fee that centres pay to receive exams	X	
		Handling service issues	Equipment sourcing to play CD - Difficult for centres to access the audio content	X	
		Service consistency	Hard to define if sound quality issue is due to equipment or actual CD - Hard for customer service to solve issue if cause is hard to identify		X
Assessment division	CI	Oversee product managers	Getting right CD for production - No version control for when liaising with Cannon		X
		Ensure quality of CD is up to standard	Studio produce audio it in different file type - Need to go back in production line - Time consuming and labor intensive		X
		See what CD need to be produced	CD hard to get extended for the 25% extra time - Need to listen out for the pauses or listen CD prior (security concern) - If digital, you know where the pauses are (e.g. can see playlist or player marker)	X	
			CD are defective - We can only check some CDs in every batch so some will go unchecked.		X

# CI internal user research. REQUIREMENTS & CONCERNS

JOB ROLE		HIGH-LEVEL REQUIREMENTS (External users)	HIGH-LEVEL REQUIREMENTS (Internal users)	THEMES OF REQUIREMENTS	CONCERNS
Digital dispatch team	CI		Encrypted file download	Restricted file access and transfer	Infrastructure - Device, internet connection
		Simultaneous access to audio file - many room have same exam at once		Accessibility	Communication with centres about implementing the solutions
		Easy to use		Usability	The keeping together of materials may be hard - digital audio but physical paper
			Solution need to talk to EPS	Integration	
Test production	CI	Compatible CCMS and Kiteworks (the checking systems)		Integration	Not to make it difficult for external examiners to access audio file when checking
		Digital file needs to be compatible with the software/player external examiners use to check audio - windows media?		Integration	
Customer service manager	CI	No more log ins - use what we already have for the portal to reduce remember log ins		System Credentials	
		Simple to use - similar to DFD		Usability	Resistance to change
					Familiarity and comfortability with the new type of delivery
Assessment division	CI	Ease to use		Usability	Centres ability to share files - copyright issues for music exams
			We can control when to access file	Restricted file access and transfer	For some countries this is a big step - may meet resistance or slow adoption
			Need to interact with other systems - kiteworks for external examiners	Integration	
Compliance Team	CI		Make sure regulations are followed	Adherence to regulations	Resistance to change
			High level security	Security	Should consider whether the recording should be continuous to prevent malpractice (going back to start of section) or keep in recording in sections





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# Internal Users Research

OCR Interview



# OCR internal user research. PAIN POINTS

JOB ROLE	STREAM	RESPONSIBILITY	PAIN POINTS:	Ext user	Int user
Subject adviser for music	OCR	Advice on assessment	CD disintegrate at arrival - Poor sound quality	X	
		Advice on teacher delivery	Sourcing of equipment for individual playing (device accessibility) - Inconvenience of finding CD player	X	
		Advice on resources	Finding good quality of devices (quality of CD players) - CD are obsolete, there few available are poor spec	X	
		Advice on product management	25% extra time- schools give pauses after each question. To do this we need to know when the pause is so invigilators need to listen to CD prior - Content exposed, security concern		X
Senior assessment material advisor	OCR	Ensure material is produced	Checking process is extensive - A lot of burning to facilitate the many passes in the production line		X
		Work with external groups who put paper together	Security - When centres rip CD they give it to IT specialist - Content is exposed, security concerns for CA		X
		Responsible for the movement of the exam content			

# OCR internal user research. REQUIREMENTS & CONCERNS

JOB ROLE	STREAM	HIGH-LEVEL REQUIREMENTS (External users)	HIGH-LEVEL REQUIREMENTS (Internal users)	THEMES OF REQUIREMENTS	CONCERNS
Subject adviser for music	OCR				
Senior assessment material advisor	OCR		Solution need to meet regulation requirements	Meet standards	
		Ease of use		Usability	

Click [here](#) to view the full internal user research spreadsheet of CE, CI, OCR.



Understand RC

## 2. PROBLEMS / PAINS

Which problems do you solve for your customer?  
There could be more than one, explore different ones.  
eg. existing solar solutions for private houses are not considered  
a good investment (1).

TOO MANY  
POINTS FOR  
COMPARISON

(FI) Hard to  
coordinate  
booking for

TOO MANY  
TABS

Too much  
irrelevant  
info on SL  
cards

# Personas, Experience maps.

(Internal Users)

# User Persona

## Sr CE.

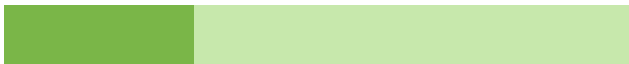
Occupation: Senior operation manager

Stream: Cambridge English

Responsibility: Process entries, CD production, Dispatch materials, FTP upload

### Level of Concerns

Security



Logistic and production



Accessibility



### High-Level Requirements

- Need to communicate with other systems - SAP.
- Users need to know what they are sitting to check correct audio is available.

### Pain points

- Production of CD expensive for CA

# User Persona

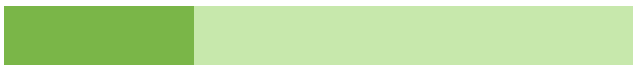
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## AV CE.

Occupation: Studio Manager  
Stream: Cambridge English  
Responsibility: Create, Archive audio content

### Level of Concerns

Security



Logistic and production



Accessibility



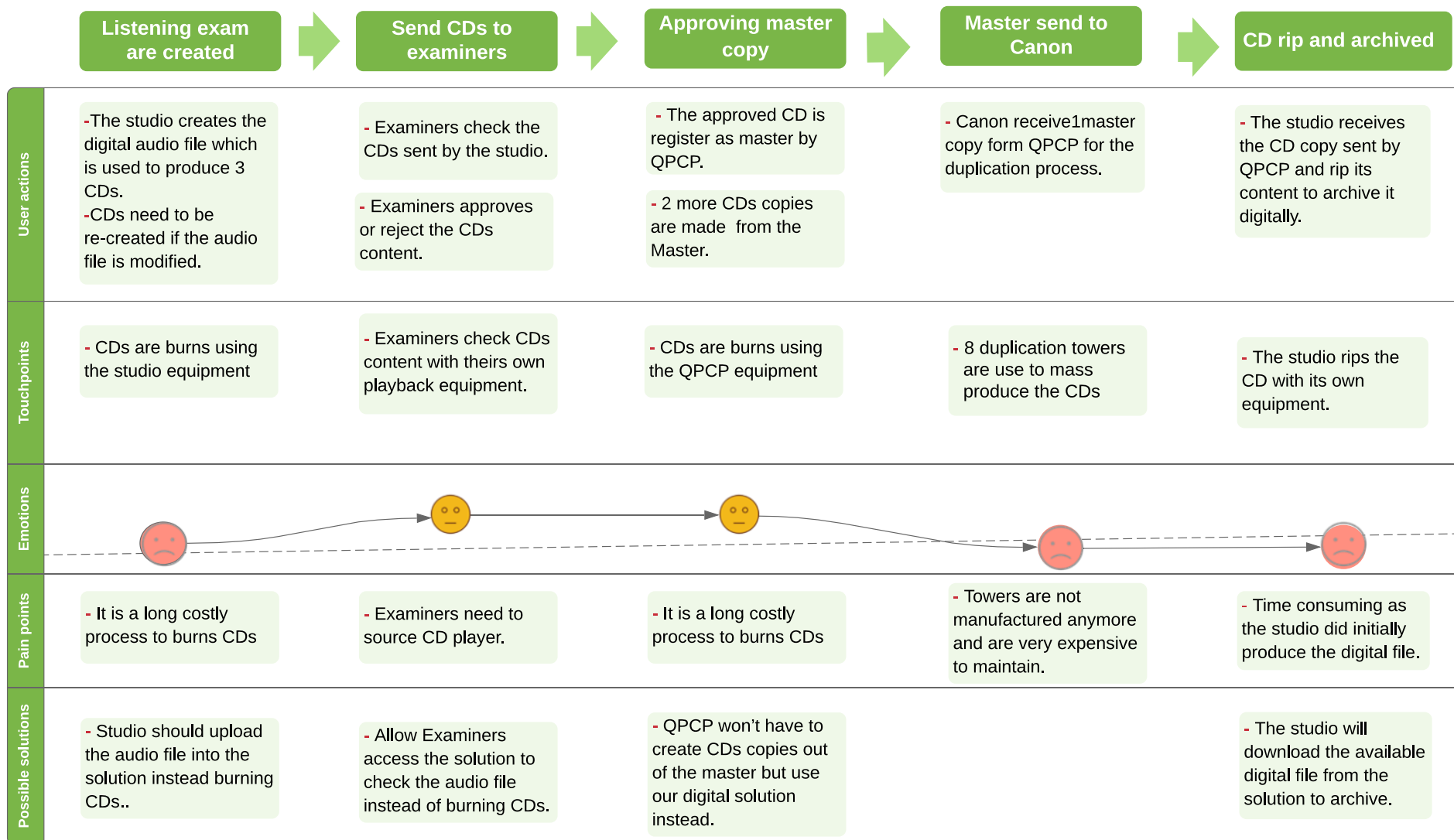
### High-Level Requirements

- Audio quality in solution (player) need to be similar of studio.
- Prefer streaming than download to maintain control.

### Pain points

- Long process to produce the master disk which requires many burnings onto a CD.
- Duplication issue which is time consuming to identify and resolve.
- Long process to rip CD from approved audio to archive it.

# User Experience Map (AV CE)



# User Persona

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## CI Examiner

Occupation: Test production

Stream: Cambridge International

Responsibility: Testing production audio files for languages and art language materials

### Level of Concerns

Security



Logistic and production



Accessibility



### High-Level Requirements

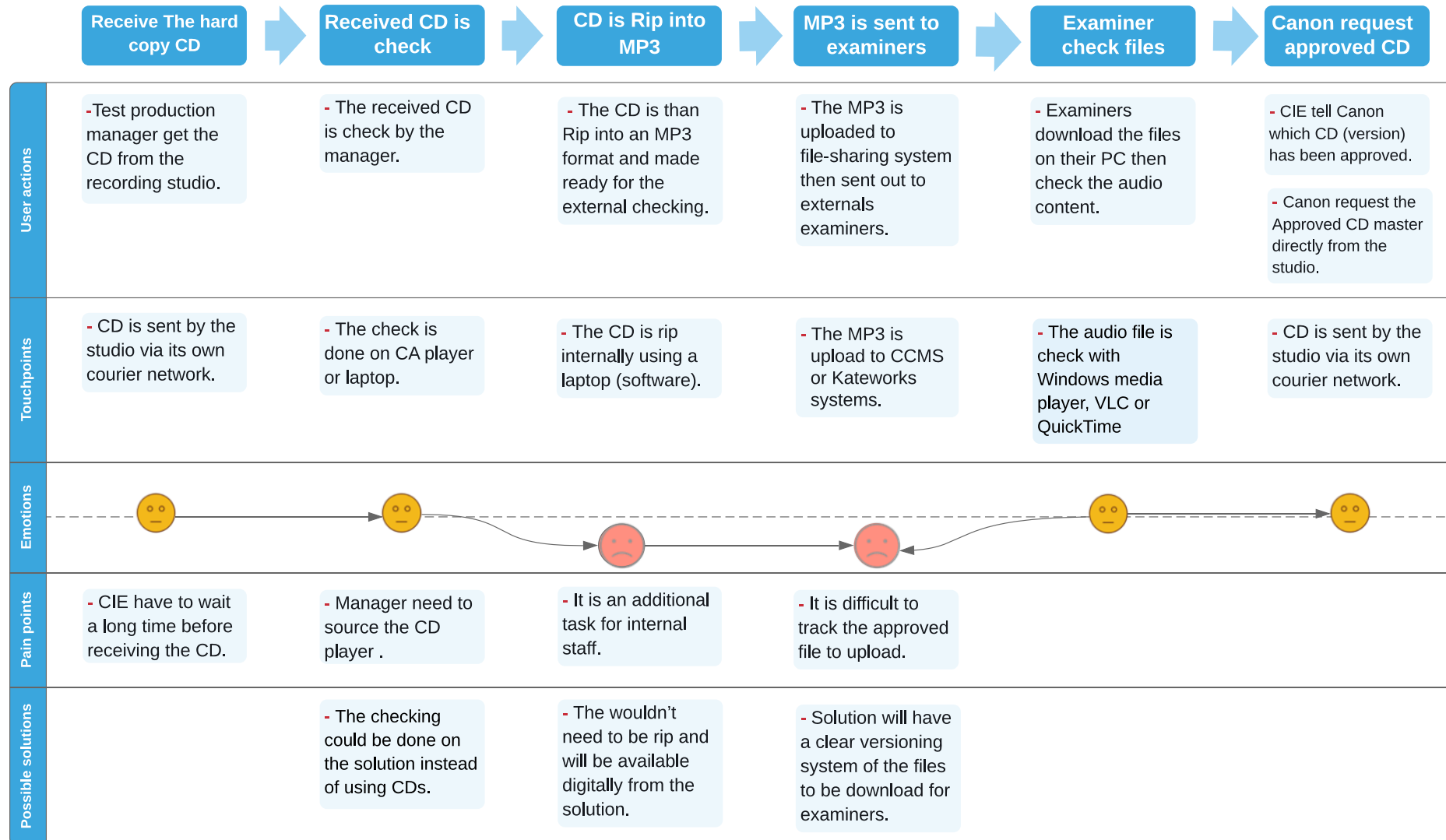
- Compatible with CCMS and Kiteworks (the checking systems).
- Digital file needs to be compatible with the software/player external examiners use to check audio - windows media?

### Pain points

- Long time taken to get CD produced.
- Security - Physicality of CD puts content at risk of being exposed.
- No version check for the approved copies when we tell Cannon to get audio from studio.
- Security - Examiners download the file to listen to it to approve it - despite there is trust, the audio file is still saved onto someones system.



# User Experience Map ( CIE examiner )



# User Persona

## Sr OCR

Occupation: Sr assessment material advisor

Stream: Cambridge OCR

Responsibility: Responsible for the movement of the examcontent

### Level of Concerns

Security



Logistic and production



Accessibility



### High-Level Requirements

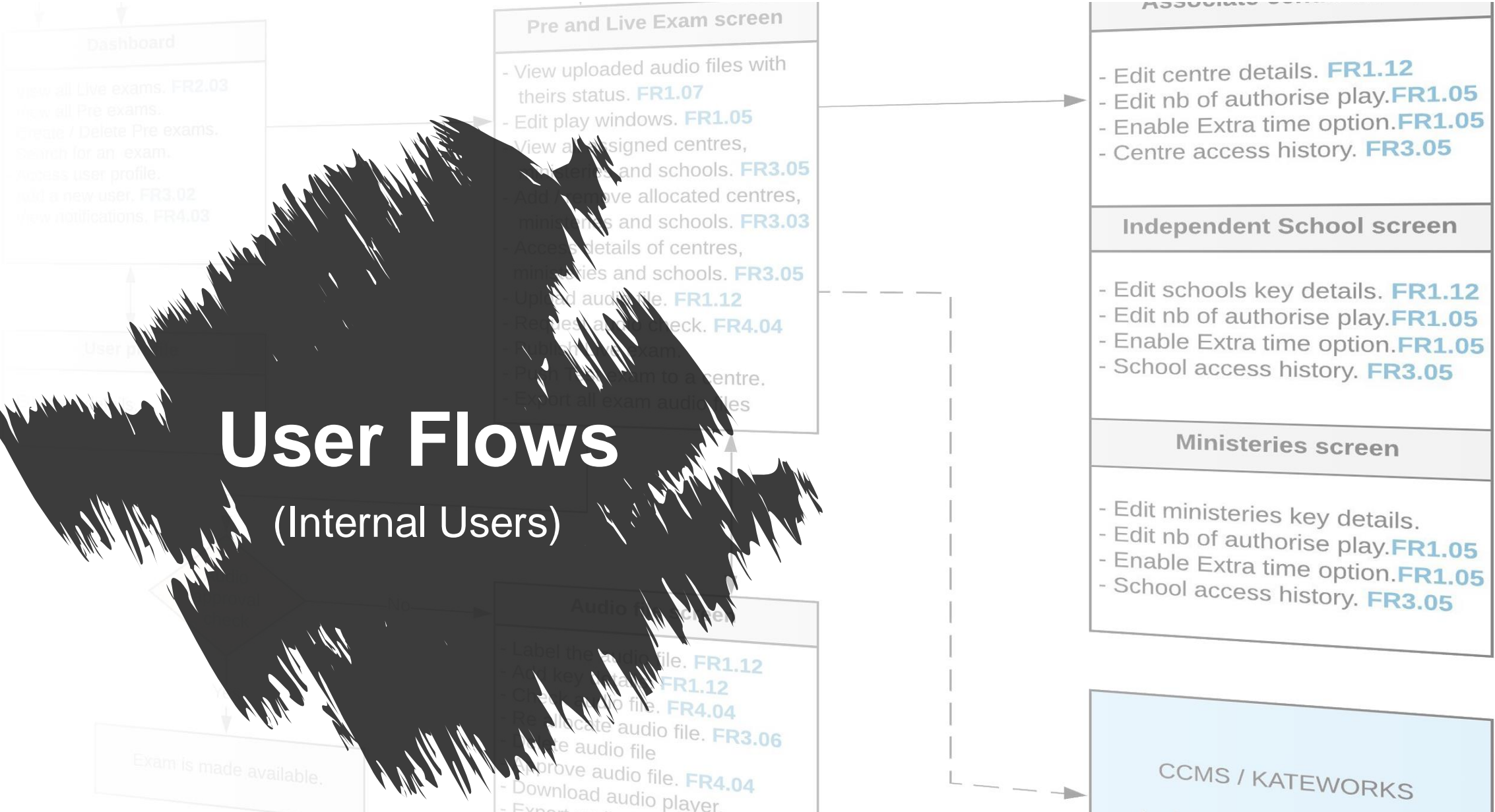
- Solution need to meet regulation requirements

### Pain points

- A lot of burning to facilitate the many passes in the production line.
- Checking process is extensive.
- When centres Rip CDs they give them to IT specialists and expose the content which is a security concerns



## User Flows (Internal Users)



# Internal User Requirements

## Description

The solution Need to communicate with other systems - SAP

Users need to know what they are sitting to check correct audio is available.

The solution should use similar audio quality than the studio

The solution should use a streaming system to maintain the control of the audio recording.

It should be compatible with CCMS and KATEWORKS.

The audio file need to be compatible with the software/player used by external examiners to check audio

The solution need to meet regulation requirements.

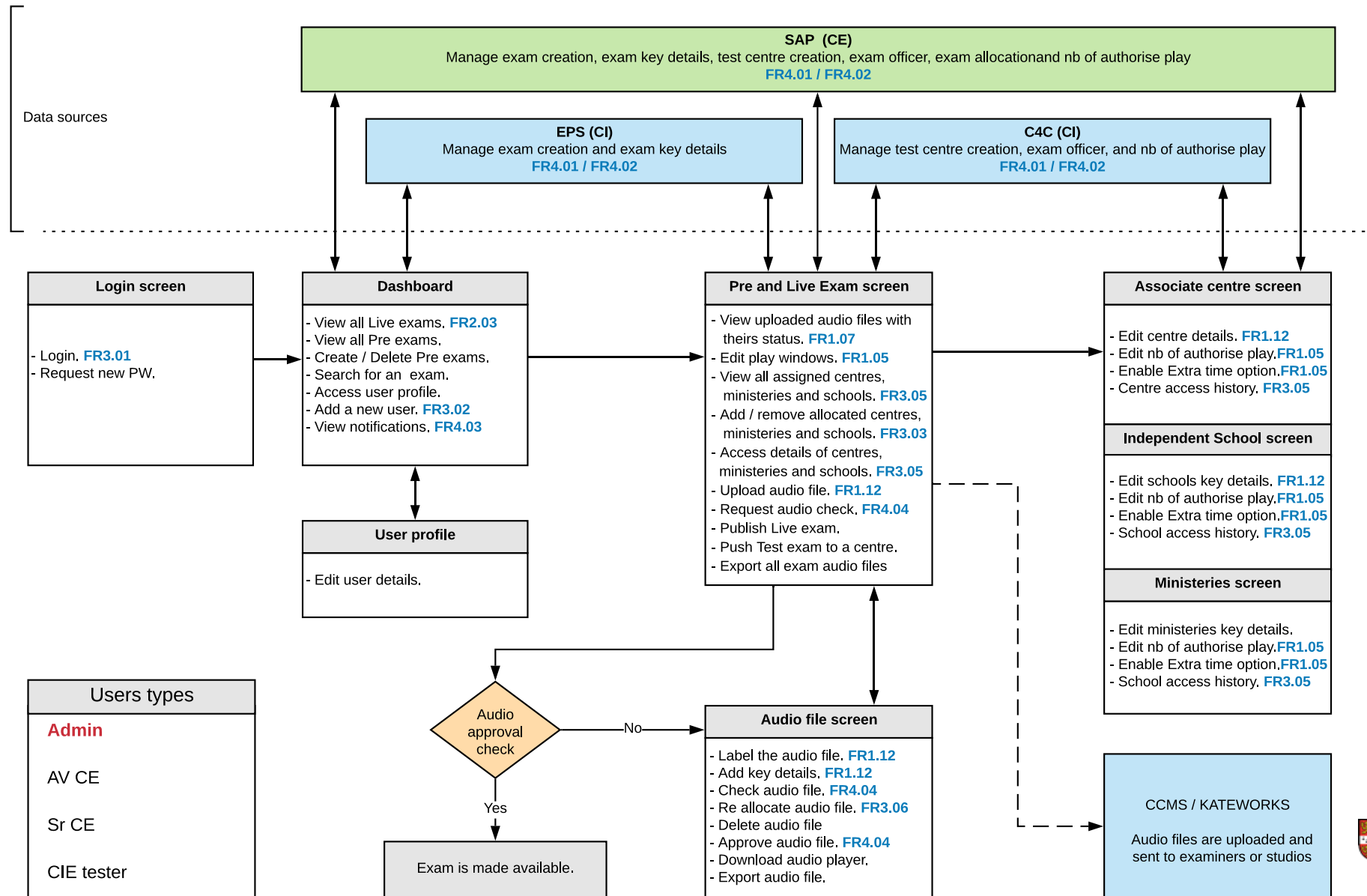
# Backend CA Functional Requirements

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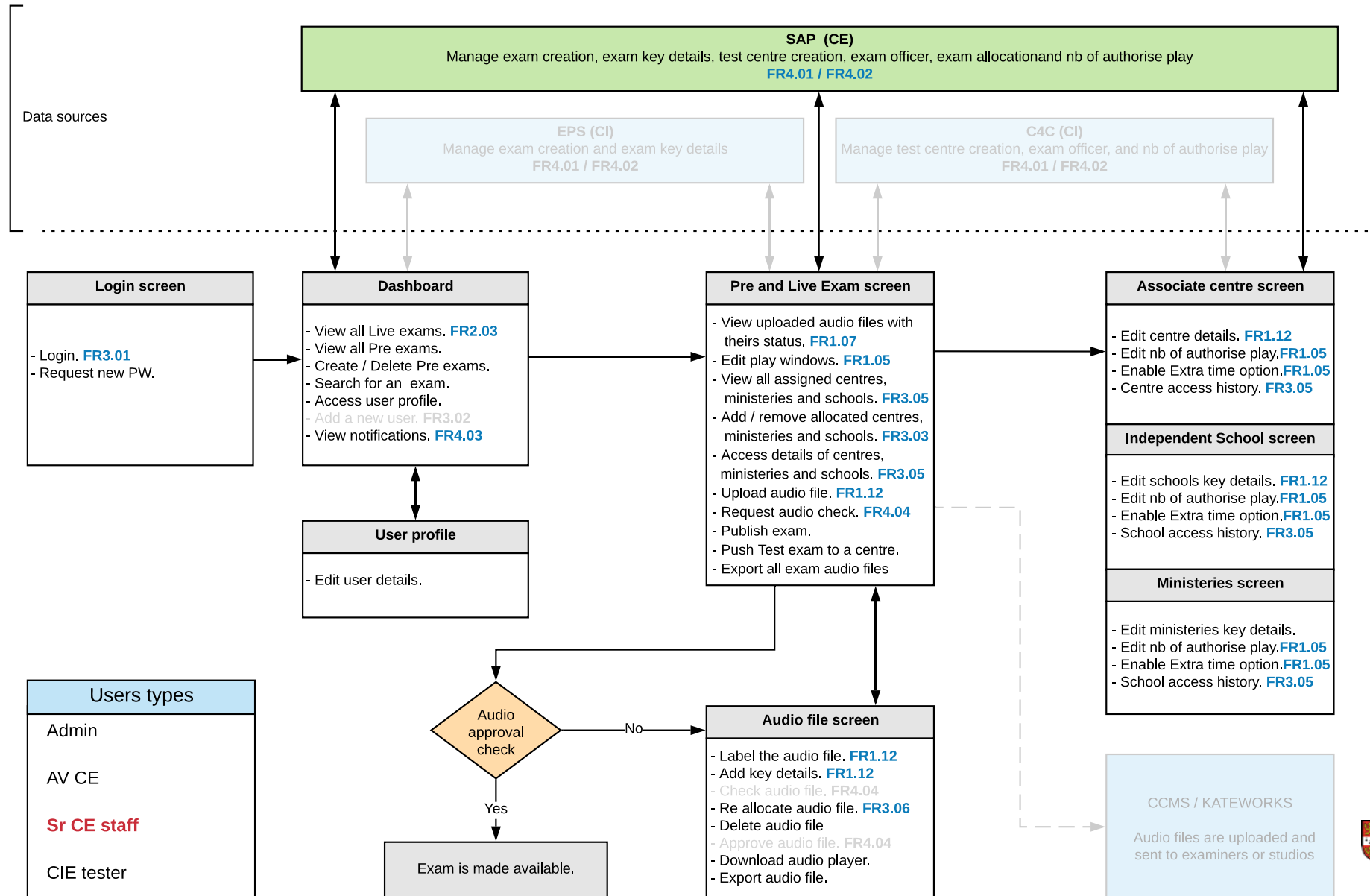
Ref	Description
FR1.05	Override exceptions to listening audio files
FR1.07	The solution should provide a status for all recordings
FR1.12	Easy upload, search and listing of audio files with the ability to add key details attached to the files
FR1.13	Ability to set window of time for each test
FR2.03	Provide access to the right test materials to the test center
FR3.01	The solution must provide user permissions and profiles for Systems Administrators
FR3.02	The solution must allow administrators to add new users / create new accounts
FR3.03	The solution must allow administrators access to re-allocate any audio files
FR3.05	The solution should be able to display and provide comprehensive access to CE staff
FR3.06	The solution should provide the administrator with a means to allocate and re-allocate digital audio content/files
FR4.01	The solution must link to an internal solution (SAP) for automatic allocation
FR4.02	Creation of Test Window after receiving test date from SAP
FR4.03	Issues notification to CE staff
FR4.04	Insure that the same player and file are use, to check and distribute the audio content.

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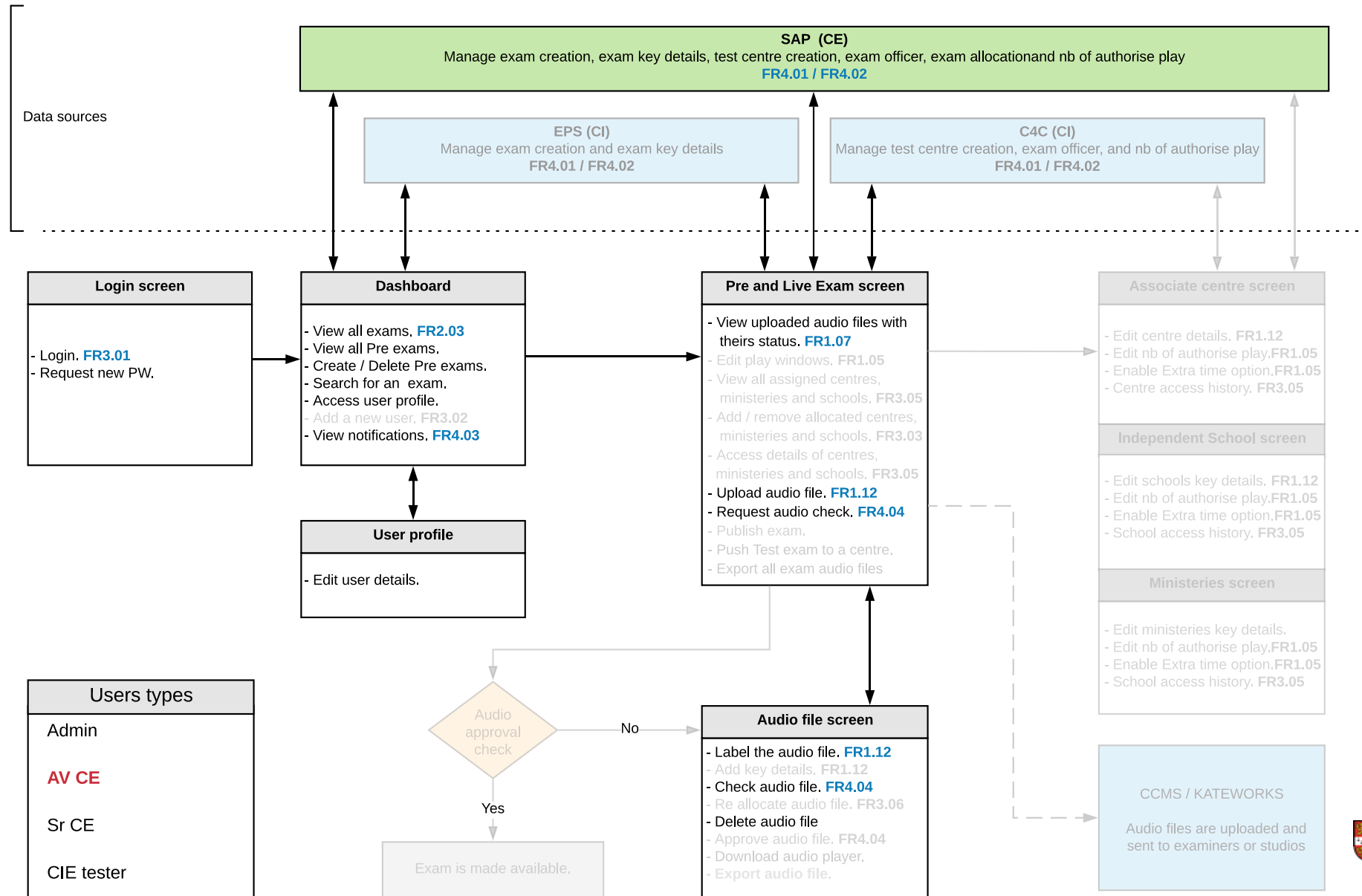
# Internal Users Flow (Admin)



# Internal Users Flow (Sr CE.)

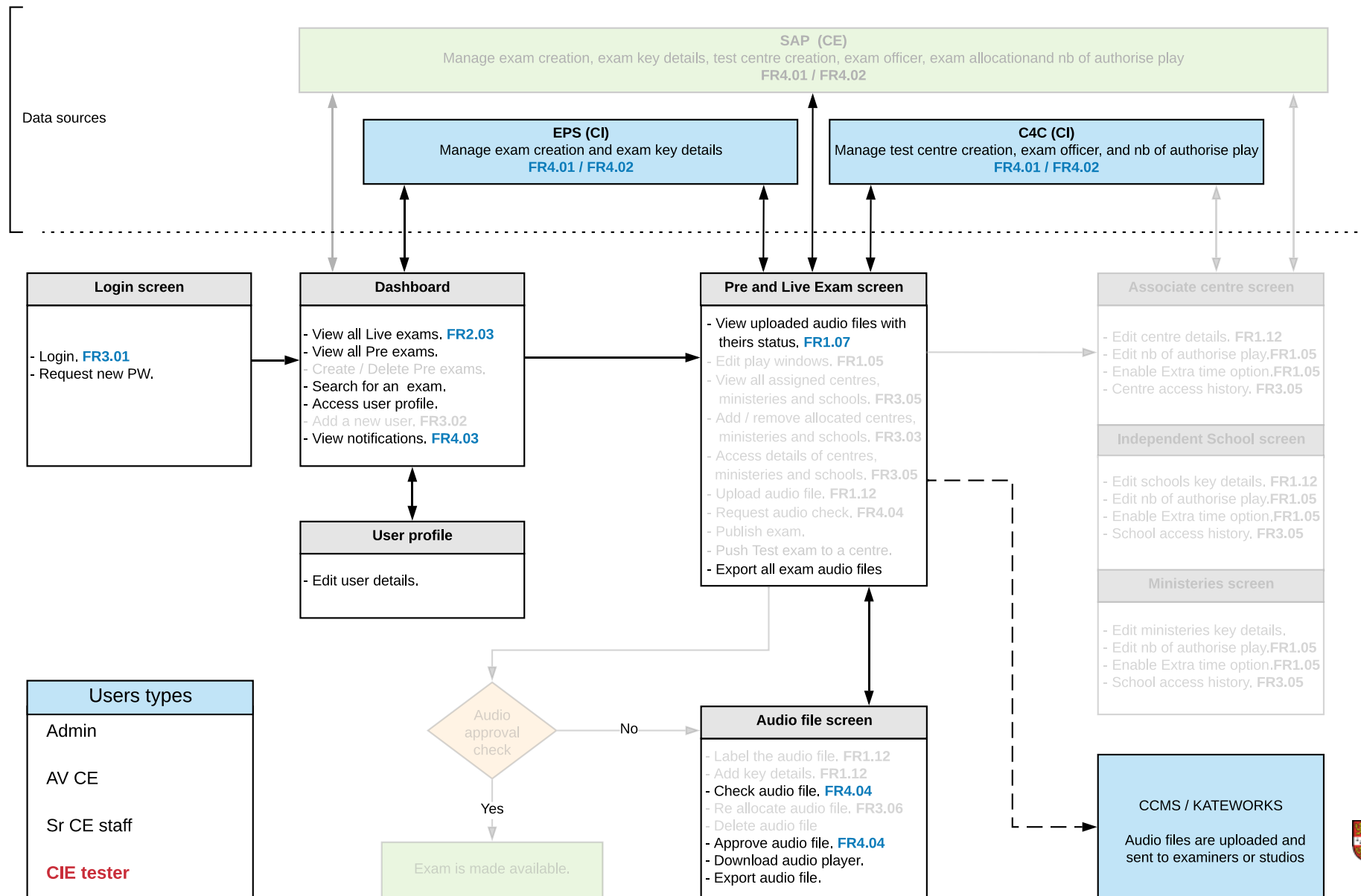


# Internal Users Flow (AV CE.)





# Internal Users Flow (CIE Examiner)





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The background of the slide shows a woman in a purple top on a video call. She is visible on a smartphone screen on the left and in a larger, blurred view on the right. The scene is set in a room with yellow and blue sticky notes on a wall.

# **External Users Research CE, CI.**



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# External Users Research

CE Interview



# CE. External user research. PAIN POINTS & REQUIREMENTS

JOB ROLE		COUNTRY	RESPONSIBILITY	PAIN POINTS:	CD DELIVERY	DIGITAL DELIVERY	HIGH-LEVEL REQUIREMENTS	THEMES OF REQUIREMENTS
Exam officer	CE	Italy - Catania (IT006)	Organizing and preparing exams	Equipment hard to find	X		Need to be able to transport the audio onto something e.g. USB, so they can play it in many rooms/venues - due to lack of internet and poor equipment at venues	FUNCTIONALITY
			Transporting exams to venue	CD player that are available are low quality - so they use laptop and wireless transmitter to listen to wireless headphones - recently invested but still not good enough - bad experience put bad reputation on CA	X		Centre should be allowed to create credentials because of the venues they have and centers should not share access with venues.	SYSTEM CREDENTIALS
				Only available players are stereo - expensive (for many rooms) and transportation issues when moving to venue	X		Centre computers that use the solution should have high level security - firewall, passwords etc.	SECURITY
				Insuring correct CD transported to right venue	X			
				Don't always use equipment at venue - Not secure		X		
				Have to buy many laptops for simultaneous exams		X		
				Long time to check CD, 5-6 CD and there are many as they have venues	X			
				Security issues when transporting CD to venue - this is done internally by the Centre	X			

# CE. External user research. PAIN POINTS & REQUIREMENTS

JOB ROLE	STREAM	COUNTRY	PAIN POINTS:	CD DELIVERY	DIGITAL DELIVERY	HIGH-LEVEL REQUIREMENTS	THEMES OF REQUIREMENTS
Exam officer	CE	Spain	Very quick/brief CD checks - too many to check properly	X		High level security	SECURITY
			Hard to source equipment	X		Similar to DFD	FUNCTIONALITY
						Once audio play through, can't play again	ACCESSIBILITY
						Back up in place, ready to use	CONTINGENCY PLAN
						Same password for all venues	ACCESSIBILITY
						Venue only allowed to download exam on the day of the exam	SECURITY
Head of centre	CE	Mexico	Too many Cd delivered - have to match CD to paper. Can sometimes lead to mismatch			Good security on content	SECURITY
			Sourcing of good quality equipment			Ease of use	USABILITY
			Limited checking of the CD - some left unchecked			Easy delivery of content	CONVENIENCE
						Centre have control of credentials	ACCESSIBILITY

# CE. External user research. PROCESS & OTHER COMMENTS

JOB ROLE		COUNTRY	PREPARATION PROCESS	PERSON(S) OF CONTACT	CHANGE OF EMPLOYMENT	HANDLING AUDIO FILE (Who)	ADOPTION PROCESS	TRANSITION PERIOD	INTERNET CONNECTION
Exam officer	CE	Italy - Catania (IT006)	Receive package & count CDs to see if got it all	Logistic manager assistant	Often	Logistic manager, Logistic manager assistant, Centre exams manager, venue supervisors and invigilators	Complicated	LOOK AT COMMENTS	Stable at centre but not at venue
			Lock CD in cupboard	Centre exams manager					
			Logistic manager retrieve it unseal CD to check tracks	Venue supervisors/invigilators					
			Reseal CD and returned back in box						
			open box, get CD and papers and take to exam venue						
			venue staff unseal one CD to check equipment						

# CE. External user research. PROCESS & OTHER COMMENTS

JOB ROLE		COUNTRY	IT SUPPORT	EXTERNAL VENUE	COMPLEX ARRANGEMENT	OTHER COMMENTS
Exam officer	CE	Italy - Catania (IT006)	LOOK AT COMMENTS	X	Having to need constant internet and ensuring venues have internet access - don't have access to venue prior to exam so hard to know. That's why need to transfer on a USB or something similar when downloaded at the centre	Too much equipment to invest in - expensive
					Venue equipment is usually poor - many of the venue are state school that have old PCs with old software. The maintenance of it is poor	Centre uses other digital solutions and is dependent on internet - this is different for the venues as they are not that digitally ready most of the time.
						Venue lack IT support, unknown about centre
						Invigilators usually ex-students - exams held in the summer time so the people change often
						Bad reputation on CA caused by bad experience from poor audio quality
						State school is biggest customer and they want the exam to be done there but they equipment they have is very poor so they transport their own equipment which offers slightly better audio quality - but transportation has issues on its own e.g. stereos are big to transport and break easily.
						Best solution - Will use it if use digital solution to download but allowed to transfer file with USB to carry to other rooms of venue. Dispatch issues will be reduced as its within the country so no custom delays.
						With digital need centre to have credential and venue (if they have good internet access), if not then USB method for centres to deliver audio
						Can get routers where you put sim cards to use as internet - but for many rooms this is a challenge & parents don't want their kids to sit next to a router

# CE. External user research. PROCESS & OTHER COMMENTS

JOB ROLE		COUNTRY	PREPARATION PROCESS	PERSON(S) OF CONTACT (CD)	CHANGE OF EMPLOYMENT	HANDLING AUDIO FILE (Who)	ADOPTION PROCESS	TRANSITION PERIOD	INTERNET CONNECTION
Exam officer	CE	Spain	Receive CD and test CD on hand held CD player	Exam officer		Exam officer at centre	Simple		Stable
			Match CD to test paper	Courier		Venue supervisor			
			Distribute box to the venue	Venue supervisor		Invigilator			
			Box goes to the venue supervisor - store in a room	Invigilator who tests and plays CD					
			Invigilator collect CD for their room on the exam day						
			Invigilator tests the CD in the room with the equipment						
			If works, play in the exam						
Head of centre	CE	Mexico	Receive CD	CENTRE: Someone who gets CD and matches it to its paper and puts in box	Often	Logistic manager (downloader)	Complicated - only due to equipment, if that is resolve then it's a simple adoption	4 weeks if equipment is not to be considered	Stable
			Match CD to test paper	VENUE: Supervisor bring material to venue		Supervisor			
			Distribute box to the venue	VENUE: Invigilators who tests and plays CD		Invigilator (to play maybe)			
			Box goes to the venue supervisor - store in a room	VENUE: Supervisor who return material back to centre		Supervisor			
			Invigilator collect CD for their room on the exam day	CENTRE: Someone who responsible for the destroying		Centre staff (destroying CD)			
			Invigilator tests the CD in the room with the equipment						
			If works, play in the exam						



# CE. External user research. PROCESS & OTHER COMMENTS

JOB ROLE		COUNTRY	INTERNET DEPENDANCY	IT SUPPORT	EXTERNAL VENUE	COMPLEX ARRANGEMENT	OTHER COMMENTS
Exam officer	CE	Spain	Dependent	X	X	Most complex arrangements can be handled by the centre pushing forward what is needed from then to qualify as a venue	Internet connection stale at centre and many venues but some venue don't - mainly venues that are schools. For centres that don't have good equipment, they will make it a requirement to have it if the venues want to continues being centre
							IT support available for centres but unsure of the support available for centres - IT support also won't be available on the day of exams, just on the days leading up to it.
							Hold exams at their centre and also use external venues
							Can have up to 12 rooms in their centre
							Venue staff will go to the centre to train on how to use the solution - centre holds annual training sessions
							Most venue use commercial, business, government establishments - e.g. hotels, halls. Many of these venue have good equipment (devices and sound systems) and good internet connection.
							Many supervisors are not technical
							Check material by skipping to each second and listening to the section announcement. 'this is part 1'
							As other venues used - security may vary for digital solutions

# CE. External user research. PROCESS & OTHER COMMENTS

JOB ROLE		COUNTRY	INTERNET DEPENDANCY	IT SUPPORT	EXTERNAL VENUE	COMPLEX ARRANGEMENT	OTHER COMMENTS
Head of centre	CE	Mexico	Dependent	X	X		Very concerned for venues being able to provide equipment - 200 venues, multiple rooms.
							1000 invigilators, 18 subcentres, 200 venues
							Will deter from the solution if high investments are needed for equipment
							Will probably have credentials per session or venue - change of employment is often . They will need someone who handle the credential records and makes sure the venues have received it
							Demo video needed and a manual - they also do annual training session for the venue staff. Can train on how to use solution.
							Har to know centres internet connection - Willing to survey centres about their internet connection and dependency. Centre in the city will have good enough connection for the solution.
							200 venues. 1/3 Internal venues
							All in communication on the day of the exam - group chat
							Would like a USB option
							External venue - take candidate to venue, internal venue - Schools that would have their own equipment. 1/3 internal centres
				Many venues are schools			



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# External Users Research

CI Interview



# CI. External user research. PAIN POINTS & REQUIREMENTS

JOB ROLE		COUNTRY	RESPONSIBILITY	PAIN POINTS:	CD DELIVERY	DIGITAL DELIVERY	HIGH-LEVEL REQUIREMENTS	THEMES OF REQUIREMENTS
Exam officer	CI	INDONESIA - Jakarta (ID087)	Preparation on exam day	No issues with CD - Never used a backup			Similar to DFD which they already use	INTERGRATION
			Organize entries	Accent issues - lack clarity in recording voice. The checking recording is fine but the test recording has issues			Once opened files and checked it, the solution should feedback to internal system to show that the audio has been opened, checked and approved.	NOTIFICATION (CA and user)
			Arrangements w/ students and parents				Informed about this solution starting in time to prepare	INTRODUCTION
							Compatible with any device	DEVICE AGNOSTIC
							Have less log ins - too many already	SYSTEM CREDENTIALS
Exam officer	CI	INDIA - Mumbai (IN657)	Organize Hindi listening exams - timetables, access teacher support for training	CD stuck in customs	X			
			Exam entries - register candidates	Extra time hard to implement - difficult to pause	X			
			Exam day preparations	Recording issues - Speaker				
Exam officer	CI	UK - Oundle (27138)						
			Running the exams - GCSE	Student Anxiety - Audio issues	X		Greater security to minimize malpractice	SECURITY
			Entries and deliveries	EO anxiety - will it work or run fully?	X		Reliability to prevent panic when audio has difficulties - need to be sure it will work	CONTINGENCY PLAN
			Mock tests	Keeping a physical CD is a security risk.			CA control the credentials - centers apply to create credentials and we approve.	SYSTEM CREDENTIALS
			results, distribution				One person gets encryption code	SECURITY

# CI. External user research. PROCESS & OTHER COMMENTS

JOB ROLE	COUNTRY		PREPARATION PROCESS	PERSON(S) OF CONTACT	HANDLING AUDIO FILE (Who)	TRANSITION PERIOD	USE OTHER DIGITAL SOLUTIONS	OTHER COMMENTS
Exam officer	INDONESIA - Jakarta	CI	Open package and check CD in the room	Exam officer (Interviewee)	Exam officer	1 year - 2 exam series	X	They distribute the CD out teacher a month after exam period ends to use as mock materials - up to 5 years
			Check second CD in room					Invested in back up internet connection
			Seal both CD back into box and note down the date opened					30 invigilators, all teachers. If more than 24 candidates they use the hall and have 2 invigilators
			On exam day, 1 hour before, check CD in exam room with player					1 invigilator (EO) - only one exam room
			Play it for the exam					
Exam officer	INDIA - Mumbai	CI	Open pack and play a part of the CD for clarity	Exam officer (interviewee)	Exam officer	1 exam series	X	Recently invested in sound system and existing infrastructure could accommodate solution
			CD returned to box and second CD checked	Admin assistant	IT support - 1 person			Recently increased internet stability - back up service provider
			CD returned to box, sealed and data open is noted	IT support to check audio - 1 person				During exam, 1 invigilator and 1 IT support
			Box of CDS put in a safe room and open on exam day					
Exam officer	UK - Oundle	CI	EO collected from main office after delivery	Receptionist collects delivery	Exam officer	1 Year	X	Would be the only exam board to deliver digitally
			EO lock CD in cupboard	Exam officer				5 invigilators - external
			On exam day, take CD to the exam room - test CD in the room and with equipment - 30 minutes before start time	Exam officer assistant				One student had to do exam in different room - used a Walkman
			Play it for the exam					CA would be the only exam board to deliver digitally
								Use CD for mock tests



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# Personas, Experience maps.

(External Users)

# User Persona

## Associate Centre Italy

Occupation: Exam officer

Stream: Cambridge English

Responsibility: Delivering all the listening exams to italian state schools'network.

Venue: External with the centre equipments.

Exam room use concurrently at centre: 6

Staff handling CD: 2

Invigilator: Vary (external)

### Level of Concerns

Security



Logistic and production



Accessibility



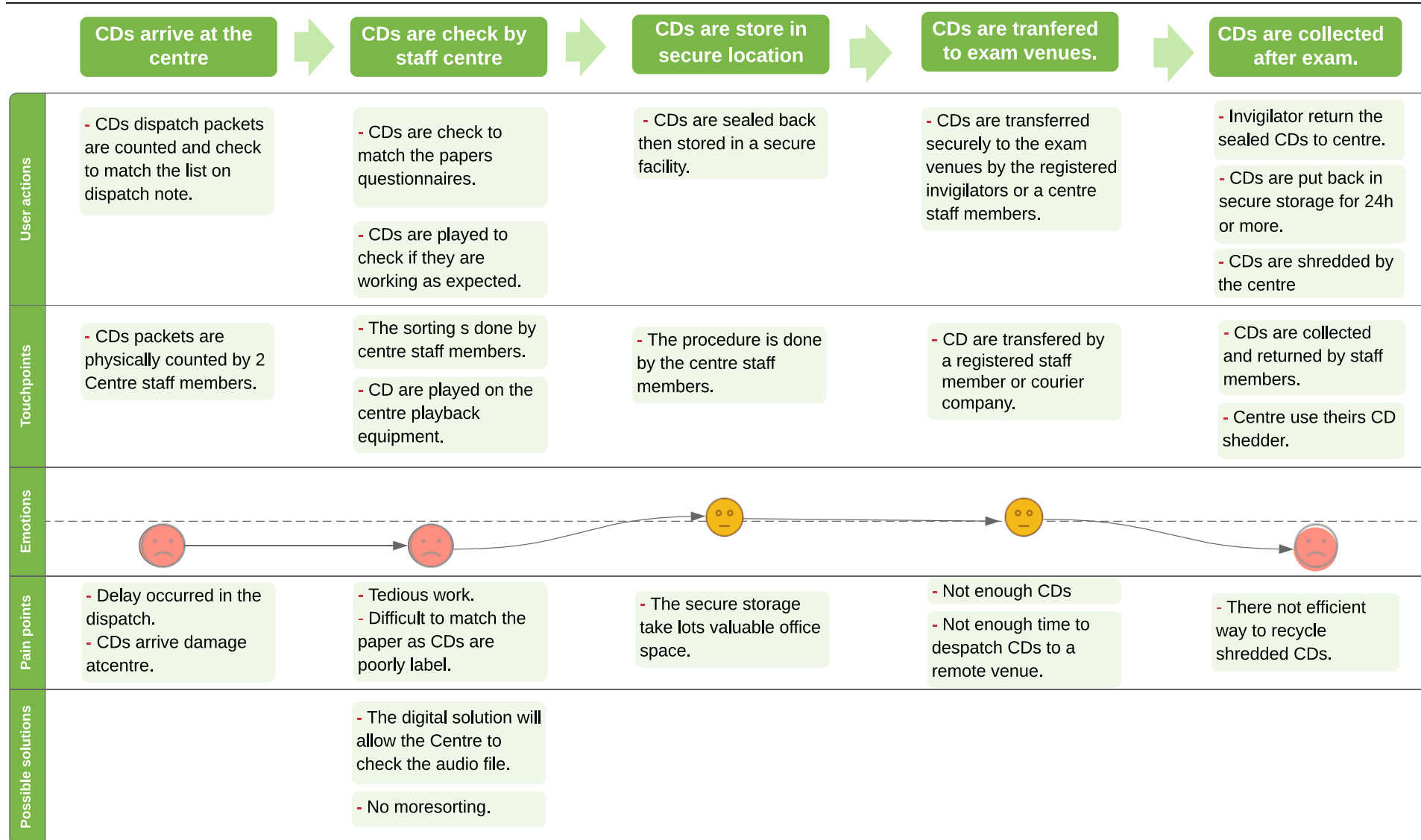
### High-Level Requirements

- Need to be able to transport the audio onto something e.g. USB, so they can play it in many rooms/venues, due to a lack of internet and poor equipment at venues.
- Centre should be allowed to create credentials because of the venues they have and centres should not share access with venues.

### Pain points

- Insuring correct CD transported to right venue.
- Security issues when transporting CD to venue - this is done internally by the centre
- The secure storage take lots valuable office space.
- it take Long time to check CD, 5-6mn per CD and there are many as they have venues.

# User Experience Map (Associate Centre. Southern Italy)





# User Persona

## Associate Centre Spain

Occupation: Exam officer

Stream: Cambridge English

Responsibility: Logistic and delivering all material.

Venue: 300 External with their own equipments.

Exam room use concurrently at centre: 12

Staff handling CD: 2 perm, 2 temp

Invigilator: 200 (external)

### Level of Concerns

Security



Logistic and production



Accessibility



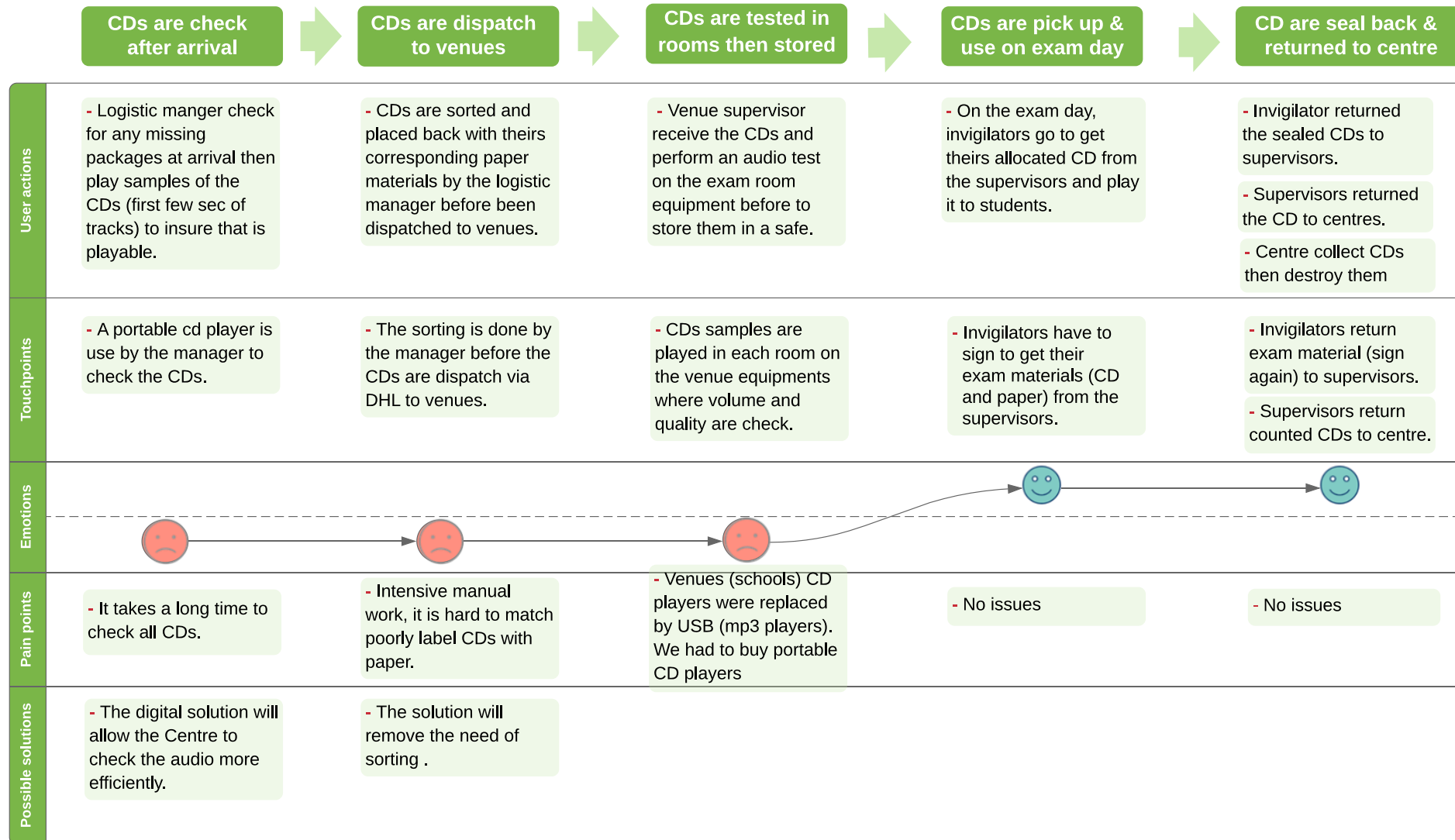
### High-Level Requirements

- Similar system then DFD.
- Venue shouldn't have access to files before exam day for security reason.
- 1 password per session that could be use by all the staff.
- Recording should only be playable once.

### Pain points

- No time to check all CDs
- Venue (schools) have no more CD players and use USB (mp3 player) so we had to source and buy portable CD players.
- Sorting equipment and making sure venues are ready.

# User Experience Map (Associate Centre. Spain)



# User Persona

## Associate Centre Mexico

Occupation: Centre Director.

Stream: Cambridge English

Responsibility: All centre operations.

Sub centres: 18.

Venue: 200 External with their own equipments.

Exam room use concurrently at centre: 118

Staff handling CD: 3 to 6 perm.

Invigilator: 1000 (external)

### Level of Concerns

Security



Logistic and production



Accessibility



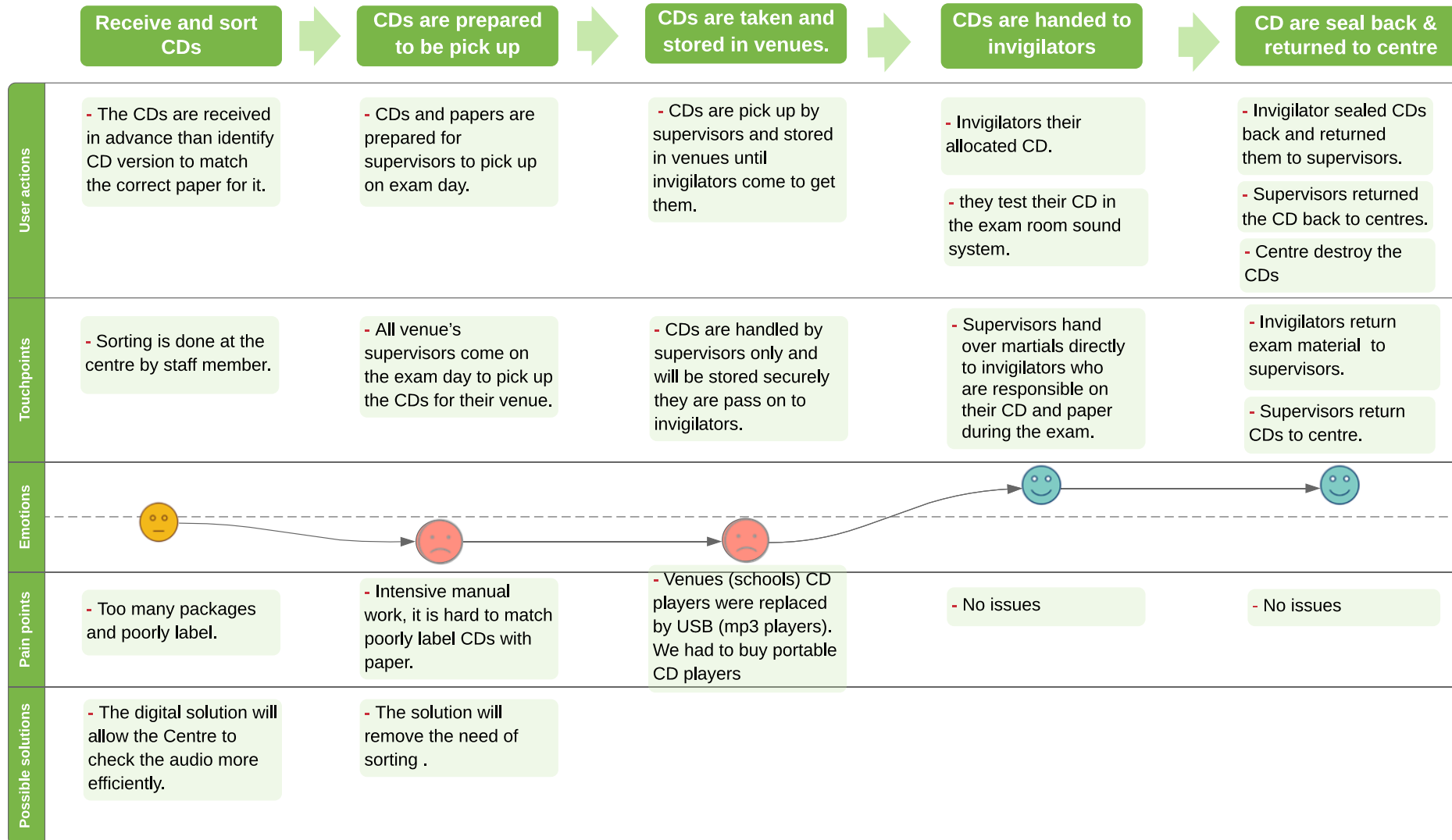
### High-Level Requirements

- The solution has to be secure.
- We need to be able to use the solution on a tablet or download the file on USB.
- Receive the PW or decryption code on exam day then we forward them to supervisors.

### Pain points

- Delivery issue with too many packages that are poorly label.
- It is difficult to sources CD players with good output.
- We can't check CDs before the exam day in the room because their cheer volume.

# User Experience Map (Associate Centre. Mexico)



# User Persona

## Independent school Indonesia

Occupation: Exam officer

Stream: Cambridge International

Responsibility: Organize entries, Preparation on examday

Venue: Internal venue with own equipments.

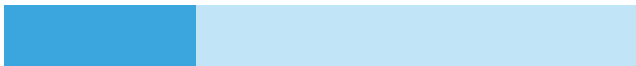
Exam room use concurrently: N/A

Staff handling CD: 1

Invigilator: 30 (teachers).

### Level of Concerns

Security



Logistic and production



Accessibility



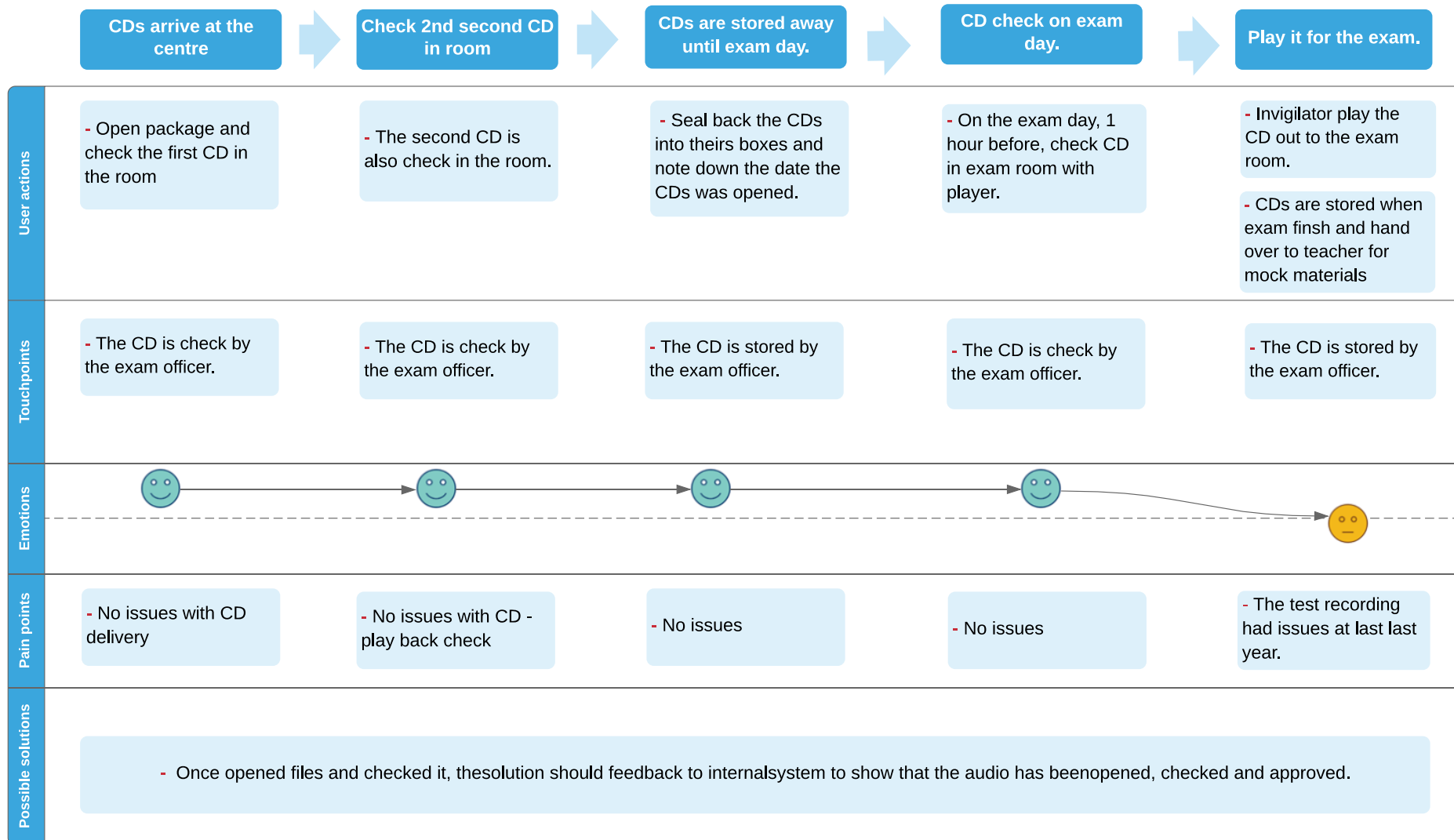
### High-Level Requirements

- Similar to DFD which they already use
- Once opened files and checked it, the solution should feedback to internal system to show that the audio has been opened, checked and approved.
- Have less log in - too many already

### Pain points

- No issues with CD
- Never used a back up
- The checking recording is fine but the test recording has issues

# User Experience Map (Independent schools. Indonesia)



# User Persona

## Independent school India

Occupation: Exam officer

Stream: Cambridge International

Responsibility: Organize Hindi listening exams,  
Exam entries - register candidates.

Venue: Internal venue with own equipments.

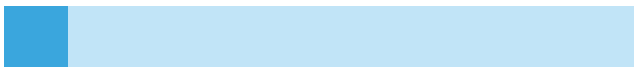
Exam room use concurrently: 1

Staff handling CD: 3

Invigilator: Vary

### Level of Concerns

Security



Logistic and production



Accessibility



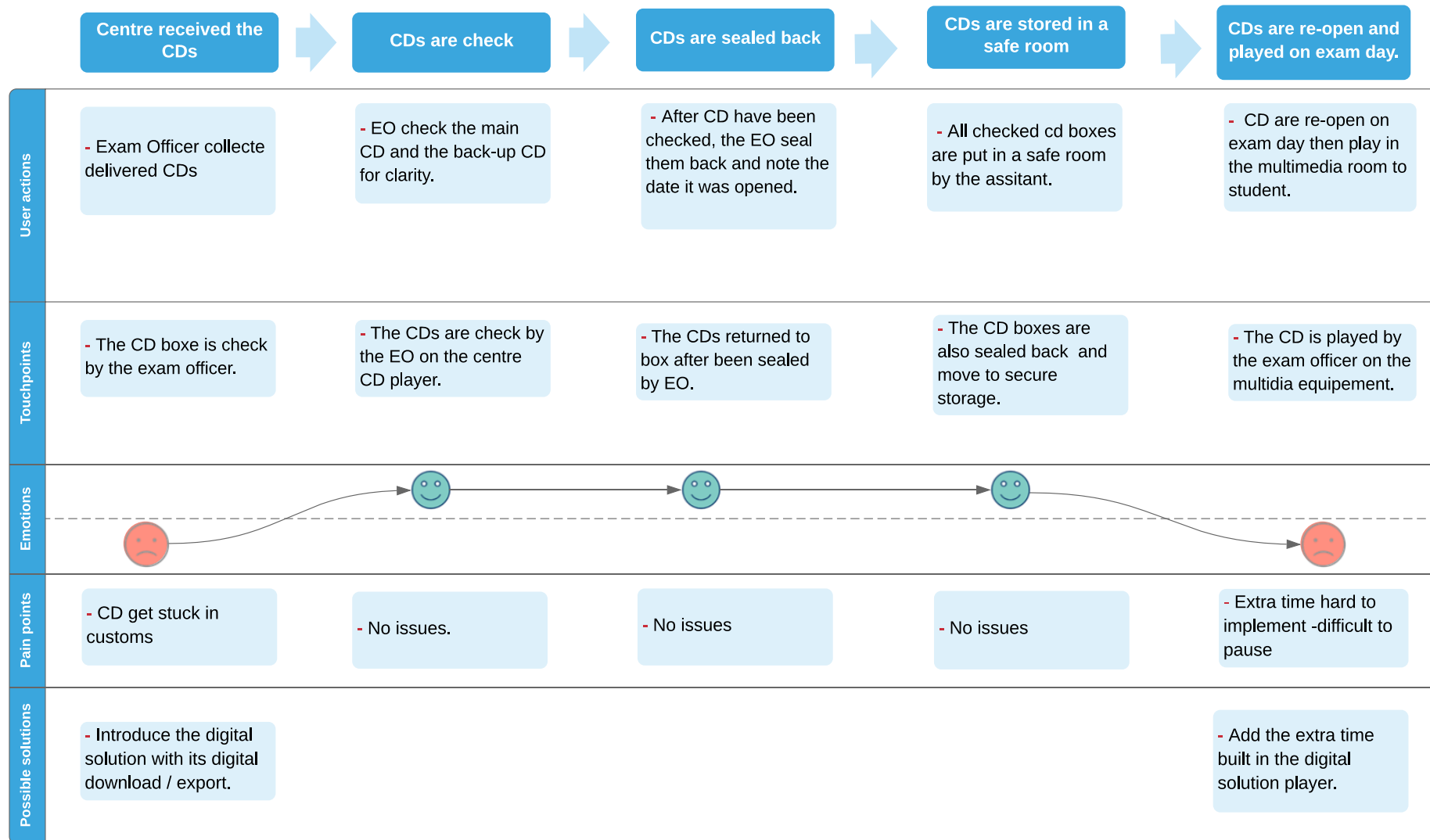
### High-Level Requirements

-

### Pain points

- CD stuck in customs
- Extra time hard to implement -difficult to pause

# User Experience Map (Independent schools. India)





# User Persona

## Independent school UK

Occupation: Exam officer

Stream: Cambridge International

Responsibility: Managing the centre and the exams delivery.

Venue: Internal venue with own equipments.

Exam room use concurrently: 2

Staff handling CD: 3

Invigilator: 5 external.

### Level of Concerns

Security



Logistic and production



Accessibility



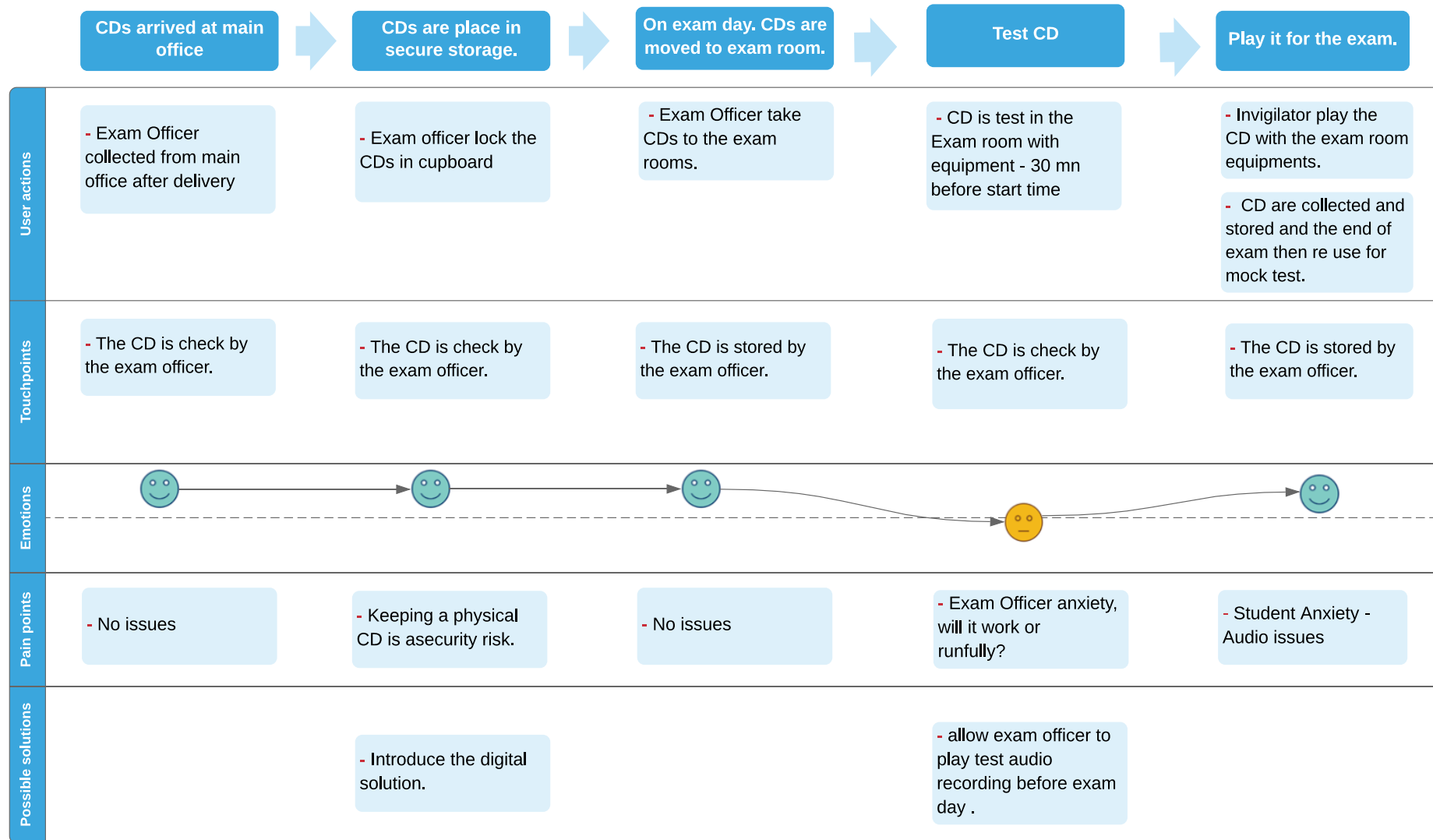
### High-Level Requirements

- Greater security to minimize malpractice.
- Reliability to prevent panic when audio has difficulties - need to be sure it will work
- CA control the credentials - centers apply to create credentials and we approve.

### Pain points

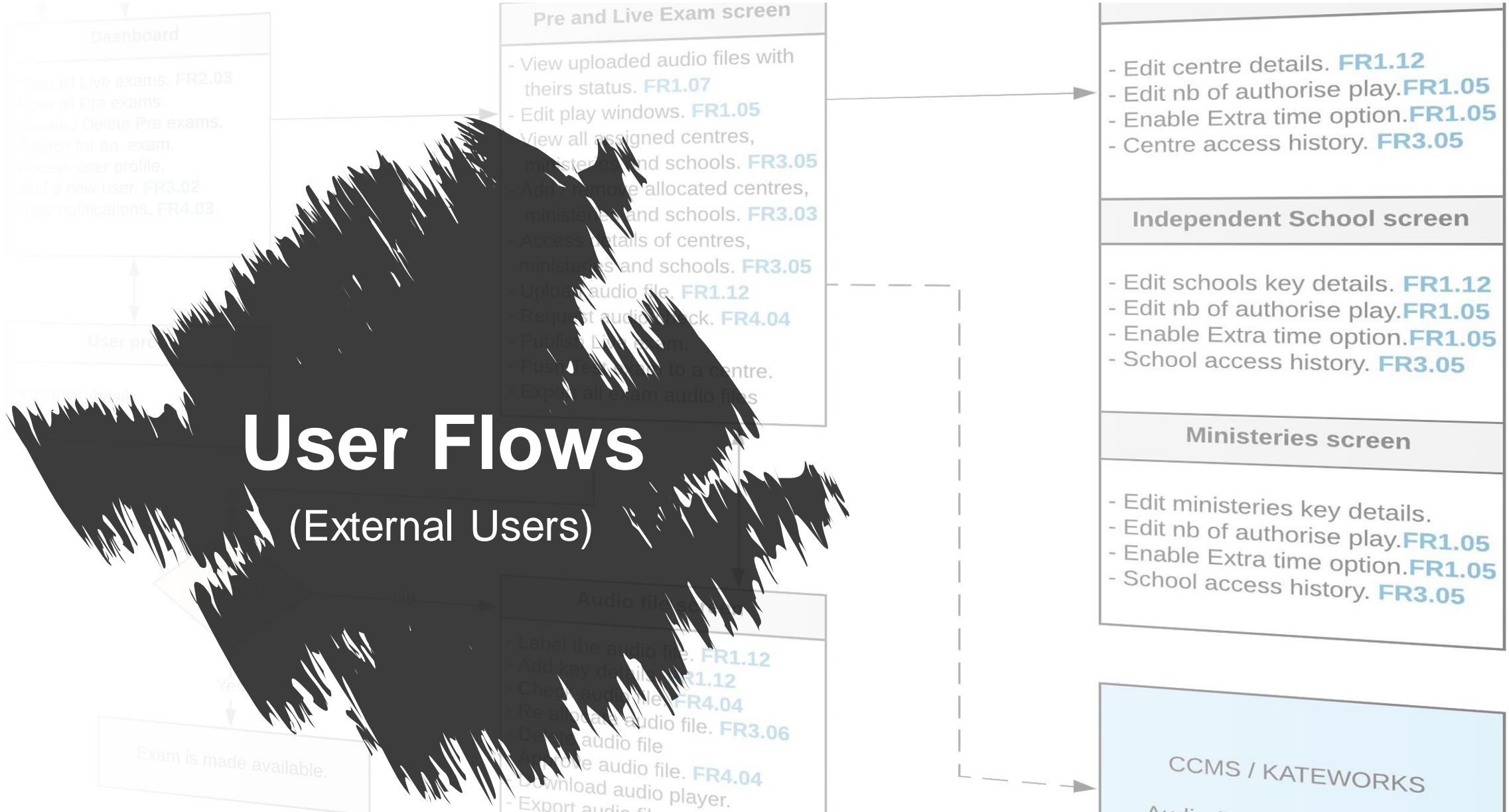
- Student Anxiety - Audio issues
- EO anxiety - will it work or run fully?
- Keeping a physical CD is a security risk.
- One person gets encryption code

# User Experience Map (Independent schools. UK)





## User Flows (External Users)



# External User Requirements

## Description

Need to be able to transport the audio onto something e.g. USB, so they can play it in many rooms/venues, due to a lack of internet and poor equipment at venues.

Centre should be allowed to create credentials because of the venues they have and centres should not share access with venues.

Similar system then DFD.

Venue shouldn't have access to files before exam day for security reason.

1 password per session that could be use by all the staff. - Recording should only be playable once.

We need to be able to use the solution on a tablet or download the file on USB.

Receive the PW or decryption code on exam day then we forward them to supervisors.

Similar to DFD which they already use.

Once opened files and checked it, the solution should feedback to internal system to show that the audio has been opened, checked and approved.

Have less log in - too many already

Greater security to minimize malpractice.

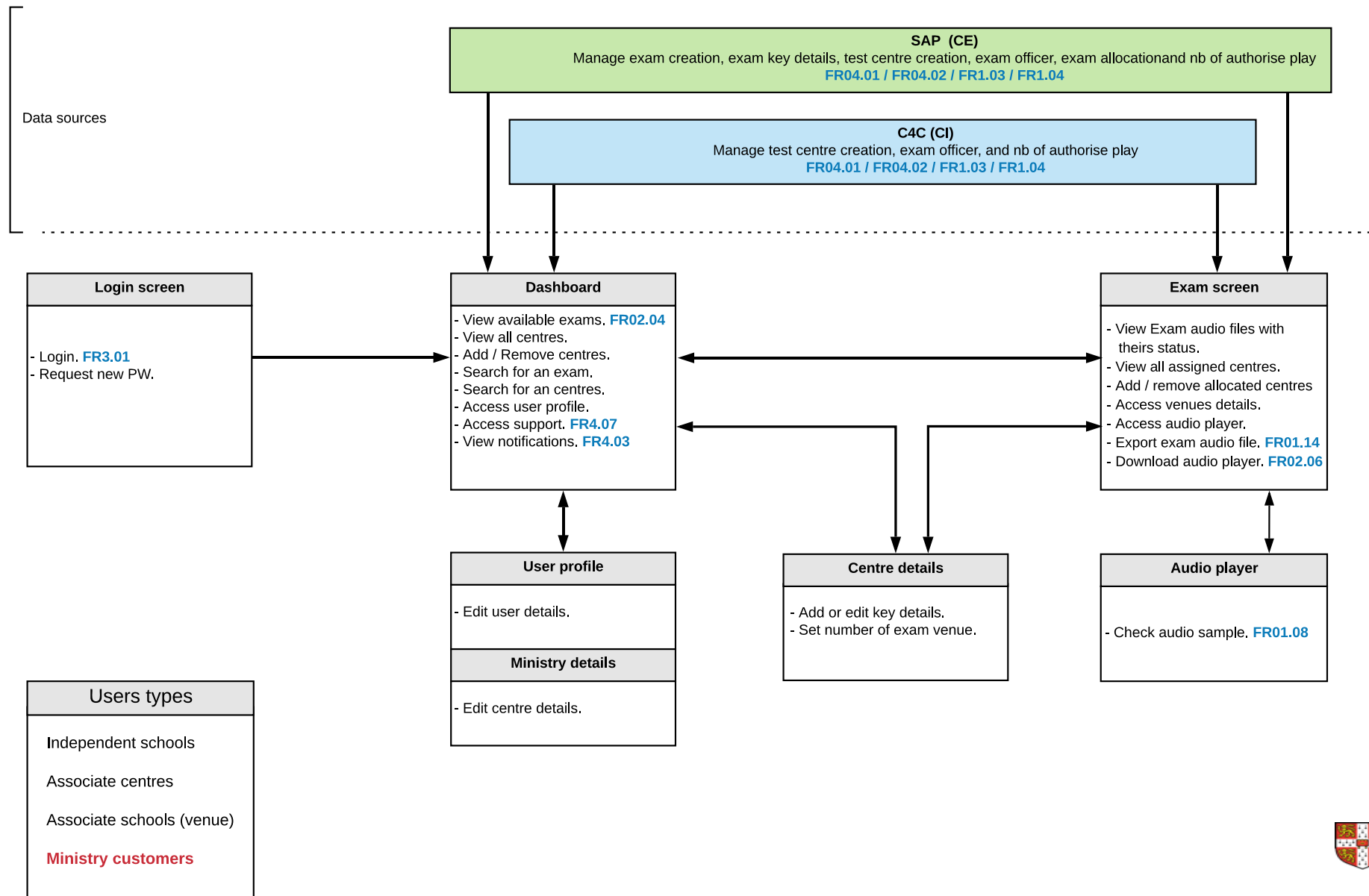
Reliability to prevent panic when audio has difficulties- need to be sure it will work.

CA control the credentials - centers apply to create credentials and we approve.

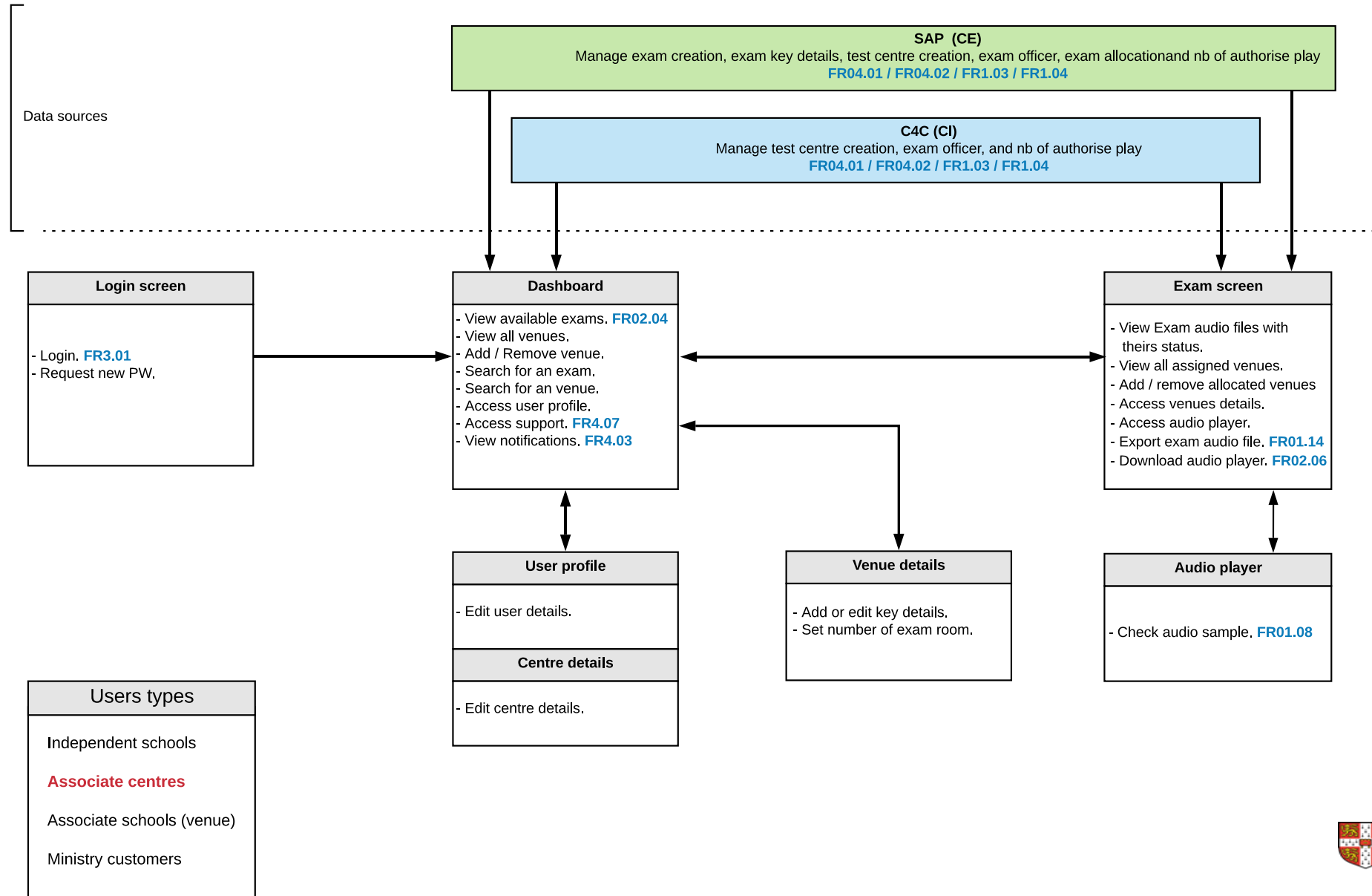
# Frontend CA Functional Requirements

Ref	Description
FR1.03	The solution must ensure listening audio items are securely accessible and allocation based on test Centre user, date of test and test version
FR1.04	The solution play the listening audio content in the order as directed by CA
FR1.08	Sample access for test Centre to check audio content
FR1.11	The system can be used on multiple devices and internet browsers
FR1.14	Download function of digital audio files
FR2.03	Provide access to the right test materials to the test Centre
FR2.04	A Home Page/Dashboard should be created to be the first page the test Centre will see after accessing the solution. The solution should provide the test center with a list of tests they have requested with test dates, status and window of time available
FR2.05	Playing audio files on test day (streaming with internet access)
FR2.06	Downloaded audio files to play on test day (no internet access/no streaming)
FR2.07	A function for test center to seek support from CE staff if encountering any problems
FR4.01	The solution must link to an internal solution (SAP) for automatic allocation
FR4.02	Creation of Test Window after receiving test date from SAP
FR4.03	Issues notification to CE staff

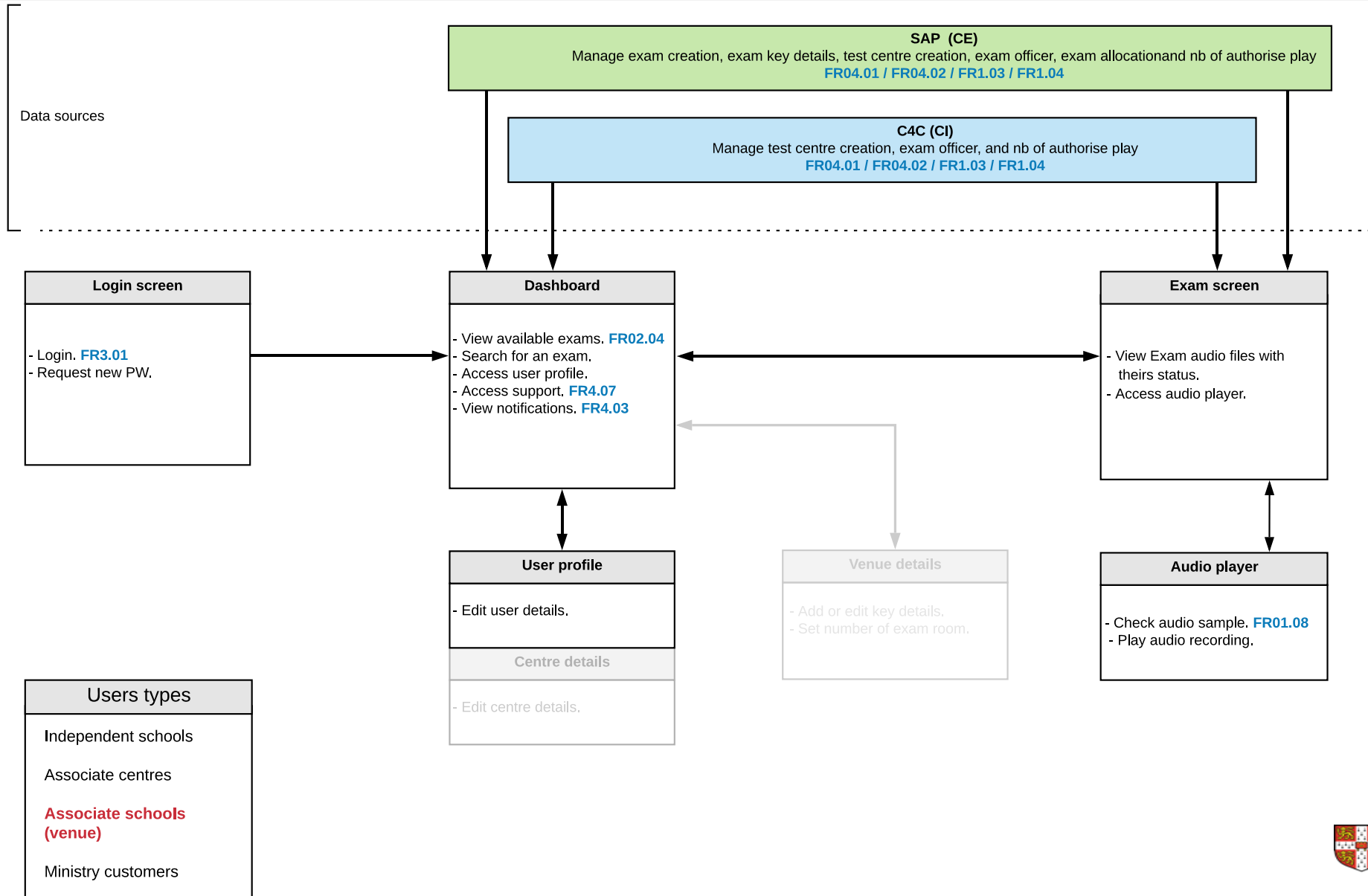
# External User Flow (Ministry customers)



# External User Flow (Associate Centre)



# External User Flow (Venue)



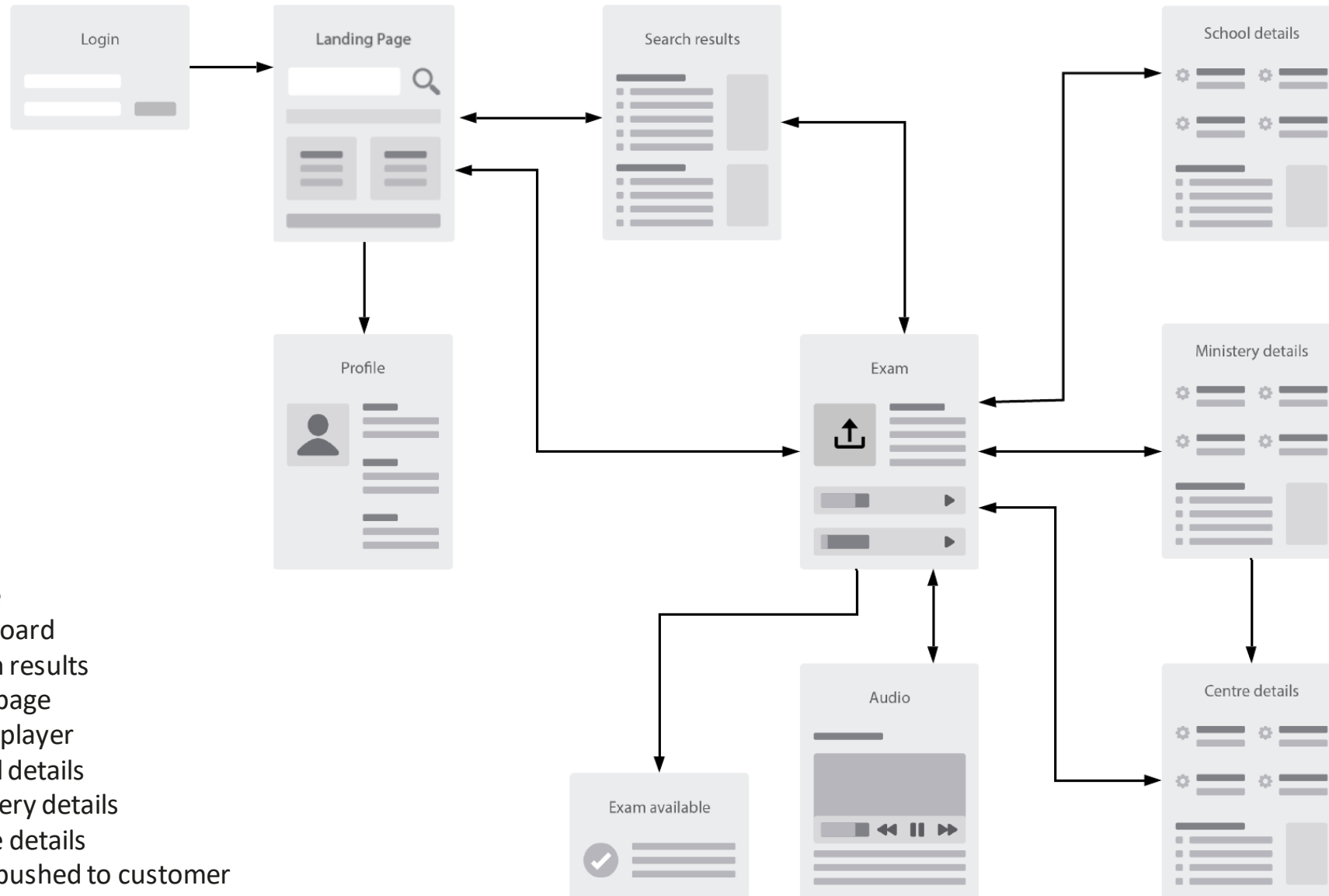




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**Site map, Wireframe,  
Prototype.**

# Backend site map



- Login
- Profile
- Dashboard
- Search results
- Exam page
- Audio player
- School details
- Ministry details
- Centre details
- Exam pushed to customer