RecoverySpaces : An Enhanced Learning Technology for Treatment and Rehabilitation Centres

James Ohene-Djan
Department of Computing
Goldsmiths, University of London
New Cross, SE14 6NW
Email: j.djan@gold.ac.uk

Mark Jones
Department of Computing
Goldsmiths, University of London
New Cross, SE14 6NW
Email: mark@mjp.uk.com

***Abstract*—A commonly recognised and significant problem faced by those suffering from addiction to drugs and alcohol and other substances or repetitive patterns of behaviour is the lack of easily accessed, digital technologies currently available to them. Recovery based material exists but there is no cohesive option which is able to offer a fully multi media opportunity for: self-reflection, communication with counsellors/therapists and ease of access to therapeutic material specific to particular addictive disorders.**

This paper presents an enhanced, unique, learning technology for treatment and rehabilitation centres. The technology is designed to bring together in one self contained area the use of self reflective space in conjunction with communication options, both through and beyond treatment, for those at every stage of their journey of recovery from addictive disorders.

It is hoped that by bringing this interactive learning system to the Addiction Sector, those working their way through addictive issues, either in treatment centres or the community (and in rehabilitation or aftercare) will be given improved and increased opportunities to build on their recovery using a very specific set of novel, learning technologies; and that those clinicians working with them will have their practice enhanced by ease of access to these technologies.

I. Introduction

New technology has a long heritage in the Addictive and Mental Health Disorder Sectors and has been used for a range of specific functions based around the delivery of a shared set of very specific data [**?**].

Software is employed at drug and alcohol treatment centres, specifically by those receiving government funded revenues, to automate the process of recording, storing and sharing client information. This detail is subsequently delivered to commissioners, government bodies and stakeholders in the recovery system (the judicial system, national health bodies etc.).

In addition to delivery of information many of these systems have demonstrated success in automating key administrative aspects of service provision and have been built with the primary function of being proficient in collecting, collating and analysing information for the National Drug and Treatment Monitoring Service (NDTMS) specifically for those involved in the drug and alcohol treatment sector. The National Drug Treatment Monitoring System from NDTMS - records information about people receiving Tier 3 or 4 treatment for drug misuse in England (i.e. structured community-based services, or residential inpatient services), in order to monitor and assist the management of progress towards the Government's targets for participation in drug treatment programmes. [**?**].

Many providers currently exist in the UK but all are management systems and the client (the person undergoing treatment) is not required to directly engage with them.

The best known and most widely used in the UK are Bomic [**?**] and Theseus [**?**] (both systems being also used in other areas of the health system).

Significantly none of these systems require any direct interaction with the client. There is no need or opportunity at any stage for the client to use digital technologies to either record personal detail or to use these systems as learning tools.

That said, clients are often offered the opportunity to learn IT skills via ETE sessions and it is not unusual for Treatment and Rehab Centres to be able to offer IT and computer use to their client cohorts but the focus is on proficiency of use rather than the use of these technologies to further and assist in a much more direct way in the clients' recovery journey.

II. Background

RecoverySpaces (reported in this paper) contains a number of key components and was initially informed and inspired by using digital technologies to facilitate the keeping of a 'recovery' journal. The power of the journal for an addict is well documented and provides them with a significant motivator and relapse prevention tool. In addition to being of direct use to an addict the benefits of keeping a journal have been scientifically proven to: improve health and wellbeing; diminish symptoms of depression, anxiety, panic, substance misuse, PTSD, asthma, arthritis and many other health conditions/disorders. They improve cognitive functioning, make therapy more effective and counteract many of the negative effects of stress.

This is borne out by the experience of researchers in this area [**?**], [**?**]. Diarising consistently makes people feel happier and healthier and recent research further concludes it may help ease the symptoms of a variety of diseases, including the condition of addiction. Pennebaker notes in his book Opening Up (Guildford Press 1997), his typewriter quickly lead him out of depression. For the first time in years perhaps ever I had a sense of meaning and direction.

There are a wide variety of options available within Journal Therapy, for example:

- Sprint: In the sprint technique, catharsis is encouraged by allowing a writer to write about anything for a designated period, such as for five minutes or for ten minutes.
- Lists: In the list technique, the writer writes any number of connected items in order to help prioritize and organize.
- Captured Moments: In the captured moments technique, a writer attempts to completely describe the essence and emotional experience of a memory.
- Unsent Letters: The unsent letters technique attempts to silence a writers internal censor. This technique can be used in a grieving process or to get over traumas linked to addictive behaviour or abuse.
- Dialogue: In the dialogue technique, the writer creates both sides to conversation involving anything, including but not limited to, people, the body, events, situations, time etc.
- Feedback: The feedback technique is important to journal therapy, in that feedback makes the writer aware of his or her feelings. This allows the writer to acknowledge, accept and reflect on what they have written before (thoughts, feelings, etc.)

Journalising has now moved into new areas provided by the growth of digital media. The growth of YouTube and Vimeo and affordable and easy access to filming equipment, whether camera or mobile phone, has seen the new phenomenon of personalised, independently made, online films charting the recovery of people suffering from a range of addictions. Increased levels of multimedia sophistication has facilitated the impulse to record and track change using new technologies People going through transformation instinctively understand the power of visually recording their change and are using technologies as part of a process of self help and as motivational tools over the course of their journey of recovery.

Hazelden is the largest speciality publisher of addiction and recovery materials, they believe that managing recovery is a daily task made easier when a client can access resources via phone and laptop [**?**]. Resources are available as mobile apps, ebooks, and through online subscription access. They offer web-based screening tools, interactive social media sites, programmess for ongoing recovery support, tele-health counseling services, and online continuing education courses. Their digital products and services allow anytime, anyplace access to essential, trusted information and resources for prevention, intervention, treatment, and recovery management.

In addition to the above, online counselling services are used by clients, their family members and friends. Counselling can be accessed from any computer or mobile device with connection to the internet. This can be from a personal computer or mobile device at home, workplace or community setting. No special equipment or downloads are required. This approach to counseling works particularly well in poorly serviced and hard to reach communities particularly in rural and regional areas.

New technologies now provide potential for the creation of communities of recovering addicts. This is exemplified by www.12step.org:

The site uses audio and video to demonstrate and explain to newcomers how groups are organised and run.

Every Step is explained and stepwork can be carried out online. Worksheets are offered as part of a wide range of resources which include: journals, online meetings, digital versions of the Big Book and recovery prayers and slogans. There are extensive link collections and an online forum www.12step.org is a complete 12 step resource which explains the origins and ethos of the 12 Step programme.

Those individuals who are recovering from an addiction are offered a range of possibilities via mobile phone technology [**?**].

One of the most popular of these technological options at the moment would be the software applications available for mobile gadgets such as the iPhone apps and apps for Android devices.

III. Recovery Spaces Overview

The following section provides an overview of the RecoverySpaces system and details its key architectural components. RecoverySpaces is a multi-media system that puts the client at the centre of their recovery from addiction. RecoverySpaces helps clients progress through their journey to recovery whether that journey begins in a prison, a treatment centre, rehab community based agency or at home.

A. Overview

Digital technologies are currently being used in a disparate, but often effective way, within the context of the Drug and Alcohol Sector. RecoverySpaces aims to bring together the elements described above in one self-contained, easily accessible and highly secure technological package. We have seen that there are a range of digital options available to the client. RecoverySpaces enables the client to use the medium that they are most comfortable with whether video, audio, text or graphics in order to document and evidence their recovery journey.

The system brings together the most effective existing digital offerings in a way that is simple to use (almost kiosk like in its design) and is securely encrypted. The system is used exclusively for self reflection, record-keeping and working and communicating with counsellors. It provides web-based education in a protected environment similar to that described in [**?**].

When initial treatment has come to a formal conclusion the system offers aftercare support and potential for community growth. The client continues to have a username and password and receives email alerts both during (if in the community) and after treatment.

RecoverySpaces enables the client to use the medium that they are most comfortable with, whether, video, audio, text or graphics to document and evidence their recovery journey. In a private, secure, online space, clients are given the opportunity

to learn safely within an organisation and, if appropriate, at home.

RecoverySpaces has six easy to use functions which are listed below and shown in Figure 1:

- Diary/Journal to document their journey
- Workbook for assignments set by practitioners
- Library of digital learning resources
- Messaging for communicating with recovery practitioners
- Worksheets for teaching and learning
- Calendar for recovery related appointments
- Progress reports to evidence recovery

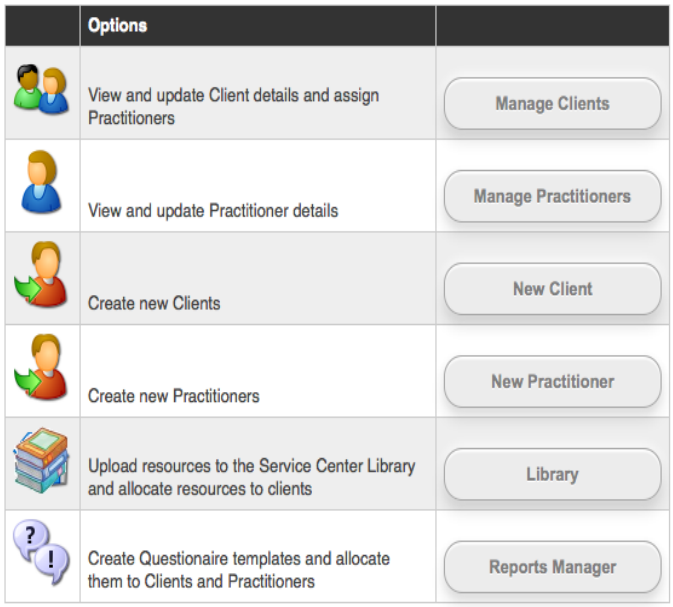

Fig. 1: RecoverySpaces Main Menu

B. *Four Tier Architecture*

RecoverySpaces has been engineered with extensive granularity. Configurable language and nomenclature is supported throughout the system. There are four login types: Client, Counsellor, Administrator and Group Administrator.

Clients are created and allocated to Counsellors by Administrators, so a Counsellor can work with one or more Clients at a time. Counsellors can see and comment on their allocated Client's work. Administrators can create Counsellors. Administrators can be configured as purely administrative or to also see Client work. Clients, Counsellors and Administrators belong to a "Service Centre". A group of one or more Service Centres is created and maintained by a "Group Administrator". A "Group Administrator" creates Administrators in their Service Centres.

The Technology behind RecoverySpaces implements industry standard practises and targets ISO27001 for security compliance. Linux is the base operating system with Apache

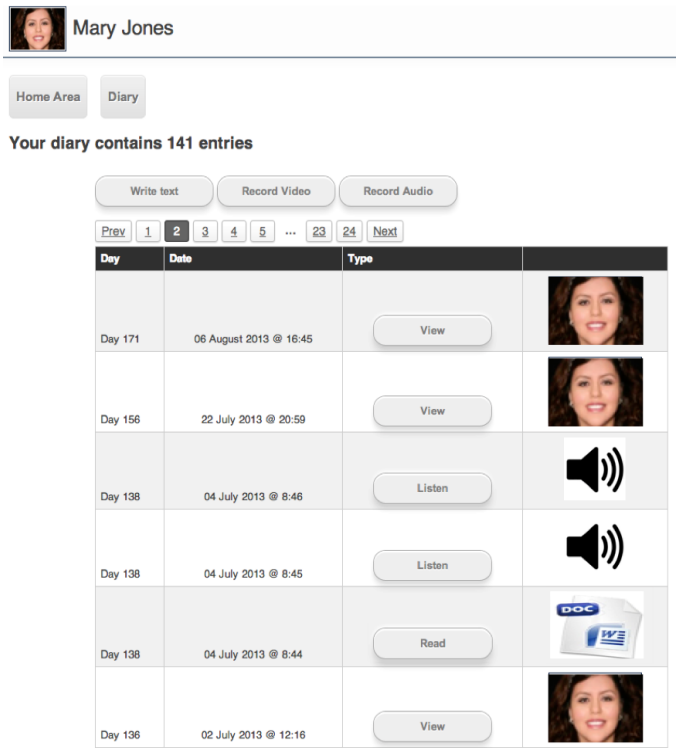

Fig. 2: RecoverySpaces Diary

using SSL. Software development utilises MySQL, PHP, CSS and JavaScript with standards adopted from OWASP (Open Web Application Security Project). Depending on site requirements, the system is configurable in intranet or internet versions and can run on in-house hardware using NAS (Network Access Storage) or internet based virtual machines using mass storage.

For security and data compression purposes, all recorded media, either streamed or uploaded, is passed via a transcoder into storage. Media storage in all cases, occurs outside the public domain in private folders or storage containers. Storage access is protected by use of a proxied media server requiring multiple methods of authentication or, for internet deployments, a time restricted SAS (Shared Access Signature). Desktop media recording via webcam is supported using AMS (Adobe Media Server) with the mobile version allowing use of a device's proprietary on-board camera/microphone and upload capability. Logging of all activity for audit and reporting purposes is implemented via a database. Aggregate reporting is supported.

IV. Methodology and Experiment

RecoverySpaces has been piloted and strongly supported by the management team of the Structured Day Programme of London's North West Drug and Alcohol Service - the flagship service of one of the UK's most significant Drug and Alcohol treatment agencies - the Westminster Drug Project. The three client cohorts initially offered the system by the NWDAS were made up of service users who were attending the service as part of a legally enforced drug rehabilitation programme, clients who linked in with the Service via their

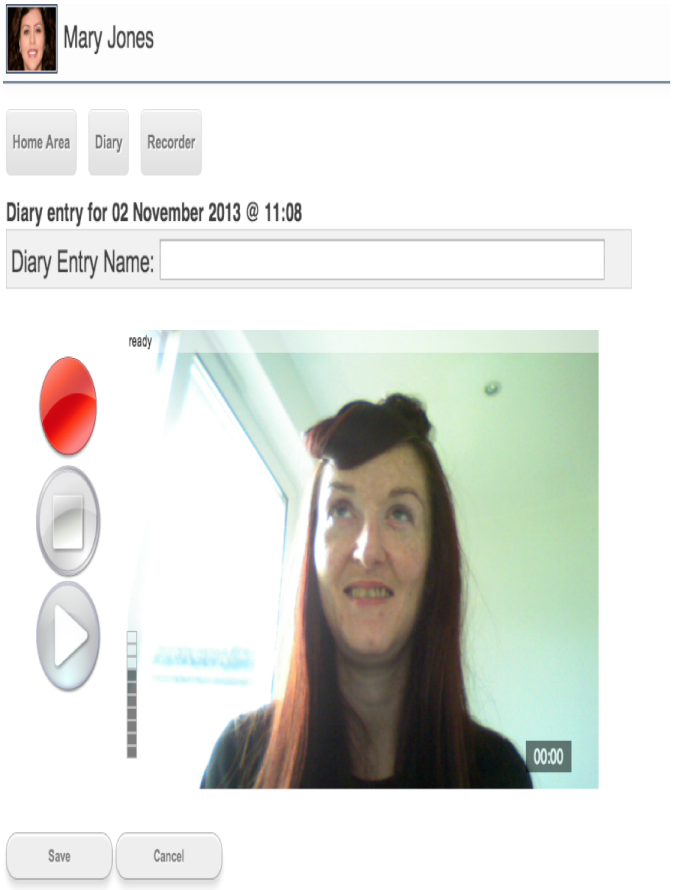

Fig. 3: RecoverySpaces Mulimedia Recorder

substitute opiate prescribing and those clients who attended the organisation on a voluntary basis. These cohorts were added to by graduates of the NWDAS' '209A' clients, based at an alternative location, including clients who had achieved both abstinence based recovery and those who were considered stable and not using 'on top' of their substitute medication.

The clients are all routinely offered IT training on a regular basis and it was concluded that the six components of the RecoverySpaces technology should initially be presented to the client on a function by function basis. Clients were initially taught how to use the multi media journal options before going on to message their counsellors, use the library and the other available options. Clients all had the in built facility to make their diary entry private via a function within the system and many chose to personalise some entries while leaving others 'open access' to IT support workers and counsellors.

Quantitative data based on groups of system users numbering approximately 30 across rolling periods of 12 weeks demonstrated regular diary usage with over 60% of the group preferring to use the video over the written or audio options. All functions were used regularly with use peaking at three days from the formal IT sessions. 70% of clients specifically requested for unique material to be added to their personalised library.

Data is being prepared for presentation and analysis on

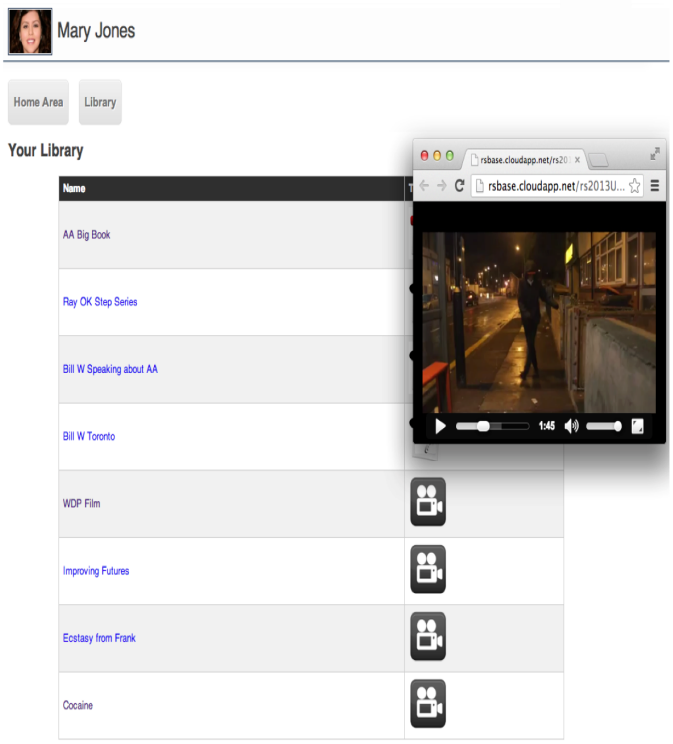

Fig. 4: RecoverySpaces Digital Library

September 1st when the pilot will have run at NWDAS for six months.

V. Conclusion

Conclusion: the technology has seen significant take up by clients, even by those with the most rudimentary IT skills. Qualitative survey feedsback that the system's kiosk-like design and ease of use has played a large part in the enthusiastic use of the technology. Some of the most positive feedback came from the fact that RecoverySpaces multi media functionality encourages clients who have difficulties expressing themselves with the written word; it offers them the opportunity to self reflect and to build a body of journal entries that demonstrate to themselves the progress that they are making in their recovery journey. A number of people attending mutual aid groups will soon be using RecoverySpaces to work with their sponsors and these groups will be monitored in the same way with greater emphasis being placed on collecting of data around the sponsor/sponsee relationship in addition to the organic development of a RecoverySpaces community.

"This package is person-centered and adaptable to the needs of individuals, whether that be in relation to diversity or just unique journeys. It brings recovery to life. Whereas narratives of recovery inspire, this tool brings that to another dimension with its capability across various media, not just words. I wish this could be available to everyone on a recovery path; it's the difference between a black-and-white still photo and a full colour 3-dimensional film." Caroline Cole Head of Development RAPt

"RecoverySpaces has the potential to revolutionise the

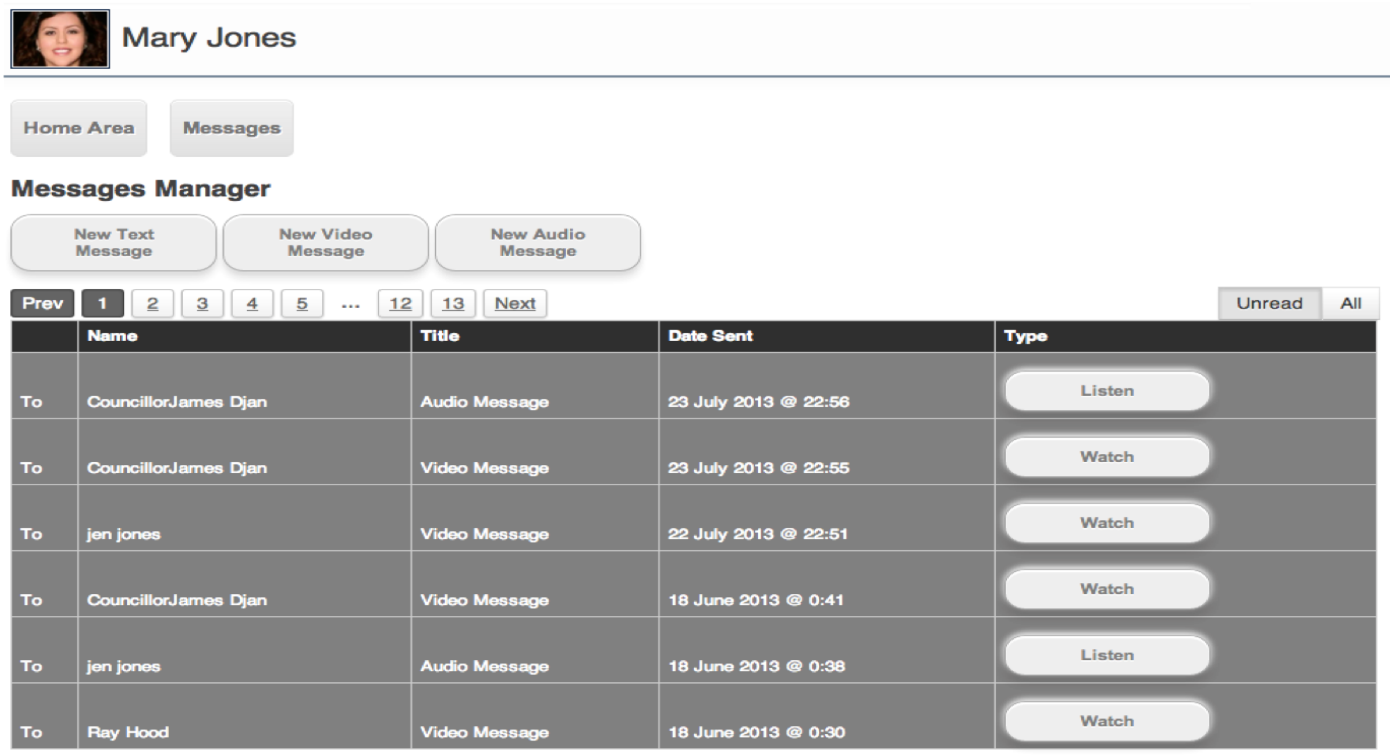

Fig. 5: RecoverySpaces internal messager

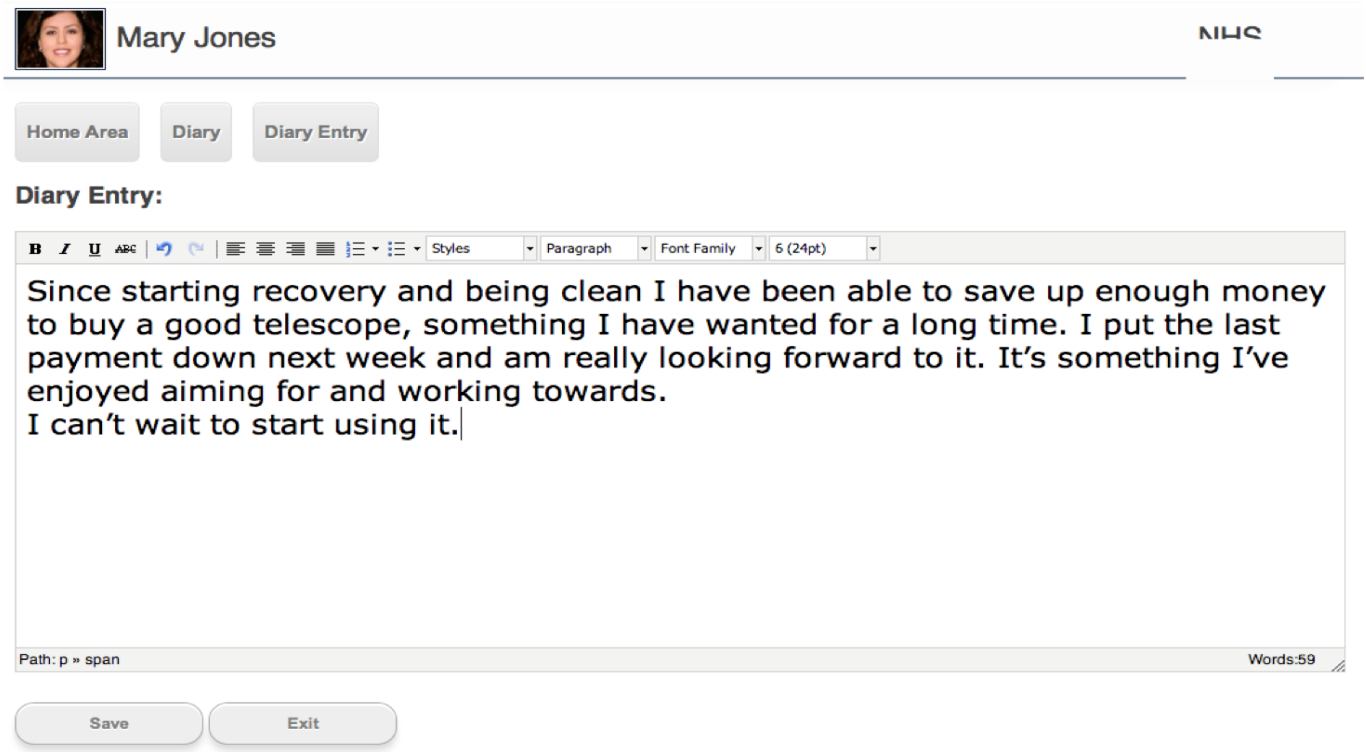

Fig. 6: RecoverySpaces digital workbook

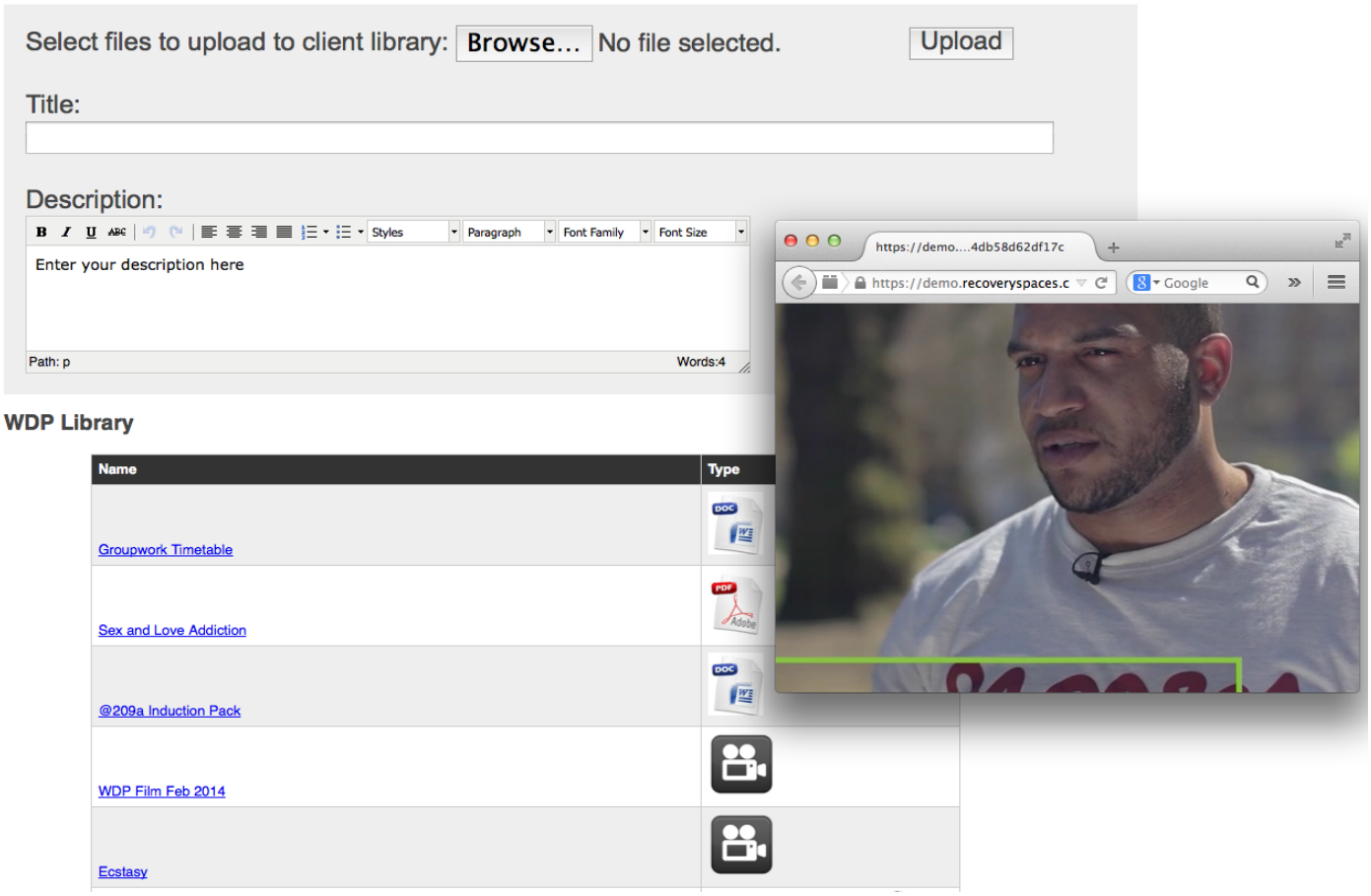

Fig. 7: RecoverySpaces Digital Library uploader

treatment experience for both client and practitioner. Two of our most significant challenges are the need to improve client engagement and increase client retention and I can see how the simplicity of the video/audio/written options, and the ownership of the process that the software gives to the client and his/her recovery practitioner, could deliver significant improvements in these areas." Chula Goonewardene - Group Facilitation & ETE Team Manager, North Westminster Drug and Alcohol service.

ACKNOWLEDGMENT

The authors would like to thank the North Westminster Drug and Alcohol service, UK and Rehabilitation for Addicted Prisoners Trust for supporting the authors to conduct the research described above.

REFERENCES

[1] H. Kritzenberger, M. Herczeg, and U. Ruhl, "Utilizing the new media to provide mental health services to young people," in *Technology and Society, 2000. University as a Bridge from Technology to Society. IEEE International Symposium on*, 2000, pp. 137–142.

[2] P. H. England, "Drug statistics from the national drug treatment monitoring system (ndtms) 1 april 2012 to 31 march 2013," *Department of Health Publication*, vol. 1, pp. 1–37, November 2013.

[3] blithesystems, "The bomic system," August 2014, http://www.blithesystems.com/blitheweb/Products/.

[4] C. M. S. Ltd, "Theseus," August 2014, http://www.theseus.org.uk/products/.

[5] J. W. Pennebaker, *Opening Up The Healing Power of Expressing Emotions*. 72 Spring Street New York, NY 10012: Guilford Press, 1997, iSBN 978-1-57230-238-9.

[6] S. V. Batten, "Written disclosure as a therapeutic tool." *In Innovations in Clinical Practice: A Source Book*, vol. 20, no. 7, p. 257268, 2002.

[7] Hazelden, "Hazelden professional education - distance learning," August 2014, http://www.hazelden.org/web/go/professionaled.

[8] R. Fletcher, S. Tam, O. Omojola, R. Redemske, S. Fedor, and J. Moshoka, "Mobile application and wearable sensors for use in cognitive behavioral therapy for drug addiction and ptsd," in *Pervasive Computing Technologies for Healthcare (PervasiveHealth), 2011 5th International Conference on*, May 2011, pp. 202–203.

[9] G. Copello, F. Lage, and A. Cataldi, "Wip: Web and education: the effects of the work in "protected environments"," in *Frontiers in Education Conference, 2001. 31st Annual*, vol. 3, 2001, pp. F4F–1–2 vol.3.