

Author: Peter Chalk (Coordinator)**1. Introduction**

As part of the university inclusion and accessibility policy, a lecture capture solution using Panopto is being piloted across all ten schools, coordinated and supported by LTIC. The pilot was decided upon following a free trial of Panopto during 2016/17 semester A. The Pilot started in January 2017 when it was decided to continue using Panopto with a full licence for one year, in the first instance. This is an Interim Report, with the Full Report to be written at the end of the Pilot in January 2018.

Three progress meetings have been held in January, March and May. They were attended by over 20 staff in each case, and approximately 20 presentations were made by academic staff, LTIC staff and school educational technologists.

In June it was decided to conduct a survey of nearly one hundred staff involved in the Pilot, either as Panopto academic users (approx. 50), support staff (e.g. educational technologists), as associate deans (L&T), as learning and teaching specialists or from LCS. A summary of the 16 responses is included in Appendix 1 of this report. It shows a wide variety of uses of Panopto, as well as existing systems such as Office Mix and Camtasia; for a variety of purposes, using a variety of features. Almost all respondents are fully committed to both the Pilot, and to lecture capture in the future, with most of them content to continue using Panopto, although several also wish to continue using an existing system alongside it.

Appendix 2 is a summary of the Panopto analytics since January. It shows the variety of recordings made, and the number of views and minutes viewed. The average viewing time is misleading in the sense that most viewers briefly see what it is about, then move on. This could be because we have yet to fully embed Panopto into our everyday practice as an essential tool.

Appendix 3 is a comparison table with other systems UH might consider after the Pilot ends in January 2018; with notes from meetings held with Techsmith Relay, Echo360, Kaltura and Panopto.

2. Conclusions and proposals for the future

In this section of the Interim Report, possible answers to key questions for the future are suggested:

- a. What system should be adopted for the long-term, beyond January 2018?

There are four options: continue the Pilot for another year; continue using existing systems but not Panopto; switch to a pilot of another system (possibly following a free trial similar to that conducted with Panopto); committing to a long-term solution with one system following a procurement exercise.

- b. How should rooms be kitted out (two rooms are currently proposed for the installation of camera and microphone plus software)?

There are three main options: include in all new room enhancements a lecture capture system; accelerate the exercise to more quickly adapt the main lecture rooms; continue to use mobile kits (generally unreliable).

- c. What level of integration should there be with the timetabling system and VLE?

In the longer term, a full scale solution could include an automatic capture of every session in every room linked to the timetable and VLE, so that the recording is automatically uploaded to the correct canvas module (unless the lecturer request a chance to edit it). This option is only available if UH commits both to the system tool (eg Panopto) and the installation of equipment in each room (above and beyond mic and camera).

- d. What level of support is required?

Currently support is provided by LTIC for the relatively small number of users. Other universities who have adopted lecture capture formally, normally have a team of support staff and sometimes student assistants.

- e. What policy and UPR changes will be required?

The government has yet to issue detailed guidance requiring the automatic recording and sharing of lecture recordings for students with disabilities. Currently we have to make arrangements for students with SNAs individually. There is research evidence that lecture capture benefits all students and the university may want to adapt it for this reason.

Other policy decisions would involve staff opt in/ opt out; and copyright clearance and permission issues.

- f. *What third-party services (if any) do we need to employ for captioning/ transcript creation and what processes should be in place to ensure we meet the accessibility responsibilities in a cost effective way?*

Currently Panopto provides a basic auto-captioning function which is very approximate, a chance to edit them before publishing, and a pay-as-you-go service to correct them.

Appendix 1 Results of Lecture Capture Survey (June 2017)

A survey was sent to all 94 staff involved (in whatever way) in the pilot with 16 responses. This included 13 teaching staff from 8 schools (CTA, LMS, LAW, HUM, HSK, HBS, EDU, COM) and 3 LTIC educational technologists who have supported the pilot. 9 respondents are Panopto users, and 10 respondents have used other platforms or tools. The survey asked a range of questions about lecture capture, Panopto, other tool and plans. The Responses are summarised below for each category.

Q2 Why are you interested in the pilot? (n=16)

Answers to this question included:

- Convinced by the merits, flipping etc; want to try it in practice
- Utilising new modes of content delivery is vital for improving student understanding
- Use tool for E-learning development (3 respondents mentioned this, COM/CTA/LTIC)
- Use for revision; better communication with very busy students
- Give opportunity to students who miss sessions to view materials
- New way to engage students (2 respondents); useful teaching tool
- Extending academic autonomy; adds interest to the process of teaching; self-reflection
- Tool to train other teacher educators regarding explicitly modelling your practice.

Q3 How have you used Panopto? (n=9, 46 Panopto recordings between them)

Answers to this question included:

- To record live lectures (7 of the 9)
- Sharing the recording soon after the lecture (4 of the 9)
- Flipping (HSK)
- So online students have the same experience
- Pre-recorded lectures or podcasts (2 respondents)
- 'Supplementary resource'; capture research focus group (HSK)
- Meetings (LTIC, which could be for several schools).

Additional features used included:

- Captions (automated) (HSK)
- Quiz (HUM)
- Analytics (CTA)
- Saving as MP4, captions, quiz, notes, analytics, webcasting, chat (LTIC)
- Editing (correct captions, delete unnecessary content, inaudible discussion)
- Visual of the lecturer (6 of the 9)
- Video clip within screen shot.

Q4c/d Effects on attendance and student feedback

Five of the nine staff commented on this – two saying attendance remained the same, and the other three saying their recordings were for online students with no effect.

Responses on student included 'very positive', 'helpful' and 'useful for revision' (MFQ), 'convenient', 'like the ability to jump between slides'. Staff perception included the comments:

- Potential to be useful but might be ignored as yet another information source (HSK)

- Students may engage more if it is rolled out across a whole programme (HUM)
- Quoting a module leader: “Most popular and best answered exam questions were where audio recordings were uploaded” (LMS)
- Staff doing CPD have requested recordings (LTIC)
- On campus students have requested access to recordings made for online students (LTIC/CTA).

Q4f/g Benefits and challenges of Panopto

Staff identified the following benefits:

- Good interactive interface; exceptionally easy to use (LTIC)
- Quick to turn around videos and share; excellent automatic upload (LTIC)
- Absent students can catch up, and participate (LAW)
- For E2L students it can help clarify the lecture; and overseas teaching (HSK)
- Ability to jump between slides; clear view of slides (CTA)

The following challenges were perceived:

- Issues with Mac camera and mic (CTA); Mobile kit setting up etc (LTIC)
- Not intuitive, eg captions (HSK)
- Awful editor; mic problems when moving/ hearing participants (LTIC)
- Misaligning slides with animation/sound/digital ink (LTIC)
- Useful if more than one audio feed for seminars (LTIC)
- Needs to be interactive so students engage (LAW)

6 of the 9 staff using Panopto ‘would recommend it to colleagues’.

Q6/7 Other systems or tools (number of staff answering this = 10)

Staff mostly had experience of using Office Mix or Camtasia, with one using Echo360 at a previous HEI. The number of recordings made varied from 5 to 100 averaging about 20.

The uses were mainly for live lecture recording, podcast, flipping and one for recording feedback. Two shared the recordings soon after the lecture, one for revision (HBS), two for flipping (HBS/LAW), introducing assessment (HBS/ LMS), online students (CTA).

Features used included saving as MP4. Quiz (LAW/HBS), captions (HBS), editing (CTA), analytics (LTIC). Eight of the ten users included a visual of the lecturer in the recording, together with either slides or a screen shot.

The effects on attendance included one increased, one decreased, one increased if you include viewers; mostly saying it is about the same, or it was used for online students. Student feedback included ‘grateful but frustrated by technical issues’, ‘enjoyable’ (LTIC); ‘liked a lot’, ‘used for revision’ (LAW); ‘positive’, ‘analytics show heavy usage before assessment points’, ‘some use to exclusion of other resources’ (HBS), ‘engaging’ (HSK).

Staff identified specific benefits of Office Mix (integrates with Powerpoint and Office 365). Flashmeeting allowed for live chats, but it was freeware and had reliability issues (LAW). Office Mix is easier to use than Camtasia (HBS). The Echo360 user mentioned its ease of use.

Challenges included obtaining previous recordings from staff who had left UH and problems uploading large files to Studynet (HSK).

Overall staff with experience of both Panopto and another system or tool were 3 to 2 in favour of Panopto. Why? 'Panopto gives more control over the recording and is easier to set up', 'ease of upload', 'quizzes' (LTIC). Other systems favoured included Office Mix for pre-recording (LAW), Snagit for ease of use (LTIC); Camtasia and Connect for familiarity (HSK).

Q13/14 Lecture Capture next semester (16 responses)

15 of the 16 staff stated that they would definitely be doing lecture capture in next semester A. 14 of those 16 said they would use Panopto, 3 of these would be using Office Mix as well.

When asked for the main reasons, they listed: 'for students to watch at any time' (11 of the 16); 'to satisfy Study Needs Agreements' (10/16); 'innovation, eg flipping' (9/16); for revision (5/16) for E2L and online students (one each).

When asked what colleagues might be concerned about, the replies included: reduced attendance (13 of the 16); technology issues (13/16); inhibits interaction (7/16); copyright concerns (8/16).

Finally, staff wanted the following enhancements in order to see an increase in the use of lecture capture: analytics (HBS), integration support and accurate transcription (HSK), Camera and mic installed in rooms (CTA/ LTIC), complete automation (LTIC).

Appendix 2 Panopto Analytics since January 2017

The following table shows the analytics for viewing the content shown against each user. As it is straightforward to identify the users and the content from the system, just the first eleven content summaries are given in detail.

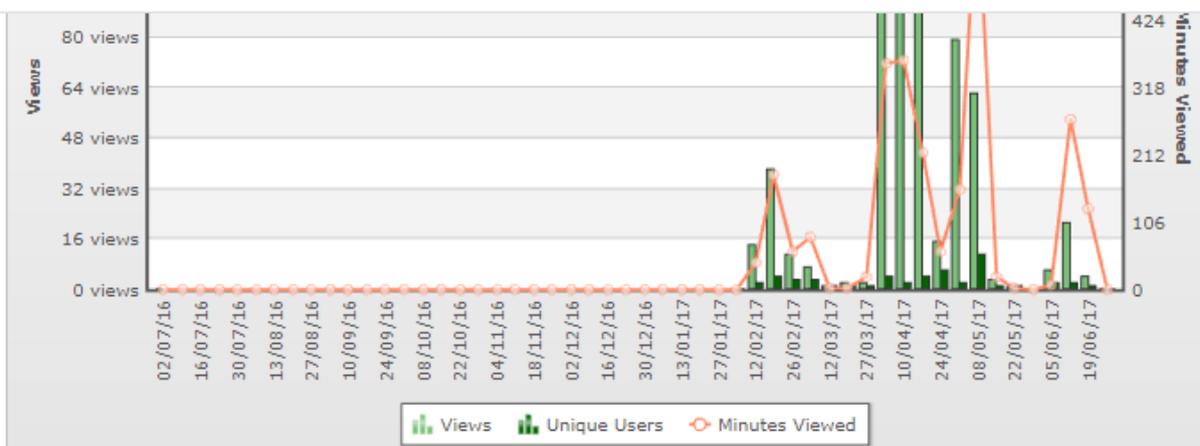
The main conclusion is that we are at the early stages of exploring lecture capture and/or Panopto as a system – the final ‘average minutes viewed’ column shows just how brief most views actually are, on average.

Evidence from research shows that the optimum time for a recording is approx. 15 minutes.

Folder Name	Content (mostly) (# recordings)	Views	Unique Viewers	Minutes Viewed	Average Minutes Viewed
comqam@herts.ac.uk	HBS L&T Conference June 2017 etc (33)	1008	418	8611	8.5
bioqhb1@herts.ac.uk	LTIC GLJ & Neurobiology lectures (19)	612	22	4996	8.2
ro13aay@herts.ac.uk	HBS lecturer assignment briefs etc (12)	593	22	2582	4.4
aatqbk@herts.ac.uk	CTA lectures (24)	509	69	2571	5.1
al17aad@herts.ac.uk	LTIC various support (10)	166	47	777	4.7
Degree Apprenticeship	Staff briefing opened by the VC (1)	157	72	802	5.1
midqch@herts.ac.uk	HSK health care evaluations etc (3)	148	29	561	3.8
cl15acw@herts.ac.uk	HUM lecture	112	5	574	5.1
jg11aaj@herts.ac.uk	LCS User Experience training (LTIC) (13)	89	12	435	4.9
df13aax@herts.ac.uk	HBS Careers talks etc	88	6	473	5.4
pc16aac@herts.ac.uk	LTIC Panopto talks	85	15	117	1.4
bv16aag@herts.ac.uk	LTIC GLJ Studynet 2 talk etc	84	13	223	2.7
Canvas	HSK Canvas training (LTIC edTech) (1)	83	38	156	1.9
ko11aad@herts.ac.uk	LTIC edTech various lectures (9)	82	23	623	7.6
Creative Arts	CTA (Lecturer + LTIC) lectures	72	8	200	2.8
ifsqsjf@herts.ac.uk	LTIC L&TS eg talk on bias	45	5	159	3.5
MHRSI	2 mental health talks	40	7	151	3.8
j.meere@herts.ac.uk	LTIC support, eg for online proctors (4)	35	26	38	1.1
LTIC	L&T conference sessions	33	12	367	11.1
js14adq@herts.ac.uk	Garment design slides + audio	26	3	5	0.2
Sulanie	LTIC support focus group on Skype	22	6	40	1.8
Get Started with Panopto	Panopto’s own support videos	22	11	41	1.9
CPAD	LTIC training video – testing only?	19	3	4	0.2
km15aaw@herts.ac.uk	Health stats practice videos	18	4	5	0.3
nr16abf@herts.ac.uk	Teaching programming EDU, 2 vids	16	8	1	0.1
midqmpb@herts.ac.uk	Public Health Leadership, one talk	15	2	4	0.2
hthqjgm@herts.ac.uk	Health Care lecture, one video	15	2	3	0.2
comqsjb@herts.ac.uk	2 test videos	15	2	75	5.0
lfsqsf@herts.ac.uk	LTIC staff practice videos	10	2	7	0.7
sd16aao@herts.ac.uk	HBS one lecture; self viewed only	8	3	355	44.4
Training	LTIC practice	7	1	2	0.3
cstqjw@herts.ac.uk	Research training practice video	7	3	1	0.2
lawqkc@herts.ac.uk	Grading in Studynet, one screengrab	6	2	2	0.3
Training version2	2 LTIC practice videos	5	2	1	0.1
comtarp@herts.ac.uk	LTIC test videos for COM	5	2	1	0.1
phyqjlc@herts.ac.uk	PAM test video	4	3	0	0.1
1J122	Web casting test	4	3	11	2.7
#Panopto	CTA lecture ‘Valuing Culture’	4	2	0	0.1

The following analytics chart is just one example of the analytics available for viewing a single recording, in this case a Business School lecturer.

Folder stats: ro13aay@herts.ac.uk



Past Day | Past Week | Past Month | **Past Year** | All Time | Custom Range

From

To

[Download](#)

Session (top 100 by minutes viewed)	Views	Minutes Viewed	Average Minutes Viewed	Unique Users
Global Investor Assignment Brief (default)	334	817	3	11
Capital Gains Lecture (default)	73	759	11	9
Benefit in Kind Tutorial Solution (default)	77	436	6	4
Corporation Tax Solutions (default)	65	339	6	5
Income Tax (default)	30	229	8	5

Appendix 3 UH Lecture Capture Pilot – Platform Comparison Table

UPDATED

This table is being prepared following the pilot and trial of Panopto during 2016/17; a meeting with ClickView; a webinar by Techsmith; but **before** visits by Echo360 and Kaltura – hence some boxes are completed using google search and other knowledge. The final column represents existing systems, mostly free, already in use by staff at UH.

	Panopto	Echo360	Kaltura	Techsmith relay	ClickView, not Lecture Capture as such (like BoB)	Existing software: Mix etc
Cost	Software £100k pa approx? Pay per hour. Cost is increasing (Russell Group)	Dedicated Pro boxes £3k each, Pod £1k, Russell Group concerns about cost of hardware	‘Expensive’ (RVC)	Probably least expensive of the main 4 LC platforms.	£10k p.a. Fixed rate. Cloud service includes TV progs (BoB savings?)	Hardware only (£10k per room?)
Hardware provided by supplier?	No	Yes (more reliable than PC-based - RVC). Pilot £8.4pa includes 3 Pods. Delcom light £70.	No	No	No	No
Canvas LTI	Yes – student assignment folder/ create; <i>NOT analytics or GradeBook (yet). Opens new window; real time view/ take notes</i>	Yes LTI	Yes, auto publish, similar UX	Yes, very smooth (eg insert quiz using embedded video; YouTube link)	Yes	No
Analytics	Yes	Yes	Yes, Caliper API	Yes	No	No (use Canvas?)
MP4 up/ download	Yes	Yes	Yes	Yes plus <i>fuse app to capture mobile video</i>	Yes, digital rights not clear; app captures mobile video	Yes
Editor	Yes, simple editor	Simple desktop editor	Yes + Mixer Factory	Yes	Yes, simple editor	Yes (Mix uses simple powerpoint trim)
Custom productions	No	No	No [<i>integrates youtube links</i>]	No [<i>but includes youtube links on server</i>]	Yes – produce to order educational videos	No

User interface	Simple, effective	Simple, effective	Modern looking	Simple, effective	Excellent, modern	Mix is Office style, Camtasia modern
Interactive	Yes, quiz/ pause	Yes	Yes + youtube quiz, in gradebook	Yes, quiz	Yes, 6 quiz types	Yes, Mix like powerpoint
Student assignments	Yes, in Canvas view of folder/ create	Yes, by link to library copy in Canvas	Yes, in Canvas using CaptureSpace	No, "use Jing freeware"	No	Yes, as free, upload MP4
Captioning	Yes, auto + pay-for (\$2.75 per minute)	'Soon', Synote approach, student editable	Needs an add-on	Auto using MS Indexer	No, separate merge	No
Search	Yes, captions & slides [plus slides contents list]	Full text search 'promised'? Captions 'soon'	Yes, smart + human option + character recognition	Yes, captions/ audio	Yes	No
Crestron TT integration	Yes	Yes (google search)	API to integrate Extron AV device	No, Matrox (\$2.5k scheduling box)	No (google search)	No
Live webcast streaming	Yes	Yes	Yes	No	No	Use Adobe Connect
Screen capture	Yes + visualiser [i.e. multiple feeds]	Yes, multi-feed [multi audio on Pro only]	Yes	Yes but <i>not visualizer</i> . Multiple audio input.	No	
Slide capture	Yes + prezi etc and display contents and thumbnails	Yes	Yes	Yes	No	Yes, by Mix
NOTE	Test LTI integration with Canvas in January?	Plus dedicated hardware	Local save/edit LectureSpace	Also produce Camtasia, can package with Snagit	Not designed for lecture capture (<i>like BoB</i>)	
	Panopto	Echo360	Kaltura	Techsmith relay	ClickView, not LC	Existing: Mix etc

Techsmith Relay Webinar 28/6/17 feedback from UH staff [recorded <https://tsc.techsmithrelay.com/gVKJ>]

The features that appeal are;

- Comprehensive analytics on video recordings. 😊 - Cross platform support for interactive video elements.
- Ease of use -- *Record from multiple audio inputs, with mixing controls.*
- Ability to search for information within the recording (based on both; an auto generated transcript and the information on the slides themselves).
- Seamless integration with Canvas (eg adding quiz). - Compatible with Camtasia for advanced editing.
- Possibly better automated speech recognition (Microsoft Indexer).

Negatives might be:

- *Limitations on video camera connectivity. Relay does not currently support input from HDMI devices* (Panopto will support HDMI input with the right capture card installed). - No support for multi-camera recordings.
- No live streaming functionality -- No control over the web camera + slides interface (Also I assume it is not possible to access/edit each channel separately, a feature that is really useful in Panopto) -- No ability to delete a section within a recording (trimming only). - Limited video navigation.
- Relay basically Snagit (freeware) plus additional features -- Poor screen capture resolution

Kaltura Demo 11/7/17 feedback from UH staff

Positive

- Plug and play with Canvas via LTI - Range of API options for further integration / development.
- Linking the grade book on canvas to the quiz on the video - Character recognition using the video frames to make the content searchable!
- In-video quizzes seemed straightforward and more user-friendly (on the creator side) than Panopto -- Range of analytics (top views; view per student).
- Not having to worry about file types for existing videos is helpful, as is detecting the best resolution/bit rate based on the user's connection (though YouTube does this already) -- All files saved in one repository once -- Streams are editable.
- Lecture capture seemed straightforward as does the useful direct link in with Canvas -- Can see the video feed while recording.
- + Uses open capture standards + Hardware independent + Distributes to Youtube / vimeo + iframe extension for sign language (roadmap?)
- + Live streaming + Open APIs / IMS global + Good integration and user interface + LTI, LDAP, SAML
- + Shared repository and personal repository + Quiz + Timetable integration + CaptureSpace as an ad hoc solution

Negative

- *Possible need to run a windows app on the Mac* -- Has a large number of tools, confusing.
- - Multiple audio feeds - Did not see the editor - not sure if students can add comments or notes
- - Windows only (lecture capture) - *Does not automatically detect PowerPoint / keynote or capture it independently*
- - Unclear what the user experience is if multiple feeds are recorded (can they navigate the PowerPoint?)
- - Inking and system sounds not recorded on tablets / surfaces

Echo360 Demo 12.7.17 feedback from UH staff

Positive features

The hardware solution addresses a number of issues:

- o Standardised hardware
- o Minimal technical literacy required
- o Compatible with the USB Delcom light
- o Scales with other devices for very interesting setups
- Also has frame-based character recognition by the sounds of it (would need to test)
- Ability to stream simply and integrate with Canvas through publishing a link in the class reference.

The best I've seen thus far.

- Analytics – very useful data reports. It's also great to see that the instructor can define the metric weightings.
- Interactive features – quizzes, discussion and confused features. The anonymous feature in discussion is very positive. The confused feature allows tutors to restructure / review teaching content.
- Overall it looks great for an integrated classroom

Minus features

- Echo360 feature sits on the left side menu on Canvas – but they did mention that it is possible to move the session under the relevant unit.
- Too many interactive features – this is both a plus and a negative feature. If these features can be individually switched off, it would allow less distractions for the tutor
- Screencasting is only available on Windows – this is not a major issue.

Panopto/ Canvas Integration Demo 19.7.17 feedback from UH staff

[recorded <https://uh.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=7039023f-2112-4270-8f09-0a1775003e94>]

+ I did like the 'live note taking' functionality that was shown, allowing notes to then be synced to the student's copy of the recording is potentially very useful
+ Remote recorder looked flexible.

- Agreed that the *Canvas integration wasn't great*. To have Panopto itself frequently open for various functions isn't very streamlined and it defeats the point. Embedding recordings can be done anyway by adding the HTML embed code into the Page editor.
- *No integration with Canvas Analytics.*
- *No integration with the gradebook (Quizzes).*
- No clear workflow for managing captioning requests.