the
difference
engine

Difference Engine – Operator Instructions

updated 30/09/24

Starting Up

1. Switch on the laptop

Open laptop (you may need to slide the clip across), and switch on (power button top left).

Click anywhere on the screen.

A screen with user name and password will come up

Password = *Difference*

Press *Enter.*

This will open the desktop – a plain screen with the Difference Engine shortcut in the middle: ⚙ .

NB: We have disabled access to the internet on the Difference Engine laptop, for security reasons, as we have to have the firewall down to enable the broadcasting – so we don't want to risk anything from external sources. **PLEASE DO NOT ENABLE INTERNET ACCESS** by changing the wifi network – this should stay on 'DifferenceEngine' otherwise the system will not broadcast captions!

2. Open Difference Engine

On the desktop, click on the Difference Engine shortcut: ⚙ (the one in the middle of the screen).

A small command-line-interface window will open (black screen with white text) - ignore this.

A second, larger window will open – this is the Difference Engine operator /control interface.

Use *F11* if you need to make it full screen.

Any time you need to access anything else on the Desktop you can just use *F11* to toggle between full screen and a smaller window.

At any time press *H* for the Help menu of commands.

Note that *S* toggles between Edit and Broadcast modes:

- When the outline is in white, it is broadcasting and the selected cell will be visible to connected devices
- When the outline is in yellow, nothing is being broadcast, and you can edit without risk of anyone seeing it before you are ready

It will open on the default.scrp file. Do not use this one to edit – it's just a holding screen.

3. Preparing captions

Refer to Help (*H*) or the Shortcuts section of this document for a quick reference of commands.

Create a new file for your script by opening the caption template (*Ctrl O* / 'Captions Template.scrp') and then 'Save As' with a new name (something short and easy to recognise is advised).

Enter captions into Channel 1 (CH1), from the cell below the Welcome captions we have pre-loaded (you can run through these in the 20-30 minutes before the show, as people arrive and connect, so people can see they are connected).

Each caption - as you would want it to be seen on a single screen - needs to be in a separate cell, one under the other (think of each caption as a cell in one column of a spreadsheet).

Captioning scripts can be typed line by line into the Difference Engine (*Ctrl E* to edit a cell) – but this is time consuming (but may be useful when devising a show or editing a script). They can also be imported into the system, from Word or a text editor, via a spreadsheet.

You will probably already have your script in Word or something similar. However, you need to go through it and chop it up into caption-size bits of text.

Getting a clean copy in Word

- On your own laptop/PC – in Word or similar programme, first cut the script up into caption-sized chunks (max around 20-25 words/ 125 characters) using the return key after each chunk (to create paragraph marks). Each line will be its own caption, so no need to leave a blank line in between

- Remove any formatting - such as paragraph indents, bullet points, headers/footers, tables etc. The layout needs to be as simple as possible to avoid anything unexpected being copied into the script file. N.B. Bold/italics/underline will not show on the Difference Engine

- Take out any stage directions and anything you do not want displayed to the audience

- You can choose whether or not you want to include the name of the character speaking

- Take out any blank lines that you do not want

- Add any sound cues you might want people to be aware of (eg [Silence falls.], [A foghorn sounds], [Tumbling music, growing louder]). We

suggest describing sound effects in square brackets to differentiate from speech. (NB: NOT angled brackets <>)

To create a line break within one caption – i.e. to put text on the next line within a single screen of captions (e.g. to break lines correctly during a verse of a song), type *n*

E.g. to get on one screen:

Happy birthday to you

Happy birthday to you

Happy birthday dear Freddy

Happy birthday to you

You will need to type:

Happy birthday to you \nHappy birthday to you \nHappy birthday dear Freddy \nHappy birthday to you

In 'Edit Cell' (*Ctrl E*), you will need to use the keyboard shortcut *Ctrl N* to enter '\n'.

The DE supports additional unicode characters (e.g. foreign language characters), but the operator window does not always display them properly (even though the App does). So they should display fine on a device but might not look right in the operator's screen. Check this by looking through all the captions on your mobile device before going live with them.

If your performance has music in it, you might want to add a musical notes symbol (♫) to the description by using the shortcut *Ctrl M* .

Do not use angled brackets (< >) anywhere in the script as this causes the captions to not be displayed properly on the browser version of the app for audience members.

Please add our start and end captions to the beginning and end of your own captions, you can find these pre-loaded, but you will need to copy the end caption onto the end of your captions, or they will be overwritten – these are to encourage feedback.

If you accidentally write over the starting/ending captions, they are included here below:

Starting Captions	Ending Captions
Welcome to the Difference Engine, an innovative new access tool from Talking Birds that we are testing.	We hope using the Difference Engine enhanced your experience today. We'd love to get your feedback to help us make it better
Captions will be shown when the performance begins.	Please select the Feedback option from the Difference Engine App menu, (available straight after the performance, at the venue)
You may wish to turn down the brightness of your screen in Settings	If using a browser, use the back button and select 'Feedback'
	If you want to send feedback later, please email birdmail@talkingbirds.co.uk

4. Importing a script

If you have an existing captions script prepared in Word it is relatively easy to import this. Just save on a memory stick from your computer and open this on the DE laptop. It will open in Open Office Writer. You can now just copy all the text (*Ctrl A* then *Ctrl C*) and then in the DE paste it using *Ctrl V* .

If for any reason this does not work then you can copy and paste the script into one column of a spreadsheet and import it from there.

Transferring it into Difference Engine
- Open the Difference Engine laptop up, and insert the memory stick
- Open your document – a Word document may open in Open Office Writer or WordPad. (A spreadsheet will open in Open Office Calc)
- Copy the text (*Ctrl C*) - if using a spreadsheet, select the specific cells you want to copy rather than selecting a whole column as this can cause the DE to crash. With a long script you might want to select sections at a time to copy
- Open the DE (see above)
- *F11* twice to maximise screen (for ease)
- Open the template script: *Ctrl O* and arrow down to select 'Captions template.scrp'
- *Ctrl A* to name it with title of your script – choose an obvious title!
- Select the cell you want your text to start from (below the Welcome captions) – and copy the spreadsheet cells (*Ctrl V*)
- Save now (*Ctrl S*)

- If you need to go back to your document to copy more cells, press *F11* to shrink the Difference Engine window

It's important to run through to make sure you have cut the text up in the right places. Use Difference Engine commands (see help sheet – or press *Ctrl H*) to make adjustments.

REMEMBER TO SAVE OFTEN (*Ctrl S*)

You might prefer to make changes on your Word/spreadsheet document and then re-import it. That way you have a backup.

We recommend you save a copy of your Difference Engine captions .scrp file onto a memory stick as a back up too – it will be saved in the DE Script folder. There is a shortcut to this folder on the desktop – labelled DE Script Directory.

You are now ready to run the captions.

Operation - Operating the Difference Engine

1. Connect laptop to the router

Open laptop as above – it is probably wise to have it connected to a power supply - although the laptop will work without being connected to a power source, the battery life may not be long enough to last for the whole show.

Ensure router (white box) is connected to its power supply and is switched on using the back button next to the power supply. Green lights on top will come on.

Put the antennae up. DO NOT press the small Reset button on the back.

Check wifi signal on router is lit up (ensure the power supply is on).

The router and laptop will connect via wifi.

Check that the laptop is connected to the router's network: on the laptop, in the taskbar at the bottom, click on Networks 'bar chart' symbol (bottom right) – it should say Difference Engine (it will say Limited which is ok – this is because it is not connecting to external internet).

2. Open the Difference Engine

Now open the DE (as in section 2) and open your script file (*Ctrl O* – select your file).

The Difference Engine has two modes – Edit and Broadcast. (use *S* to switch between modes) You can still edit in Broadcast mode, but captions will only be sent out when you are in Broadcast mode.

Whatever words are in the selected row in Channel 1 (CH1) will be broadcast as captions – so make sure that the currently selected cell (which will be highlighted in blue) is in the CH1 (captions) column. (The CH1 title at the top will be in white if you are in that column).

Captions are broadcast by using the down arrow or space bar to move through the captions. Make sure you are in Broadcast mode – it will say 'Broadcast' above the selected cell. The outline around the row you currently want to broadcast is in WHITE.

If it is in yellow (Edit mode), press *S* to switch it into Broadcast mode.

In Edit mode, nothing is broadcast (so you can toggle into this mode to make any changes during the show – but that's a bit risky on time!).

3. Audience instructions

The Difference Engine is accessed via an App on iOS or Android. There is a way to access the captions via a browser if people have a different phone or are on older versions of the operating systems that are not supported – but the App is the best way. Audiences should download this in advance.

To access captions via the App

a) Download the free Difference Engine app

- from the App Store for iOS - iPhone / iPad (v 8 or above)
- from the PlayStore for Android (v 5.1 or above)

b) Connect to the Difference Engine system

- set your device to Airplane mode
- re-enable WiFi and select the Difference Engine network (this should be available at least 20 mins before the event begins – if not, speak to a member of staff)
- **Password is: *engine123*** (If this changes it will be in the Guide on the app)
- Select Captions

c) If you have a different device, or an older version of iOS or Android

People with devices on older versions of iOS or Android, or other devices (e.g. Windows phones) or anyone who turns up on the day without the app can access the captions via a browser. This is a bit clunkier and we know the main feedback will be about ease of accessing it – so **please encourage users to use the App where possible.**

- Connect to the Difference Engine WiFi network, as above
- Open a browser on your device (e.g. Chrome, Safari)
- Type *192.168.0.105* into the address bar and press *Enter*
- Select 'Captions'

You might want to adjust your brightness down – it will save battery life.

This information for audiences is available on a flyer from: https://differenceengineaccess.wordpress.com/operator-support-resources/

4. Feedback

Audience members using the App can select Feedback from the app menu, to send comments about the Difference Engine.

Audience members using a browser can use their back button and select Feedback.

NB - These only work while the Difference Engine server are still running, at the venue – so please leave the laptop and router 'on' for 20-30 mins after the show.

To view their Feedback, click on the Feedback File shortcut on the desktop.

You will see comments with a date stamp.

You can copy and paste comments out of here - **please copy all comments and send these to birdmail@talkingbirds.co.uk**, ideally after each performance, so that if there are any problems we can try and address them as soon as possible.

All users can also send feedback at any time by email to birdmail@talkingbirds.co.uk

Please also gather feedback from anyone who operates the Difference Engine and send this to us.

Functions

1. Multiple Channels

Multiple channels are used to send different captions to different devices. At the start of the show the audience must select which channel they wish to receive captions from. One use for this could be for translation, for example one channel could be entitled 'English' and have the English translation of the show and another channel could be entitled 'French', with French translated captions coming through to anyone who selects that one.

Bear in mind when you are creating the captions that when going from one caption to the next, all of the channels will change at the same time. This means that if you need a caption on one channel to remain the same while another channel changes to a different caption, you need to repeat the caption for the channel that needs the same caption.

e.g. it would look like this-

Channel 1	Channel 2
Caption A	*Caption B(i)*
Caption A	*Caption B(ii)*

Before your audience connects to the Difference Engine router, you have to press *X* to make the extra channels available to the user. **Make sure you check that the channel options are available on the app at this point.** If the app is connected to the Difference Engine router but isn't showing the channel options completely close the app, close and reopen the Difference Engine programme on the computer, press *X* and then reopen the app on the smart device. It's usually fine at this point, however, you may need to repeat the process making sure to completely close the Difference Engine app and program each time.

Please note: Running Multiple Channels will mean that you are not able to use the Auto-Cycling, Live or Ad-lib caption functions.

2. Auto-cycling Captions (Pre-/Post-show)

Auto-cycling captions are used to automatically cycle through a series of pre-made captions, usually before and after the performance to free up your Difference Engine Operator from having to manually click through opening and closing captions. Please note this function is only available on the standard Difference Engine with the most up to date version of the software. This function does not work if you are running multiple channels.

a) Preparation

On the Difference Engine desktop there should be two text files, called 'DE Loop Before lines' (for pre-show) and 'DE Loop After Lines' (for post-show). If you need to add in appropriate lines, you can do so in here, although please ensure after you are finished with the machine that these lines are returned to their original format. Each line will be a separate caption in the cycle. If the Difference Engine software is running, it will need to be restarted for the caption changes to take effect.

b) Usage

When the Difference Engine software is running, press *L* to display the list of captions. It will automatically start running through from top to bottom, highlighting the current caption. Use the Left and Right arrow keys to move between Pre-show and Post-show captions. To exit, press *Escape*. The last line displayed will be replaced once you move to the next caption.

3. Live Captions

If you want to caption in live time, e.g. post-show Q&As, if performers are improvising, interacting with the audience, or have needed to go off script for another reason, the Difference Engine is able to go into Live Captioning Mode.

N.B. Please note this function is only available on the standard Difference Engine with the most up to date version of the software. This function does not work if you are running multiple channels.

Usage

Press *Ctrl L* to enter the Live Captioning mode. A pop up screen should appear, type in the caption you wish to display and press *Enter.* You can now either continue typing captions, pressing *Enter* whenever you want to send the caption to the devices, or you can exit Live Captioning mode and return to your pre-prepared captions by pressing *Ctrl L*. The current caption will be replaced when you move onto the next caption in line.

4. Ad-lib captions

If you know that your performance has certain ad-libs that are often included (but not always or not always at the same time), the Difference Engine is able to record up to 5 lines which can be brought forward at any point. This can be used to display a summary of ad-libbing e.g. if a performer is interacting with the audience, you could describe the gist of what is happening.

N.B. Please note this function is only available on the standard Difference Engine with the most up to date version of the software. This function does not work if you are running multiple channels.

a) Preparation

On the Difference Engine Desktop, there is a shortcut to a file called 'adlib.txt', each line of the file corresponds to a line that can be called at any point. There is a maximum of 5 different lines able to be called. Edit these to suit anything you might need and then save the file. Please return this file to its original condition once your performances are finished.

You will need to restart the Difference Engine software (if it is running) before these changes will take effect.

b) Useage

When the Difference Engine is running captions, pressing *U* at any time will bring up your list of ad-lib lines. Pressing a number will send out the corresponding line to users and will also close the menu (1 will being up the top line, 2 will bring up the second line and so on).

5. Takeaways

Takeaways are a way of giving your audience something they can keep after the show. This could be a cast list, article about the show or pictures of the

making of. This will automatically download onto the users devices and they will continue to be able to see the article after they have disconnected from the server.

Preparing an article for Difference Engine Takeaways

You will need the following-

- **Article Thumbnail Image**

  A small square (1:1) jpeg (.jpg extension) – Used on the Takeaway main article list page.

- **Article Main Image**

  A large jpeg (.jpg) image – Used at the top of your article page.

- **Article Text File**

  A text file (.txt) – Enter your article text in this file, including other data.

You might need to enable 'view file extensions' to check that the files have the correct file extension.

You can create the content and folder on another computer and then copy the prepared article folder onto the DE Laptop.

The Takeaway article folder

On the DE Laptop desktop you will find a shortcut which will take you to the Takeaway folder. You can navigate to this by going to

> C:\DE\python19####\static\takeaway\ .

In the Takeaway folder in the DE directory:

- Create a new folder (Right click > New > Folder) and give it a simple, unique name, using only alphanumerical characters (e.g. no spaces, underscores)

- Copy and paste your thumbnail image into the folder and rename it to 'thumb' ('thumb.jpg').

- Copy and paste the main image into the folder and rename it to 'image' ('image.jpg').

- Copy and paste your text file into the folder.

Check that the Takeaway is working before your audience users try to download it.

Reference

Ctrl N	New file (captions script)
Ctrl O	Open file (captions script)
Ctrl S	Save
Ctrl A	Save as (new file)
Alt F4 or *Esc*	Quit
F11	Toggle between Full Screen and Window mode
H or *F1*	Help file – instructions
Ctrl Z	Undo
Down↓ or *Space*	Move to next line
Up ↑	Move to previous line
Ctrl R	Restart (go back to first line)
J	Jump to (enter line number)
S	Switch between Edit and Broadcast modes
E	Edit cell
B	Insert Blank cell symbol (will not show to user)
Ctrl C	Copy cell
Ctrl V	Paste data from copied cell / Paste imported script
Delete	Delete cell
Ctrl N	Insert line break for text within a cell
I	Insert new row

Ctrl Delete	Delete a row
Ctrl I	Insert new channel
+ / -	Move channel to the Right / Left
X	Send available channels
R	Rename channel
Ctrl M	Insert musical notes symbol (♫)
L	Auto-Cycling Captions
Ctrl L	Switch into/out of Live Caption Mode
U	Insert Pre-written Ad-lib line (then press 1, 2, 3, 4 or 5)

Difference Engine Commands