

VALCRI WHITE PAPER SERIES

VALCRI-WP-2017-008

1 January 2017

Edited by B.L. William Wong

Improving Professional Training in Criminal Intelligence Analysis

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ABSTRACT

The training and development of criminal intelligence professionals has long suffered from a range of challenges including the absence of rigorous training standards and a failure to embrace new disciplines or branches of knowledge. This has undermined analysts' abilities to keep pace with the evolution of crime. The VALCRI syllabus was developed to address this problem by providing instruction in a holistic set of organisational, operational, informational, technological and cognitive skills. We outline the evolution of this syllabus and what we hope to achieve through its delivery.

Keywords

Criminal intelligence, law enforcement intelligence, intelligence training, professional development, analytic training, intelligence analysis, VALCRI Project

INTRODUCTION

This paper details the work of the VALCRI project in developing a new syllabus for the development of criminal intelligence analysts. The paper begins by examining traditional impediments to intelligence training, as well as the requirements of law enforcement professionals in Europe and beyond. The paper goes on to explore the VALCRI project's response to these requirements by elaborating on the value and scope of our syllabus, our intended means of delivery, and the outcomes we hope to achieve.

CHALLENGES TO INTELLIGENCE TRAINING

Training and professional development are key to improving criminal intelligence analysis (Gwinn, et al., 2008, p. 28). However, research and anecdotal evidence suggest the training of intelligence professionals is subject to a number of challenges, including: the absence of training standards; poor or limited on-the-job training; limited training opportunities at the intermediate and advanced levels; a rapidly changing operating environment; overreliance on the intelligence cycle as an instructional model; limited research on the current state of intelligence training in law enforcement; a reluctance to address the many causes of intelligence failure; and the continued indifference to non-traditional subjects in standard intelligence curricula. We examine each of these below.

The Lack of Comprehensive Training Standards

Current training standards are inadequate to the needs of intelligence professionals working in law enforcement. Those that exist – including from the US Department of Justice's Global Justice Information Sharing Initiative (2007), the US Department of Homeland Security (2010) and the International Association of Law Enforcement Intelligence Analysts (2012) – typically focus on a narrow subset of intelligence skills, or the "minimum" training requirements needed by entry-level analysts. They do not detail the diversity of skills needed by intelligence analyst in general, or criminal intelligence analyst in particular, to operate in rapidly changing environments. Nor do they elaborate on how an analyst's skill set should evolve over the course of their career. The only standard known to the authors that includes a detailed maturity model is the Analyst Professional Development Roadmap published by the United States Global Advisory Committee (GAC) which is a Federal Advisory Committee to the US Attorney General (2015). But this too can be extended to include a wider array of skills and disciplines.

Poor or Limited On-the-Job Training

The training given to criminal intelligence analysts is invariably limited and often inadequate (see Buckley, 2014, p. 76; Ratcliffe, 2008, p. 230-231). This problem is common to law enforcement agencies around the world (Ratcliffe, 2007, p. 27). As Buckley (2014) observes, most learning is "on the job" and often based on flawed assumptions: that an experienced analyst is always on hand to teach novices; and that the same analysts know what works and what

doesn't and can communicate this knowledge willingly and effectively to junior colleagues, (Buckley, 2014, p. 248). These assumptions persist despite evidence to the contrary. Discrepancies in the knowledge and capabilities of criminal intelligence professionals in different organisations, as well as in different teams in the same organisation, is one consequence of this current state of affairs. Inevitably, sub-optimal training brings sub-optimal results.

Training Gaps at the Intermediate and Advanced Levels

Webster (2007) notes that few programs address the needs of intermediate or advanced analysts (p. 6). The overwhelming majority of in-house, university, or private-sector training programs are dedicated to entry-level analysts and are not suitable for law enforcement professionals looking to develop their skills at later stages of their career.

The Evolution of Criminal Intelligence as a Discipline

The discipline of criminal intelligence is undergoing considerable change. Practitioners are busy figuring out what works and what doesn't. Existing training programs either do not keep pace with the evolution in analytic best practices, or include them selectively. This is despite the fact analytic innovations have been shown to improve the analytic process, and the quality of the resulting outputs.

The Evolution of the Analyst's Operating Environment

The environment in which criminal intelligence analysts operate is also subject to change. Internally, analysts have to accommodate new laws, new technologies and changes in structure, strategy and mandate. Many of these changes are prompted by the evolution of one's external environment and the emergence of new forms of criminal behaviour. Regrettably, analytical training does not always keep pace with this evolution. Indeed, anecdotal evidence suggests the volume of training given to criminal intelligence analysts is falling just as the pace of change has increased.

Overreliance on the Traditional Intelligence Cycle

Training programs are often built around a simplified model of the intelligence process known as the intelligence cycle. Unfortunately, this model fails to reflect the operational and cognitive challenges of the analytic process (see Hulnick, 2006, pp. 959-979; Gerraint, 2009, pp. 22-46; Johnston, 2005, pp. 45-60; Clark, 2007, pp. 10-13; Lowenthal, 2006, pp. 65-67; Ratcliffe, 2007, p. 114; Treverton, 2003, pp. 104-108). Failure to address these challenges deprives analysts of the deep insights needed to mitigate their worst effects. While the cycle has its uses, it should not dictate the core components of an intelligence training curriculum, nor should it be the only operating model that analysts work with.

Failure to Address the Many Causes of Intelligence Failure

Current training programs address some causes of analytic failure while routinely ignoring others. In recent years, emphasis has been given to the impact of different cognitive pathologies, particularly those biases analysts operate

under as a result of prior knowledge and experience. Attempts to improve bias mitigation are to be commended, even if a bias-free analyst is neither possible nor desirable. That said, little attention has been to other causes of analytic failure such as poor management of analytic workflows, the inconsistent application of operational best practices, poor data quality, and so on. Such challenges are not exclusive to intelligence. Rather, they are common to all forms of knowledge work. Addressing these challenges obliges intelligence practitioners to explore other disciplines for possible solutions.

Lack of Up-to-date Research and Publications

The literature on criminal intelligence analysis and analytic training in general is very limited. Much of the research dates between 1995 to 2010. Even the most recent publications continue to rely heavily on this earlier literature. It is unclear whether this is because there are no alternative sources of research to borrow from, or whether the authors are confident that previous findings are still relevant. Either way, recent advances in cognitive psychology, neuroscience, operations management and other disciplines suggest there is much that can be integrated into the standard intelligence curriculum.

Indifference to Non-Traditional Subjects and Disciplines

The intelligence analyst's job is never limited to the production of intelligence. However, the overwhelming majority of training programs ignore those activities that fall outside the intelligence cycle. Such activities typically include process management, information management, knowledge management, strategy development, and so on. While such disciplines may appear tangential, their proper execution can significantly improve the quality of intelligence product and address such challenges as cognitive bias, poor data quality, requirements planning, stakeholder management and quality improvement, to name but a few. Indeed, the authors' experience suggests that expanding the scope of an analyst's knowledge and training can significantly improve their ability to address long-standing organisational impediments to effective analysis.

ADDRESSING END USER REQUIREMENTS

With these challenges in mind, the VALCRI project undertook a rigorous assessment of the training needs of criminal intelligence professionals. Our survey considered not just the subjects to be taught, but also the structure and delivery of a future criminal intelligence training program. In addition to the project's End Users, we solicited input from law enforcement and security professionals across Europe. Their input can be summarised in the following requirements.

First, a future intelligence curriculum should reflect the breadth of work intelligence professionals do, not just the activities prescribed by the intelligence cycle. Further, it should address the limitations of existing training guidelines and standards. Put differently, *relevance* should take precedence over compliance. The VALCRI project has argued that

intelligence work spans five separate but interconnected domains:

- The organisational domain - activities pertaining to an organisation's mission, objectives, etc.
- The operational domain - activities pertaining to the execution of orders, policies, projects, etc.
- The informational domain - activities pertaining to use and management of information
- The technological domain - activities pertaining to the use and management of IT
- The cognitive domain - activities pertaining to the cognitive dimensions of analytic work

A rigorous training program should address each of these domains in detail. Thus, from an organisational perspective, instruction can be given on the analysis of one's operating environment and setting of strategic objectives. From an operational perspective, instruction can cover such activities as workflow analysis, process design and operational planning. The informational domain underscores the importance of data quality, data management and metadata conventions and so on. The technological domain emphasises the need to continually improve analysts' abilities to work with standard office productivity tools, as well as advanced analytic technologies. Finally, the cognitive domain underscores Smith's (2004) finding that critical thinking, problem solving, and structured analysis can significantly improve the performance of criminal intelligence analysts. In all instances, emphasis should be given to the role that knowledge plays in enabling strategic and operational outcomes. Police officers in general (Ericson and Haggerty, 1997, p. 19; Brodeur and Dupont, 2006, p. 7-26), and criminal intelligence analysts in particular (Ratcliffe, p. 95), are knowledge workers. As such, they are highly likely to benefit from learning about those disciplines that enable the creation, management and sharing of knowledge, regardless of their provenance.

Second, a successful curriculum should marry training with education. As Essenheigh (2000) observes, training is about "know how", whereas education focuses on the "know why" (p. 46). Education provides deeper understanding and supports independent thinking, decision making, and problem-solving. This matters because, as noted above, criminal intelligence analysts operate in challenging environments that are subject to continued change. To elaborate: the cases they are asked to support can differ enormously and often require novel solutions; the technical or operational resources available to them can vary from one day to the next; the issues or actors they are asked to evaluate defy rapid analysis and cannot be approached using a common set of analytic tools or fixed mental models; to avoid analytic failure, an analyst has to reflect on their thinking and maintain the mental flexibility needed to identify, understand and adapt to change. In light of these challenges, expanding the scope of analyst's formal education is increasingly seen as a "must have" rather than a

“nice to have”. However iterative the intelligence cycle might be in practice, it remains a fixed process that does not address the many causes of analytic failure.

Third, the curriculum should be customisable and enable career-long learning. It should address different levels of knowledge and capability, as well as the different assignments analysts are likely to handle over time. The scope of the curriculum should be sufficiently broad so that analysts can customise their learning to current needs and / or future career objectives. Moreover, as Buckley (2014) observes, “delivering training as staff commence their roles is important but it is not the end of the process. Staff will need both ongoing refreshes and developmental training if the agency is to obtain the maximum benefit” (p. 249). Accordingly, training should follow a maturity model, one that lets analysts proceed through different stages of professional development.

Fourth, the curriculum should be subject to continued development and review. It should be flexible enough to accommodate new branches of knowledge and operational best practices. Feedback and evaluation mechanisms should be built into the program so that students and instructors learn from one another.

Fifth, the curriculum should reflect the specific needs of the law enforcement community. As Buckley (2014) notes, most training programs for criminal intelligence analysts borrow from those developed for national security and / or military intelligence professionals. These materials are not always adjusted to reflect the operating context of law enforcement professionals (p.10) or the specific legal constraints they are obliged to operate under.

Sixth, special attention should be given to the use of analytic techniques, particularly those that support the qualitative analysis of data. Indeed, analysts should be given a portfolio of techniques to work with. This portfolio can include popular law enforcement techniques such as Comparative Case Analysis. However, it can also include useful tools from other fields including national security intelligence, risk intelligence, business intelligence and so on. These tools can all enhance an analyst’s critical, creative and conceptual thinking skills. However, they are not well known in the law enforcement community. Naturally, these techniques should be amended to reflect the challenges faced by law enforcement professionals, and introduced in a contextually or operationally relevant manner.

Seventh, emphasis should be given to improving the technical literacies of students. On completion of the program, participants should have received instruction in an extensive portfolio of tools, ranging from routine web and office productivity tools, such as Excel, to advanced analytic technologies, such as those being developed by the VALCRI project. Analysts should know how to select the right tool(s) for the job, and how to combine or customise them for effect. Further, they should know how to embed these tools into their standard operating procedures.

Eighth, the curriculum should reflect the needs of adult learners and working professionals. Criminal intelligence professionals cannot be approached in the same manner as college students. A useful set of adult learning principles is provided by McCain (1999, p. 5-6):

- Learner Directed: Learners have to understand why they need the knowledge and skills taught to them
- Experiential: Learners have to “experience” the taught subjects. The knowledge and skills they acquire should be immediately applicable to the real-life problems they face in their operating environment
- Able to be evaluated: Learners want to understand, clearly and early, what changes will occur to their performance, work style, knowledge, etc. as a result of the training they receive
- Residual: Learners appreciate training that builds on the knowledge and experience they have already acquired, keeps them actively involved, and gradually moves them toward greater understanding
- Numerous instructional methods: Training should combine various teaching styles so as to satisfy the different learning styles of the trainees in the room

Finally, the curriculum should be sensitive to the legal, ethical and privacy constraints analysts have to contend with. Training should be conducted in a way that encourages a frank and honest discussion of organisational challenges, including those that are routinely considered sensitive or off-limits. The program should equip trainees with the practical guidance needed to address these challenges, as well as the decision making skills needed to operate ethically and in the best interests of their respective organisation.

THE VALCRI SYLLABUS

Overview

In light of these requirements, the VALCRI project has developed an extensive syllabus for the training and development of criminal intelligence professionals. Although the project is primarily aimed at developing a suite of advanced analytic and data processing technologies, VALCRI is unique in acknowledging that technology works best when it augments the analyst’s cognitive abilities and contextual circumstances.

Thus, the syllabus reflects the project’s objective of giving analysts a better toolkit, as well as the knowledge needed to operate effectively across the five domains mentioned above. When complete, it will cover not just the use of the VALCRI system and its individual components, but also those disciplines that enhance the analytic capabilities of individuals and organisations alike. Further, the syllabus is intended to serve as a reference document for European law enforcement agencies looking to improve their training efforts outside of the VALCRI project.

Development

The VALCRI syllabus has been in development for the past 18 months. It has been subject to multiple iterations and reviews, including from the project's end users and other security and law enforcement professionals. Successive versions have built on the comments and suggestions of these practitioners to provide what we believe is the most extensive index of training modules currently available. The topics listed here were not chosen at random. Rather, they reflect the strategic and operational priorities of our project partners and the wider law enforcement community we engaged as part of VALCRI or in the course of other EU-funded projects.

The development of the syllabus included a careful review of the literature on criminal intelligence, intelligence analysis, human cognition, process and project management, collaboration, leadership, communication, knowledge management, information management, strategy and strategic thinking, operational management, productivity, etc. This review sought to identify the most important skills and disciplines needed by analysts in general and criminal intelligence analysts in particular. Particular emphasis was given to those disciplines that are rarely (if ever) taught to analysts, but whose relevance to analytic work cannot be denied, and can be readily adapted to meet the needs of law enforcement professionals.

While determining the scope of our syllabus, we examined training standards developed by various bodies, as well as training curricula offered by public and private sector organisations. Our survey was not limited to the discipline of criminal intelligence but included other intelligence disciplines such as national security intelligence, military intelligence, business intelligence and so on. Our assessment evaluated such programs as:

- *Minimum Criminal Intelligence Training Standards for Law Enforcement and Other Criminal Justice Agencies in the United States* by the United States Department of Justice and the United States Department of Justice's Global Justice Information Sharing Initiative (2007)
- *Law Enforcement Analytic Standards* by the United States Department of Justice, the United States Department of Justice's Global Justice Information Sharing Initiative and the International Association of Law Enforcement Intelligence Analysts (IALEIA) (2012)
- *Common Competencies for State, Local, and Tribal Intelligence Analysts* by the United States Department of Justice, the United States Department of Justice's Global Justice Information Sharing Initiative, and the United States Department of Homeland Security (2010)
- *Minimum Standards for Intermediate-Level Analytic Training Courses* by the United States Global Advisory Committee (GAC) (2013)

- *Analyst Professional Development Roadmap* by the United States Global Advisory Committee (GAC) (2015)
- *Intelligence Management Model for Europe, Phase One: Guidelines to Standards and Best Practice Within the Analysis Function* by the Scottish Police College (2003)
- *The National Criminal Intelligence Sharing Plan* by the United States Department of Justice and the United States Department of Justice's Global Justice Information Sharing Initiative (2003)
- *United States Intelligence Community Directive 203: Analytic Standards* by the United States Office of the Director of National Intelligence (2015)
- *Core Competencies for Intelligence Analysis at the National Security Agency* by Moore & Krizan (2012)
- *The Characteristic of Successful and Unsuccessful Intelligence Analysts* by Wing (2000)
- *Attributes of an Analyst: What We Can Learn from the Intelligence Analysts Job Description* by Corkill, et al. (2015)

In addition to identifying those topics of value to criminal intelligence professionals, we also surveyed the literature on adult learning for recommendations on how best to educate career analysts. We examined the state-of-the-art and developed an approach that we believe blends the practical and theoretical with training and education.

Syllabus Content

The current version of the syllabus has eight sections, each designed to increase the student's value added:

1. Introduction to Analysis – This section provides a concise introduction to analytic work. Emphasis here given to the contextual factors that inform the analytic process and its outcomes
2. The Analytic Process – This section focuses on analytic theory and the application of structured analytic techniques. Students will also be introduced to supplementary topics, such as productivity, time and work management, information management, etc. The section also covers those analytic disciplines that are rarely taught to criminal intelligence professionals, including future analysis, risk analysis, and early warning.
3. Data Visualisation and Visualisation-Based Analysis – This section examines how to visualise data to support analytic reasoning, pattern detection, and insight generation. Emphasis here is given to many different types of visualisation and how they can be achieved using different tools.
4. Thinking and Reasoning Skills – This section provides a detailed overview of the cognitive mechanisms that support effective reasoning and

data-driven action. Our objective here is to give analysts a comprehensive set of tools to support decision-making, problem solving, idea generation, and learning.

5. Managing the Analytic Function – This section addresses those disciplines that enable the management and coordination of analytic teams. These include: networking and collaboration, information management, project management, change management, leadership, continuous improvement, strategy and strategic thinking, etc.
6. Knowledge Management – This section covers the fundamental principles of personal and organisational knowledge management. Emphasis here is given to how best to capture, codify and share the *know-what* and *know-how* that enable effective intelligence work.
7. Legal, Ethical and Privacy Issues – The section embraces the legal, ethical, and privacy-related issues that inform law enforcement and analytic work in general.
8. Online Research and Investigative Skills – This final section provide guidance on the collection of open source information for investigative or intelligence purposes.

Each section is divided into separate units. For each unit we specified:

- Key learning objectives
- Planned activities and exercises
- An evaluation method
- Required readings
- Supplementary readings
- Online learning resources (where applicable)

Detailed below are two sample learning units that we have developed as part of the curriculum:

1.1 Analysis and the Intelligence Process	
Introduction	This unit is intended to examine the fundamentals of the analytic discipline. It explains the origins, highlights the evolution, and describes the current state of law enforcement intelligence. It also explains what analysis is and describes its place in the law enforcement intelligence process. Finally, it introduces the Human Issues Framework which has been applied by the VALCRI project to map the non-technical challenges to intelligence work. The framework can be used to gain a broader understanding of the contextual factors that impact the intelligence process in

	general and the analytic process in particular. Such understanding represents the essential prerequisite to the improvement of the intelligence and analytic performance.
Learning Objectives	By the end of the unit, participants will be able to: <ul style="list-style-type: none"> • Explain what analysis is and describe its place in the overall intelligence process • Explain the relation between intelligence analysis and crime analysis • Elaborate on the process frameworks that inform intelligence work (e.g. the Intelligence Cycle, the Target-Centric Approach, etc.) • Describe key principles underlying the Human Issues Framework • Explain the practical utility of the Human Issues Framework • Use the Human Issues Framework to gain a broader understanding of analytic work and the context in which it takes place. Exploit this understanding to improve intelligence planning and workflow management • Explain the role played by intelligence in policing and elaborate on the current state of law enforcement intelligence
Activities / Exercises	Use the Human Issues Framework to discuss the analytic environment within your organization
Evaluation Method	Analysts will be evaluated on their ability to: <ul style="list-style-type: none"> • Internalise standard process frameworks, together with their benefits and limitations • Internalise the Human Issues Framework and use it to identify and prioritise the analytic challenges they wish to address inside their respective organisation
Required Readings	<ul style="list-style-type: none"> • Blog posts by K. Wheaton: <ul style="list-style-type: none"> http://sourcesandmethods.blogspot.com/2014/06/thinking-in-parallel-21st-century.html (3 Parts) http://sourcesandmethods.blogspot.com/2011/05/lets-kill-intelligence-cycle-original.html (11 Parts) • Eck, J. E., & Clarke, R. V. (2013). Intelligence Analysis for Problem Solvers: http://www.popcenter.org/library/reading/pdfs/intell-analysis-for-probsolvers.pdf, pp. 10-21 • United Nations Office on Drugs and Crime (2011). Criminal Intelligence Manual for

	Analysts: http://www.unodc.org/documents/organized-crime/Law-Enforcement/Criminal_Intelligence_for_Analysts.pdf , pp. 1-16, 29-33
Supplementary Readings	Ratcliffe, J. H. (2016). <i>Intelligence-Led Policing</i> . New York, NY: Routledge

3.1 Introduction to Data Visualisation and Visualisation-Based Analysis	
Introduction	This unit introduces the key principles of data visualisation and visual analytics. It will endeavour to provide participants with the knowledge needed to develop one's own visualisations and evaluate the work of others. Guidance will also be given on how to enhance the analytic products developed earlier in the course using different data visualisation tools. On completion of the unit, analysts will understand the benefits of data visualisation and visual analytics, as well as the discipline's limitations and dangers. When combined with other best practices, this mode of critical thinking on visualisation should help participants determine when to best employ the data visualisation tools taught.
Learning Objectives	By the end of the unit, participants will be able to: <ul style="list-style-type: none"> • Explain the benefits of data visualisation and visual analytics, as well as the related limitations and dangers • Describe the link between visualisation and effective information management • Distinguish between different visualisation techniques and the tools that can be used to effectively present and analyse information • Select a visualisation approach the most appropriate considering the task • Generate visualisations using standard productivity software and accepted best practices • Effectively use visualisations to communicate analytic findings
Activities / Exercises	<ul style="list-style-type: none"> • Generate analytic products using different visualisation tools, techniques, and datasets
Evaluation Method	Students will be evaluated on their ability to generate basic and intermedia data visualisations. This includes the presentation of statistical, geospatial and network relevant data

	using such common or freely available tools such as Excel, Gephi, CartoDB, Chart.js, and Tabulu.
Required Readings	<ul style="list-style-type: none"> • Dubakov, M. (2012). "Patterns for Information Visualization": https://www.targetprocess.com/articles/information-visualization • Friedman, V. (2007). "Data Visualization: Modern Approaches": https://www.smashingmagazine.com/2007/08/data-visualization-modern-approaches • Lin, M. (2013). "Why Data Visualization Matters?": http://www.mulinblog.com/data-visualization-matters • Wong, D. M. (2013). <i>The Wall Street Journal Guide to Information Graphics: The Dos and Don'ts of Presenting Data, Facts, and Figures</i>. New York, NY: W. W. Norton & Company
Supplementary Readings	<ul style="list-style-type: none"> • Cairo, A. (2012). <i>The Functional Art: An Introduction to Information Graphics and Visualization</i>. Berkeley, CA: New Riders • Meirelles, I. (2013). <i>Design for Information</i>. New York, NY: Rockport Publishers • Tufte, E. R. (1990). <i>Envisioning Information</i>. Cheshire, CT: Graphics Press • Yau, N. (2013). <i>Data Points: Visualization That Means Something</i>. Indianapolis, IN: John Wiley & Sons, Inc. • Yau, N. (2011). <i>Visualize This: The FlowingData Guide to Design, Visualization, and Statistics</i>. Indianapolis, IN: John Wiley & Sons, Inc.
Online Learning Resources	<ul style="list-style-type: none"> • A periodic table of visualization methods: http://www.visual-literacy.org/periodic_table/periodic_table.html • The 5 Most Influential Data Visualizations of All Time: http://www.tableau.com/sites/default/files/whitepapers/the_5_most_influential_data_visualizations_of_all_time.pdf • A Quick Illustrated History of Visualization: http://data-art.net/resources/history_of_vis.php • Bēhance - a showcase of creative work: https://www.behance.net • FlowingData: http://flowingdata.com

	<ul style="list-style-type: none"> • Information Is Beautiful: http://www.informationisbeautiful.net • Improving data visualisation for the public sector project: http://www.improving-visualisation.org • Visual Complexity: http://www.visualcomplexity.com
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Our study of adult learning theories and didactic best practices has also allowed us to include suggestions on the methods and approaches needed to teach these units effectively.

NEXT STEPS

The development of the syllabus is only the first of VALCRI's training-related activities. Our intention is to translate our research into a series of training and educational programs for law enforcement professionals. To begin, we hope to develop a series of short courses on specific skills (e.g. data visualisation, information management, critical thinking, etc.). These are intended to serve as a springboard to further training or a formal academic qualification. These courses would be modular in nature, allowing students to combine topics or focus on specific aspects of intelligence work, and can be provided by any of the consortium's members.

We also intend to launch graduate programs at both the master's and doctoral levels. These will provide instruction in all five dimensions of intelligence work (or the option to specialise in a specific area). They will be applied, theoretical or hybrid in nature. Applied programs will oblige students to address those challenges that impact analytic work in their organisation. Theoretical programs will invite students to advance our knowledge and the state-of-the-art in the field of criminal intelligence analysis.

Further, we plan to enhance the value of the VALCRI syllabus by developing a dedicated maturity model. This can be used by organisations to benchmark the capabilities of their staff, and monitor their continued evolution.

Finally, we are planning a series of public seminars to test selected parts of the syllabus and generate feedback from VALCRI's end users and other law enforcement professionals. In doing so, we hope to improve the learning materials already developed, as well as the syllabus as a whole.

EXPECTED OUTCOMES AND IMPACTS

Our work on the VALCRI syllabus, and our interaction with the project's End Users, has confirmed the findings of previous EU projects: the challenges faced by intelligence professionals are not restricted to the process of collecting, analysis and communicating information. Rather, their efforts are undermined by issues that have little to do with intelligence at all. This includes challenges associated with the effective management of people, processes, and tech-

nology, inefficient organisational and personal information and knowledge management, inconsistent identification and application of "best practices", etc. Our syllabus has been designed to address these challenges. By realising the training and educational objectives detailed above we hope to:

- Demonstrate the importance of a holistic approach to intelligence training / education
- Broaden the intelligence community's understanding of a "core" intelligence curriculum, by emphasising the importance of those activities and disciplines that fall outside the intelligence cycle but enable analytic work
- Enable individual learning and adaptability by extending the analyst's toolkit to include theories, concepts and frameworks from other professions or disciplines
- Extend the knowledge and capabilities of law enforcement professionals in general, and criminal intelligence analysts in particular, so that they can better address contemporary policing and security challenges
- Further to the above, enhance the consulting capabilities of criminal intelligence analysts, thus allowing them to address both internal and external challenges; contribute to the setting of an organisation's strategic objectives; and instruct others in the cultivation of new skills and capabilities as needed
- Encourage law enforcement agencies to think of intelligence as a multidisciplinary activity, one that warrants a sustained, career-long investment of resources
- Enhance the technical capabilities of criminal intelligence analysts
- Enable the adoption of the VALCRI system and its components for operational use by European law enforcement agencies

REFERENCES

Brodeur, J. P. & Dupont, B. (2006). Knowledge Workers or "knowledge" Workers?. *Policing and Society*, 16 (1).

Buckley, J. (2014). *Managing Intelligence: A Guide for Law Enforcement Professionals*. Boca Raton, FL: Taylor & Francis Group.

Clark, R. M. (2007). *Intelligence Analysis: A Target-Centric Approach*. Washington, DC: CQ Press.

Corkill, et al. (2015). *Attributes of an Analyst: What We Can Learn from the Intelligence Analysts Job Description*. Paper presented at the 8th Australian Security and Intelligence Conference, Edith Cowan University Joondalup Campus, Perth, Western Australia.

Ericson, R. V. & Haggerty, K. (1997). *Policing the Risk Society*. Toronto: University of Toronto Press.

- Essenhigh, R. H. (2000). A Few Thoughts on the Difference Between Education and Training. Letter to the Editor, National Forum: The Phi Kappa Phi Journal.
- Gerraint, E. (2009). Rethinking Military Intelligence Failure: Putting the Wheels Back on the Intelligence Cycle. Defense Studies.
- Gwinn, S. L. et al. (2008). Exploring Crime Analysis: Readings on Essential Skills (2nd Edition). Overland Park, KS: International Association of Crime Analysts.
- Hulnick, A. (2006). What is Wrong With the Intelligence Cycle. Intelligence and National Security.
- Johnston, R. (2005). Analytic Culture in the US Intelligence Community: An Ethnographic Study. Washington, DC: Center for the Study of Intelligence, Central Intelligence Agency.
- Lowenthal, M. M. (2006). Intelligence: From Secrets to Policy. Washington, DC: CQ Press.
- McCain, D.V. (1999). Creating Training Courses. Alexandria, VA: American Society for Training and Development.
- Moore, D. T. & Krizan, L. (2003). Core Competencies for Intelligence Analysis at the National Security Agency. In Swenson, R. G. (eds.), Bringing Intelligence About: Practitioners Reflect on Best Practices. Washington, DC: Joint Military Intelligence College, Centre for Strategic Intelligence Research.
- Ratcliffe, J. (2007). Integrated Intelligence and Crime Analysis: Enhanced Information Management for Law Enforcement Leaders. Washington, DC: Police Foundation.
- Ratcliffe, J. (2008). Intelligence-Led Policing. Portland, OR: Willan Publishing.
- Scottish Police College (2003). Intelligence Management Model for Europe, Phase One: Guidelines to Standards and Best Practice Within the Analysis Function.
- Smith, R. A. (2014). The Pursuit of Law Enforcement Intelligence Training and Education. The Police Chief Magazine.
- Treverton, G. F. (2003). Reshaping National Intelligence for an Age of Information. New York, NY: Cambridge University Press.
- United States Department of Justice & United States Department of Justice's Global Justice Information Sharing Initiative (2003). The National Criminal Intelligence Sharing Plan. Washington, DC: US Department of Justice.
- United States Department of Justice & United States Department of Justice's Global Justice Information Sharing Initiative (2007). Minimum Criminal Intelligence Training Standards for Law Enforcement and Other Criminal Justice Agencies in the United States. Washington, DC: US Department of Justice.
- United States Department of Justice, United States Department of Justice's Global Justice Information Sharing Initiative & International Association of Law Enforcement Intelligence Analysts (IALEIA) (2012). Law Enforcement Analytic Standards. Washington, DC: US Department of Justice.
- United States Department of Justice, United States Department of Justice's Global Justice Information Sharing Initiative & United States Department of Homeland Security (2010). Common Competencies for State, Local, and Tribal Intelligence Analysts. Washington, DC: US Department of Justice.
- United States Global Advisory Committee (GAC) (2013). Minimum Standards for Intermediate-Level Analytic Training Courses. Washington, DC: US Department of Justice.
- United States Global Advisory Committee (GAC) (2015). Analyst Professional Development Roadmap. Washington, DC: US Department of Justice.
- United States Office of the Director of National Intelligence (2015). United States Intelligence Community Directive 203: Analytic Standards. Retrieved from: <https://www.dni.gov/files/documents/ICD/ICD%20203%20Analytic%20Standards.pdf>
- Webster, M. (2007). Review of Applied Intelligence Training. Retrieved from https://www.churchilltrust.com.au/media/fellows/WEBSTER_Megan_2007.pdf
- Wing, I. (2000). The Characteristics of Successful and Unsuccessful Intelligence Analysts. The Journal of the Australian Institute of Professional Intelligence Officers.



The research leading to the results reported here has received funding from the European Union Seventh Framework Programme (FP7/2007-2013) through Project VALCRI, European Commission Grant Agreement Number FP7-IP-608142, awarded to Middlesex University and partners.

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