CARI Project Evaluation Report

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This report is **primarily intended for internal reporting purposes**; however, it is being made available in the interest of sharing our lessons learned and to inform future police-academia collaborations. Individual workstream evaluation reports may be provided upon request.

The CARI Project

The CARI Project is a large-scale collaboration between West Yorkshire Police and the Cybercrime and Security Innovation Centre (CSI Centre) at Leeds Beckett University. The CARI Project aims to improve and incorporate an evidence-based approach into the policing of digital forensics and cybercrime investigations. An extensive needs assessment of UK policing and cybercrime and digital evidence was conducted to understand the current situation, and to identify needs across the force. The CARI Project also involved implementing a training and research programme that has impacted the capability of the digital forensics and cyber units within West Yorkshire Police to engage in research. This needs assessment and research training led to the development of a set of research proposals, which were scored and selected. Subsequently, academics and police staff co-produced 9 research and development workstreams: a framework for seizure, preservation and preservation of cloud evidence; automated forensic analysis; image linkage for victim identification and framework for image fingerprint management; automated grooming detection; frontline officer awareness development and decision support mobile app; assessment of methods of cyber training; an evaluation of the role of the Digital Media Investigator within WYP; and characteristics of victims of cybercrime. Each of these projects were designed to address needs within law enforcement and outputs include evidence-based procedures, new capabilities such as software/algorithms, and actionable intelligence.

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List of contents

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Introduction

The purpose of this report is to provide an overall evaluation of the CARI project, taking a holistic view of the project outputs and the work processes that generated them, and to summarise the benefits, challenges and lessons learned throughout. The primary audience is the Police Knowledge Fund (PKF), which funded the project, but it is also envisaged that Leeds Beckett University (LBU) and West Yorkshire Police (WYP) as institutions will be able to make use of the findings to inform future collaborative work. It is intended that the PKF funders read this report in conjunction with the end of project final PKF report, which describes the individual project outputs in more detail. It is also strongly recommended that the individual workstream evaluation reports are consulted for further detail on the work and evaluation of the individual workstreams.

Project Summary

The CARI project, a collaborative PKF-funded research project between Leeds Beckett University and West Yorkshire Police, ran from September 2015 to March 2017. The purpose of the project was to integrate the use of evidence-based approaches within WYP in order to enhance their capabilities in addressing the 'wicked' problem of fighting cybercrime (cyber-enabled crime in particular). It was an ambitious and challenging undertaking, both in terms of the new technological and research ground to be advanced, but also due to the project's broad scale and scope, as outlined below.

The project began with an extensive needs assessment exercise to determine WYP's institutional requirements and areas of interest or concern, both operational and strategic, in relation to cybercrime. Arising from this, and following a prioritisation and selection process, eight different research workstreams were created, each of which explored a different solution to identified needs. A Workstream Lead was appointed for each workstream from either WYP or LBU. These research workstreams were framed and supported by a number of other workstreams in the areas of project set-up and organisation, research training, dissemination and evaluation. In total, there were fifteen workstreams, of which eight were the main research programmes carried out jointly by WYP-LBU staff.

Evaluation methodology

A 'bottom up' approach was adopted. At the outset of the project, as part of the Delivery Plan planning process, all individual workstream teams devised their own specific evaluation approaches. These activities varied according to the nature of the particular work to be undertaken; in some cases, for example, software was trialled with end users within West Yorkshire Police; in others, statistical analysis of data was conducted to derive meaningful results, and training materials were reviewed by WYP officers.

An evaluation template for use by all teams was designed by the Research Support Officer (RSO), with additional input sought from the wider LBU-WYP project team to ensure fitness for purpose. As well as providing space to describe performance against workstream-specific evaluation measures, the template included a set of generic headings and questions to enable standardised data collection and analysis in the following key areas outlined in the project Delivery Plan:

- Achievement and quality of outputs
- Effectiveness of the methods and procedures employed
- Impact on WYP's practice
- New knowledge generated
- Potential for future impact in West Yorkshire and beyond
- Lessons learned

The three overarching PKF Objectives have also provided a useful framework within which to evaluate the success of the project; specific performance against these is detailed within the final PKF project report.

The workstream evaluation templates were completed towards the end of the project, mainly by Workstream Leads, with input from team members. Support was provided by the Research Support Officer, who had maintained close involvement with the project since joining and therefore had good understanding of the work: meetings, discussions and feedback on evaluation drafts took place to optimise detailed input from those best placed to comment on what had been achieved and how. Where available, written outputs such as reports and training materials were also read by the RSO to enable more meaningful feedback to be provided on evaluation drafts.

As the Broadcast Artefacts workstream incorporated interviews with WYP and LBU staff in order to generate material that could be used as impact videos for later dissemination of project outcomes, the RSO devised a set of questions to feed into the interview process so that this material could also be drawn upon for evaluation purposes (not all intended for broadcast for this reason, and participants were encouraged to speak honestly about their experiences).

In order to evaluate the success of the Showcase Conference on 25th May 2017, an evaluation survey was devised by the RSO and distributed in hard copy and online during and shortly after the Showcase. Attendee evaluation feedback was reviewed and attendance data analysed to determine the numbers of police forces reached and range of organisations in attendance.

Senior WYP staff stated the value of the project from their perspective as part of the Showcase Conference on 25th May 2017. A written testimonial has been received from the most senior West Yorkshire Police partner, DCI Vanessa Smith, and further testimonials will be sought from other West Yorkshire Police staff in due course.

Although it has been possible to describe the immediate short-term impact of the project, it is difficult to evaluate the sustained longer term impact and achievement of PKF objectives at this early 18-month stage, as there are opportunities to further develop and embed the outputs. Institutionally, beyond the project structure, LBU is taking a longer term evaluation approach; we intend to follow up in a year's time, and hopefully beyond, to document the medium and long-term impact achieved. WYP is supportive of this approach.

Evaluation findings

Achievement of outputs

The CARI project as a whole has yielded a diverse and innovative range of project outputs. These offer solutions to real-world policing issues in cybercrime, and equip the force with new understandings and insights to better inform their approach. All outputs are new resources, generated through police-academic collaborative research, that have not been in place before. They are summarised below. Further detail about individual outputs will be found in the final PFK Project Report.

A set of software packages to support operational policing practice in addressing cybercrime
- A mobile app that supports on-scene decision-making by frontline officers in relation to cloud evidence seizure
- An integrated software package that 1) identifies the unique digital 'fingerprint' of a camera device to enable images taken by that device to be linked to it for evidential purposes, and 2) catalogues these unique 'fingerprints' for easy retrieval and later matching with further images
- Grooming/Child Sexual Exploitation detection software, to automate the flagging of online chat logs of likely concern
- A digital forensics tool that allows the Digital Forensics Unit to extract data from their existing key tools in a standardised format, so that connections can be made between exhibits and cases more quickly and easily

A suite of research-based reports providing new knowledge to inform policing strategy related to cybercrime

- A Needs Assessment, providing a thorough insight into the cyber-related needs of the force which formed the basis of research workstream selection and design
- A comparative analysis of the perceived effectiveness of different methods of cybercrime training
- A critical appraisal of the role of the Digital Media Investigator, with recommendations to maximise the potential benefits of the role
- Analysis of the characteristics of victims of cybercrime, highlighting trends and demographics on which future preventative action can be based

Training and development materials

- A detailed frontline officer guide to gathering cloud evidence at the scene of a crime/potential crime, and accompanying presentation slides
- Instructional materials from the initial research training programme

Dissemination outputs

- All practical outputs were showcased and shared nationally at the CARI Showcase Conference (25th May 2017) for the benefit of the wider police community and other interested agencies
- Academic outputs (journal articles) are in progress (some papers have published while other papers were drafted during the extension period)
- Broadcast outputs include training videos, recordings of the Showcase event and impact video interviews with project staff

Evaluation

- Set of individual workstream evaluation reports
- Overall project evaluation report (this document)

One of the Workstream 5 outputs (cloud evidence reference guide for the Digital Forensics Unit) was deemed by WYP to no longer be necessary, as the Standard Operating Procedures in development at the time would have quickly rendered a DFU-specific guide out of date. The DFU's remit has also changed, in that they are no longer responsible for cloud evidence. However, the other Workstream 5 outputs were completed as planned.

Some workstreams have exceeded their original aims:

- The needs assessment was significantly larger in scale than initially anticipated, which resulted in a more detailed picture of the WYP force and more collaborative research options to pursue.
- The image linkage workstream produced a software user manual to accompany the software tool and best practice framework. This had not been planned

originally, but was developed in response to user testing to enhance usability of the tool.
- The grooming detection software workstream produced additional functionality in the form of a chat log validator to enable effective conversion of the file format, thereby removing a barrier to immediate operational implementation.

As can be seen in the individual workstream evaluations, opportunities for further development exist:

- Revisiting the Needs Assessment
- Further development of the existing software tools, either with additional functionality, implementation in other domains, or wider roll-out nationally
- Establishing a legal framework for cloud/digital evidence
- Creating a Cyber Training Working Group to continue further research in WYP and beyond
- Conducting similar DMI studies within other forces, to build a national picture and potentially feed into national training by the College of Policing
- Incorporating additional data to enhance the victim profiling model, enabling even more sophisticated analysis

Quality of outputs

This section provides a high level summary of overall output quality and fitness for purpose; please refer to the individual workstream evaluation reports for further detail on the quality of individual outputs.

WYP's cybercrime knowledge and operational needs have been analysed extremely thoroughly, to a more detailed degree than originally planned, providing in-depth understanding of the needs of a police force and a sound informational baseline about the current state of WYP in this area of work. Over 50 people within West Yorkshire Police, in 18 different parts of the organisation, were consulted to get the best possible understanding of police needs.

Software was designed in consultation with the police so that development could be tailored to their needs. It has also been tested with end users, and feedback has been positive. Some enhancements have been suggested, and further areas to develop have been identified as mentioned above, and these we would hope to be able to address in future work. Interest has also been expressed in rolling out the mobile app nationally.

Written reports are detailed and comprehensive, grounded in primary and secondary research, and provide sound underpinning knowledge in a fast-moving arena of crime and associated legislation. In particular, they enable an evidence-based approach to 1) developing police workforce cyber capabilities and 2) taking preventative action for particular groups of cybercrime victims.

Training materials encompass a wide range of the most up-to-date literature and legislation in the cloud evidence area, and have been developed with the requirements of police end users in mind. They have already been further adapted to different formats based on officer feedback, to suit user needs as they evolved.

Two academic articles so far have been peer reviewed and accepted for publication, clearly indicating a high level of academic quality, with other publications due to follow.

Synergies between workstreams enhanced the quality of outputs for each. For example, the content produced for the cloud training materials was also included within the frontline mobile app, the app videos can also be used for training, and the dissemination and evaluation workstreams worked together to generate content appropriate for both purposes.

The Showcase dissemination event attracted 70 attendees, with representation from six other police forces across the country in addition to West Yorkshire Police, the Home Office, National Crime Agency, National Police Chiefs' Council, the College of Policing and a number of other organisations. There were staff from a range of different roles and at different levels of seniority. Considering the Manchester bomb attack that had taken place two days earlier, and the consequent operational demands on police forces in northern England in particular, this level of attendance was impressive, and demonstrates the strong interest in the project and this area of policing. Feedback comments included:

> "It was really interesting to see how successful the collaboration between law enforcement and academia can be."

> Most valuable or interesting aspect of the event: "The fact that WYP are directly engaging with academics to find explanations / alternatives / answers to assist in the practical fight against cybercrime. It was great to see so many senior police officers, from several forces, there."

Answered: 15   Skipped: 0
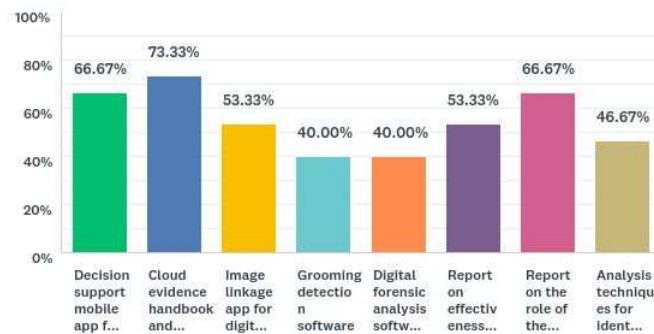
Feedback showed a high level of interest in the full range of project outputs, which inspires confidence that the legacy of the project offers far-reaching benefits beyond the initial implementation with West Yorkshire Police:
There was also interest in seeing the outcomes at a later stage when the work has matured further.

The overall evaluation methodology has been customised to suit the needs of the workstreams as well as taking a generic approach for consistency of evaluation and top-level reporting. The evaluation process also contributed to quality assurance, resulting in enhancements to some of the actual outputs as well as the evaluation outputs. The overall project evaluation report should, however, be treated as a draft at present until the extension work due to be finalised by September is complete.

Project delivery

a) Staffing

The project brought together a large number of staff from both institutions. In total, twenty-one staff worked on direct delivery of the project, fifteen from LBU (thirteen academic staff including the Lead Academic/Project Manager and two administrative staff) and six from WYP including the DCI. (These figures do not include the small number of WYP staff who left early on.) Two LBU-based Research Fellows and the five WYP staff were employed as full time project staff. There was also wider involvement from cybercrime-related units within WYP - the Cyber Crime Team and Digital Forensics Unit - in the form of feeding into requirements and the evaluation of outputs. Financial management and governance support from LBU was also in place. Steering group members involved a further five people.

The majority of LBU staff (academics and the Project Administrator) were from the School of Computing, Creative Technologies and Engineering, but also included a

member of academic staff from the School of Social Sciences and the Research Support Officer from the former Faculty of Arts, Environment and Technology.

Of the project staff, fifteen were male and six were female. The smaller proportion of women is likely to reflect the typical composition of academic and police teams in this traditionally male-dominated area.

The final staffing complement differed from that initially envisaged. Early on, some secondees originally scheduled to join the project from WYP were unable to participate due to a restructure, which necessitated WYP's appointment of new staff to the project. Although this was a challenge to the project initially, these vacancies for new police staff to enter the profession attracted LBU graduates from Computing programmes of study to take up the posts, which also had the benefit of providing a high quality graduate employment opportunity.

Later, as the project progressed, additional academic staffing resource was allocated by LBU when the need for further input was identified in particular areas and to mitigate the impact of long term staff illness. Further evaluation support provided by the Research Support Officer was incorporated into the revised Delivery Plan; this was not costed to the project but provided as institutional resource to support the work. Both institutions therefore took action to overcome staffing challenges to avoid jeopardising project success.

Once up and running, wider staff teams and departments within WYP facilitated the project well and enabled access to police staff to allow focus groups, interviews and end user testing to take place. This was very much valued, as police operational demands and constrained resources are recognised. A theme emerging across many of the individual workstream evaluations was praise of the wider WYP staff for being very helpful and accommodating. The ongoing high level support and facilitation provided by DCI Vanessa Smith was also recognised and very much appreciated.

There were some challenges associated with the fact that WYP contracts ended at slightly different times and had a firm cut-off at project end, in contrast to the academics, who had contract extensions or more flexibility within their substantive roles. This put pressure on the final stages of completion and evaluation. Also, as WYP contracts ended before the Showcase Conference, attendance was not possible for some staff who had gained other employment.

b) Staff skills

The project benefitted from high levels of staff expertise. The most experienced member of WYP staff, a Digital Forensics Investigator, who played a key part in the project and took a lead (formally and informally) in supporting and delivering a number of workstreams, brought 30 years' experience of frontline policing and Digital

Forensics work; this insight was invaluable to the process of co-production and was a significant contributory factor to the overall quality of the end products. On the academic side, all staff were very experienced in their fields, and some had police-related specialisms; the Criminologist member of staff had a research specialism of policing over 20 years, and another academic member of staff had formerly worked with the police in several forces and therefore also had good contextual understanding of the domain.

Although staff had the appropriate skills for their allocated roles, additional support and input was necessary in some areas – for example, with proof-reading and copy-editing for the written outputs on one workstream. This was provided by colleagues from within the immediate workstream team and beyond, but had not been factored into the schedule. In future, it may be useful to assess (even informally) levels of confidence and accuracy with written English prior to allocation of roles/workstreams, to ensure that workstreams with the heaviest and most demanding written outputs do not fall to those less equipped to deal with them.

In terms of evaluation template completion (as conducted by individual workstreams), most people found it straightforward to detail the activities undertaken and describe the outputs completed, including user feedback. Some needed encouragement and support to engage with the more reflective and critical elements of the evaluation template; this was provided by the Research Support Officer. Evaluation did not come easily to everyone, and it was suggested by one member of staff that some training early on would have been helpful.

The project enabled the sharing of skills and experience. As one example, the later involvement of an academic staff member with an industry background (to cover the illness absence of a LBU workstream lead) yielded useful insights regarding management of software development projects that could be adopted by the university more widely in future in this kind of practical, collaborative research with external organisations.

   c) Project resources

Project staff reported that individual workstream resources, both literature and tools, were well chosen and appropriate for the tasks. Overall, project staff were very satisfied in this respect, apart from the data access issues encountered by two of the workstreams.

Overall, data access was a significant challenge and risk to the project, severely impacting the grooming detection software workstream (Workstream 8) and the analysis of victims of cybercrime workstream (Workstream 12). There was a 7-month delay in being able to access the necessary data for Workstream 12, and the academic appointed to cover the Workstream 8 Lead later in the project was unable to access one particular data source at all due to authorisation having been granted to

the previous Workstream Lead only. It is a testament to the perseverance and dedication of all involved that, despite this, the project outputs were delivered (although both felt that more could have been achieved in the absence of data obstacles).

Further related to the data topic, it is worth noting that the grooming detection software workstream necessitated large amounts of time spent doing close analysis of the graphic and potentially distressing content contained within online chat logs in order to prepare the data for the application of automated techniques, and not all staff felt comfortable working with this. However, effective team working ensured that those who were not affected by it undertook this task.

In terms of project infrastructure:

> A shared project office space at the university would have been preferred by some of the WYP project staff, to facilitate collaborative working and enable dedicated PC and equipment to be permanently set up. It was felt that this, along with closer liaison, could also have mitigated some issues encountered at the WYP office, where it was felt that project work was sometimes viewed with suspicion by colleagues, and seen as not being normal/legitimate police work.

> Police equipment and its associated restrictions caused practical difficulties in some cases – for example, WYP laptops did not allow internet access outside of police buildings or access to the necessary software for development work. Dedicated project laptops would have helped.

Planning and bibliographic tools such as Todoist and Zotero were considered to be effective by the wider project team.

Project as a whole

At the top level, the Needs Analysis shaped the overall programme to ensure its relevance and ultimate effectiveness, influencing the selection and design of individual workstreams at the start of the project. WYP's openness and honesty in describing shortcomings in their current procedures was very important at this stage, and ensured that real issues and problems were being addressed.

Monthly project-wide team meetings provided the opportunity to review progress against schedule, with workstream leads and teams asked to provide updates. The schedule tracking spreadsheet initially created and the outputs table that was devised for the revised Delivery Plan were both helpful in structuring these discussions.

One practical challenge experienced was the differing work schedules between WYP staff and academics, with WYP staff all full time but most academics only part time on

the project. It was also difficult at times for WYP staff to collaborate with LBU staff given the longer academic leave periods. However, despite this, it was felt by WYP staff that academics were accessible, supportive and helpful.

At the workstream level

As can be seen in the individual workstream evaluations, most workstreams reported being satisfied with their chosen methods and tools, and found them to be appropriate and effective for the purpose. Two workstreams, during evaluation, identified changes in approach that would improve similar projects in future. Also, in one workstream, integration of the qualitative and 'hard' quantitative research methodologies undertaken by academics from very different disciplinary backgrounds was an interesting process that, with discussion and a little extra work, delivered a successful end product.

All workstream projects were co-*designed* at the top level, but the realities of co-*delivery* of research within individual workstreams were very interesting in terms of team composition and dynamics**.**

People were allocated to particular workstream teams, all of which had a mix of WYP and LBU staff - but in practice, teamwork was much more fluid, with some staff not formally listed on a workstream actually contributing a great deal to it in practice, and occasionally some members listed on a team not being required to contribute as much as originally anticipated. Additionally, WYP staff, largely due to the fact that their work pattern and full-time status was the same, also operated as an informal sub-team of their own, coordinated and led by the most experienced officer, and worked very flexibly across the range of workstreams. This was beneficial in terms of mutual help and support, enabled tasks to be allocated according to current capacity, provided cover for a WYP colleague's absence, and facilitated links between workstreams.

It was apparent (to this report's author) that different organisational cultures exist within academia and policing. Police working practice is hierarchical, with strong team-working inclination and skills evident, and a directive, action-driven and results-focused approach taken. The academic way of working contrasts with this in some ways: highly autonomous, many academic staff are more used to working as individuals than as team members; tend to be more reactive than proactive in managing, supporting or taking responsibility for the work of others, because the Higher Education students and colleagues with whom they usually work are generally expected to be able to work independently; and in day-to-day work may be used to a greater degree of flexibility than the police in their approach to tasks. These differences were reflected in the varying ways the role of the Workstream Lead was interpreted across the project, and the way in which project work was undertaken by teams generally.

To a large extent, therefore, it seemed that many staff on the project naturally self-organised in keeping with their organisational and/or disciplinary cultures, rather than according to the formal workstream team allocation. This did not appear to negatively impact the achievement of objectives or quality of outputs in this project, and no value judgment is implied as to which approach is 'better'. It is interesting to note, however.

Impact and benefits

The term 'impact' is being used here in the sense of change or benefit having taken place as a result of the project – either within WYP, to the collaboration as a whole, or within LBU. Details of impact specific to each workstream can be seen in the final PKF project report, but is summarised here:

a)   Short-term impact achieved:

The project has yielded a number of **new, innovative practical tools and resources for WYP** that were not in place before.

The evidence base has increased to support ongoing development of Evidence-Based Practice. New knowledge, and greater understanding of existing knowledge, has been generated and shared regarding:
- WYP needs
- Cloud evidence legalities and best practice seizure approaches
- Limitations of existing forensics extraction tools and use of ontologies within forensics
- The most effective technologies and management systems for digital camera fingerprint capture and storage
- Online grooming patterns
- Cyber training preferences
- The effectiveness of the role of the Digital Media Investigator
- Cybercrime victim profiles: in particular, the increased vulnerability of young women to sexual harassment online, and 16-45 year olds to fraud and theft-related cyber-enabled crimes.

Frontline officers, the Cyber Crime Team and Digital Forensics Unit have seen at first hand the benefits of research applied to their operational roles. One example is the increased interest and confidence shown by WYP officers in the Latest Class Analysis technique and its benefits, and increased recognition of the benefits of linking datasets, that was inspired by Workstream 12 (analysis of cybercrime victims).

The most senior Digital Forensics Officer on the project has transferred back to WYP as a permanent member of staff, and another member of WYP staff has

taken up a different policing role, enabling some sustained **capability for knowledge sharing**.

WYP project staff have reported increased skills and confidence in research and academic skills, along with project management, presentation, communication and office skills.

Appointment to the project provided a **valuable employment opportunity for LBU graduates** of Computing programmes, giving them relevant vocational experience in which they could apply their degree-related learning.

Wider links with other organisations have been made. To date, ten organisations who attended the Showcase Conference have expressed an interest in using the outputs, and some have suggested further ideas to take the work forward. The cloud evidence workstream (see Workstream 5 evaluation) also made links with Greater Manchester Police during the project.

The project afforded an **opportunity for interdisciplinary working** between academics from different disciplines (Computing and Social Sciences), which was a benefit from a LBU institutional perspective.

Dissemination of the work is well underway, and has been very positively received to date.

In terms of evaluation, **learning that has taken place throughout the project has been captured** to feed back to the PKF Programme and inform future collaborative work with WYP. Institutional 'lessons learned' have also been captured, which could have a positive influence on other collaborative research.

Sustainability of the WYP-LBU partnership is high on the agenda – 'next steps' discussions and planning for future bids to enable continuation of the work are in progress.

    b)   Anticipated long-term benefits:

There are a range of future benefits possible. These have been summarised below, and will be followed up and evidenced as part of our longer term evaluation strategy and preparations for REF assessment of impact:

Operational efficiency and effectiveness
>Ongoing use of the automated tools will enable greater efficiency, reduce backlogs and save future operational time in handling evidence. Use of the mobile app will enable the gathering and protection of evidence without contamination, and will also relieve pressure on the Digital Forensics Unit as fewer items will be incorrectly or unnecessarily seized.

>The mobile app will enable more confident decision-making by frontline officers at the scene of actual or potential crimes.

Strategic change and influence
>Changes will be seen to the way in which staff are trained and deployed in relation to cyber.
>Targeted action will have been taken based upon insights provided through project reports, tools and techniques.

It was acknowledged in many of the workstream evaluations that 'next steps' support at senior level within WYP would be needed to enable the full benefit of the project outputs to be realised. This has been discussed at the most recent WYP Cyber Crime Strategic Board, and the most senior levels within the force have been involved.

Lessons learned

There is a clear police need and appetite for the most up-to-date and regularly maintained knowledge in the area of cybercrime, and a desire to work productively in partnership. Knowledge and training emerged early on through the Needs Assessment as an important priority and concern for WYP, particularly consideration of where cyber knowledge resides within the organisation and how to continually update it. Senior WYP leadership are keen to address this.

The support of senior stakeholders within the police to facilitate access to people and data is crucial, and the importance of the involvement of staff at lower management and operational levels is also recognised as being key to project success. It is desirable for as wide a range of staff as possible to be engaged at some level with the project, so that the benefits of research-enabled policing solutions and academic input can be appreciated, and the value of the partnership demonstrated.

Translational activity beyond the end of the project to support, embed and further extend WYP's capacity to use the project outputs will be very important, in order to maximise the benefits of the work achieved to date. The project has also identified many opportunities for further development of existing outputs and the creation of new ones, which it is hoped can be realised in future work. Ongoing maintenance and development of the resources by WYP/LBU would also ensure that this work remains relevant and up to date, but resource would need to be committed to this. The CARI

Project in some ways has been the first step of a longer journey.

The changing structural context of the police can pose threats to project delivery and continuity of organisational learning. Even this short 18-month project saw expertise lost through restructure, changes to team responsibilities making some planned project work redundant, and evolving procedures meaning that some aspects of work could be more usefully undertaken at a different time. This is another important reason to maintain the partnership, in order to be able to address issues and act on opportunities when it is most appropriate for police partners.

Different HE and policing organisational cultures bring different strengths in work approaches and skills, and collaborative partnership affords good opportunities for two-way learning. As well as co-production of knowledge, and academic support provided to police in their EBP learning, it seems that there could also be scope for the police to share some of their successful approaches and strategies to benefit academia – for example, team working – perhaps as part of formal training and development programmes as well as informally through joint project work.

It was discovered that obtaining access to police data is just as lengthy and problematic a process as it is in any other context, if not more so. It is worth persevering and attempting to create easier mechanisms for future projects, however, as there is potentially a great deal of value in using data to support decision-making, as in other arenas. Analytics could play a key role in the evidence-based policing practice of the future. In order for this to become a reality, however, improvements to data collection at source would be needed, in addition to more streamlined data access and authorisation protocols.

Conclusion

The CARI project has fulfilled its aims, making a strong contribution towards achievement of the three overarching PKF programme objectives, particularly Objective 3 ('Demonstrating innovation in building the research evidence base and applying it through knowledge exchange and translation across all levels of policing.') It has had demonstrable impact on a wide range of beneficiaries within WYP and beyond. Staff from both organisations spoke highly of the project in evaluation and clearly gained a lot from participating in it. The range and scale of the work is a strength, as is the clear commitment to the partnership on both sides. Collaborative working was a success. Although challenges were encountered, these were worked through and overcome. Both organisations value the partnership and are keen for it to continue. There is an evident need for this kind of work in the cybercrime area, and LBU and WYP are therefore well placed for continued future work together.

Recommendations

For the LBU-WYP partnership:

1. Continue to embed the work of this project within WYP.

2. Review and prioritise opportunities for further development suggested by individual workstreams, including elements of the Needs Assessment not able to be included this time.

3. For future projects:

   o Ensure firm and detailed data access arrangements are in place early on.
   o Consider a project office 'base' and project PCs/laptops.
   o Consider equally balancing the part-time or full-time complement of staff from both organisations, possibly using secondments as initially planned.
   o Reflect on what a revised project training programme might look like in future. The initial programme could be expanded to include guidance on evaluation and project management, for example, alongside research skills. Some elements could be delivered by WYP or other LBU staff, and some could be delivered at later points in the project, not necessarily all at the start.

4. To build on the partnership, consider other progression pathways and opportunities within WYP for Computing graduates as another means of knowledge transfer and enhancement of student employment options.

For WYP:

1. A review of data collection procedures is recommended in relation to cybercrime victims, to increase completeness of datasets and enable development of existing analytic models.

2. Investigation of more straightforward routes to data access for research purposes would be beneficial.

For LBU:

1. As project management and devolved workstream management is a complex and demanding undertaking, additional resource and support attached to this could be considered.

2. It is recommended that CCTE staff share and, where appropriate, apply some of the learning from the project to other collaborative projects more broadly within the institution.

For PKF:

1. It would be useful if data sharing support at national level could be investigated. This could hopefully facilitate local arrangements.

2. Provision of a PKF template for the Delivery Plan may be helpful for institutions, at project start and for monitoring and reporting purposes.

For College of Policing:

1. CoP are encouraged to take up the reports and training materials devised during the CARI project, and make wider use of them as appropriate within their training and knowledge sharing programmes.

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Naomi Colhoun
Research Support Officer

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