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## Learning by doing: Acquiring the tacit knowledge of how to conduct an open-source intelligence collection and analysis project

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### Abstract

Intelligence professionals working in analytic jobs in the U.S. intelligence community, in law enforcement intelligence, or in the competitive intelligence field can increasingly expect to participate in, or even lead, intelligence project teams. At Mercyhurst University, the first-ever intelligence studies program in the United States, resident graduate students in Applied Intelligence prepare for intelligence careers by taking the mandatory Strategic Intelligence capstone course. This course enables them to gain valuable tacit knowledge by conducting a semester-long, intelligence collection and analysis project for a real-world, external client. Based on a positivist intellectual paradigm and consistent with the theory of Social Constructivism, students learn to operate effectively as a team, acquire and apply project management skills, communicate with external clients, articulate Key Information Topics and Key Information Questions, scope a project, use specialized, commercially-available software and tradecraft to conduct open-source intelligence collection, aggregate and share acquired intelligence, comply with Intelligence Community Directive 203 (Analytic Standards), select and use appropriate structured analytic techniques, evaluate sources and information, write a final estimative intelligence product using probabilistic language, and present timely, actionable intelligence and findings to different types of audiences.

**Keywords:** intelligence, intelligence community directive, information management, knowledge management, organizational culture, project management

### Introduction

Intelligence studies is a burgeoning field in academia, with over 150 institutions now teaching intelligence in the United States alone (Dexter et al., p. 2017). In colleges and universities, intelligence has become “an academic complement to the practice of national security intelligence” (Marrin, 2016, p. 266). Today, there are many different degree programs in the intelligence field: Depending on which college or university they attend, students in the United States could earn a bachelor’s or master’s degree, in residence or online, in such degree programs as Homeland Security, Security Studies, Cyber Intelligence and Security, or Global Security; they could also minor in Defense Studies, Diplomatic and Military History, or Technical Intelligence. Mercyhurst University, which boasts the oldest intelligence studies department in the United States, prepares undergraduate and graduate students to transition after graduation into intelligence jobs in national security, intelligence support to law enforcement, or competitive intelligence.

This study sought to answer the question, “How does a real-world intelligence research project enable graduate students to leverage explicit knowledge acquired from a master’s program in applied intelligence and gain the tacit knowledge necessary to perform effectively on an intelligence project team?” At Mercyhurst University, undergraduate students can enrol in a resident undergraduate degree program in Intelligence Studies, while graduate students can earn a Master of Science in Applied Intelligence either

online or in residence. One of the goals of the Mercyhurst master's degree program in Applied Intelligence is to teach graduate students how to effectively conduct intelligence collection and analysis while serving on, or leading, an intelligence project team. A master's degree program is not the same as a training program; yes, students learn about the intelligence profession, its history, and how intelligence is collected, analyzed, and reported. But most of all, students are taught how to think creatively and how to adapt to different intelligence requirements and needs.

Most of the students in the Mercyhurst master's degree program in Applied Intelligence do not have undergraduate degrees in Intelligence Studies, and it is a rarity in the resident program to have students who worked in the intelligence field prior to participating in the graduate degree program. For these reasons, for students enrolled in Mercyhurst's two-year-long master's degree program, the experience can be a lot like "drinking from a fire hose." In contrast to students in the four-year-long undergraduate degree program, graduate students have only *two* years to learn about the intelligence field, the intelligence profession, develop, write, and defend a master's degree, and then draw upon their accumulated knowledge and skills in a project-based Strategic Intelligence class. Strategic Intelligence is a capstone course that requires second-year graduate students to apply the knowledge gained over the previous year and a half to a real-world, semester-long intelligence project in support of an external client.

## The Strategic Intelligence course

What is strategic intelligence? More than six decades ago, Sherman Kent (1949) distinguished between *intelligence* and *strategic intelligence* by asserting that the latter refers to "knowledge vital for national survival" (p. vii). With this distinction in mind, Strategic Intelligence course students draw upon all they have learned from various intelligence courses in the program and apply that knowledge as part of an intelligence project team supporting an external client, performing such tasks as:

- Receive a customer's initially stated intelligence needs and translate those into mutually comprehensible, executable, and achievable collection requirements.
- Formulate clear Key Intelligence Topics and Key Intelligence Questions (KIT/KIQ);
- Present KIT/KIQ to the client in a Terms of Reference (TOR) document.
- Engage in open-source intelligence (OSINT) collection.
- Engage in human intelligence (HUMINT) collection.
- Evaluate sources and information in accordance with intelligence community practices.
- Aggregate, store, access, and analyze intelligence.
- Recognize and mitigate analytic bias.
- Select and use appropriate structured analytic techniques.
- Write different types of intelligence reports.
- Properly write an estimative intelligence report with key judgments written in probabilistic language.
- Prepare and submit project deliverables.
- Professionally present intelligence project findings, both orally and in writing.

## Literature Review

Just as there has been an expansion in intelligence as a field of academic study, there has been a similar growth in the number of intelligence-related scholarly publications. CIA analyst Sherman Kent (1955) advocated for an increase in intelligence literature. As Marrin (2016) observed, although "intelligence studies literature is quite large, and growing," this "was not always true" (p. 267). However, the volume of

intelligence literature has increased, especially since the start of this century. In fact, as Van Puyvelde and Curtis (2016) observed, it has recently reached the point where, “Students of intelligence can now rely on a substantial body of literature to inform their research and contribute to knowledge in this specific field of study,” (p. 1040). Based on their examination of intelligence literature, Coulthart and Rorissa (2023) identified three distinct eras for the production of intelligence literature: The *practitioner era* (1950-1985), the *scholarly emergence era* (1986-2001), and the *exponential growth era* (2002-2020). It is in this most recent era that there has been a proliferation of scholarly articles about intelligence: “The last ten years alone (2010–2020) have seen more article-based knowledge production than the previous sixty years combined (1950–2010)” (Coulthart & Rorissa, 2023, p. 1003). Scott and Jackson (2004) noted how the terror attacks of 11 September 2001, and the alleged distortion of intelligence information to justify the 2003 invasion of Iraq, resulted in greater public interest in intelligence and contributed to the “development of intelligence studies” (p. 140). Scott and Jackson (2004) also asserted that, “The rapid growth of intelligence as a focus of academic enquiry will surely continue” (p. 140).

### Academic interest in intelligence analysis

Coulthart and Rorissa (2023) noted that intelligence analysis was of particular interest to a large number of scholars writing on intelligence topics. Contributing to this increase in academic and scholarly interest in intelligence analysis are periodic conferences attended by intelligence scholars, such as the Strategic Consortium of Intelligence Professionals (SCIP) and the International Association for Intelligence Education (IAFIE) (Coulthart & Rorissa, 2023). Intelligence analysis is also of growing interest in the private sector (García-Madurga & Esteban-Navarro) and also in law enforcement intelligence (Guerette et al., 2021).

### What is intelligence analysis, and how should it be performed?

The meaning of the terms *intelligence* and *intelligence analysis*, and the purpose of intelligence, continue to evolve. As Marrin (2016) asserted, there still is no universally agreed-upon definition of what intelligence is, or what its purpose might be. In the 20<sup>th</sup> century, intelligence evolved “from a staff function focused on information collection and collation, mainly for military commanders,” to an “institution that reports tailored operational information” to military, government, and corporate decision-makers (Pili, 2023, p. 129).

Ben Jaffel and Larsson (2023) pointed out how, in this century, intelligence practices have spread to other professions and practitioners. Walsh and Harrison (2021) examined the roles played by leadership, organizational culture, cognitive factors, and technology in influencing the evolution of how strategic intelligence is performed in Australia since the 9/11 attacks. Marrin (2016) opined that as the field of intelligence studies grows in academia, this will enable an improved understanding of the intelligence and the intelligence field, both within the government and within the private sector. Scott and Jackson (2004) asserted that “the essence of intelligence lies at the level of analysis or assessment” (p. 142). Pili (2023) observed that although intelligence analysis was “one of the most explored topics in intelligence studies”, it is also true that “decoding its nature is still challenging” (p. 128). Pili (2023) also argued that what is often called intelligence analysis “is much more synthesis – namely, structuring sensory data collection – than analysis” (p. 128). Delagenière (2021) argued there should be a critical discourse analysis approach in addition to the evidence-based reasoning methodology contained in Sherman Kent’s positivist epistemology. Arcos and Palacios (2020) stated that, “Intelligence analysis is widely considered one of the cornerstones of the intelligence function” (p. 73). Teirilä (2024) noted that in addition to thinking about how strategic intelligence analysis is performed, and what the desirable qualities of an intelligence analyst should be, more attention must be paid to how an analyst is trained and developed.

## The professionalization of intelligence analysis

Established in 2000, the Sherman Kent Center for Intelligence Analysis, located on CIA's Langley, Virginia campus, is named after the former Yale professor and CIA analyst who had been largely responsible for the professionalization of intelligence analysis within the Central Intelligence Agency during the 1950s and 1960s (Davis, 2002). As Davis (2002) noted, "Kent's *Strategic Intelligence* and the articles and letters he wrote around the time of CIA's establishment, about the need to ensure that the US intelligence effort attracts the country's best minds, had a profound effect on the early Directors and their top aides" (p. 6). As shown in table 1 (below), Frans Bax, founding Dean at the Kent School and later President of CIA University, identified nine characteristics of Kent's professional code for intelligence analysts (Davis, 2002, p. 8).

**Table 1: Sherman Kent's professional code for intelligence analysis (Davis, 2002, p. 8).**

1	Focus on policymaker concerns
2	Avoidance of a personal policy agenda
3	Intellectual rigor
4	Conscious effort to avoid analytic biases
5	Willingness to consider other judgments
6	Systematic use of outside experts
7	Collective responsibility for judgment
8	Effective communication of policy-support information and judgments
9	Candid admission of mistakes

## Different approaches to teaching intelligence analysis

With respect to the teaching of intelligence analysis, Kilroy (2017) noted "how academics and practitioners often differ in their views of intelligence analysis" and asked, "is it an art or science?; tradecraft or training?; creative or critical thinking?" (p. 71). A gathering of intelligence educators from five universities "shared their views on how they approach the teaching of intelligence analysis within their specific academic departments and disciplines" (Kilroy, 2017, p. 73). Kilroy (2017) explained how methodologies used at these five universities to teach intelligence analysis included intensive readings, learning structured analytic techniques, working in teams, learning how to effectively communicate with decision-makers and intelligence product end users, being given tasks where they "can fail, adopt, and succeed" (p. 78) "implement the research design by learning in a trial and error way (like riding a bike)" (p. 79), and use estimative language. One of the professors in Kilroy's (2017) study noted how undergraduates frequently fail to read assigned materials.

## Methodology

In Mercyhurst's Strategic Intelligence course for second-year graduate students, the research orientation is a *positivist intellectual paradigm*, a paradigm that Phythian (2021) described as "one committed to the idea of the possibilities of producing neutral, objective, intelligence based on the accumulation of facts and dispassionate analysis of them" (p. 314). The theoretical underpinning of our approach to intelligence in the master's program in Applied Intelligence is *social constructivism*, an approach which Dexter et al. (2017) described as viewing "teachers and students as partners engaged in a joint enterprise of knowledge production" (p. 924). Rather than simply being passive recipients of classroom lectures, students in the Strategic Intelligence capstone course are instead active participants with both the professor and foreign intelligence partners in the active creation and execution of an intelligence activity.

## Learning by doing

One of the concepts embraced by the U.S. military is that of “Be-Know-Do”, which incorporates what a military servicemember must *be*, must *know*, and must *do* (Sangwan & Raj, 2021). Polanyi (1966) asserted that there are two types of knowledge, *explicit* and *tacit*. Explicit knowledge is easily conveyed and easily learned. Tacit knowledge is harder to convey, and therefore harder to learn. Learning how to play soccer, or ride a bicycle, is an example of tacit knowledge (Fruehauf et al., 2014). Learning how to conceptualize, plan, and execute an intelligence activity involves the acquisition of tacit knowledge because it is a “socially constructed phenomenon” (Fruehauf et al., 2014, p. 103). As Dexter et al. (2017) asserted, “people learn best through doing” (p. 924). Apprenticeships are a common method for transferring tacit knowledge from experienced practitioners to those who are new to a profession. Similarly, “using intelligence professionals in academic activity is a means of transferring expertise and institutional culture to future theoreticians and practitioners” (Coldea, 2019, p. 81). As Dexter et al. (2017) asserted, “Student interaction, then, is the key to active learning” (p. 925).

## The value of working as a project team

“Learning is a collaborative process,” as Dexter et al. (2017) observed (p. 925). Working as part of an intelligence project team in Strategic Intelligence is not only beneficial for effective learning, but as preparation for the demands of a career as an intelligence analyst: Whether working in one of the 18 organizational entities that currently comprise the U.S. intelligence community, as an intelligence practitioner in federal or state law enforcement, or in the private sector field of competitive intelligence, analysts increasingly find themselves working as members of a project team. As Heuer and Pherson (2011) pointed out, “This is a major change from the traditional concept of analysis as largely an individual activity” (p. 21).

## Creating and enabling a project team

Tuckman (1965), a psychologist, introduced the four-step construct of group behavior that he referred to as *forming*, *storming*, *norming*, and *performing*. According to Tuckman (1965), *forming* is where group members establish relationships “with leaders, other group members, or preexisting standards” (p. 396). *Storming* is characterized by friction in the early phase of the project, as team members carve out responsibilities (Tuckman, 1965). As resistance and friction is overcome, the group enters the *norming* phase. In the *performing* phase, “interpersonal structure becomes the tool of task activities. Roles become flexible and functional, and group energy is channeled into the task” (Tuckman, 1965, p. 396). Hackman (2011) identified six enabling conditions necessary for creating an optimal intelligence project team: (1) Create a real team; (2) specify a compelling team purpose; (3) put the right people on the team; (4) establish clear norms of conduct; (5) provide organizational supports for teamwork, and (6) provide well-timed team coaching.

## Intelligence project management

Successfully managing an intelligence project requires that project team members be familiar with some basic project management principles. García-Madurga and Esteban-Navarro (2020) examined how project management principles outlined by the Project Management Institute (PMI) were useful for human intelligence teams conducting collection and analysis for competitive intelligence firms. To be successful, effective intelligence analysts and managers require certain rudimentary project management skills. Such skills include:

- Conduct an effective “kick-off” meeting
- Conceptualize and plan how to perform collection, analysis, and production tasks in the time available

- Task organize the project team
- Develop a work breakdown structure
- Developing a project schedule, with milestones and interim objectives
- Manage an intelligence project while remaining attentive to the “triple constraint” of cost, schedule, and scope

### **Working with a foreign partner**

At the start of the project, the external customer provides the team with an unclassified, open-source intelligence (OSINT) collection requirement. Sometimes the external customer is a foreign entity, which adds additional complexity to the project. Whitford and Pruncun (2017) examined the pedagogical, linguistic, and cultural challenges associated with teaching foreign non-governmental organizations (NGO) how to gather and analyze intelligence information and noted the “difference in world view” reflected in the use of intelligence language (p. 54). Fortunately for the most recent student project team, the foreign counterpart consisted of professional military intelligence officers from a NATO partner country who possessed a comparable understanding of, and attitude towards, intelligence collection and analysis. Communication between the student team and the foreign partner was successfully accomplished via regularly scheduled Zoom calls and email.

### **The kick-off meeting**

Kent (1949) wrote, “There is no phase of the intelligence business which is more important than the proper relationship between intelligence itself and the people who use its product. Oddly enough, this relationship, which one would expect to establish itself automatically, does not do this” (p. 180). It is at the kick-off meeting that the relationship between the intelligence project team (who will provide the intelligence) and the customer (who will use the intelligence) is formed. In the most recent project, the student team received and reviewed the customer’s original intelligence requirements and then organized a “kick-off meeting” with the foreign customer to review and refine the tasking. The team then provided the customer with their proposed KIT and KIQ, a series of questions that the team would seek to answer during the course of the research project. KIT and KIQ are not only used in the U.S. intelligence community, but also by competitive intelligence professionals in the private sector for the purpose of effectively scoping a research project and ensuring a shared understanding between the client and the team regarding the intelligence project’s objectives (Herring, 1999).

### **Scoping the project**

One of the earliest tasks for the student project team is scoping the project so that it can be successfully completed within a 14-week-long semester. One of the principles of project management is the tyranny of the so-called “triple constraint” of cost, time, and scope: It is not possible to change one of these without impacting the other two (Van Wyngaard et al., 2012).

### **The pros and cons of open-source intelligence (OSINT) collection**

According to *Army Techniques Publication (ATP) 2-22.9* (2012), the Army’s current manual for open-source intelligence collection, OSINT collection may be conducted in public speaking fora, public documents, public broadcasts, and Internet web sites. Open-source intelligence is more than just poking around on the Internet with one’s preferred search engine; one must know where, and how, to look for information: Less than five percent of the Internet is indexed for search engine retrieval (Kobayashi & Takeda, 2000). In order to securely access websites in sensitive foreign countries, student project team members must have access to specialized, commercially available software, employ managed attribution, and be familiar with appropriate online OSINT tradecraft (Fuchs & Lemon, 2019). Because not all Internet-

based information is equally reliable, or valid (*Army Techniques*, 2012), the student project team used the Army's alphanumeric system for assessing acquired information. Wherever possible, the team strove to maximize efficiency and effectiveness. For example, they established collection lanes in the road to avoid the duplication of effort. They established a shared folder system for storing collected intelligence, enabling them to quickly ascertain whether something a team member came across had already been collected. Team members named files with standardized dates and names to simplify recovery and retrieval and used commercially available social media apps (such as Signal, Microsoft Teams, and WhatsApp) to rapidly communicate and exchange information.

### **Complying with ICD 203, Analytic Standards**

In previous courses, team members learned structured analytic techniques (SAT), a collection of analytic techniques intended to improve the quality of intelligence analysis, mitigate analytic bias, and increase transparency by enabling analysts to show their work and explain how they reached the conclusions they had reached (Heuer & Pherson, 2011). The purpose of structured analytic techniques is to “divide an intelligence problem into simple pieces and solve them accordingly” (Pili, 2023, p. 130). Although the *term* structured analytic techniques is relatively new, first used in the Intelligence Community in 2005 (Heuer & Pherson, 2011), a “review of hundreds of declassified national intelligence assessments from 1947 through the 1990s reveals elements of most” of them (Marchio, 2014, p. 159). Artner et al. (2016) noted how the intelligence community has made increased use of structured analytic techniques (SAT) “in the years following the intelligence failures on Iraqi weapons of mass destruction” (p. 3).

The Office of the Director of National Intelligence (ODNI) first disseminated Intelligence Community Directive 203, *Analytic Standards*, in 2007 (ICD 203, 2007). The stated purpose of this directive was to “promote rigorous analysis, lessen the risk of intelligence failure, and make analysts’ reasoning more transparent to consumers” (Artner et al., 2016, p. 1). The most recent iteration of ICD 203, published in 2022, states that its purpose is to express “the responsibility of intelligence analysts to strive for excellent, integrity, and rigor in their analytic thinking and work practices” (ICD 203, 2022, p. 1). To achieve this goal, ICD 203 (2022) identifies five analytic standards and nine analytic tradecraft standards that U.S. intelligence community analysts should follow. According to ICD 203 (2022), the five analytic standards are that intelligence products should be: (1) Objective, (2) independent of political consideration, (3) timely, (4) based on all available sources of intelligence information, and (5) based on analytic tradecraft standards. The nine analytic tradecraft standards listed in ICD 203 (2022) are that an intelligence product: “(1) Properly describes quality and credibility of underlying sources, data, and methodologies; (2) Properly expresses and explains uncertainties associated with major analytic judgments; (3) Properly distinguishes between underlying intelligence information and analysts’ assumptions and judgments; (4) Incorporates analysis of alternatives; (5) Demonstrates customer relevance and addresses implications; (6) Uses clear and logical argumentation; (7) Explains change to or consistency of analytic judgments; (8) Makes accurate judgments and assessments; and (9) Incorporates effective visual information where appropriate” (p. 4-5).

### **Selection and use of structured analytic techniques**

Over the years, many intelligence analysts have created and used specialized tools and techniques to improve the efficiency and accuracy of their work; however, in recent years, there has been an attempt to capture, codify, and standardize the use of what has become known as structured analytic techniques (Artner et al., 2016, p. 3). One of the most familiar references currently used by intelligence analysts has been Heuer and Pherson's (2011) *Structured analytic techniques for intelligence analysis*. The Mercyhurst project team made use of the following as described in that book.

## ***Brainstorming***

Brainstorming is a structured analytic technique that most people have heard of, but have probably done incorrectly (Heuer & Pherson, 2011). Structured Brainstorming, or Divergent/Convergent Thinking, is a 12-step process originally developed for CIA's Sherman Kent School for Intelligence Analysis (Heuer & Pherson, 2011). Done correctly, brainstorming requires a facilitator and for brainstorming session participants to write down, rather than verbalize, their responses to facilitator questions. This serves to mitigate Groupthink and prevents more vocal session members from dominating the conversation.

## ***Hypothesis Generation***

A hypothesis is “a potential explanation or conclusion that is to be tested by collecting and presenting evidence” (Heuer & Pherson, 2011, p. 122). Based on what they have observed and know, an analytic team articulates a hypothesis as a statement (rather than as a question). The hypothesis “contains a dependent and an independent variable. The dependent variable is the phenomenon being explained. The independent variable does the explaining” (Heuer & Pherson, 2011, p. 122).

## ***Key Assumptions Check***

Heuer and Pherson (2011) describe this technique as “a systematic effort to make explicit and question the assumptions (the mental model) that guide an analyst's interpretation of evidence and reasoning about any particular problem” (p. 148). Explicitly articulating assumptions in a written document is part of the team's effort to show their work, as ICD 203 (2022) requires. Failing to acknowledge assumptions can have catastrophic consequences for an analytic team. For example, in the 2002 DC sniper case, law enforcement officials mistakenly assumed the perpetrator was a white male with military experience, driving a white van (Beebe & Pherson, 2015).

## ***Source identification and assessment***

Artner et al. (2016) noted how ICD 203 (2007) asserted that a finished intelligence product “properly describes quality and reliability of underlying sources” (p. 12). The importance of this requirement was reflected by the fact that, in addition to issuing the original ICF 203 in 2007, the Office of the Director of National Intelligence (ODNI) also issued ICD 206 (2007), *Sourcing Requirements for Disseminated Analytic Products*. ICD 206 (2007) requires analysts to provide a **source reference citation**, or SRC, to identify sources of information or analytic judgments. Sourcing information should be provided in the form of source reference citations, appended reference citations, source descriptors, and source summary statements. As ICD 206 (2007) instructed, “Analysts should use a combination of these mechanisms to optimize clarity and reader understanding” (p. 3).

## ***Alphanumeric source descriptions***

ICD 206 (2007) encouraged analysts to provide **source summary statements** “to provide a holistic assessment of sourcing that supports a covered analytic product” (p. 3). Not all OSINT reporting is of equal quality or legitimacy; for this reason, the analytic team rated individual information sources using the U.S. Army's alphanumeric code for evaluating both **source reliability** and **source credibility**. For example, as shown in figures 1 and 2, an F-8 code might be given to a source for which there is no means for evaluating either the source's reliability or the reliability of the reported information (*Army Techniques*, 2012).



A	<i>Reliable</i>	<b>No doubt</b> of authenticity, trustworthiness, or competency; has a history of complete reliability.
B	<i>Usually reliable</i>	<b>Minor doubt</b> about authenticity, trustworthiness, or competency; has a history of valid information most of the time.
C	<i>Fairly reliable</i>	<b>Doubt</b> of authenticity, trustworthiness, or competency, but has provided valid information in the past.
D	<i>Not usually reliable</i>	<b>Significant doubt</b> about authenticity, trustworthiness, or competency, but has provided valid information in the past.
E	<i>Unreliable</i>	<b>Lacking</b> authenticity, trustworthiness, and competency; history of invalid information.
F	<i>Cannot be judged</i>	<b>No basis</b> exists for evaluating the reliability of the source.

Figure 1: Open-source reliability ratings. ATP 2-22-9 (2012), p. 22.

1	<i>Confirmed</i>	<b>Confirmed</b> by other independent sources; logical in itself; consistent with other information on the subject.
2	<i>Probably true</i>	<b>Not confirmed</b> ; logical in itself; consistent with other information on the subject.
3	<i>Possibly true</i>	<b>Not confirmed</b> ; reasonably logical in itself; agrees with some other information on the subject.
4	<i>Doubtfully true</i>	<b>Not confirmed</b> ; possible but not logical; no other information on the subject.
5	<i>Improbable</i>	<b>Not confirmed</b> ; not logical in itself; contradicted by other information on the subject.
6	<i>Misinformation</i>	<b>Unintentionally false</b> ; not logical in itself; contradicted by other information on the subject; confirmed by other independent sources.
7	<i>Deception</i>	<b>Deliberately false</b> ; contradicted by other information on the subject; confirmed by other independent sources.
8	<i>Cannot be judged</i>	<b>No basis</b> exists for evaluating the validity of the information.

Figure 2: Open-source information content credibility. ATP 2-22-9 (2012), p. 22.

## Deciding on an appropriate intelligence product and reporting format

There are many different types of intelligence products, such as basic intelligence, current intelligence, and estimative intelligence (Lowenthal, 2017). Depending on a customer’s intelligence needs, a student project team will decide on which type of intelligence product is appropriate and create products appropriate for that category. In the most recent case, the student project team opted to engage in estimative intelligence and craft products consistent with this type of intelligence. This decision was driven by the fact that the customer wanted to know what a peer competitor had been doing over time and what implications that might have for that competitor’s future activities.

## Estimative intelligence, key judgments, and probabilistic language

The student project team decided to use a modified national intelligence estimate (NIE) format to deliver Key Judgments to the customer, following the “BLUF” principle (“bottom line up front”). The NIE and its key judgments must have relevance for a time-constrained leader attempting to make the most informed decision possible in response to a particular problem or challenge. To create an estimative intelligence product, analysts look at past and current data to make predictions about what is likely to happen in the future. One of the premier intelligence products within the U.S. intelligence community is

the National Intelligence Estimate (NIE). Two characteristic features of an NIE were incorporated into this team's final product: Key judgments, and probabilistic (or estimative) language. Heuer (1981) described a *judgment* as "what we use to fill gaps in our knowledge. It entails going beyond the available information and is our principal means of coping with uncertainty. It always involves an analytical leap, from the known into the unknown" (p. 65). Key judgments written in probabilistic language contain two key components: The *degree of confidence* analysts have in a stated projection, and the *likelihood* that the predicted action will actually occur.

## **Desired end state: Actionable intelligence**

Pedantic writing has no place in intelligence writing. Instead, simplicity, directness, and conciseness are all valued in an intelligence product. Whether an intelligence team's customer is on the battlefield, in the White House, or in a corporate board room, the delivered intelligence product must be timely, relevant, comprehensible, and *actionable* (Rao, 2003). Actionable intelligence does not mean a decision-maker *must* act on the intelligence received; in fact, an informed decision to take no action at all is absolutely legitimate. However, the goal of intelligence professionals is to equip the decision-maker with the most complete picture possible of a given situation. The intelligence product must also meet the "so what?" test, answering the question, "What significance does this intelligence have for me (or us)?" (Bernhardt, 2003).

## **Conclusion**

As Polanyi (1966) asserted, tacit knowledge is the type of knowledge that is most effectively acquired via experiential learning, through personal experience. The objective of graduate students enrolled in the Strategic Intelligence capstone course in Mercyhurst University's Applied Intelligence program is to acquire tacit knowledge about intelligence project team collection and analysis through experiential learning. In pursuit of this objective, students were afforded the opportunity to take the explicit knowledge they have acquired in a classroom setting over the previous year and a half and apply it working a real-world intelligence product in support of an external client. What made the project team experience especially useful for acquiring tacit knowledge was student exposure to, and subsequent application of, relevant theories, project management principles, and intelligence collection and analysis techniques and tradecraft during regularly-scheduled classroom instruction during the course. Students learned what to do (and why) at appropriate points in the course, and were then encouraged to apply this new knowledge in their project work.

This real-world, intelligence project team experience helped prepare the students for future careers as intelligence professionals in the U.S. intelligence community, law enforcement, or competitive intelligence. After the student project teams delivered their oral presentations and written products to their clients, all the clients and the students anecdotally expressed to the professor great satisfaction and appreciation for having been able to participate in such a worthwhile academic activity.

## **Limitations**

This study sought to answer the question, "How does a real-world intelligence research project enable graduate students to leverage explicit knowledge acquired from a master's program in applied intelligence and gain the tacit knowledge necessary to perform effectively on an intelligence project team?" Although the study revealed some of the project management techniques and research methods used to facilitate student acquisition of tacit knowledge (i.e., "learning by doing"), it did not adequately answer the question of "how" that knowledge was acquired. Answering that question would not only require more time, but also institutional review board (IRB) review of planned research methods.

Although the professor has successfully taught this course several times, this study was solely based on the most recent graduate school iteration of Mercyhurst University's Strategic Intelligence course. Another acknowledged limitation of this study was that there were no quantitative measures used to identify and examine such things as what students learned, what client expectations were, and to what extent client expectations were actually met. Because there were only 11 students in the class and four individuals on the three foreign client teams supported, quantitative surveys of the participants in only this class would have been inadequate to achieve statistical validity. Given the small number of students and clients, it would be necessary to use the same data collection methods in multiple iterations of this course to obtain sufficient participant responses for a quantitative assessment. Because this course is only offered in the spring semester each year, that would need to be a multi-year study.

## Suggestions for Future Research

There are several techniques that could be employed in the future to research this issue more systematically. For example, a professor could use anonymous, online surveys at both the start and conclusion of the Strategic Intelligence course to gather and compare students' knowledge and opinions on such issues as conducting a group intelligence project, tools and analytic techniques used in the project, expectations and experiences working with external (and especially foreign) clients, and before-and-after assessments about their experience as members of the project team. If the clients are amenable, the professor could also interview or survey clients to identify and discuss their expectations, their experiences with the student team, and to assess the extent to which clients' information needs were met.

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