Organisational factors enabling intelligence-led policing in the Dutch police force

A case study research

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Preface

This thesis forms the conclusion of my time at the Delft University of Technology. With this thesis I complete the Master of Science program Systems Engineering, Policy Analysis and Management.

I would not have made it to this point without the support of my family and friends throughout the past years.

In the light of this thesis, I would like to take the opportunity to thank some people in particular. First of all, I would like to thank Mariëlle den Hengst-Bruggeling for being my first supervisor. I enjoyed the extremely valuable discussions I had with her about Intelligence-led policing, especially because of her incredible knowledge on this subject. Also I like to thank Thomas Hoppe for being a fantastic second supervisor whom I could always approach for questions. I like to thank Hans de Bruijn for being the chair of my graduation committee, but more importantly, for his very sharp and constructive critics during the meetings we had. In particular I would like to thank Annette de Boer, for the trust she had in me to hire me at Berenschot and for her continuous support throughout the writing of this thesis. Her eye for detail has brought this research much further. Finally, I would like to thank all the participants that took the time to be interviewed by me. Especially I would like to thank Matthijs Vijlbrief for the great amount of time he dedicated to be interviewed by me and to provide his expert judgement on the findings of this research.

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Executive summary

Several societal developments have changed the nature of policing in Western societies in the past decades. Societies are becoming increasingly risk-oriented and public organisations are pushed towards more efficient use of resources. Digitalisation makes data and information available at cheap costs and through multiple channels, criminal activity has become increasingly complex, and terrorism has made governments extra alert. These developments led to the emergence of a new policing strategy: intelligence-led policing. Intelligence-led policing (ILP) is founded on the use of data, information, and knowledge to guide decision making and coordination of resources in order to reduce, disrupt and prevent both crime and threats. ILP aims to change policing from a traditional reactive strategy into a proactive and preventive strategy through better informed decision making. Many police organisations worldwide have adopted ILP as a new policing strategy.

Research problem

Many police organisations struggle with the implementation of ILP which results in wasted resources, duplicated efforts, and ineffective policing actions. Also in the Dutch police ILP is often not meeting its potential. This research aims to provide more insight into why ILP is often not delivering the desired results. A review of prior research suggests that a broad range of organisational factors are to be taken into account for the successful functioning of ILP. It is however unclear *what* these factors are, *how* they exactly enable or hinder ILP, and how these factors should be configured in order to improve ILP. To fill this knowledge gap, the following research question is formulated:

> *What organisational factors enable ILP, and how do these factors affect the functioning of ILP in the Dutch police force?*

Four sub-questions provide further structure to this research:

1. *What is Intelligence-led policing?*
2. *What organisational factors that could enable ILP can be derived from literature?*
3. *How do these factors affect the functioning of ILP in the Dutch police?*
4. *How can the findings on these factors be used to design a framework for improving ILP in the Dutch police?*

Conceptualisation of ILP

ILP is a multifaceted concept that lacks conceptual clarity and a uniform definition. In order to be able to study ILP, this research has conceptualised ILP along three dimensions: processes, context, outcome, and intelligence. Four core processes of ILP are regarded in this research: the collection, creation, use, and sharing of intelligence. The core processes of ILP take place in a context where analysts (or an intelligence unit), decision makers and street officers (or operational unit), and the environment, where the environment consists of partners and civilians (among which are criminals). The outcome of ILP in this research is described as a *decision* (or set of decisions), where this decision is proactive, based on intelligence, while considering the efficient use of resources. Intelligence is defined as the end product of the accumulation of data, information, and knowledge. Knowledge is

crucial for providing information with context and interpreting information. This research assumes that to accommodate for the role of knowledge, ILP requires knowledge management.

Theoretical perspective

This research has approached the study organisational factors that affect ILP from a resource-based view (RBV). RBV originates from the field of strategic management and it explains the successful deployment of a strategy – ILP – by assessing the organisations internal resources. Since literature on ILP is extremely scarce and given the role of knowledge for the creation of intelligence, the identification of possible factors from literature (sub question 2) was done by exploring the field of knowledge management. From this literature study, nine organisational factors were identified that served as starting point for identifying the organisational factors that influence the functioning of ILP. These *enablers* are categorised into technological (*linkage of data systems*), structural (*centralisation, formalisation, integration*), cultural (*collaboration, trust, management and leadership, and incentive schemes*), and people factors (*skills* and *training*).

Multiple case study

In order to examine empirically whether these nine factors influence ILP, whether additional factors should be included, and to examine *how* the organisational factors affect ILP (sub question 3), a multiple case study research was performed. Two police tasks have been studied: maintaining public order around football (soccer) matches, and the investigation of organised drugs crime. The execution of each tasks was observed in two different units of the Dutch police by interviewing in total 20 persons. Next to the case studies, four experts have been interviewed.

The case studies have been used to empirically evaluate the factors that were derived from literature. Furthermore, additional factors have been identified that were found to hinder or facilitate ILP. In the case studies it was observe how these factors affected ILP. These findings were analysed by contrasting the two case studies. This resulted in a comprehensive set of factors that enable ILP.

Organisational factors affecting ILP

Technological factors

From the case studies, the following technological enablers are identified that affect the functioning of ILP: linkage of data/information systems, analytical tools, usability, and authorisation model. It is found that the *linkage of data/information systems* provide potential for better creation of intelligence but that it should be accompanied with upgrading the *analytical tools* in order to prevent an information overload. The *usability* of the systems is found to positively affect the registration of information, as it prevents the workaround in unofficial systems. An *authorisation model* that is ineffective (i.e. providing or restricting access to tooling and data for the wrong persons) and inert (difficult to adjust to changing demands) was found to hinder the creation of intelligence. Technology cannot be regarded without considering the capabilities of the people that make use from it, the people enablers provide more insights to this aspect.

People factors

Analytical skills, knowledge about privacy legislation, knowledge about integral action possibilities, and training were found to be important enablers for ILP. *Analytical skills* are increasingly important for the efficient collection of information and creation of intelligence. The overall analytical level of the police organisation should therefore be higher than was required for traditional policing strategies. For analysing large amounts of (unstructured) data and working with advanced analytical tools, analysts require advanced analytical skills. In the absence of such skills, analysts struggle to provide added value

to decision makers. *Training* is not always sufficient for obtaining these skills, therefore the hiring of highly educated specialists is necessary. It is found that training should accompany the implementation of new software in order to make optimal use of the software. Limited *knowledge about privacy legislation* leads to great uncertainties as to what the legal possibilities for information use and sharing are. Consequently, intelligence is unlawfully shared and used or not shared and used where this is in fact possible. *Knowledge about integral action possibilities* is required to facilitate collaborative actions with external partners. Without this knowledge, potential intelligence for such actions is not collected or created. The technology and people are subject to the organisational structure, the influence of the structural factors are discussed next.

Structural factors

Organisational structural factors were found to play an important role in facilitating or hindering collaboration. Decentralised decision making (as opposed to centralised decision making) including multiple disciplines and organisational levels enables ILP. Centralised decision making results in a fragmented, misaligned, and time consuming flow of intelligence towards lower organisational levels. Little formalisation of tasks (as opposed to strict functional demarcations and control on output) was found to enable ILP as it allows for more creativity, development of new approaches and cross-function collaboration. Integration between the intelligence and operational departments (as opposed to rigid 'columns' in the organisation) were further found to enable ILP. Work of analyst and decision makers often overlaps as both collect and analyse information. Imposing a structural border in between these work processes leads to misalignments of intelligence supply and needs. Especially the physical separation of the intelligence unit from the operations was found to impose a major barrier to the sharing and creation of intelligence as this made face-to-face interactions impossible. The importance of structural factors give rise to the question what cultural factors affect ILP that could potentially work around structural barriers.

Cultural factors

Four cultural factors have been identified to enable ILP: collaboration, management & leadership, trust, and incentive schemes. *Collaboration* through face-to-face interactions between analysts and operational decision makers, and partners was found to be the most important enabling factor for ILP. Through multi-disciplinary collaboration the supply and demand of intelligence can be aligned, knowledge can be shared easily, and creativity and innovation is facilitated. *Managers* have a crucial role in facilitating ILP. Managers enable ILP by providing professional freedom to employees for establishing new approaches, new communication channels, and collaboration. At the same time managers should provide employees with a clear focus, and accountability for the compliance to this focus should be established to prevent freewheeling. This focus should be a focus on achieving effects on the society instead of on departmental or administrative output performances (e.g. capacity management). *Trust* in the capabilities of the analysts and trust in the willingness to use intelligence was found to enable ILP as it directly affected the use and creation of intelligence. Creating a *closed feedback loop* between people involved in the ILP processes is an incentive scheme that strongly enables ILP. Through active feedback, complimenting, and the shared celebration success, continuous improvements can be achieved in the processes.

Maturity model

The identified enablers and their effects on the ILP processes provide insight into causes of the successful or unsuccessful implementation of ILP. If the enablers are underdeveloped or not configured rightly, the ILP processes are negatively affected and ILP is likely to produce an unsuccessful outcome. On the other hand, when the state of the enablers is improved, ILP can be more successful.

In order for an organisation to be able to 1) *assess* to what extent the ILP enablers are in place and configured optimally for the functioning of ILP, 2) to *prioritise* improvement measures based on the relative maturity of each enabler, and 3) to provide a *direction for improvement* based on the desired/optimised state of each enabler, a maturity model is designed (sub question 4).

The validation of the maturity model by an expert review revealed the model is able to perform the functions as described above. It could also serve as input for discussions about improving ILP. Furthermore, the model is especially applicable for use by managers or ILP experts, given the overview that is required over the various organisation factors. The model should not be regarded as a static instrument, as developments over time might require changes and different organisational units and police tasks might require different descriptions of enablers. The model is not designed for benchmarking different organisations against each other, rather it can help single units or organisations to derive improvement measures. It is therefore encouraged to adjust the model where particular circumstances require other measures.

Conclusion

This research has identified a comprehensive set of organisational factors that affect the state of implementation of ILP. These factors were empirically identified and evaluated in two different cases. By comparing the case studies together with the expert interviews, the relevant factors were identified, their effects on the ILP processes were analysed, and an ideal state for each of these factors could be formulated. Based on these findings, a maturity model is designed that can help to assess the enablers and prioritise and derive improvement measures. The answers to the four sub questions resolve the problem statement that served as the motivation for this research.

Discussion

Societal relevance

This study provides a unique broad perspective into the problems that arise in the implementation of ILP in the Dutch police. The identification of the organisational factors and the development of the maturity model can serve as an important step towards eventually resolving these problems. The maturity model can be used to diagnose problems, prioritise interventions and derive targeted strategies for improving ILP in the Dutch Police and potentially in other police organisations. It can help to understand why ILP is more successful in certain organisations than in others. These findings can be valuable to other organisations that already have implemented ILP and for organisations that are planning to implement ILP.

Secondly, since 2013 the Dutch police is undergoing a major reorganisation. The reorganisation aimed amongst other objectives on the improvement of ILP. The assessment of organisational factors in this research contributes to the evaluation of this reorganisation.

Thirdly, the Dutch police considers ILP as an equivalent of Business Intelligence. This research provides evidence that that perspective is too narrow. Business Intelligence is about explicit knowledge, whereas this research shows the importance for ILP of managing the tacit knowledge as well. Therefore this research can expand on the view of the Dutch police on ILP. This could lead to different priorities. In the past years, many investments have been done in IT technology. This research emphasises that collaboration and face-to-face interactions, are at least of equal importance and should be facilitated.

Scientific contributions

This study enlarges the small body of empirical literature on ILP. By doing so it enlarges the theoretical understanding of ILP. Specifically this understanding is enlarged by the conceptualisation of ILP in this research. Also, this study shows the similarities with and applicability of knowledge management to the domain of ILP. It shows that evaluations of ILP should not only focus on managing explicit knowledge but should regard mechanisms for creating both explicit and tacit knowledge. Furthermore, this research applies a unique qualitative approach from an organisational perspective. This revealed relationships between the organisational factors, ILP processes, and the context/environment. Previous studies taking an organisation perspective on ILP were mostly of quantitative nature. Lastly, this study provides counter arguments for the theory describing ILP as a top-down policing approach. The findings indicate that the intelligence necessary for informed decision making resides largely at the operational and tactical levels of the police organisation, and that the transfer of such intelligence to the top level and back to the lower levels results in outdated and fragmented intelligence supply. Decentralised decision making at lower levels in the organisation seems to enable ILP as it facilitates, creativity, innovation, collaboration, and the better alignment of intelligence supply and demand.

Generalisability

This research has conducted case studies on mainly two police tasks, being the investigation of organised drugs crime and maintaining public order around football matches. For the execution of other police tasks (e.g. law enforcement) these findings might be less suitable. Consideration of the differences between these tasks and settings should be ensured when transferring the findings of this research to other police tasks. Furthermore, this research is conducted in three of the eleven units. In other police units, the results findings might have been different, leading to other outcomes or organisational factors. The generalisability of the findings is enlarged by contrasting the case studies with due consideration of the inherent differences. Also, it is increased by conducting expert interviews and an expert review, who were asked to reflect on ILP from an organisation-wide perspective. As developments in digitalisations follow in a rapid pace, the applicability of these findings might be limited over time; the model is expected to be usable in its current form for about the next five years.

Directions for future research

As a next step it is recommended to conduct a quantitative research in order to assess the relative importance and significance of the influence of the identified factors on the ILP processes. This can provide further insights into what the explanatory power is of each enabler for the functioning of ILP. Furthermore, it could reveal interrelations between the enablers.

Secondly, future research could deploy the maturity model as a benchmarking tool. This requires the development of an assessment tool that is able to compare a large amount of responses. By executing such a benchmark, the police could identify the relative level of ILP maturity of specific organisational elements and units. It could provide insights into good practices considering the configuration of enablers and improvement strategies.

Thirdly, this study has taken a broad perspective on organisational factors. It is recommended to study the effects of the specific enablers on the ILP processes, as this allows for generating more in-depth insights.

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1. Introduction

1.1. The emergence of intelligence-led policing

In the past decades, Western societies have become increasingly risk oriented, digitalisation has made data and information widely available at a cheap cost (Ratcliffe, 2005), and public organisations have increasingly been pushed towards a more efficient use of resources (Gibbs, McGarrell, & Sullivan, 2015; Maguire & John, 2006). These developments, together with increasingly sophisticated criminal activity and security threats and challenges (such as terrorism and large events), have influenced the nature of policing (Den Hengst & Mors, 2011; Gibbs et al., 2015).

Consequently, law enforcement is undergoing a philosophical shift in practice: from a traditional reactive and responsive strategy to a more proactive and preventive strategy (Carter & Phillips, 2013). This shift is translated into the emergence of a new policing paradigm: Intelligence-led policing (ILP) (Crank, Kadleck, & Koski, 2010; Schaible & Sheffield, 2012).

Definitions of ILP vary (see Chapter 3), but in general ILP is about the use of analysed information to guide decision making and coordination of resources in order to reduce, disrupt and prevent both crime and threats (Bell & Congram, 2013; Ratcliffe, 2016; Schaible & Sheffield, 2012).

This 'business model' for policing is expected to make policing more efficient and more effective through better informed decision making (Carter & Carter, 2009). By making decisions for action based on intelligence, actions are expected to be more targeted and effective and resources are expected to be deployed more efficiently (Bell & Congram, 2013).

The benefits of ILP have made many police agencies worldwide (e.g. the UK, the USA, Sweden, and Australia) decide to adopt ILP. The Dutch police force have also adopted ILP. Already since the mid-1990s, regional police agencies have been experimenting with the concept of ILP in the Netherlands. In the years that followed, multiple initiatives[1] have taken place to transform the Dutch police into an intelligence-led police organisation. In 2008, the Dutch police laid down the objective that by December 2012 the implementation process should be finished and that the entire Dutch police work according to the intelligence-led policing paradigm (Ten Brink, 2008). As a result, by 2013 ILP is not mentioned anymore as a distinct policing strategy in policy documents as it is expected to be "interwoven in the organisation"; "ILP is in the DNA of the organisation" (Den Hengst, Ten Brink, & Ter Mors, 2017).

[1] In 2004, the Board of Chief Commissioners (Dutch: Raad van Hoofdcommissarissen) decided that ILP should be leading in all of the work processes of the police. In 2008, these developments were bundled and concretised into the National Intelligence Model (NIM) (Dutch: Nationaal Intelligence Model). The NIM was developed in order to guide the implementation of ILP in the Dutch police force. It provides guidelines on the way that information should steer police work and the way the police should steer information processes (Kop & Klerks, 2009).

1.2. Motivation for research

The Dutch police aim at improving ILP continuously (Kop & Klerks, 2009; Ten Brink, 2008), but despite these ongoing efforts it is found by several studies that the functioning of ILP in practice is often not meeting its potential (Landman, 2005; Den Hengst & Commissaris, 2007; IOOV, 2008; Cents, 2008; Landman & Malipaard, 2011; Scholtens et al., 2013). International studies on ILP sketch a similar picture: there is a gap between on the one side the theory describing how ILP is ought to function and the results that are ought to be obtained, and on the other side how it functions in practice (see for an elaboration on these findings Chapter 2).

Many of the ILP strategies developed by police organisations are not implemented or only partially implemented. This has results in wasted resources, duplication of efforts, ineffective actions, and contradictory organisational components (Gibbs et al., 2015). These consequences are particularly problematic when regarding the size of a police organisation and the important role it performs in a society. In the Netherlands, the police are the single largest employer of the country with over 60.000 FTE (Dekker & Witteman, 2015).

This research aims to provide more insight into why ILP is often not functioning as it should and not delivering the desired results. To do so, this research will explore what underlying organisational factors, or *preconditions*, enable the functioning of ILP in the Dutch police. Police organisations may not be equally predisposed for a successful functioning of ILP. Therefore, a key to understanding the success and failure of ILP within police organisations is the identification and assessment of organisational factors that enable ILP to thrive.

The identification and assessment of these factors could provide insight into the reasons why ILP is not functioning as expected in the Dutch police. Furthermore it could explain why ILP functions better in certain (parts of) police organisations than other (parts of) police organisations. Also it could reveal in which areas of the organisation interventions should take place to improve ILP. The research question is therefore formulated as follows (Chapter 2 provides a further elaboration on the research problem and questions):

> *What organisational factors enable ILP, and how do these factors affect the state of implementation of ILP in the Dutch police organisation?*

This research is at the moment particularly relevant for the Dutch police, since a large scale reorganisation has taken place since 2013. In fact this is the largest reorganisation in Dutch history (Bakker & Thijssen, 2016). It transformed the Dutch police from an organisation consisting of 26 fairly independent forces into one 'national police' force with ten 'Regional Units' and one 'Central Unit'. One of the (many) objectives of the reorganisation was to improve ILP in the Dutch police (Politie, 2012b). Since this research aims to identify and assess organisational factors explaining the success or failure of ILP, it is expected that this research will generate insights into the contribution of this new police organisation to ILP.

1.3. Reading guide

Chapter 2 will zoom in on the research problem and will discuss the methodology used in this research. Chapter 3 will elaborate on the concept of ILP. It will reveal that ILP is a multifaceted concept without a universal definition and it will highlight multiple aspects of ILP to provide structure to the concept. The theoretical perspective that this research takes on the organisational factors will be presented in Chapter 4. Chapter 5 elaborates on the design of the multiple case study that has been conducted to

gather empirical evidence for this research. In Chapter 6 the case study findings are discussed after which in Chapter 7 the findings on the propositions will be presented. In Chapter 8 the framework based on the findings is presented that could guide future improvement measures for ILP: a maturity model. Chapter 9 provides the conclusion and recommendations for the Dutch police. A discussion and reflection will conclude this research in Chapter 10.

2. Research definition

2.1. Problem exploration

As stated in the introduction, multiple police organisations worldwide have implemented ILP as a new policing strategy. These efforts are however often unsatisfactory, leaving a gap between the proclaimed potential of ILP and its success in practice. This seems to be the case for the Dutch police as well.

To explore the reasons behind these unsatisfactory implementation efforts, a literature study is performed on barriers to the functioning of ILP. For this literature study academic and grey literature is examined by using academic search engines such as Science Direct, Google Scholar, Scopus, Web of Science, as well as Google for grey literature.

The literature study reveals that ILP is still a marginally covered topic of research in general (Carter & Phillips, 2013; Gibbs et al., 2015; Viaene et al., 2009b), and compared to other (older) policing paradigms, such as community-policing and problem-oriented policing (Carter, 2012; Gibbs et al., 2015). Viaene et al. (2009) state that 'the academic research on ILP remains extremely scarce' (p. 280). Literature on ILP is largely still in an explorative phase, which is focussed on conceptualising ILP and increasing the understanding of ILP (Carter & Carter, 2009; Carter & Phillips, 2013). The lack of empirical insights into ILP hamper the understanding of ILP and hinder the implementation and adoption of ILP in other police agencies (Bell & Congram, 2013; Carter, Phillips, & Gayadeen, 2014).

> It seems that one part of the answer to why ILP implementation is often unsatisfactory is the lack of empirical research that has the capability of guiding implementation and improvement efforts elsewhere.

A review of the scarce research that has been conducted and published reveals nevertheless various barriers to the implementation and functioning of ILP. These barriers seem to have a root cause in various organisational elements that could enable or hinder the functioning of ILP (see Appendix A).

Various authors (e.g. Carter & Carter, 2009; Ratcliffe & Guidetti, 2008) have also recognised that a broad range of organisational factors are to be considered for ILP to be successful and state that, given the relative novelty of ILP, ILP requires changes (with respect to traditional, reactive ways of policing) in the organisational structure, police management and daily operations (Carter & Phillips, 2013). However, the question remains largely open to *what* these factors are and what these changes could be (Carter & Carter, 2009).

Research to date on ILP in the Dutch police does not provide an answer to this question. Research has been focused on specific elements related to ILP. For example on the functioning of *procedures* such as briefings and debriefings (Inspectie Openbare Orde en Veiligheid, 2008), on *output products* such as crime maps and shortlists (Sluis, Siep, & Bekkers, 2014), on the effectiveness of related *policing tactics* such as hot spot policing (Versteegh, Plas, & Nieuwstraten, 2010), and on *methods for knowledge sharing* such as communities of intelligence (Den Hengst & Mors, 2011). Research taking an

organisational perspective on factors that explain the functioning of ILP in the Dutch police is however missing. Furthermore, the generalisability of the (few) international studies is for the Dutch police possibly limited as the concept of ILP "must be tailored to the characteristics of each individual agency" (Carter & Carter, 2009, p. 316)

The barriers to the functioning of ILP that have been identified in literature suggests that a broad range of organisational factors is to be taken into account for the functioning of ILP. It seems that many police organisations have tried to implement ILP without due consideration of the organisation's characteristics to guarantee any measure of success.

Research into what such factors could be is limited, especially in the Netherlands. This calls for an organisational perspective on ILP in order to explore which organisational factors enable the functioning of ILP in the Dutch police.

2.2. Problem statement and research questions

It is argued that various aspects of a police organisation need to be in place and properly configured to enable the functioning of ILP. It is however unclear *what* these factors are, *how* they exactly enable or hinder ILP, and how these factors should be configured in order to improve ILP in the Dutch police organisation.

Based on the previous problem exploration and problem statement, the following main research question is formulated:

> **What organisational factors enable ILP, and how do these factors affect the functioning of ILP in the Dutch police force?**

The following sub questions will be answered to guide this research:

Theoretical:

1. What is ILP?
2. What organisational factors that could enable ILP can be derived from literature?

Empirical:

3. How do these factors affect the functioning of ILP in the Dutch police?

Design:

4. How can the findings on these factors be used to design a framework for improving ILP in the Dutch police?

2.3. Research relevance

The relevance of this research is reflected into two domains, the scientific relevance and the societal relevance.

2.3.1. Scientific relevance

Research on ILP is still in a conceptual and explorative phase and empirical evaluations are highly demanded. This research will reduce this shortage by providing new empirical insights. More specifically, an explorative study to organisational factors that affect ILP has not yet been performed

as such. This research will try to generate insights into such factors and could therewith substantiate and enrich the theoretical concept of ILP. Furthermore a direct link between knowledge management and ILP has not been made before. The insights could enrich both the field of knowledge management as of ILP.

2.3.2. Societal relevance

Firstly, the identification and assessment of organisational factors enabling ILP can help the Dutch police organisation to balance their efforts, resources and prioritisation for improvement efforts of ILP. Secondly, the results obtained in this research can be input for the evaluation of the reorganisation of the Dutch police.[2] Lastly, because ILP aims at making policing more effective and efficient, it is assumed that – although it is outside the scope of this research – a well performing ILP practice within the Dutch police will lead to better policing and eventually to a safer country.

2.4. Research approach

This research follows a qualitative exploratory and evaluative research approach. The research is exploratory as it aims at gathering new insights into what organisational factors enable ILP and at finding explanations to how these factors affect the functioning of ILP, which are typical exploratory objectives (Yin, 2009). Also, it partly has an evaluative character, since certain factors are derived from literature of which their (expected) effects are evaluated in the context of ILP in the Dutch police. Given the fact that this topic of study has not been covered extensively before, an evaluative-exploratory research seems appropriate. This research is qualitative since a qualitative approach fits well with the type of research questions. They do not only aim for the identification of organisational factors (which could also be done through a quantitative study), also an examination of *why and how* these factors facilitate or hinder ILP is done. Those questions are explanatory and therefore typically require qualitative and narrative techniques to provide sufficient substantiations (Pawson & Tilley, 1997). Also, the data sources that are used are (academic) literature, policy documents and case study interviews, which are of qualitative nature.

This research consists out of three elements: a literature study, case studies, and a framework design (a maturity model).

2.4.1. Literature study

In this research literature studies have been undertaken for three distinct purposes. Firstly, a literature study is done to establish an overview of current problems and barriers that are pertinent in police organisations worldwide that implemented (or attempted to implement) ILP. This problem analysis is conducted in order to specify the perspective that this research takes on ILP. It was found, and presented earlier in this chapter, that problems arise in various organisational dimensions (see Appendix A).

Secondly, a literature study is performed to define the concept of ILP. As ILP is a multifaceted concept that suffers from a lack of conceptual clarity, an analysis to define ILP is performed. Various definitions and conceptual models of ILP, as well as the relevant actors involved will be discussed.

[2] The reorganisation is initiated by the enactment of the Police Act 2012 (Dutch: Politiewet 2012). In article 74 of this Act it is determined that the Act should be evaluated five years after the enactment in January 2013. The evaluation is to be presented to the House of Representatives of the Netherlands by September 2017.

Thirdly, an academic literature study is performed to establish a theoretical foundation for the identification of the organisational factors that enable ILP. As ILP is considered a policing strategy it will be considered from the perspective of strategic management. Given the scarce amount of literature on ILP, parallels will be drawn with a more mature field of research, that of knowledge management, to establish a strong theoretical basis to this research. It will result in the formulation of propositions that will structure the next phase of this research, the case studies.

2.4.2. Case studies

Case studies are undertaken at the Dutch police to explore what factors enable ILP and how these factors affect ILP in practice. From the theoretical model constructed through the literature study factors and accompanying propositions are derived that serve as a structure for the exploration of these factors in the case studies. In the case studies these factors will be observed and if necessary the model will be extended or altered, depending on findings in the case studies. Eventually, conclusions can be drawn for these factors, based on the findings in the case studies.

2.4.3. Framework design

Based on the identification and assessment of the factors in the case studies, a maturity model can be developed. The maturity model aims to clarify a direction for improvement on the basis of which improvement measures can be derived.

2.5. Research scope

ILP aims, as mentioned earlier, to increase the effectiveness and efficiency of the police. A more effective and efficient police intends to lead to less crime, hence a safer country. The effects of policing on the safety of the society are however, due to various external factors, extremely difficult to measure (e.g. Rest, Roelofs, Nunen, & Don, 2014; Zouridis et al., 2014). For this reason, the scope of this research will be delineated to the functioning of ILP within the Dutch police organisation. The effect of ILP on the policing performance (e.g. number of criminals caught, number of crimes prevented) will be largely left out of the scope although certain performances will be kept in mind where they are relevant. The effect of policing performances on the society, in terms of safety, will be left out of the scope of this research. The scope is visualised in Figure 1.

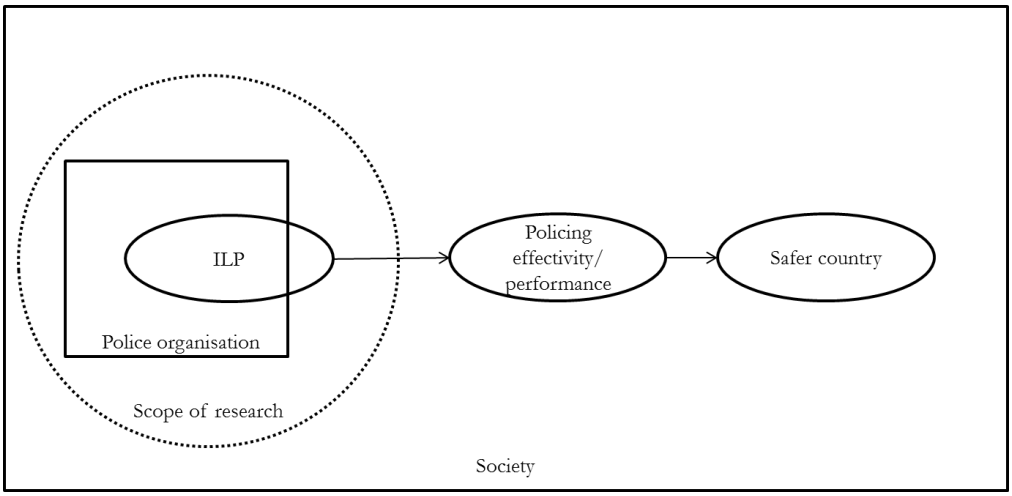

Figure 1: Scope of the research

As can be seen, ILP is positioned partly outside the police organisation. This is deliberately done as ILP requires the cooperation and interaction with other partners and other actors within the society.

Certain aspects of this interaction with the environment will be included in the scope of this research. Since organisational factors are the scope of this research, several contextual factors are not (extensively) taken into account in this research. For this reason, the legal framework in which the Dutch police operates is largely left out of scope. Furthermore, a public debate takes place over ethical issues related to the extent that information of people can be used for security purposes at the cost of privacy. The ethical question, stemming from this debate, to what extent ILP is socially desirable is left outside the scope of this research.

2.6. Research framework

The following figure summarizes the research approach as discussed in this chapter.

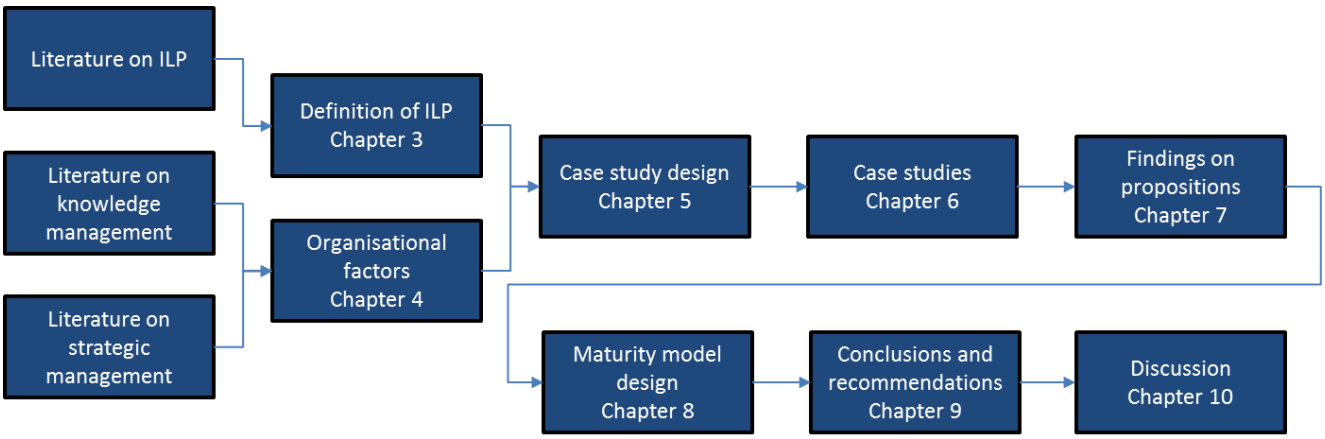

Figure 2: Research framework

3. What is intelligence-led policing?

This chapter will provide insight and structure to the sometimes ambiguous concept of ILP. It will do this by first defining what policing is, then it will elaborate on intelligence-led policing. Lastly it will zoom in on a crucial element of ILP: intelligence. The following figure shows the build-up of this chapter visually.

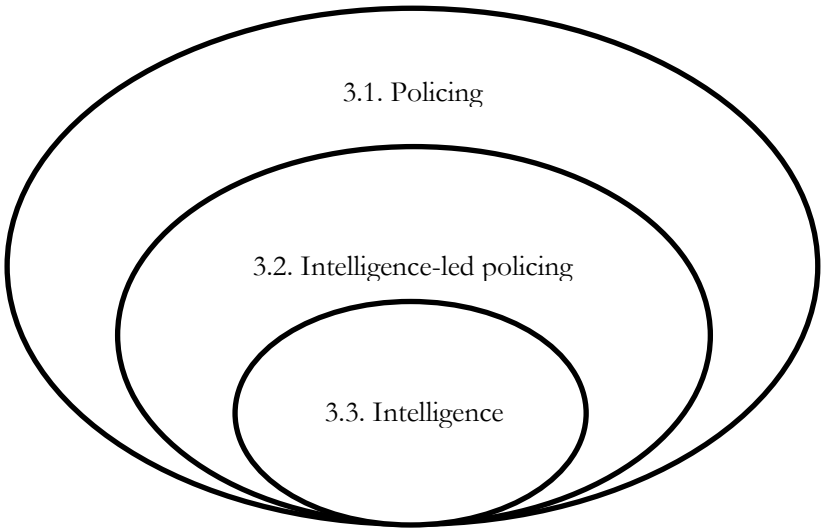

Figure 3: Structure of chapter

3.1. Defining Policing

3.1.1. Police tasks

Policing can historically be interpreted as the "broader processes of social regulation and reproduction that govern everyday lives" (Rowe, 2013, p.4). The processes as referred to in this definition encompass all functions that are formally or informally performed by any kind of institution (e.g. schools, churches, businesses, etc.) to contribute to the development of social norms and standards of behaviour (Rowe, 2013). Policing can also refer to the *set of functions performed by the institution of the police service* (Rowe, 2013). This definition of policing – which is tied to the institution of the police service (the police) – serves the topic of this research better than the broad definition mentioned above.

When looking into the functions that the police performs, it becomes clear that this is a very broad range of functions. It is difficult, and probably impossible, to formulate an exhaustive list of police functions. In The Netherlands the defined set of tasks for the police has been debated over many decades. One of the conclusions drawn by a research on this discussion is that an exhaustive

description of tasks is undesirable, because a strictly delineated task description creates a risk of hampering the police in daily operations (Van der Torre, Kuppens, Ferwerda, & Van Bolhuis, 2007). For this reason, the legal framework of the Dutch police is purposely formulated broadly (Van Der Steur, 2015), and it has almost not changed since the Police Act of 1957 (Remkes & Donner, 2004): "the Police has the task to, subordinate to the competent authority and in compliance with the law, maintain the legal order and provide help to those who need it" (Politiewet 2012, 2013).

To provide more clarification and distinction to the functions of the police, without falling into too detailed task descriptions, the Dutch police have established a list of 'key duties'. For this reason it is helpful, for clarification, to look at the most important functions as formulated by the Dutch police. Although these key tasks have also been debated for years (see Van der Torre et al. (2007) for an overview of this discussion), the Dutch police have currently formulated the following key duties ("Politietaken," n.d.):

- Ensure safety
- Prevent and fight crime
- Maintain public order
- Investigate criminal acts
- Respond to emergencies

These key functions provide further substance to the definition of policing, as they can be seen as the highest level of the 'set of functions' as referred to in the definition mentioned earlier. It is remarkable that a common mentioned key function of any police organisation – law enforcement – is not mentioned by the Dutch police. However, in other policy documents of the Dutch police, law enforcement takes in a prominent position as underlying function to the functions mentioned above. Hence, law enforcement can be considered an integral function of the Dutch police throughout the key functions mentioned. In order to serve the purpose of this research, which is conducted in the context of the Dutch police, policing will be defined as:

> The set of functions performed by the institution of the police service (the police), where the set of functions consists of ensuring safety, preventing and fighting crime, maintaining public order, investigating criminal acts, and responding to emergencies.

3.1.2. The policing environment

The Dutch police are under dual authority. For maintaining public order and providing help to civilians the police are under authority of the Mayor of the respective municipality or region. For investigations, the police are under authority of the public prosecution service (Openbaar Ministerie, n.d.). These three parties together form the so called 'triangle' which regularly comes together to coordinate each party's tasks and actions (Politiewet 2012, 2013).

Besides the collaboration with the Mayor and public prosecution service, the police cooperate with a variety of other parties. For ILP, obtaining information from external partners is crucial. Over-reliance on police data and a lack of complementary data from other sources limit strategic intelligence analysis which reduces its quality (Ratcliffe, 2016). These other sources can be public organisations (e.g. the tax agency, secret service, schools, and inspection agencies), private organisations (e.g. sports clubs, event organisers, banks, companies) and individual civilians.

Next to obtaining information, the police works together with partners for undertaking actions. This 'integral approach' aims at dealing more effectively with societal safety issues by cooperation between various organisations (Kop & Klerks, 2009). An example is the approach to fight drugs crime in the south of the Netherlands where the tax administration and municipality work alongside with the police. For example, the tax administration by seizing criminal capital, the municipality by closing buildings used by criminals.

3.2. Defining Intelligence-led policing

To analyse the concept of ILP, first a definition of ILP will be provided. Next, ILP will be discussed along three dimensions: processes, actors, and objectives.

3.2.1. Definitions of ILP

Definitions of ILP however vary and there is no universally accepted definition (Carter & Carter, 2009; Den Hengst & Mors, 2011; Gibbs et al., 2015). This section will discuss two widely cited definitions that are present in literature on ILP and will identify commonalities and differences between them. One definition that provides more insight into ILP is provided by D. L. Carter & Carter (2009):

> *"the collection and analysis of information related to crime and conditions that contribute to crime, resulting in an actionable intelligence product intended to aid law enforcement in developing tactical responses to threats and/or strategic planning related to emerging or changing threats" (p. 317).*

Another often cited definition in literature on ILP is the definition as proposed by Ratcliffe (2008):

> *"a business model and managerial philosophy where data analysis and crime intelligence are pivotal to an objective, decision making framework that facilitates crime and problem reduction, disruption and prevention through both strategic management and effective enforcement strategies that target prolific and serious offenders"*

Ratcliffe changed this definition slightly in his recently published book to a definition that is more inclusive in terms of targets, since he states that ILP is "moving to become an 'all-crimes, all-hazards, all-harms' business approach" (Ratcliffe, 2016, Chapter 5), p. X). In the following definition the text in bold has replaced 'prolific and serious offenders' from the definition in 2008:

> *"Intelligence-led policing emphasises analysis and intelligence as pivotal to an objective, decision-making framework that* ***prioritises crime hot spots, repeat victims, prolific offenders and criminal groups****. It facilitates crime and harm reduction, disruption and prevention through strategic and tactical management, deployment, and enforcement" (p.X e-book)*

When comparing these definitions and the explanations that the authors provide with them, various similarities and differences can be observed. The table below compares the definitions on six aspects: typology of ILP, the core process, type of information, level of application, the main targets of ILP, and the expected benefit.

	Carter & Carter (2009)	**Ratcliffe (2016)**
Typology	Business model	Business model
Core processes	Collection and analysis of information	Analysis of information
Type of information/intelligence	Intelligence analysis (from a variety of sources)	Crime intelligence (from crime analysis and criminal analysis)

Level of application	Strategic and operational/tactical	Strategic, operational, and tactical
Main target(s)	Emerging or changing threats	Crime hot spots, repeat victims, prolific offenders and criminal groups
Expected benefit	Aid in developing tactical responses to threats and/or strategic planning related to emerging or changing threats	Crime and harm reduction, disruption and prevention

Table 1: Comparison of definitions

Both authors argue that ILP is a business model or strategy for policing. The model consists of various processes, taking place among different actors within the police organisation as well as in between the police organisation and its environment (Carter & Carter, 2009; Ratcliffe, 2016).

The most prominent difference lays within the target of ILP. Whereas Ratcliffe states that ILP focusses on 'crime' (hot spots, prolific offenders, repeat victims, and criminal groups), Carter & Carter emphasize a broader focus on 'threats'. Consequently, Ratcliffe states that 'crime analysis' (information about crime events) and 'criminal analysis' (information about the behaviour of offenders) together form the required 'crime intelligence'. This information can be considered incident-driven and is especially suitable for investigational purposes. On the contrary, Carter & Carter state that in order to be able to prevent crime, a threat-driven approach is needed. A threat-driven approach requires a wider perspective, since also information about non-criminal activity and non-criminals could be relevant for identifying threats. It therefore requires more sources of data and information; i.e. not only from the criminal environment (e.g. incident reports, crime statistics, geographic characteristics) but also from the 'information environment' which consists of "the criminal environment, private sector organisations, community members, politics, open-source information (Internet) and other law enforcement organisations" (Carter, 2012, p. 39).

The Dutch police has not officially adopt a specific definition of ILP to date in policy documents, but in a recently published book by the police academy ILP is defined as "to collect and analyse information and knowledge in order to enable decision making about the approach of security problems on the basis of oversight, insight, and forecast" (Den Hengst et al., 2017, p. 23). This definition of ILP seems to be more in line with the broad perspective of Carter & Carter than with the definition as proposed by Ratcliffe since it refers to the broad term 'security problems'. The Dutch police states that the actions led by intelligence are not only intended for the investigation of street crime, but for example also in emergency response, management of public order, and surveillance (Den Hengst & Mors, 2011; Kop & Klerks, 2009; Sluis et al., 2014). Further, the identification of threats is mentioned as a specific objective and the cooperation with a multitude of sources for information stresses the similarities with the interpretation of Carter & Carter (Kop & Klerks, 2009; Ten Brink, 2008).

Therefore, the definition of ILP as proposed by Carter & Carter (2009) will be adopted for this research:

"The collection and analysis of information related to crime and conditions that contribute to crime, resulting in an actionable intelligence product intended to aid law enforcement in developing tactical responses to threats and/or strategic planning related to emerging or changing threats".

This definition provides a concise interpretation of ILP. However, as it is a broad definition, it is vulnerable for different interpretations. ILP is a multifaceted phenomenon that is implemented in a certain context. This definition alone does not provide sufficient detail on the context and various

facets to prevent misinterpretations or miscommunications to occur. For this reason, this research will extend on this definition in the following by specifying the various *processes* that are considered pivotal for ILP in this research. Also the *context* of ILP will be elaborated on as well as on the perspective that this research takes on the *outcome* of ILP.

3.2.2. ILP processes

Various authors and police organisations regard ILP from a process perspective, highlighting several core processes (e.g. Bullock, 2013; Cope, 2004; Gibbs et al., 2015; Ratcliffe, 2005). Often these process are described by the 'analytical cycle' or 'intelligence cycle'. The intelligence cycle comes in various forms, varying in the amount of processes included. It usually starts with a planning phase or collection of information phase. Next, the information is analysed which results in an intelligence product, this product is used and consequently its value is evaluated, after which the cycle repeats itself (Cope, 2004; Ratcliffe, 2016).

Since a great variety of processes are mentioned in the various cyclical models presented in academic and grey literature, this research brings them down to three core processes of ILP that are apparent in all models: the *collection*, *creation*, and *use* of intelligence. In the ideal situation, the collected information serves as input for the creation of an intelligence product on the basis of which decisions about policing actions are made.

Next to the processes described in these cyclical models, another process is considered crucial for ILP: the *sharing* of information (Carter, 2012; Chermak, Carter, Carter, Mcgarrell, & Drew, 2013; Ratcliffe, 2016; Sheptycki, 2004). This research considers this process alongside the three aforementioned processes. They are conceptualised as cyclical processes that are continuously undertaken at various levels in the organisation. The four core processes – collection, creation, use and sharing – will be elaborated on briefly.

Collection

Data and information is collected from multiple sources, through multiple channels. Following the definition of ILP as presented in 3.2.1, in which 'threats' are the target of ILP rather than just 'crime', the sources of information are diverse. Not only criminal records as registered by the police are relevant, also open sources (such as social media) and information from public partners are important (e.g. the municipality personal record database). Furthermore, information obtained directly from civilians form an essential source of information. The information is stored in police databases. The information is acquired through digital channels as well as through personal interaction between the police and its environment. The collection of data and information often requires registration of this data and information in the data storage systems.

Creation

In the ideal situation the collected data and information is analysed and intelligence is created. For this process also knowledge is required to interpret the information and data. Intelligence traditionally comes in the form of a report written by an analyst, for example a report on relations between criminals. However, since more and more information is automatically digitally analysed and generated, intelligence becomes increasingly available at any time and any place by means of a 'push on the button' on a digital device such as a smartphone or computer (Den Hengst et al., 2017). Intelligence provides insight into a security problem and, ideally, provides directions for decision making (an extensive elaboration on the difference between data, information, knowledge and intelligence is provided in 3.3).

Use

After the creation of intelligence, it is to be integrated into the decision making process for policing actions. The essence of ILP is that decisions are based on intelligence, as compared to ad hoc decision making in response to daily incidents. Crucial in this process is that the intelligence (product) meets the demand of the decision maker. This research considers the integration of intelligence in decision making as the use of intelligence. Decision making is about the priority setting and actions the police can take (note that a decision to *not* undertake action is also considered a decision) (Ratcliffe, 2016). The effect of the actions on the society falls outside the scope of this research.

Sharing

For the collection, analysis and use of intelligence, it needs to be transferred between individuals, between units within the police organisation, and between the police organisation and the environment. The need for intelligence sharing is propelled by the fact that crime crosses geographic borders, as well as intra- and inter-organisational borders. For example, a criminal active in drug trafficking, is operating in multiple regions or even nations, while at the same time trespassing the traditional police domain by infiltrating in the private domain (e.g. by renting cars), the public domain (e.g. by using a house for storage of drugs) and the fiscal domain (e.g. by money laundering). This implies that several levels and units within the police organisation need to share information (intra-organisational sharing), as well as the police and other organisations (inter-organisational sharing) (Sheptycki, 2004).

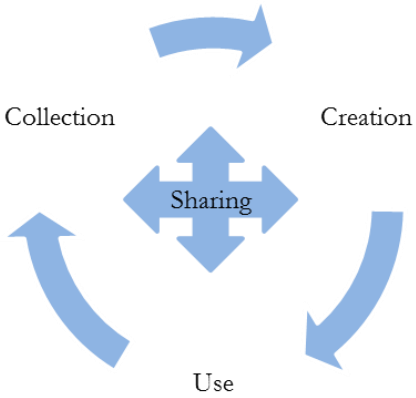

Figure 4: Core processes of ILP

This research considers four core processes of ILP: the **collection**, **creation**, **use**, and **sharing** of intelligence. The end state of ILP in this research is a **decision** for action or non-action.

3.2.2. ILP context

The sequential process as described by the intelligence cycle is considered to be incomplete and over-simplified for conceptualising ILP (Ratcliffe, 2016). It is an idealised model for a process that is actually very complex and often messy. Due to time constraints analysts skip process steps or perform them simultaneously. Also, it considers just the role of the analysts, whereas the interaction between various actors, both within the police organisation as in the organisation's environment, are pivotal for ILP (Carter, 2012; Ratcliffe, 2016). In response to the criticism on the intelligence cycle, Ratcliffe (2016) developed another conceptual model for ILP: the 3-i model. In this model the interconnection between two actors within the police organisation – analysts and decision makers – and the criminal environment is emphasised.

The analyst (or intelligence unit) *interprets* the environment, by making use of the collected information and attempts to *influence* the decision maker who in return *impacts* the environment through policing actions. For ILP to function successfully, the linkage and alignment between the analysts (or unit of analysts/intelligence unit) and decision makers is crucial (Cope, 2004; Ratcliffe, 2016). Analysts provide the intelligence on the basis of which the decision makers can make their operational decisions. This requires close alignment of the intelligence demand at the decision makers' side and supply at the analysts' side. Failure to do so results in unappreciated and unused intelligence products, hence in wasted resources and decision making on the basis of inferior intelligence which is detrimental for the effectiveness of actions.

Where analysts and decision makers are especially important during the creation and use phases, street officers are important actors for the collection phase. They register information in the data systems about daily incidents and developments.

Also the actors in the policing environment play an important role for ILP. The police cooperates with external partners for the exchange of information and for the coordination of actions. These actors have already been introduced in section 3.1.2., being public organisation, private organisation, civilians, the public prosecution service and the municipality. Obviously, also criminals and their activities are part of the environment. Information is collected from partners through the active sharing of information. Information from the criminal environment is collected through the registration of information by police personnel, reports from civilians, through direct interrogation of criminals or infiltration into the criminal environment (Dean, Filstad, & Gottschalk, 2006).

The core processes of ILP take place through an interplay with **analysts** (or an intelligence unit), **decision makers** and **street officers** (or operational unit), and the **environment**, where the environment consists of partners and civilians (among which are criminals).

3.2.3. The outcome of ILP

This section will elaborate on what in this research is considered the outcome of ILP. As mentioned in the introduction, ILP has the potential to make policing more efficient and more effective. However, formulating the outcome of policing is a difficult task (Zouridis et al., 2014). Moreover, since the concept of ILP has no uniform definition and no 'manual of practice' it is complicated further. Therefore, this research will draw upon the scope, definition, core processes, and actors as presented earlier, to guide this effort.

From reactive to proactive policing

ILP aims to realise a shift from a traditional *reactive* policing practice to a *proactive* policing practice (Schaible & Sheffield, 2012). Intelligence enables decision makers to provide strategic direction, to make tactical decisions and to manage risk (Bell, Dean, & Gottschalk, 2010). In other words, intelligence allows decision makers to conduct better informed decision making (Carter & Phillips, 2013). Decision making on the basis of intelligence should lead to proactive, or future-oriented decision making, meaning that decision makers are "informed about significant and emerging challenges and threats to anticipate, plan and take appropriate preventive action, and target their crime control efforts better" (Verfaillie & Vander Beken, 2008, p. 535). When predictions about crime become increasingly accurate, terms as highly proactive, predictive, prescriptive, or preventive policing are used (e.g. Lum, Koper, & Telep, 2011; Smit, Vries, Kleij, & Vliet, 2016). In this research I consider all these terms part of *proactive policing*. Proactive policing aims at anticipating and predicting crime or other security threats in order to reduce and prevent crime and harm (Hughes & Jackson, 2004).

It should be noted that pure preventive policing is unrealistic, if not impossible, and probably undesired. Due to its dynamics, crime and incidents that require police actions (such as accidents) cannot always be predicted (Verfaillie & Vander Beken, 2008). Besides, it would require access to great amounts of (personal) data which is undesired given ethical (privacy) and legal issues. For these reasons, reactive policing will remain a key aspect of policing and therefore also of ILP.

The outcome of ILP in this research

As the effect of policing actions on the society are largely left out of scope of this research, the *decision* for action is considered the outcome of ILP. This research assess this outcome by three criteria:

1) The decision should be *proactive*, which means that a certain effect on security problems is anticipated or predicted.
2) The decision should be *based on intelligence*. In order be proactive, the quality of intelligence needs to be high to ensure well informed decisions. A detailed elaboration on what exactly constitutes high quality of intelligence falls outside the scope of this research, but in general the quality of intelligence is in the eye of the beholder. Therefore the usefulness is one criteria for the quality of intelligence. Also timeliness and accurateness could be criteria.
3) The decision should *aim at the efficient use of resources*. A decision to deploy one officer in front of every house of a city might very well prevent burglaries, but it isn't very efficient.

A continuum for ILP

To clarify the coherence between reactive and proactive decision making and ILP this research places them on a continuum (see Figure 5). The decisions for action move from ad-hoc reactions to anticipative (scenario based) decisions or decisions for preventive action. The figure presents the most likely nature of actions as a result of both types of decision making under the arrow. The ordering under the arrow is not to be taken too strict. It can very well be that a reactive (or repressive) response to crime prevents crimes in the future (think of a fine for speeding).

Furthermore, even in situations of reactive policing proactive decisions can be made, based on intelligence. For example, when a bank is robbed, the police could respond by racing to the bank where most likely the robbers have already left. Alternatively, the police could know on the basis of intelligence that there are two roads for escaping the city. Instead of going to the bank, the police then blocks both roads in order to catch the criminals there. This way proactive decisions are made, even though the event was unexpected and was not prevented.

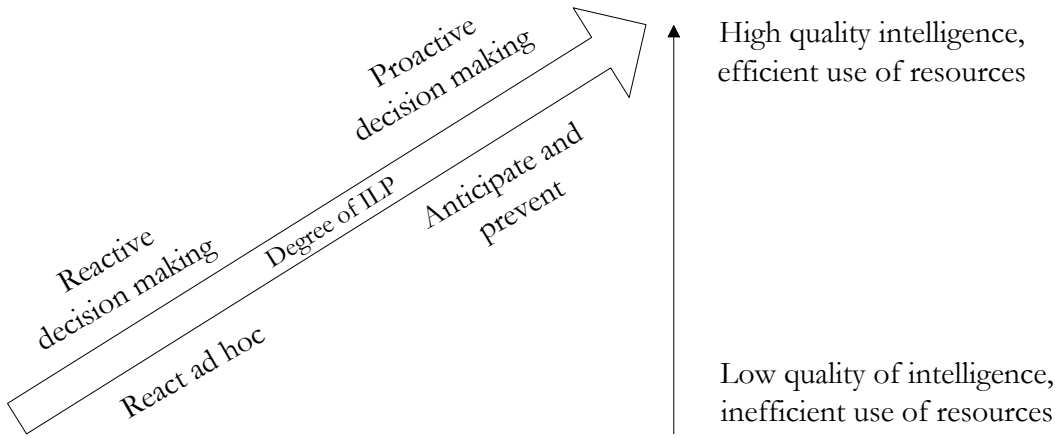

Figure 5: Continuum reactive - proactive decision making

Decision making can take place on various levels in the police organisation. Mostly this is divided into operational (front-line decision making and case specific actions), tactical (supporting area and regional decision makers in planning crime reduction activity and resource deployment), and strategic decision making (to provide insight and contribute to broad strategies and policies) (Ratcliffe, 2016; Versteegh et al., 2010).

The outcome of ILP in this research is described as a decision (or set of decisions), where this decision is proactive, based on intelligence, while considering the efficient use of resources. This decision making process can take place on a strategic, tactical, operational level.

3.3. Defining Intelligence

From the previous sections it became apparent that intelligence and the quality thereof plays a crucial role in ILP. Therefore, this section will elaborate on what intelligence is and what implications its characteristics have for ILP.

Intelligence has its origin in the field of study on human intelligence, where it encompasses a broad range of mental and social phenomena such as (among others) learning and understanding, reasoning and problem-solving, perception and adaptation, creativity, and social skills (Neisser et al., 1996; Sternberg, 2012).

In the context of policing, there is no universal definition of intelligence available, but there are many authors that provide similar definitions or descriptions. The most simple definition is: intelligence is analysed information (Carter, 2012; Cope, 2004), or phrased mathematically: intelligence = information + analysis (Peterson, 2005).

It remains however difficult to grasp what intelligence exactly is and the following will argue that the previous definitions might be too simplistic. To provide structure and understanding to the concept of intelligence, a distinction can be made between data, information, knowledge, and intelligence; together placed on the DIKI continuum (Ratcliffe, 2016).

3.2.4. DIK(I) continuum

Davenport & Prusak (1998) stress the importance of distinguishing data, information, and knowledge. They emphasise that organisational success and failure often depends on knowing which of the three is present, which is needed, and what can be done with each of them. They represent data, information, and knowledge in hierarchical process where knowledge derives from information and information derives from data (see Figure 6).

Data

Data consists of objective, discrete facts about events (Davenport & Prusak, 1998). Data lacks contextual substance. It does not provide a judgment, an interpretation, nor a sustainable basis of action.

Information

Data becomes information when meaning is added to it. Information can be seen as a *message.* It is meant to change the way the receiver perceives something.

Knowledge

Knowledge is broader, deeper, and richer than data or information. Davenport & Prusak (1998) come up with the following definition of knowledge: *"Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organisations, it often becomes embedded not only in documents or repositories but also in organisational routines, processes, practices, and norms."* Knowledge is valuable because it provides information with a particular context, meaning, and interpretation. Due to its complexity, knowledge is also more intangible than data and information which makes it harder to transfer (Ratcliffe, 2016).

Intelligence

In the context of ILP, Ratcliffe (2016) extents the data – information – knowledge continuum with intelligence. He regards intelligence as an intelligence product, and states that where knowledge products create understanding, intelligence products generate action. Knowledge can create insight and understanding, but for decision makers to take decisions, it must be structured. In other words, intelligence is structured knowledge in such a way that it can be used to choose between alternatives (Tuomi, 1999). Furthermore, intelligence should be timely, accurate and as complete as possible. As mentioned earlier, the usefulness as perceived by the user of intelligence is very important.

DIKI or IKID?

The DIKI continuum is not an uncontested hierarchical representation. Tuomi (1999) stresses that the hierarchy should in fact be reversed. He states that information can only be created after there is knowledge, and data exists only as a solution to the practical problem of how to translate information into forms that can be modelled, represented and processed. He stresses that for individuals to articulate information into documents, tools, databases etcetera, and to arrive at the same level of understanding of data and information, it is important to share the same knowledge base.

Although both hierarchical representations of data, information, knowledge, and intelligence are contradicting at first sight, they both stress the central role of knowledge for the creation of intelligence. Both the DIKI and its reversed version implicate that knowledge should be created, transferred and applied for the creation of intelligence. Either as the stock for creating information and data (IKID), or for providing meaning, context and inference to data and information (DIKI).

This research adopts the DIKI continuum as the conceptual model for intelligence since this model is widely applied in general and – in contrast to the reversed hierarchy of Tuomi – has been applied in the context of ILP before.

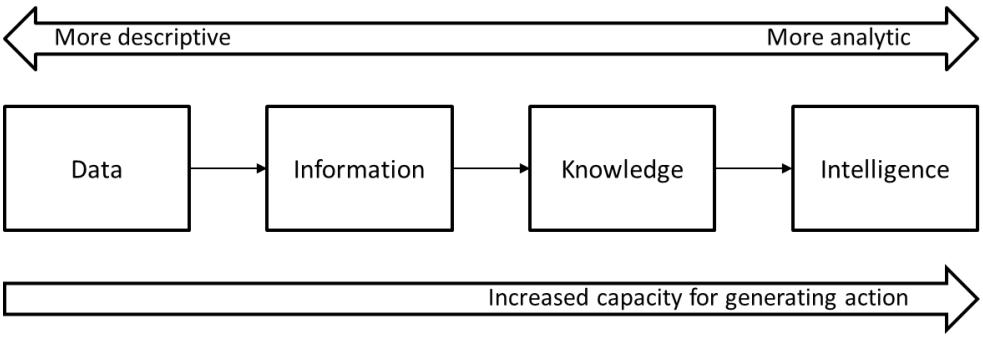

Figure 6: DIKI continuum (adapted from Ratcliffe (2016))

3.2.5. Implications

The notion that knowledge is a core ingredient of intelligence has implications for the way intelligence (and therefore ILP) is regarded in this research.

1) Intelligence is more than analysed information

Based on the conceptualisation of intelligence, the definition that intelligence is 'analysed information' might be too simplistic. Knowledge plays a crucial role in turning information into intelligence and knowledge is inherently different than information. Knowledge is context specific, it is determined by a particular time and place. If not put into context, knowledge is just information. Furthermore, knowledge is humanistic. Information becomes knowledge when it is interpreted by individuals; hence the interpretation is in the 'eye of the beholder'. Social interaction amongst individuals and organisations is therefore essential for knowledge creation and sharing (Nonaka, Toyama, & Konno, 2000).

Knowledge can be categorised in two types: *explicit knowledge* and *tacit knowledge* (Nonaka et al., 2000). Explicit knowledge can be expressed and documented in a formal and systemic language in tangible forms (e.g. in policy documents, manuals, etc.). It can be relatively easily stored, processed, and shared. Tacit knowledge is intangible and difficult to formalise. It is highly personal and rooted in action, routines, experience, values, and emotions. It is hard to communicate tacit knowledge to others.

ILP is usually described around the analytical effort of the analysis of information by analysts. In the Netherlands ILP is mirrored to Business Intelligence (BI) by stating that ILP is not much different than BI (Den Hengst et al., 2017). BI is about the automated collection, integration, and analysis of information (Negash & Gray, 2008). BI is considered to focus on explicit knowledge and information, it does not encompass tacit knowledge (Richard T. Herschel, 2005).

The inclusion of knowledge in ILP goes beyond the analytical effort of analysing explicit information – hence it goes beyond BI – since not only explicit knowledge is crucial for the execution of police tasks, but also tacit knowledge is (Dean et al., 2006; Luen & Al-Hawamdeh, 2001). Herschel (2005) recognised therefore that BI should be regarded as a subset of 'knowledge management' as knowledge management incorporates both explicit and tacit knowledge. Following the above, this research argues that ILP requires management of knowledge.

2) ILP requires management of knowledge

The successful execution of police tasks depends to a large extent on timely and accurate information and on the ability to access, assimilate and use knowledge effectively (Dean et al., 2006). Knowledge is valuable as it gives the information context, meaning, and a particular interpretation (Davenport & Prusak, 1998). It is therefore critical to ensure that such knowledge and information are made available to police officers and decision makers in a timely and effective manner (Luen & Al-Hawamdeh, 2001; Seba, Rowley, & Lambert, 2012). Brodeur & Dupont (2006) argue that the police can be seen as *knowledge workers* and a police organisation can be described as a *knowledge-intensive organisation* for which the management of knowledge is a crucial task (Collier, 2006; Luen & Al-Hawamdeh, 2001; Millar, Lockett, & Mahon, 2016; Seba, Rowley, & Lambert, 2012).

However, mechanisms to create, store and share knowledge are often absent in police organisations (Ratcliffe 2016). There are still many examples of tacit knowledge being held by police officers that is not converted into explicit knowledge to be used for intelligence products (Collier, 2006). Furthermore, as knowledge resides for a large part in the minds of individuals, who have built this up through (years of) experience, knowledge is often exclusive or scarce. Power and reputational benefits can be derived from having exclusive knowledge. Police officers can use knowledge as a strategic asset for fostering their career and personal status. This hampers the sharing of knowledge and therefore it hinders the functioning ILP (Seba & Rowley, 2010; Yang & Wu, 2008).

Management of knowledge is a challenging effort. Knowledge is more intangible than data and information, and as it resides for a large part in the minds of police officers. That makes it prone to organisational and cultural barriers. Knowledge is more difficult to capture, create, and transfer than information or data (Alavi & Leidner, 2001). Knowledge management, as opposed to information management or BI, *"represents a shift from a focus on information to a focus on the individuals that create and own knowledge"*(Terra & Angeloni, 2003, p. 9). Therefore, this research states that ILP is significantly different than just the management data and information or BI.

Given the above, this research argues that regarding ILP as a sole analytical approach to policing, neglecting the role of knowledge and the management of knowledge, would fail to leverage the benefits of knowledge, and would disregard the pitfalls of the role of knowledge in ILP.

Concluding, intelligence is the end product of the accumulation of data, information, and knowledge. Intelligence provides the client with knowledge that is actionable. As knowledge is needed to turn information into intelligence, and given the nature of knowledge, ILP requires management of knowledge.

3.2.6. Conclusion

This chapter has defined policing, ILP, and intelligence. Together these are able to provide a conceptual understanding of ILP. The chapter took the following definition of ILP as a starting point:

"The collection and analysis of information related to crime and conditions that contribute to crime, resulting in an actionable intelligence product intended to aid law enforcement in developing tactical responses to threats and/or strategic planning related to emerging or changing threats".

In addition to this definition, the concept of ILP is further specified and extended:

Application: ILP is applicable to the set of functions performed by the institution of the police service (the police), where the set of functions consists of ensuring safety, preventing and fighting crime, maintaining public order, investigating criminal acts, and responding to emergencies.

Processes: Four core processes of ILP are regarded in this research: the collection, creation, use, and sharing of intelligence.

Context: The core processes of ILP take place through an interplay with analysts (or an intelligence unit), decision makers and street officers (or operational unit), and the environment, where the environment consists of partners and civilians (among which are criminals).

Outcome: The outcome of ILP in this research is described as a decision (or set of decisions), where this decision is proactive, based on intelligence, while considering the efficient use of resources. This decision making process can take place on a strategic, tactical, operational level.

Intelligence: Intelligence is the end product of the accumulation of data, information, and knowledge. Intelligence provides the client with knowledge that is actionable. As knowledge is needed to turn information into intelligence, and given the nature of knowledge, ILP requires management of knowledge.

4. Theoretical perspective

From the previous chapters three conclusions shape the direction for the further steps of this research:

1) **The functioning of ILP is affected by various organisational factors.** Based on the problem exploration in Chapter 2 and the conceptualisation of ILP in Chapter 3, it was concluded that most contemporary ILP models present a too simplistic image of ILP. The models are mainly prescribing the core cyclical analytical processes, whereas the problem analysis suggests that a wide range of organisational factors affect the successful implementation and functioning of ILP. This research argues that for ILP to be successful, it is important to identify what these factors are and how they contribute to a successful functioning of ILP.
2) **The body of literature on ILP is small.** Chapter 2 has highlighted that documentation and empirical research on ILP is scarce. This implies that the information resources available are likely to be too limited for a substantive research on organisational factors of ILP. Since there is little documented empirical research on ILP, related fields of research could provide the necessary scientific depth and breadth to this research.
3) **ILP requires management of knowledge.** Chapter 3 discussed multiple models of intelligence and the relationship between knowledge and intelligence. Further, it was argued that a police organisation is a knowledge-intensive organisation. The intertwinement of intelligence and knowledge suggests that for intelligence to be valuable, knowledge needs to be managed.

The following sections of this chapter will account for these three conclusions by first elaborating on strategic management and the resource-based perspective in order to deal with the first conclusion mentioned above. Secondly, a related field of research to ILP will be explored – that of knowledge management – in order to deal with the second and third conclusion.

4.1. Strategic management

In order to identify organisational factors that enable the functioning of ILP, and given the fact that ILP is regarded as a business model or strategy for policing, the main research question will be regarded from the perspective of strategic management. Strategic management in the private sector is about how organisations achieve and sustain competitive advantage (Teece, Pisano, & Shuen, 1997). For public organisations, where market competition is usually absent (this is especially the case for the police who have a monopoly on the use of force), strategic management is about enhancing the long term viability and effectiveness of the organisation and the delivery of public value to stakeholders (Piening, 2013; Poister & Streib, 1999).

Literature on public management explored the nature of strategic management in public organisations (e.g. Rosenberg Hansen & Ferlie, 2014)) and found specific differences as compared to strategic management in private organisations. Public organisation have typically ambiguous goals, and decision making processes are more transparent and political due to multiple stakeholders. This made that strategic management for public organisations got less attention than for private organisations. However, given developments in the public sector, strategic management has gained increased attention. They have been confronted with demands to become more effective and efficient,

fluctuating resources, and increased public scepticism regarding public organisations (Bryson, Ackermann, & Eden, 2007; Piening, 2013; Rosenberg Hansen & Ferlie, 2014).

The Dutch police are no exception to the public organisations subject to these characteristics and developments. Large budget cuts are planned, political influence on the operational capacity is strong, and its performance receive substantial media attention (Politie, 2012b).

In the field of strategic management four paradigms can be distinguished: Competitive forces, Strategic conflict, the Resource-based perspective, and the Dynamic capabilities perspective (Teece et al., 1997).

4.1.1. Competitive forces and strategic conflict

The competitive forces perspective is pioneered by Porter (1980). It explores the choice for a clear strategy and position in an industry to exploit market imperfections. In the competitive forces approach five industry-level forces determine the inherent profit potential an industry. These are entry barriers, threat of substitution, bargaining power of buyers, bargaining power of suppliers, and rivalry among industry incumbents. A firm can use this approach to develop actions and position itself in the industry to defend itself against competitive forces (Porter, 1980). The Strategic conflict paradigm is closely related to the competitive forces perspective. It adopts the use of game theory to analyse the character of competitive interaction between competing firms (Teece et al., 1997). These two paradigms emphasise the exploitations of market conditions and market imperfections. They therefore take and 'outside-in' focus on strategy from an industry-level view (Rosenberg Hansen & Ferlie, 2014).

4.1.2. Resource-based view and dynamic capabilities

The resource-based view regards internal resources and capabilities of an organisation as the main determinants of competitive advantage (Teece et al., 1997). Resources are transformed into products or services of greater value through various capabilities, where capabilities are regarded as repeatable patterns of actions in the use of resources in order to create value and improve organisational effectiveness (Pee & Kankanhalli, 2016; Piening, 2013). The dynamic capabilities perspective can be regarded as an extension to the resource-based perspective (Teece et al., 1997). It emphasises that in a rapidly changing environment, capabilities can turn into rigidities if they are not renewed purposefully (Piening, 2013; Teece et al., 1997). The capacity to renew these capabilities is referred to as dynamic capabilities (Teece et al., 1997). Both paradigms emphasise that competitive advantage is determined by firm-specific capabilities and resources. They therefore take and 'inside-out' perspective on the performance of a firm from an firm-level view (Rosenberg Hansen & Ferlie, 2014).

4.2. Resource-based view (RBV)

Although each of the four frameworks could provide valuable insights for a complex problem, it is key to identify which framework is most appropriate for the problem at hand (Teece et al., 1997). This research adopts the Resource-based perspective as the theoretical perspective (hereafter referred to as the Resource-Based View (RBV)). After a brief description of RBV, the grounds for this choice are explained hereafter.

4.2.1. What is RBV?

RBV focuses on developing and exploiting the organisation's resources for supporting organisational survival, growth, effectiveness and efficiency (Barney, 1991; Wernerfelt, 1984). Resources can be physical resources (e.g. equipment, IT), organisational resources (e.g. planning, reporting structures), and human resources (e.g. skills, culture) (Pee & Kankanhalli, 2016). Resources are 'transformed' into outputs of value (e.g. profit, public value, or efficiency) through capabilities. Capabilities can be defined as "repeatable patterns of actions in the use of resources to create value in the forms of products and

services" (Pee & Kankanhalli, 2016, p. 189). Capabilities are therefore rooted in processes. Other authors consider capabilities and resources as interchangeable terms but make a the distinction between infrastructural capabilities and process capabilities, where the process capabilities interact with the infrastructural resources to generate (public) value (Gold, Malhotra, & Segars, 2001).

Resources (or capabilities) can be considered preconditions or *enablers* that are necessary for a management effort to flourish (Allameh, Zare, & davoodi, 2011; Gold et al., 2001; H. Lee & Choi, 2003). "Without such enablers "a program for transformation by management efforts may be doomed before it begins" (Gold et al., 2001, p. 208). For this reason, identifying and assessing the enablers for ILP could provide important insights that help to understand why the implementation of ILP often faces so many problems.

4.2.2. Appropriateness of the Resource-based view for this research

Firstly, for public organisations the inside-out perspective on the use of internally available resources is particularly appropriate for understanding how value is created for key stakeholders as competitive market behaviour is largely absent (Pablo, Reay, Dewald, & Casebeer, 2007; Pee & Kankanhalli, 2016; Rosenberg Hansen & Ferlie, 2014). Identifying and developing resources and capabilities are essential to the success of public organisations (Bryson et al., 2007). The RBV focus on organisation-specific resources is in line with the purpose of this research, which is to identify organisational factors within the police organisation.

Secondly, RBV is one of the most widely accepted theoretical perspectives in the field of strategic management. RBV has received more attention than the competing forces and strategic conflict paradigms in research on public organisations. Therewith RBV has generated empirical evidence to the usefulness of its application in the context of public organisations (Bryson et al., 2007; Harvey, Jas, Walshe, & Skelcher, 2010; Pablo et al., 2007; Rosenberg Hansen & Ferlie, 2014).

Thirdly, Rosenberg Hansen & Ferlie (2014) established three dimensions to assess the appropriateness of RBV (and dynamic capabilities) on the one hand, and competing forces and strategic conflict on the other. They state that where the degree of autonomy for a public organisation, the degree of performance based budgets, and the degree of market like conditions are all low, RBV (and dynamic capabilities) is more suitable than the other paradigms. These three conditions seem to be the case for the Dutch Police, as it operates under the control of the minister, is not primarily funded by a performance based budget, and is not confronted with competitors in the 'crime fighting market segment'.

On the other hand, the competing forces and strategic conflicts paradigms are inherently less applicable. Using market imperfections instead of creating value or efficiency is for a public organisation considered inappropriate as public organisations typically serve multiple stakeholders and do not focus on profit for shareholders (Bryson et al., 2007). Also public organisations usually do not have the freedom of choice to focus on particular customers or market segments? They have a mandate to fulfil, are tied to a specific 'market', and have citizens as their customers (Rosenberg Hansen & Ferlie, 2014). These arguments make RBV the most appropriate theoretical perspective for the purpose of this research.

Lastly, this research adopts RBV over the dynamic capabilities paradigm. The dynamic capabilities perspective focuses on the capacity to renew resources in response to a rapidly changing environment. Given the overlap between the foundations of RBV and dynamic capabilities, and the fact that various authors consider them as part of the same paradigm (e.g. Gold et al., 2001; Rosenberg Hansen & Ferlie,

2014), the choice for RBV in this research does not implicate a rejection of dynamic capabilities. The need for renewing resources and capabilities will be taken into account (especially for the development of the maturity model), however, for the sake of terminology and focus, this research refers to RBV.

4.3. Knowledge management from a resource-based perspective

It was argued that the management of knowledge is essential for ILP, therefore this research will focus on the application of RBV on knowledge management.

The complex nature of knowledge itself makes knowledge management a difficult management task. Companies and public organisations often struggle with the putting knowledge management into practice (Allameh et al., 2011; H. Lee & Choi, 2003). Prior research on knowledge management taking a RBV perspective identified three dimensions for analysing the success of knowledge management: enablers (sometimes referred to as resources or capabilities), processes (sometimes referred to as process capabilities), and performance (Y.-C. Lee & Lee, 2007). Various studies have researched these factors and/or the interrelations between these factors in private organisations (Gold et al., 2001; Ho, Hsieh, & Hung, 2014; H. Lee & Choi, 2003) and in public organisations (Annick & Buelens, 2006; Dawes, Cresswell, & Pardo, 2009; Pee & Kankanhalli, 2016; Seba, Rowley, & Lambert, 2012; Titi Amayah, 2013).

The assumption that is often studied and confirmed in these studies is that enablers are essential technical and social resources that determine the success of knowledge management processes and eventually of knowledge management performance (see Figure 7). Insight into the relationships between enablers, processes and performance allows for targeted strategies to eventually increase the performance of knowledge management. These strategies can be targeted along two dimensions: one dimension refers to interventions in knowledge management processes, the other dimension refers to interventions in enablers to help the knowledge processes (Y.-C. Lee & Lee, 2007).

Following this same line of reasoning for ILP enablers, processes and outcome, it is valuable to explore the relationships between ILP enablers and ILP processes, and between ILP processes and ILP outcome. The theoretical model for exploring enablers and the relationships between the enablers and processes is presented in the following figure. In this figure also the outcome as defined in Chapter 3 is included.

Multiple studies found that systematically managing knowledge management enablers allows enterprises to effectively implement and leverage knowledge management to increase organisational performance (Alavi & Leidner, 2001; Ho et al., 2014; Y.-C. Lee & Lee, 2007). These enablers are in this research regarded as *organisational factors influencing knowledge management processes*. The identification of these enablers is crucial for the success or failure of knowledge management in organisations (Gold et al., 2001). As such, the identification of such enablers for ILP could explain the success or failure of ILP.

There has been little research conducted on enablers for ILP or knowledge management in police organisations, despite a global trend towards a proactive, intelligence-led policing and the resulting need for effective knowledge management (Gottschalk, 2007; Hughes & Jackson, 2004; Ratcliffe, 2016). Given the important role of knowledge management in ILP, as elaborated on earlier in this research, knowledge management enablers are hypothesised to provide a good fundament for identifying enablers for ILP.

As such the following relationship between ILP enablers, processes and outcome is hypothesised based on the resource based view:

Figure 7: Resource-based view on enablers, processes and outcome of ILP

4.4. Enablers

A review of studies on knowledge management in both private and public organisation shows that the enablers can be grouped into three groups: 'structure', 'culture', and 'technology', where culture is often split into 'organisational culture' and 'people' (Allameh et al., 2011; Gold et al., 2001; H. Lee & Choi, 2003; Y.-C. Lee & Lee, 2007; Pee & Kankanhalli, 2016; Yeh, Lai, & Ho, 2006). This section will provide a literature review on knowledge management enablers that have been empirically found to affect the knowledge management processes and the performance of knowledge management (see Appendix C for an overview of the factors found in literature).

These enablers have been reviewed by four ILP experts working for the Dutch police. The experts were asked what they consider important organisational factors for ILP before they were shown the enablers as observed from literature in order to avoid biases towards the identified enablers. At the end of the interviews they were asked to review the factors as obtained from literature and in case necessary they were asked about factors that they had not mentioned. Based on these interviews some nuances and extensions to the factors observed in literature have been made.

For each enabler a proposition is formulated that will be studied in the case studies. According to Yin (2009) propositions help to direct attention in a case study research. Additionally, the propositions are accompanied with supportive and *rival hypotheses* in case these could be found in academic literature or if they were mentioned in the expert interviews, in order to limit the chance for research biases towards the confirmation of the propositions.

4.4.1. Technology

For knowledge management, the information and communication technology infrastructure comprises a key enabler for storage, sharing, application, and creation of knowledge (Pee & Kankanhalli, 2016; Syed-Ikhsan & Rowland, 2004). Given the multifaceted nature of knowledge and communication, an organisation must invest in a comprehensive infrastructure that supports the various types of communication, knowledge, information, and data used in the organisation (Gold et al., 2001). *Linkage* of data and communication systems integrates previously fragmented flows of information and knowledge (Gold et al., 2001; Teece, 1998).

For a police organisation, information technology infrastructure has become "the bedrock of most police processes and systems" (Darroch & Mazerolle, 2013, p. 22). An insufficiently developed technology infrastructure could result in a 'digital divide' (Sheptycki, 2004). When there are many different systems for data, information, and knowledge storage within an organisation, storage becomes fragmented. As a result, retrieving and combining data and information becomes problematic, which eventually reduces the quality and completeness of knowledge and intelligence (Sheptycki, 2004). In a police organisation, a digital divide makes timely and accurate intelligence creation impossible (Sheptycki, 2004). Based on the previous, the following proposition is formulated:

Proposition 1: Linkage of data storage systems positively affects the ILP processes

Supportive hypotheses	*Rival hypotheses*
• Better information combination, prevents and resolves digital divide.	*No rival explanation mentioned in literature or expert interviews*

4.4.2. Structure

Organisational structure is an organisational resource related to the formal allocation of work roles and administrative mechanisms to control and integrate work activities (Pee & Kankanhalli, 2016). Structural elements are important as they can affect the flow of knowledge within an organisation. Gold et al. (2001) state that in essence the organisational structure should be flexible (as opposed to rigid). It should encourage sharing and collaboration across boundaries within the organisation and between the organisation and its environment (Gold et al., 2001; Pee & Kankanhalli, 2016). Studies on knowledge management enablers mention various factors that describe the organisational structure. Lee & Choi (2003) and Pee & Kankanhalli (2016) reviewed many of these studies and derived 'centralisation' and 'formalisation' as key dimensions for an organisational structure. However, a closer look at studies on organisational structure in relation to knowledge management reveals that organisational structure is often described along three elements: centralisation, formalisation and integration (Chen & Huang, 2007; Miller & Dröge, 1986). Chen & Huang (2007) found that, next to centralisation and formalisation, 'integration' is an important factor of an organisational structure in the context of knowledge management. For the sake of completeness, this research includes centralisation, formalisation and integration as factors describing the organisational structure.

Centralisation

Centralisation refers to the hierarchical level that has the authority for decision making and control in an organisation (Chen & Huang, 2007; H. Lee & Choi, 2003). Studies on knowledge management indicate that more centralisation often hinders the sharing and creation of knowledge within the organisation as centralisation of decision making often leads to complex communication channels through multiple levels of authority, leading to the distortion of ideas and knowledge (Pee & Kankanhalli, 2008). Decentralisation on the other hand stimulates the inclusion of more employees and organisational levels into the process of decision making, leading to a greater variety of knowledge and ideas (H. Lee & Choi, 2003; Pertusa-Ortega, Zaragoza-Sáez, & Claver-Cortés, 2010). More autonomy for action enlarges the chances of finding valuable information and stimulates employees to create new knowledge (Nonaka et al., 2000). Consequently, decreased centralisation is likely to lead to higher levels of knowledge creation and use (H. Lee & Choi, 2003; Y.-C. Lee & Lee, 2007; Teece, 2000) .

Public organisations are often more centralised than private organisations, because centralisation promotes standardization, stability, and predictability (Pee & Kankanhalli, 2008). In general, police organisations are considered to be centralised with a vertical hierarchical structure. Some authors have already questioned the utility of traditional centralisation for ILP. Cope (2004) found that the role of analysts is often not clear, as they do not naturally fit into the traditionally hierarchical structures of a police organisation. This hinders their prevalence in bringing analyses to a footlight. However, Ratcliffe (2016) mentions that ILP is a top-down approach where priorities need to be set at the top level and decisions for tasks and actions are dispersed top-down to the operational levels.

Based on the previous it seems that centralisation could both positively as negatively affect ILP. This research will therefore explore to how centralisation affects ILP in order to provide an answer to this uncertainty. For the sake of consistency of formulation style as compared to the other propositions, the proposition is formulated as follows:

Proposition 2: Centralisation negatively affects the ILP processes.

Supportive hypotheses	*Rival hypotheses*
• Complex communication channels through multiple layers. • Less inclusion of different disciplines in decision making. • Less autonomy for creativity and experimentation.	• Facilitates top-down approach through clear priority setting and focus. • Promotes standardisation, stability and predictability.

Formalisation

Formalisation refers to the degree to which decisions and working relationships within the organisation are governed by rules, standard policies, and procedures (Burstein & W. Holsapple, 2008; Chen & Huang, 2007; H. Lee & Choi, 2003; Pertusa-Ortega et al., 2010). As such it is closely related to standardisation, which can be considered as a form of formalisation. Formalisation is found by some authors to hinder the flow of knowledge across employee roles, job functions, and other traditional boundaries, therefore hindering knowledge management activities such as the creation and transfer of knowledge (H. Lee & Choi, 2003). Less formalised organisations allow for more flexibility and variation in work execution, facilitating knowledge creation and sharing. By flexibility, better solutions and ways of working can be established, while variation in process and structure allows for the adaptation to unforeseen problems (Chen & Huang, 2007; H. Lee & Choi, 2003; Pee & Kankanhalli, 2016). On the other hand, in the absence of a formalised structure efforts to create and use new knowledge will probably remain disorganised, infrequent, and ineffective (Okhuysen & Eisenhardt, 2002; Pertusa-Ortega et al., 2010). Formalisation can improve coordination and cooperation by shaping the scope of interactions (Kern, 2006), it can improve inter-functional transfer of knowledge through rules, and it reduces ambiguity (Cordón-Pozo, García-Morales, & Aragôn-Correa, 2006).

For managing ILP in police organisations, some studies have pinpointed the need for explicit formal rules and procedures for ILP working principles. Carter (2012) states that ILP "requires formal policies to guide more specific practices – such as collecting and maintaining legal information as well as sharing this information through the appropriate channels."

Based on the previous, it seems that formalisation can both facilitate and hinder knowledge management. It seems not so much a choice about more or less formalisation, which seems to be presented as an over-simplified trade-off by various authors. Rather it is a question of how formalisation affects ILP in the Dutch police. The following proposition is formulated, while taking notice of the arguments for and against this proposition:

Proposition 3: Formalisation negatively affects the ILP processes.

Supportive hypotheses	*Rival hypotheses*
• Limits flexibility to established better ways of working • Limits flexibility to adapt to new problems	• Processes remain disorganised, infrequent and ineffective • Formalisation improves coordination of work • It improves continuity of good practices

Integration

Integration refers to the extent to which various subdivisions of an organisation work interrelatedly (Germain, 1996; Sciulli, 1998). Integration is by various authors found to have a positive effect on knowledge creation and sharing. Integration can occur both vertically through the organisation and horizontally through the organisation (Y.-C. Lee & Lee, 2007). Furthermore, although some authors do not mention 'integration' literally, they emphasise the importance of collaboration and knowledge

sharing across subdivisions, and across the organisation's border and its environment (Gold et al., 2001; Pertusa-Ortega et al., 2010). Integrative work structures facilitate the sharing and combination of knowledge through social interaction (Chen & Huang, 2007). Syed-Ikhsan & Rowland (2004) argue that knowledge sharing in public organisations is fostered by structures that support the flow of information with fewer boundaries between divisions. Furthermore, Pertusa-Ortega et al. (2010) stress that integration is crucial for connecting the various specialised units within an organisation. Specialised organisational units possess different skills and knowledge, and integration (they emphasise horizontal integration) of these units creates new and common knowledge, improving the use of knowledge.

In the context of ILP, integration also comes forward as an important aspect for the sharing and creation of intelligence. Sheptycki (2004) found that regional police agencies tend to operate isolated in their own vertical structure, hampering the sharing of intelligence between agencies, therewith highlighting a lack of horizontal integration. Also within units the integration between the analytical division and the operational divisions is considered important in order to integrate intelligence within the decision making process. On the other hand, it is mentioned that analysts can be undervalued and not used to their potential when they are integrated within operational teams, given their status as 'civilians' (Cope, 2004). To this end it could be beneficial to establish separated intelligence units in order for analysts to develop specialised skills in a supportive environment (expert interview). Therefore the proposition is formulated as follows:

Proposition 4: Integration positively affects the ILP processes.

Supportive hypotheses	*Rival hypotheses*
• Better flow of knowledge through fewer boundaries between divisions • Collaboration between different specialised units creating new knowledge	• Limited specialised skills development • Analysts become undervalued by 'blue' personnel in integrated teams

4.4.3. Culture

The organisational culture is central and the most important factor in an organisation's ability to manage its knowledge effectively (Gold et al., 2001; H. Lee & Choi, 2003). The culture should support the sharing and creation of knowledge. Four factors of culture will be included in this research.

Collaboration

Interaction between individuals is essential for creating knowledge and for sharing tacit knowledge or transforming tacit knowledge into explicit knowledge. Furthermore, collaboration enables the creation of professional networks. These networks can prove helpful for finding solutions to new problems that require new approaches (Gold et al., 2001). Lastly, collaboration allows members of the organisation to develop a shared understanding of the context in which the organisation resides, or in which a particular project resides (H. Lee & Choi, 2003).

In police organisations collaboration between analyst and decision makers allow for the sharing of expertise and knowledge which is likely to lead to better intelligence (Den Hengst & Mors, 2011). Also collaboration between the police and external partners can increase the quality of policing and of intelligence, as these partners provide different information and can take measures to reduce crime (Osborne, 2006). This research will focus on collaboration between analyst and decision makers and between the decision makers and external partners.

Proposition 5: Collaboration positively affects the ILP processes.

Supportive hypotheses	*Rival hypotheses*
• Allows for sharing of tacit knowledge • Enables creation of professional networks for finding new solutions and approaches • Develops shared understanding	• *No rival explanations found in literature or expert interviews*

Trust

The second aspect of culture that is often found to enable knowledge management is trust. Interpersonal trust can be defined as expectancy of an individual or group in the reliability of the promises or actions of other individuals or groups (Al-Alawi, Al-Marzooqi, & Mohammed, 2007). Trust between employees increases their willingness to share knowledge (H. Lee & Choi, 2003). In police organisations trust is a peculiar aspect. The information that is dealt with is often valuable and leakage of information is harmful. Therefore trust between employees is of crucial importance.

Proposition 6: Trust is positively related to the ILP processes

Supportive hypotheses	*Rival hypotheses*
• Increases willingness to share knowledge and information	• When trust is limited to a certain group within the organisation, a closed network could emerge e.g. an 'old boy's network'.

Incentive schemes

The last cultural factor that is taken into account are reward schemes for the collection, sharing, generation and use of knowledge. Rewards, either extrinsic (e.g. payment or promotion) or intrinsic (e.g. better reputation or respect), can help to foster the sharing and generation of knowledge (Seba, Rowley, & Lambert, 2012). However, if the perverse incentives are imposed, hoarding of information can be the result, which would hamper ILP (Gold et al., 2001). Also the sharing and creation of knowledge can be difficult to measure and evaluate, which complicates rewarding (Holman, Wall, & Clegg, 2005). Furthermore, the issue of reward mechanisms are complex in the public sector (Bock, Zmud, Kim, & Lee, 2005).

Proposition 7: Reward schemes positively affect the ILP processes.

Supportive hypotheses	*Rival hypotheses*
• Intrinsic or extrinsic rewards motivate employees to share or create knowledge	• Incentive schemes could result in perverse effects • Performance measures are difficult to establish

Management support and leadership

Management support and leadership is an important factor for enabling knowledge management processes. Employees can learn directly from leaders in the organisation. Furthermore, leaders and managers can encourage employees to share and generate knowledge by various means. The decision making process is controlled by leaders. As such leaders have a great influence in the extent of using knowledge for decision making. Leaders are also of importance of articulating a clear vision to what direction the organisation or department should move (Seba, Rowley, & Delbridge, 2012).

For ILP leadership is found to be important as well. Commitment of the mangers to the uptake of ILP is found to be an important factor for the development of ILP (Darroch & Mazerolle, 2013). Furthermore, ILP is considered by various authors (e.g. Ratcliffe (2016)) to be a top-down approach. Strategic managers should make strategic decisions based on intelligence, which are translated into tactical and operational decisions by sub managers. As such managers have a crucial role in putting intelligence to action. This also explains why various experts mentioned reasons for a negative effect of leadership on ILP. Managers that do not advocate the importance of ILP and stick to reactive policing

strategies, tend to undervalue the role of intelligence and the sharing of information. They could actively restrict employees to share and create intelligence. The following proposition is formulated:

Proposition 8: Management and leadership positively affect the ILP processes

Supportive hypotheses	*Rival hypotheses*
• Managers encourage employees to share and create intelligence. • Commitment of managers to ILP fosters implementation of ILP. • Managers make decisions based on intelligence.	• Managers restrict employees to be creative and share knowledge • Managers use their hierarchical position to make their own decisions, neglecting intelligence.

4.4.4. People

The people within the organisation (in some studies referred to as social capital or human capital) create, share and use knowledge. Two aspects are considered in this context: skills and training.

Skills

Various studies have found that job skills (or expertise) is an important enabler for knowledge management (H. Lee & Choi, 2003; Pee & Kankanhalli, 2016). Special attention is given 'T-shaped skills'. T-shaped skills consist of both deep, specialised knowledge of a particular domain and broad knowledge about the context of this domain that allows to apply the specialised knowledge to adjacent domains. Within the context of ILP it is in this study hypothesised that analytical skills enable ILP. Analytical skills could both be required for analysts as for operational decision makers as they both have to analyse (large amounts of) data and information. Given the abovementioned findings in studies on knowledge management on the importance of T-shaped skills, special attention will be given in this research to the necessity of both broad and deep skills and knowledge. The following proposition is formulated:

Proposition 9: Analytical skills positively affect the ILP processes.

Supportive hypotheses	*Rival hypotheses*
• Analytical skills facilitate the ILP processes through better capability of selecting and analysing information	• Other skills than analytical skills are equally or more important.

Training

In order to improve skills and knowledge of the people in the organisation, training and learning programmes are found to be an important enabler in the field of knowledge management. Also in the studies on ILP implementation training has come forward as a factor influencing the success of the ILP implementation (e.g. Carter & Phillips, 2013; Chermak et al., 2013). This research will investigate to what extent training and learning possibilities influence ILP processes:

Proposition 10: Training positively affect the ILP processes.

Supportive hypotheses	*Rival hypotheses*
• Training and learning programmes are improving the ability of employees to execute the ILP processes	• Training and learning programmes have limited effect on ILP.

4.5. Theoretical model

Based on the literature study and expert interviews, the following theoretical model is constructed. The theoretical model is used to structure the collection and analysis of the empirical obtained in the

case study interviews. This model serves therefore as guidance for structuring qualitative information and is not tested quantitatively.

The model shows the hypothesised relationship between ILP enablers, processes, and ILP outcome.

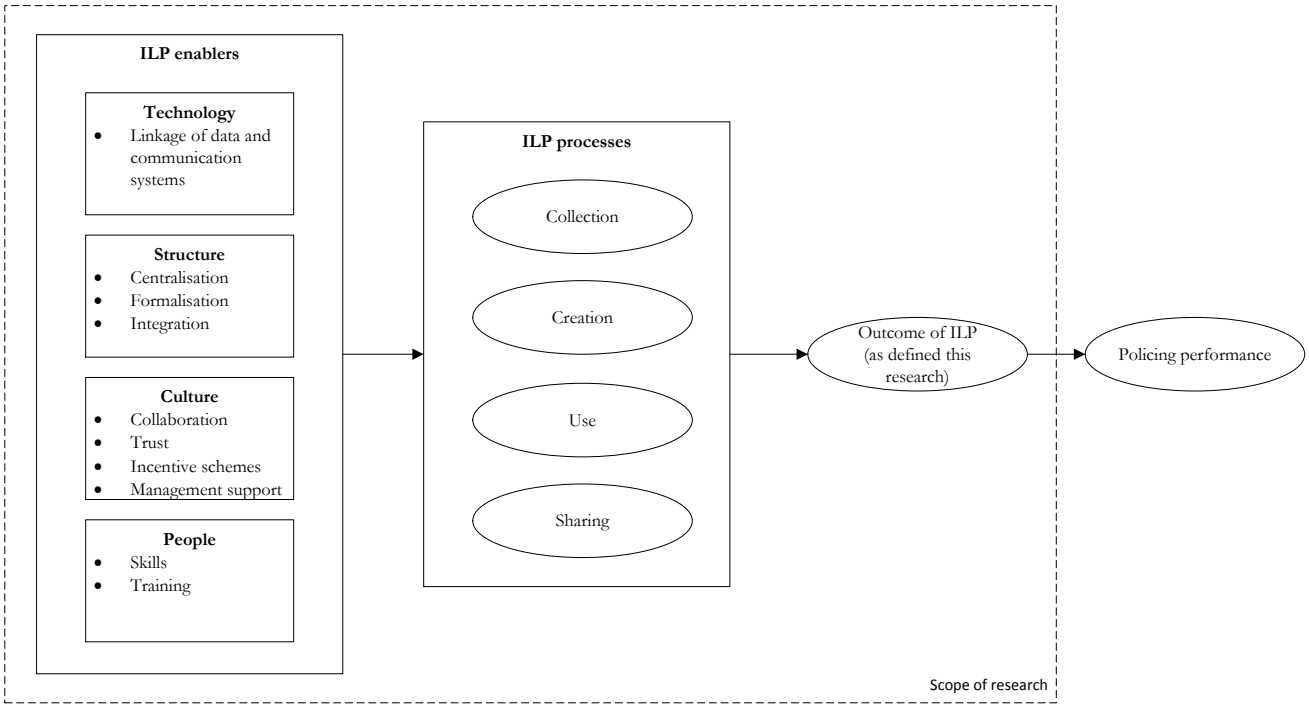

Figure 8: Theoretical model for ILP enablers, processes, and performance

5. Case study design

A case study is an empirical enquiry that studies a contemporary in depth within its context, especially when the boundaries between the phenomenon and context are not clearly evident. A case study can be defined as "an intensive study of essential features of a single unit for the purpose of understanding a larger class of (similar) units (Gerring, 2004, p. 342). This section elaborates on why a case study method is chosen for this research. Furthermore, the case study research design will be presented. In order to ensure a scientifically rigor execution of this case study research, the methodological guidelines of Yin (2009) are followed since these guidelines are extremely widely applied and are oftentimes empirically tested.

5.1. The appropriateness and usefulness of a case study

According to Yin (2009) a case study has a distinct advantage over other methods (survey, archival analysis, history, and experiment) when three conditions are present: 1) a 'how' or 'why' question is asked, 2) the research is about contemporary set of events, 3) over which the investigator has little or no control (see Figure 9).

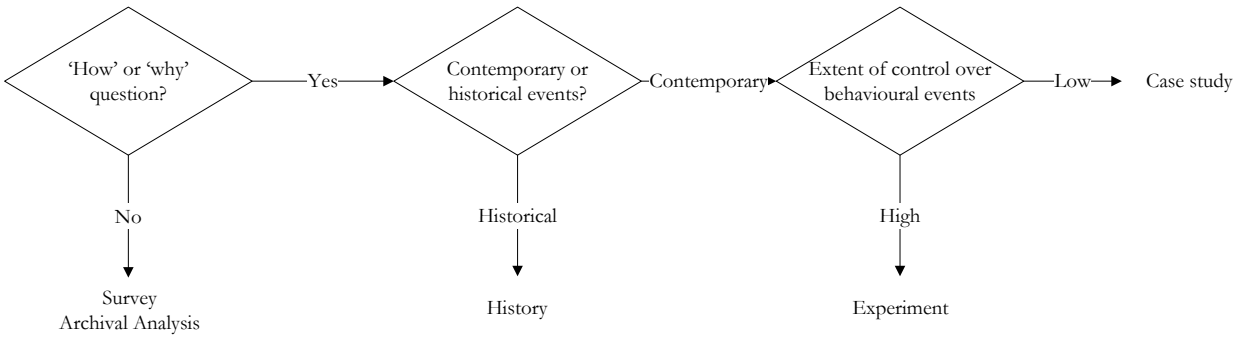

Figure 9: Decision scheme for research method (figure based on Yin (2009))

In this research all three conditions are strongly present. Firstly, this research is exploratory and the main research question is about identifying enablers for ILP and exploring *how* they affect ILP. Secondly, ILP is obviously a contemporary object of study. As the police has implemented ILP, it 'takes place' continuously; i.e. it is an ongoing effort. The advantage of a case study over other methods is that in a case study such events can be observed and that interviews can be conducted with persons involved in these events (Yin, 2009). Lastly, as a researcher I have little control over the behavioural events. It is nearly impossible to conduct experiments where certain conditions are manipulated or control groups are established. Police work is simply too important for it to become subject to such experiments. Furthermore, as an external researcher I do not have the authority to change any course of events in the daily policing practice.

The use of a case study for this research is particularly useful as it allows for obtaining in-depth insights into reasons for the (dis)functioning of ILP. Another method often used, a quantitative survey, would allow for identifying the strength or weakness of the effects of the various enablers on ILP. However, it is largely incapable of observing the reasons to why these effects occur. The advantage of a case study is that it allows for exploring the reasons why certain factors are important by observing the mechanisms behind their effects. Furthermore, a case study allows for identifying circumstantial factors and factors that have not been included into the original research model, therewith strengthening the completeness and validity of the findings.

5.2. Case study purpose

The conceptual model as presented in Chapter 0 will function as the basis for the case study. The case studies are conducted to identify enablers for ILP in the Dutch police and to explore how these enablers affect the functioning of ILP. Through the case study research the relationship between the ILP enablers and ILP processes will explicated. This will lead to an increased level of detail in the understanding of the relationship between ILP enablers and processes. Furthermore, as this research is of exploratory nature, other enablers might be identified.

Further, for each of the enablers that are discussed in the case study, a question will be asked how these are ideally configured (in the future). The answers to these questions can constitute a desired situation for these enablers according to which a path for growth and improvement can be formulated.

5.3. Case study propositions

According to Yin (2009) a case study design should include propositions. Using propositions and following up on those during the case study increases the chance that relevant information will not be missed. Furthermore, the propositions invite for formulating a rival explanations ex-ante to what is eventually found in the case study. This increases the eventual quality of the results. The following propositions are formulated (one for each factor). The propositions by means of a simple positive or negative influence on the ILP processes. However, it is important to note that this case study aims specifically to examine *why* this relationship is positive or negative and *how* the enablers affect ILP. Therefore, the propositions will not be answered with a simple yes or no. The rival explanations as established in Chapter 4, help to gain in-depth insights into these factors.

- Proposition 1: Linkage of data storage systems positively affects the ILP processes
- Proposition 2: Centralisation negatively affects the ILP processes.
- Proposition 3: Formalisation negatively affects the ILP processes.
- Proposition 4: Integration positively affects the ILP processes.
- Proposition 5: Collaboration positively affects the ILP processes.
- Proposition 6: Trust positively affects the ILP processes.
- Proposition 7: Reward schemes positively affect the ILP processes.
- Proposition 8: Management and leadership positively affect the ILP processes.
- Proposition 9: Analytical skills positively affect the ILP processes.
- Proposition 10: Training positively affect the ILP processes.

5.4. Unit of analysis

According to Yin (2009) it is of importance to define the unit of analysis before conducting the case study. The unit of analysis in this case study is ILP, as it is defined in Chapter 3. The four processes of ILP will be investigated, among the various actors within the environment, whereby constantly the

relation between these processes and the enablers are explored in order to find out how these enablers affect ILP.

5.5. Selection of the case studies

Two different case studies are conducted, which will later on be compared on their results. Therefore the approach is a multiple-case study (Yin 2009). The cases are selected first by isolating two policing tasks. The multitude of policing tasks and the large differences between the tasks, make it helpful to observe one task only in each case study. This contributes to the clear identification of ILP (the unit of analysis) in each case study. For this multiple-case study two policing tasks out of the five tasks defined in Chapter 3 will be studied: the investigation of criminal acts, and 2) the maintenance of public order. More specifically, the investigation of criminal acts is delineated to the investigation of drugs crime. The maintenance of public order is delineated to football and safety. As these tasks are inherently different, the two cases are expected to enhance the generalisability of the results through *contrasting* the results (Yin, 2009).

Then within each case study, again two different cases will be studied. Namely, two different police units will be investigated in each case study. This *replication* serves, just as contrasting the two policing tasks, to enhance the power of the findings (Yin, 2009).

For the drugs crime case two units are investigated: one regional unit – Oost-Brabant – and the Central Unit (Dutch: Landelijke Eenheid). For the football & safety case two regional units are investigated: Oost-Brabant and Rotterdam. In each of the cases both analysts and decision makers are interviewed. Also, partners are interviewed. For both case studies (drugs crime and Football & safety) at least one person of the municipality and one public offender has been interviewed. Selection of persons was based on my personal network, recommendations by other interviewees and the availability of the potential interviewees. The interviews are in depth, open-ended interviews and took approximately 1 to 1.5 hours.

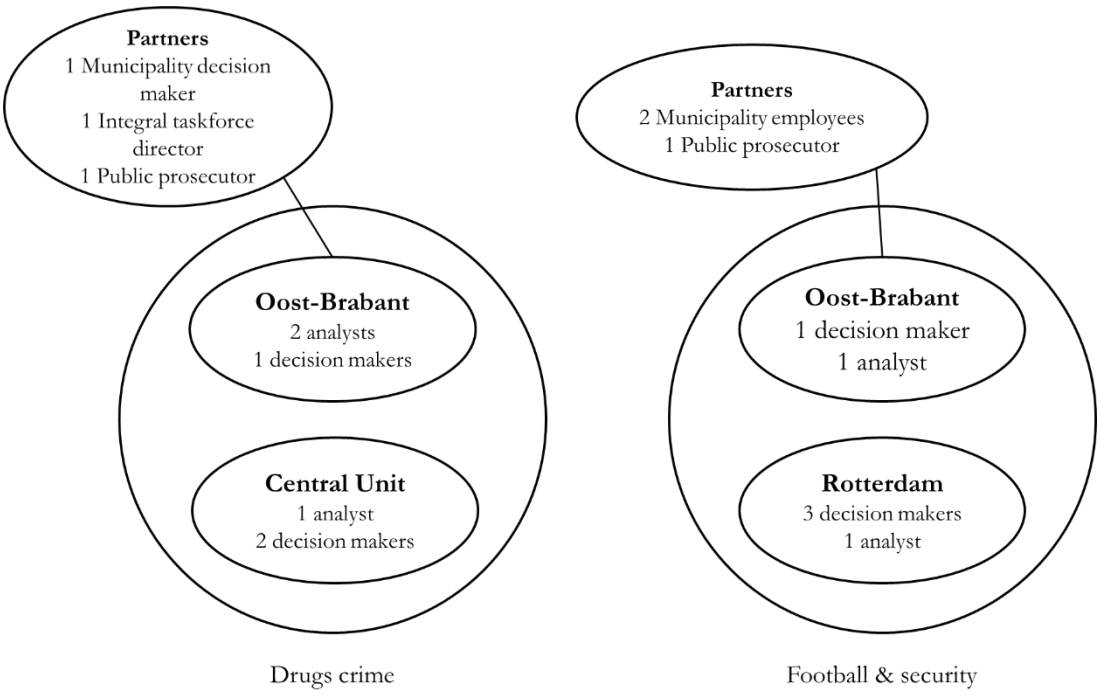

Figure 10: Case study lay-out

5.6. Collection of data

Three principles are of relevance for the collection of case study data (Yin, 2009).

First, the use of multiple sources of evidence in order to develop converging lines on inquiry. This enhances the strength of the findings in the case studies. In this case study two sources of data are used: interviews and documentation. The interviews are in-depth, open-ended interviews that took approximately 1 to 1.5 hours. Interview questions were used to guide the interview. The interviews followed an *inductive approach*. This approach is chosen as it was considered important to provide the interviewees with the opportunity to discuss openly, in an unbiased way what they considered key problems and success factors considering ILP. In case at the end of the interview certain organisational aspects (structure, culture, people, or technology) were not brought forward by the interviewee, I asked about whether they considered these aspects to be important and why. This way I could determine whether the interviewee found these aspects unimportant or whether they had forgotten to mention these. By following an inductive approach, I could identify what interviewees found most important. Also it allowed me to determine what the interviewee had most knowledge about, which increased the likelihood that their responses could be well substantiated. Lastly, it prevented me as much as possible to have a biased approach towards the enablers identified in literature.

The interviews are conducted between persons with different roles (analysts and decision makers) and from within and outside the police organisation (partners). Data obtained from the various interviews can therefore be triangulated. Where possible, the responses from interviews will additionally be triangulated with available documentation.

Secondly, the data obtained by means of the interviews are to be collected in an interview database. To this end the interviews are recorded and transcripts are made and stored in the Atlas.ti database.

Thirdly, a 'chain of evidence' is to be maintained to ensure the reliability of the research. The chain of evidence means that the steps from the research questions to the conclusions can be traced; no data should be omitted through carelessness or biases.

5.7. Data treatment and analysis

From the several strategies that exists for analysing case study data, the most preferred strategy is to follow the theoretical propositions (Yin, 2009). For each proposition one or more questions are formulated in the interview structure (see Appendix). All the answers will be transcribed and labelled using the software package Atlas.ti. The answers will then be grouped by first the ILP enabler and then by the ILP process it relates to (according to the respondent). This will allow for the study of the links between enablers and processes, this is therefore called 'pattern-matching'. According to Yin (2009) this contributes to the 'chain of evidence', and thereby contributes to the construct validity of the study (see next section for an explanation of the construct validity).

5.8. Validity

Three criteria four judging the quality of an explorative case study research are mentioned by Yin (2009): construct validity, external validity and reliability.

Construct validity is about identifying correct operational measures for the concepts that are studied. To account for the construct validity specific three tactics have been applied in this research. Firstly, *multiple sources of evidence* have been used. By interviewing different persons in different settings and cases, triangulation of the findings is possible. This is further enhanced by adding findings from literature and policy documents where possible. Secondly, the conceptual model as presented earlier,

is *reviewed by four experts* of ILP. They were asked to comment about the factors at hand and to bring forward their opinion about what enablers of ILP are. Thirdly a *chain of evidence* is established by making use of propositions and apply pattern matching analysis based on these propositions.

External validity deals with the generalisability of the study's findings. For enhancing the generalisability of this study the *replication logic* is used. Both drugs crime and football & safety are observed in two units. This allows for the comparison of the findings between these two units. Furthermore, the two case studies, drugs crime and football & safety, can be compared to each other. Both cover a different police task which enlarges the generalisability of the findings.

The reliability can be ensured through two tactics: establishing a case study protocol and by developing a case study database (Yin, 2009). Both tactics are used in this research. A case study protocol is formulated in the form of interview questions and can be found in Appendix E. A case study database is established in the software program Atlas.ti. There the transcripts of the interviews are stored together with the labelling that is assigned to these transcripts. Both tactics contribute to ensuring that a replication of this study is possible and would generate similar results.

6. Case studies

In this chapter the two case studies will be described. First the findings of the drug crime case will be presented, followed by the findings of the football & safety case. Each case will be briefly described first after which the enablers will be discussed. As the interviews in the case study used an inductive approach, also other factors have been found to affect the ILP processes. These factors are discussed in coherence with the factors they were most

For each enabler its role within the context of the case will be described. For each enabler a descriptive analysis will discuss *to what extent and in which form is this enabler present* within the setting of the case, and it will be evaluated *if and how the enabler affects the ILP processes.*

At the end of the chapter the findings on these enablers will be compared. In Chapter 7 these findings will be used to provide answers to the propositions that have been formulated in Chapter 4.

6.1. Organised drug crime

6.1.1. Case description

Organised drug crime is a major problem in the south of the Netherlands. For decades organised crime has been playing a dominant role in the society of southern provinces in the Netherlands. There are three police units in the south of the Netherlands: Zeeland-West-Brabant, Oost-Brabant, and Limburg (see the map of police units in Appendix H). Furthermore, the Central Unit of the Dutch police is active in fighting drug crime in the south of the Netherlands. In response to the proliferation of problems caused by drug crime, mayors of southern cities have rang the alarm bells in 2010. The 'underworld' had gotten increasingly infiltrated into the legitimate society. Criminals had gained significant influence in politics, injected the local economy with criminal capital, and drug production and trafficking became a core business. It is estimated that the revenue in just one city (Tilburg) from cannabis trade only amounted 800 million euro in 2014 (Haenen, 2014). In response to these problems two initiatives were started: a Taskforce (Dutch: Taskforce Zeeland Brabant) was established by the majors of southern cities with the aim to the fight drug crime, and a programme the Intensification South (Dutch: Intensivering Zuid) was established by the police and public prosecutor to intensify the fight against drug crime (*Jaarbericht Intensivering aanpak ondermijning in Zuid-Nederland*, 2016).

This case study investigates two units that are active in the fight against drug crime: Oost-Brabant and the Central Unit. These units are also involved in the 'Intensification South' (Dutch: Intensivering Zuid) programme and fall in the geographic realm of the Taskforce. Within these units, people from two departments are interviewed: analysts from the intelligence department (Dutch: Dienst Informatieorganisatie), and investigators from the investigations department (Dutch: Dienst Recherche). The term 'department' is used to differentiate them from the 'units'.

The collection of data and information takes place through the registration of information by street officers. They register any information in BHV (Dutch: Basisvoorziening Handhaving) which is the uniform police system for storing data about persons. Next to registration by street officers, much information is gathered during investigations (through for example taps on phones and informants).

This information is stored by investigators in another system: summ-IT. Analysts acquire information from the police systems to create intelligence products. This takes place on the various levels from strategic safety images to case analyses. The type of intelligence products they create depend on the purpose of their analysis and could range from a long term criminal trend analysis to a social network analysis of a suspect. Intelligence is meant to be input for the decision making on priorities for the investigations. In first instance this should happen on a strategic level. From there, tactical and operational priorities are set and decisions for undertaking investigative actions are made.

6.1.2. Enablers

This section will discuss the enablers as observed in this case. A descriptive analysis will discuss *to what extent and in which form is this enabler present* within the setting of the case, and it will be evaluated *if and how the enabler affects the ILP processes*.

6.1.2.1. Technology

Linkage of data storage systems

Regarding the linkage of data storage various observations have been made in this case. These will be discussed below together with their effects on the ILP processes are described hereafter.

Firstly, BVH and summ-IT are not linked. BVH and summ-IT are two important systems used for the storage of police data for investigations. In BVH, street officers register all types of information on incidents. Summ-IT is used by investigators of the police for the storage of information collected during investigations. The consequence of the disconnection of these systems is that investigators have to manually copy and paste information from BVH into summ-IT before they are able to use the information in their investigation. This is a very time consuming process and creates a risk of errors. The analysts and investigators considered this to be very frustrating. An important consequences is that investigators enter less information into sum-IT than they might have done when this could be done seamlessly. As a result, analyst are missing the information that remains at the desk, in a separate database, or in the head of the investigator.

Furthermore, obtaining information from summ-IT is problematic. As it retrieves mostly unstructured data in various formats (even pdf files), analysts have trouble with retrieving this information, and especially with analysing this information. Proper tooling for the analysis of unstructured data is largely lacking in both the Central Unit and Oost-Brabant.

This brings out a negative effect of the linkage of systems. Since the reorganisation of the Dutch Police the data systems that units use are now largely uniform (although BVH and summ-IT are not linked to each other, all units use BVH and summ-IT). This allows for the access to large amounts of data. This puts strains on the analytical capacity in both units. As one interviewee illustrates: “when I enter the name of a suspect I get an enormous amount of data, I can’t see the wood for the trees”.

Only in special teams (such as the Counterterrorism team) analysts are equipped with advanced analytical tools to analyse large amount of (unstructured) data. The need for advanced analytical tooling is considered to become increasingly important as more and more data and information becomes available, often in unstructured forms. The potential for intelligence that can be derived from this amount of data and information is currently not met. “At the moment we are not obtaining the maximum potential from the data at our hands, not even close” (confidential conversation).

An additional finding is that investigators have limited access to open source data. Due to security measures, they are inhibited to visit very common websites such as Youtube and websites of municipalities.

Lastly, investigators have the possibility to shield their investigational information in summ-IT from other police colleagues. On the one hand this is logical, as this information is sensitive and improper use of information from ongoing investigations could harm those investigations. However, for analysts, this information is often very valuable. Currently, analysts cannot see whether an investigation is already finished (which means that the information is available to use) or not (there can be good reasons to shield information to a certain extent in order to not disturb ongoing investigation). Also, before analysts can have access to the information, they have to personally call the main investigator. This process is extremely time consuming and leaves the analysts dependent on the willingness to cooperate of the investigator.

Linkage of data systems

Observations	*Effects on ILP processes*
• BVH and summ-IT are not linked • Retrieving data from summ-IT is problematic • Analytical tools for analysing unstructured data are lacking • Where systems are linked (e.g. between units) an information overload can appear • Limited access to open data • Limited access to investigational information for analysts	• Time consuming process of registering information in summ-IT • Reduced information registration in summ-IT • Limited quality of analysis, hence of intelligence • Time consuming process of collecting information from investigations

6.1.2.2.Structure

Centralisation

As mentioned in Chapter 0, a police organisation is typically centralised. This is also the case in both units that have been studied in this case study. The decision making power lays high in the unit's organisation. In Oost-Brabant most decisions on directions for investigations are made on the strategic and tactical levels. The operational and tactical/operational levels are largely excluded from the decision making process. Among the analysts and decision makers of both units this is considered very problematic for ILP.

Investigators mention that doing an investigation is a creative process. It cannot be determined beforehand what the result of an investigation will be. However, due to the centralised decision making power over tasks and objectives, this is nevertheless expected from the investigators. They are handed a very specific objective, for example a specific person to catch within three weeks. Accordingly, they are provided with information from the intelligence department that serves as a basis for their investigation. This information is specified to their objective, it is a small piece of information that is cut out of the information available. This is problematic for the investigators. They have to collect information on these persons, because the information has to be verified and supplemented in order to serve as proof in court. However, during this process they oftentimes find information that was already present in the intelligence department, but was left out of their sight for the sake the demarcation of their specific objective. Hence, the investigators do work that is (partly) already done by analysts. "We spend a lot of time to find information that turned out to be already present higher up in the hierarchy" (confidential communication). They consider this very demotivating. It either results in investigators becoming passive and cynic "if they don't give it to me,

than I just don't know it" (confidential communication), or investigators become frustrated while continuously trying to acquire the missing information.

Furthermore, during this process the investigators often find more information than is strictly necessary for their objective. This 'residual information' (Dutch: restinformatie) can be very valuable for other ongoing or future investigations. However, as they have a strict objective with a time frame, they are not allowed to take action on this information by enlarge or redirecting their investigation. As a result, the motivation for registering this information is low, as they are not allowed to do anything with that information. The centralised decision making takes away creativity and autonomy from the investigators to make better use of the information. Also it leads to the fragmentation of objectives, and therefore of investigative efforts. "At some point four teams were working on dismantling a lab each. We found out that the labs were all owned by the same guy, but we were not allowed to change the direction of our investigation towards that guy. As such, four teams kept being busy with their own objective, a lab, and the guy was not investigated. That's highly ineffective and inefficient […] we have no decision making space at all to change the objective of our investigation".

Analysts in both units complain that decisions made by the tactical and strategic management of the investigations department are often not based on intelligence from the intelligence department. New investigations are started from information obtained in earlier investigations without first consulting the intelligence department on the expected effectiveness of that specific target or topic. The investigators on the other hand complain that they are offered too little support from the intelligence department. Often they are told that the intelligence department has insufficient capacity to provide intelligence services to the investigations, consequently they decide on future actions based on their own information and insights. As such, both units are in fact not 'led by intelligence' from the analysts.

Centralisation

Observations	*Effects on ILP processes*
• Decision making is centralised towards strategic and tactical management • Operational/tactical investigators are offered little autonomy for changing the course of investigations • Intelligence supply to operational/tactical investigations is fragmented • Decision making is often not based on intelligence from the intelligence department, rather on information and insights from within the investigations department.	• Collection of residual information is limited • Decision making is often not based on intelligence. • Effectiveness of investigations is limitedly evaluated or monitored. • Wasted capacity on collecting and searching for information that is already present elsewhere in the organisation

Formalisation

Formalisation is considered high by the interviewees in both units, especially the formalisation of work processes and output are considered to hinder ILP greatly.

In line with the findings on centralisation, this case shows that creativity is at stake when formalisation is high. This problem is found in especially Oost-Brabant. Both analysts and decision makers complain about the strict procedures that bound their ability to use software to collect, analyse and share information. Standard authorisation models, tied to specific job functions, limit their possibilities for accessing information from investigations. To investigators, only a limited amount of applications for collecting information is available. For example, they have no access to BlueView. BlueView is an

application that enables the efficient search into the data systems of the police (Politieacademie, n.d.). As a result, they need to ask an analyst to do basic search tasks for them. As this analyst often has no knowledge of the context of the particular investigation. As a result, "it takes much more time to make clear what you want to know than it would take to search it yourself" as an investigator stated.

Also the analysts have limited access to applications. For them, the accessibility to analytical tools is limited. For example, they are not allowed to build macros in Microsoft Excel. This limits their possibilities to find creative solutions for analytical problems and is detrimental for their motivation to try new approaches.

Furthermore various respondents in both units mention that the focus is too much on the execution of fixed tasks and procedures, instead of on a greater, common goal. Someone at the central unit said: "People are stuck in a standard tunnel of their work process, instead they should look at the problem at hand and find a suitable tunnel for solving that". In Oost-Brabant an analyst mentions the same phenomenon: "it is too often that we say 'surgery successful, patient died', everybody executes their own task, but did the society become any safer?" It seems that people are discouraged to step outside their work processes, an analysts gives an example: "I found colleagues in other units that faced a similar problem as I was facing, we tried to cooperate to develop a new method for solving this problem, but then my boss decided that I was not allowed to go to those other units because it wasn't part of my job. These things happen often."

Formalisation

Observations	*Effects on ILP processes*
• Restrictions on the use of software applications • Management manages on execution of tasks instead of on 'greater goal' • Limited freedom to depart from standard work processes	• Simply search tasks have to be outsourced to others who do have access to applications, which costs time. • Analysts lack freedom to experiment with analytical software to tackle analytical problems • Lack of working on common outcome leads to passive attitude or frustration among officers who do not feel that their work is valuable • Experimenting and finding new or different ways to solve investigations are discouraged

Integration

A major issue that comes forward in both units is the structural gap between the intelligence department and the investigations department. As can be seen in the organogram of both the central unit and the regional unit (see Appendix 0), the criminal investigation department (Dutch: 'Dienst Landelijke/Regionale Recherche') and the 'intelligence department' (Dutch: 'Dienst Landelijke/Regionale Informatieorganisatie' are two separate hierarchical columns. In both units this separation is strongly limiting the integration of work processes between both departments. Horizontal integration between the intelligence department and the criminal investigation unit, hence between the analysts and decision makers, is thus very low.

For many interviewees it is no clear border where the work of an analyst stops and the work of an investigator begins. The analyst collects information and creates an intelligence product. This product serves as the basis for an investigation to be executed by investigators. The investigators collect and analyse information as well. Their task is to find proof of criminal acts in order to get a criminal convicted in court. However due to the structural gap between the departments, an artificial border in their work processes is established.

As a result, problems arise at both sides. Since analysts are not involved with the work of the investigators, they have no access to, or do not know about the existence of the information that is collected by the investigators during an investigation. Therefore the analysts miss crucial information for the creation of intelligence products. In return, the investigators are unhappy with the quality of the information products because information is missing. Furthermore, as the analysts have the task to create *intelligence*, and the investigators have the task to establish *proof*, the intelligence provided by analysts is often not suitable to serve as proof. This on itself is not a problem, as providing proof is not the aim of an analyst. However, due to a lack of integration in the creation process of the product, the products do not align with the quality demands of the investigators. Oftentimes references are lacking or information in the intelligence product has not been verified. As a result, the investigators feel they have to re-do all the work of the analysts. “That eats away our capacity”, mentions an investigator. “Intelligence products are thrown over the wall” (investigator, confidential communication). On the other hand the analysts complain that “the investigators don’t trust our products, we don’t have the impression that they actually do something with them, at least they don’t use it for decision making on investigations”. This suggest that the lack of integration wastes capacity at both the side of the analysts and at the side of the investigators.

To bridge the structural gap between the two departments, liaison structures are established. Information Nodes’ (Dutch: Informatieknooppunten), consisiting of ‘information coordinators’, are deconcentrated from the intelligence department into the investigation department. The coordinators have the task to align the intelligence needs and supply between the intelligence department and the investigational department. However, these structures are in both units largely ineffective. One reason is that they suffer from a shortage in capacity. There is simply a shortage of information coordinators to support all the investigations. However, also where coordinators are in position problems persist. The coordinators are often not directly involved in investigations. As a result they lack the contextual knowledge and miss out on the latest updates in the investigations which hinders their ability to align the intelligence needs and supply. Altogether there appears to be a strong lack of horizontal integration between the intelligence department and the investigation department.

Integration between the police and other partners is dependent on the persons involved. As a municipality employee mentions: “the one chief wants to work together from the start, the other wants to do everything by himself”. As such it seems that integration of the work processes between the police and partners are not fully institutionalised. However, all interviewees state that this is improving. Integrative work is relatively new, therefore many police chiefs have to get used to this way of working.

Integration

Observations	*Effects on ILP processes*
• Formally the intelligence department and investigations department are separate columns in the organogram of both units • This separation strongly apparent in reality, work processes are not integrated even though people involved recognize that there shouldn’t be a border in these processes. • Liaison structures are not in place or ineffective due to lack of involvement in investigations • Integration between the police and external partners is for some chiefs out of habit, others are more open to it	• Lack of integration of work processes leads to misalignment of intelligence supply and demand. • Investigator re-do the work of analysts since they are not satisfied with the quality • Analyst miss crucial information obtained in investigations • Integrative work and intelligence sharing between the police and partners is improving

6.1.2.3. Culture

Collaboration

From the problems that arise due to the lack of horizontal integration it becomes apparent that collaboration between analysts and decision is important. The interviewees mention that collaboration is crucial for the creation and sharing of information, knowledge, and intelligence. In this case study it a lack of collaboration between analysts and investigators was considered to be a very important problem for ILP.

An important consequence of the lack of collaboration is that contextual knowledge is not shared and misunderstandings arise. “It is often the case that you ask for certain information, but you receive other information. This is because the analysts don’t know the context of your question.”

Furthermore, due to the lack of collaboration the latest information cannot be shared quickly. Information in systems is usually not the latest information and, due to the large amount of information stored in the systems, it is difficult to find the relevant information in a short period of time.

In the Central Unit, an analyst states that collaboration between analysts and decision makers could resolve the chasm between the intelligence in the intelligence product and the eventual need for proof. If collaboration would take place between analysts and investigators in an early stage of the development of the intelligence product, they could align and communicate which parts of the information are verified and suitable to serve as proof, and which parts are not. This would save the investigators time, as they do not have to verify all the information.

The structure of the organisation in both units is a barrier to effective collaboration. Due to the organisational structure, analysts and investigators are oftentimes not just on paper, but also physically separated. This makes collaboration and interaction difficult.

Collaboration

Observations	*Effects on ILP processes*
• Collaboration between analysts and investigators is very limited and considered to be a major problem. • The investigation department and intelligence department are physically separated in Oost-Brabant, strongly hindering collaboration.	• Contextual knowledge is not shared, leading to misunderstandings • The lack of collaboration hinders the quick sharing of the latest information and knowledge • Misalignment in creation of intelligence (proof vs intelligence)

Trust

Trust between people within the police, on a personal level, seems to be high. All interviewees emphasise that their colleagues are trustworthy. Trust between the police and partners is high where personal bonds are strong. However, on an organisational level this is not yet the case. It depends on grown personal relationships. As the sharing of information, and close cooperation between the municipality and the police is relatively new, trust is not institutionalised on an organisational level between these organisations. The municipality experiences hesitation at the side of the police when intelligence is to be shared from the police with the municipality. Only after personal relationships are established and positive experiences with previous cases have taken place, trust between the people involved is established. This way, the level of trust between the police and the municipality depends strongly on the persons involved. Another police officer could very well be much more hesitative to share information with the municipality than his/her colleague.

Furthermore, the gap between the intelligence department and the investigations unit, both in structure and in work processes, leads to a distrust in the intelligence products and in the intelligence unit's capabilities at the side of the investigators. This enlarges the chasm between the two units and it leads to the isolation of each unit. They are less eager to collaborate, as they feel it is useless anyway.

Trust

Observations	*Effects on ILP processes*
• Trust in colleague's integrity is high • Trust in capabilities of intelligence department is low in both units • Analyst doubt willingness to use intelligence by strategic and tactical management of investigations department	• Many investigators re-do the work of analysts, which costs much time • The level of trust in each other's integrity seems to play no problematic role.

Incentive schemes

In both units of this case study there are insufficient extrinsic and intrinsic incentives for active collaboration and sharing information. This is the case within the two units between analysts and investigators, but also outside the police organisation, between the police and partners.

Within the police the intelligence unit and the investigation unit appear to have different goals. The intelligence unit's goal is to produce intelligence products. The goal of the investigations department is to 'catch criminals'. These are two output measures of police work: the number of products and the number of criminals caught. However the common outcome goal - to make the society safer – is moved to the background, according to the interviewees. Both the intelligence unit and the investigation unit should have the same goal in mind. Due to these different goals, successes are celebrated only within a single unit. As an investigator of the Central Unit says: "I sent a 'thank you' to all the investigators that were involved in the operation. Now you ask, I realise it would be logical to thank the analysts as well, as it is also their success. But I sent it only to the colleagues of the investigation unit".

As mentioned earlier, creativity, experimenting, and entrepreneurship is in general not encouraged in the police. For ILP this seems to be problematic, as the creation of intelligence and the execution of an investigation are creative processes, in which outcomes are not predictable. For this reason, the Taskforce (a neutral organ outside the police organisation with the aim to boost the integral approach against drug crime) rewards police officers that have proven to be innovators and advocates of integrative work. For example, one investigator was given a framed (unofficial) certificate to show the appreciation for his achievements. This encourages these people to continue and to improve their work. Such rewards are not present within the police. On the contrary, innovation and creativity seems to be discouraged.

Incentive schemes

Observations	*Effects on ILP processes*
• There are no extrinsic incentive schemes in place in both units • (Perceived) counteracting department goals limit mutual dependencies and discourage collaboration and sharing • Intrinsic incentives such as compliments or shared celebration of successes are absent in both units between analysts and investigators • The Taskforce is actively rewarding 'outperformers'	• Limited sharing and collaboration among analysts and investigators • Limited feedback on work, hence limited improvements in intelligence use and creation. • The Taskforce found that celebrating successes collectively and rewarding individuals who outperform motivates officers strongly.

Management and leadership

In Chapter 4.3 it is hypothesised that support from senior management contributes to ILP. Senior managers should encourage the collection, creation, sharing, and use of intelligence.

The first aspect of management support that came forward in the interviews are the *management goals*. In both units there are complaints about the difference in goals of the intelligence unit and the investigations department, and about the management decisions that stem from these goals. Both the analysts and investigators emphasise that there is no clear border in the work processes between the analysts and the investigators. However, management of both departments manage on output products and performances that are not mutually supportive. Analysts feel that their senior management manages on the creation of information products. The use of these products is of subordinate importance to the creation of products. On the other hand, the senior management of the investigators manage on output performances such as the number of criminals caught, and the number of labs round-up. As an analysts stated: "Managers of the investigations unit want quick wins, they literally say 'we need to make it to the newspapers'". Making decisions based on intelligence is subordinate to increasing such output performances. At the end, a common focus seems to be lacking. The results are troubled intelligence sharing, inferior intelligence products, and ad hoc decision making that is not based on intelligence.

Another aspect of senior management support that came forward in the interviews is the *management style.* Analysts and investigators mention that they are restricted by senior management. Initiative, experimentation and entrepreneurship are values that seem to be discouraged by the management style of the senior management. This was especially mentioned in Oost-Brabant. It is focused on measurable results and predefined outputs. However, as mentioned previously, the analysis of information requires creativity and experimentation. This requires from management to allow professional freedom, but also to establish a clear greater goal. "We are professionals. They [the management] should facilitate us to do our job instead of prescribing every step we should take" (investigator Oost-Brabant, confidential communication). The personnel wants to work on a goal (e.g. the fight of synthetic drug crime) instead on output measures, and be provided with professional freedom to find methods and approaches to reach that goal. Currently this goal, or focus, seems to be lacking and work is done without due consideration of the intelligence available.

Furthermore, analytical tasks become more and more complex, due to an increasing quality of analytical tooling and the increase of the amount of information. This requires skilled analysts which can work with new tools and are able to analyse large amounts of data. These skills are relatively new. The analysts require professional freedom that allow them to take initiative, discover new approaches and be creative. Since the managers have little knowledge about these new approaches and such processes are difficult to control, it is for senior managers difficult to allow this professional freedom.

Management and leadership

Observations	*Effects on ILP processes*
• Strong emphasis on control on output performances and work processes instead of on effects on society • Common goals between departments are lacking • Managers have difficulties with managing high skilled analysts	• Intelligence is limitedly integrated into decision making • Potential of analysts is not used, hence the intelligence creation hindered • Experimentation and innovation is discouraged

6.1.2.4.People

Skills

By most interviewees in both units it is mentioned that the skillset that is required for the analysis of large amounts of data is becoming increasingly important. Whereas experience used to the foremost critical asset in the policing practice for years, analytical skills to select and analyse data and information are becoming increasingly important.

An important aspect of these skills is knowledge to interpret information and data. As information is widely available, specific knowledge allows people to make a *selection* of relevant information. This knowledge comes partly with experience. An experienced analysts or investigator 'knows' which information is important. However, this experience works especially for traditional types of information, such as telephone tabs and crime reports. Searching in big data sets for relevant information requires different *analytical skills*. These skills are difficult to obtain, and both units emphasise that there is a shortage of such hard analytical skills. Not only the analysts should acquire these skills, also investigators need these skills as they also analyse large amounts of information.

Furthermore, next to skills it seems that knowledge about the possible use of intelligence determines what information is registered and collected. As an integral approach to crime is becoming more important, different types of information become relevant. For example, the municipality can withdraw a permit for a bar in which criminals gather. It is then important that the investigator knows about this possibility and registers this information. *Knowledge about the possibilities of integral actions* and the use of intelligence as a basis for these actions is thus important for the initial collection of intelligence.

A third aspect which is especially important for the *sharing* of information with partners is knowledge about privacy legislation. It seems that many police officers are hesitative to share information with partners, as they think that it is forbidden by law. However, oftentimes this legislation is not a barrier to share information, if the right requirements are met. The Taskforce member and the municipality employee mention that this knowledge is often lacking, with unnecessary difficulties in information sharing as a result.

Skills

Observations	*Effects on ILP processes*
• Advanced analytical skills increasingly important • Knowledge and experience are important to select relevant information out of heaps of data and information. • Knowledge on possible applications of intelligence in integral actions is often lacking • Limited knowledge about privacy legislation	• Increased amounts of (unstructured) data cannot be analysed properly • Knowledge about possible (integral) actions guides the collection and registration of relevant information for undertaking these actions • Limited knowledge on privacy legislation leads to unlawful sharing of information, or to unnecessary hoarding of information

Training and learning

It is not within the scope of this research to examine the various training programmes that are in place in the Dutch police. However it is examined whether, according to the interviewees, trainings were sufficient to meet the skills required for ILP. It seemed that various analytical skills are lacking which require intensive training to acquire. Instead, the police often opts for the external hiring of skilled employees. Furthermore it is mentioned that often new software is purchased and used without

providing decent training on how to use this software. As a consequence, the tools are not used to their full potential reducing the quality of intelligence.

Training and learning

Observations	*Effects on ILP processes*
• Training accompanying new tools is often lacking • Hard analytical skills are difficult to acquire, therefore external analysts are hired	• Investigators and analysts have problems with adapting to new tools, lower quality of analysis and intelligence

6.1.3. Outcome of ILP

The outcome of ILP was defined in this research as decisions based on intelligence, where these decisions are proactive and aim for the efficient use of resources. It seems that due to the gap in work processes and structure between the intelligence department and the investigations department, the ILP processes are inhibited. As such, the decision making processes are often not based on intelligence coming from the intelligence department.

As decisions are often not based on intelligence, proactive decision making is problematic. Strategic priorities are not translated into tactical decisions, and evaluations of actions and intelligence do hardly take place. As such, it seems that resources are not efficiently used. Much capacity is devoted to either the need for re-checks of information or the production of unused intelligence products. Many interviewees doubt the effectiveness of the actions that are eventually taken.

6.2. Football & safety

6.2.1. Case description

For the Dutch police, football & safety is about maintaining public order during professional football matches. This encompasses two main phases: the planning phase and the execution phase. During the planning phase, the police discuss with other stakeholders (Public Prosecution service, municipality, football club, and the Royal Dutch Football Association (KNVB)) the required police capacity for a particular match day. During the execution phase which encompasses a match day, the police has the task of maintaining public order around the football stadium. Within the stadium the football club has the primary responsibility for the security, only when necessary will the police act within the stadium.

Two streams of information are of importance for the approach of football & safety. One stream is event information, such as historical data on previous matches, information about current competition conditions (e.g. league table standings), and information about recent developments within and between (rival) supporters groups. The other stream is information about individual supporter/hooligans (e.g. social network or their 'track record'. Both types of information are registered and stored in a system specifically designed for the organisation of football matches: VVS (Dutch: Voetbal Volg Systeem). In this system information about supporters and previous matches is stored, as well as the policy capacity that was deployed. An important source for information about risk supporters are covert informants. They provide information from inside the groups of supporters.

From the VVS system and other police systems (predominantly BHV), the operational decision makers derive the information necessary for the operational planning and executing activities. This is combined with information that is brought in by officers that are in the 'football unit'. (Dutch: voetbaleenheid). They know the supporters of the club in their area well and have much experience in

this field. Furthermore special analysts monitor social media for any irregular activities of (groups of) supporters. All the information is brought together as input for decision making.

From the event information, the historical information is used to assess a risk category to each match. An A-class means a low risk match, a B-class means a medium risk class, and a C-class means a high risk class. The police capacity increases with each class. Furthermore – for B and C matches – the supporters from the away team are obliged to make use of organised bus travel. As for all public order cases, the mayor of the respective city has the ultimate responsibility of these decisions. In this setting the police are the main advisor for the mayor.

Rotterdam

In this case study two police regions are observed. In Rotterdam there are four professional football clubs: Feyenoord, Sparta Rotterdam, Excelsior, and FC Dordrecht. Feyenoord is by far the biggest club of these three with a stadium capacity of 51.177 seats (as compared to Sparta Rotterdam (16.599), Excelsior (4.500), and FC Dordrecht (4.100)). Also, Feyenoord is known for the relative large amount of 'hooligans' among their fans. Therefore, most of the capacity of the Rotterdam police region goes to Feyenoord. The operational chief for each club is from a particular local police team (Dutch: basisteam). Furthermore, a so called 'Football Information Cell' (Cell) is enacted to support the operational football units. The Cell consists of four fulltime analysts that collect and analyse information and deliver intelligence reports to the operational teams. The analysts are two former employees of the intelligence department and two former operational officers.

Oost-Brabant

In Oost-Brabant football & safety is organised slightly different. In Oost-Brabant there are three professional football clubs PSV Eindhoven, Jong PSV (young PSV), Helmond Sport, and FC Eindhoven. In this region the operational chief is part of the regional unit instead of the local team. Therefore this operational chief is chief for all teams together. He is supported by an analyst and some assistants who undertake operational preparation tasks and assist the analyst.

6.2.2. Enablers

Linkage of data storage systems

In the football and safety case two data storage systems are of importance: VVS and BVH. All information that officers on the streets and around the stadium register is registered in BVH. VVS is the special system designed for the organisation of safety around football matches. These two systems are not linked. That means that every entry in BVH has to be re-entered or copied and pasted into VVS. This is time consuming and can lead to entry mistakes due to the manual transfer of data. This is considered a problem. This results in the fact that VVS is not always properly filled with up-to-date information about risk supporters. In Rotterdam the Football Information Cell is actively extracting the information from both systems into their reports, in order to obtain complete information. Furthermore, the municipality as no access to this system. This is problematic since the municipality is working closely together with the police, both in terms of organising the match as in the approach to hooligans. The municipality is therefore unable to obtain information or the share its information with the system to enrich the police's information. Both parties consider this problematic. It now requires manual effort and willingness to share this information.

Linkage of data systems

Observations	*Effects on ILP processes*
• VVS is an old, unlinked system	• Manual copying from VVS to other systems

	• Double entries

Centralisation

In both regions the football units have much independence in coordinating their tasks. The operational chiefs have full decision making authority over the operational capacity and actions during a match day. Furthermore, although officially the mayor of a city is in charge, the advice of the police is basically never altered or rejected. This is the case in both Rotterdam and Oost-Brabant. It seems that in both regions operational decision makers have almost full decision making authority. In Rotterdam an operational decision maker explains this relation: "Formally my chief is responsible, but he tells me 'I leave it to you, you fix it'. Once in a while we meet to discuss broadly how it is going" (confidential communication). The Football Information Cell in Rotterdam, consisting of the analysts, got a "carte blanche" from the chief of the regional unit. Formally, the chief of the Cell has to report to the chief of the unit, but the unit's chief provides the chief of the Cell with a large degree of decision making authority. "I have been given free reign" (confidential communication). This implies that the Cell members have a lot of autonomy over their collection and analysis tasks.

In Oost-Brabant, the analysts are part of the operational unit. The analysts and operational decision makers work in close collaboration, in fact they are working in the same room. Like in Rotterdam, the decision makers and analysts are provided a large degree of autonomy. They do not feel restrained in having to report to a higher chief. Both the decision maker and analyst emphasise that this is also a matter of culture. In their unit "hierarchy is not a strong aspect of our culture, instead we are all focused on a common goal, that of ensuring a safe football match" (confidential communication).

Centralisation

Observations	*Effects on ILP processes*
• Decision making is decentralised towards operational chiefs • Analysts in Rotterdam got carte blanche • Analysts in both units are closely involved in decision making	• Short cycles of intelligence supply • In Rotterdam the analysts are innovative and experimenting with new approaches

Formalisation

In both units the level of formalisation is considered low. None of the respondents have mentioned formalisation or related issues as a barrier or problematic factor in their work processes. They did not mention any cases in which they had too many restrictions due to their task descriptions, neither did they mention any cases in which they preferred more detailed task descriptions.

In both units, the coordination of the work between analysts and decision makers occurs in an informal setting. In Oost-Brabant the analysts are in the same room as the operational decision makers, allowing for close face-to-face contact. In Rotterdam, a similar coordination scheme is established between the analysts and decision makers where the analysts visit the decision makers regularly. Consequently, work processes are established naturally in both units.

Formalisation

Observations	*Effects on ILP processes*
• Formalisation is not considered a barrier • Routines determine the work processes	• No negative effects on ILP processes

Integration

In Oost-Brabant the analysts were literally positioned in the same room as the decision makers. This means that the analyst unit and decision maker unit are fully horizontally integrated into one unit. It allows for close cooperation. Both the analysts and decision makers appreciated these close working relationships. In Rotterdam the Cell is a separate unit. However, the analysts of the Cell work in close relationship with the operational decision makers of each club. Each analysts is dedicated to a specific operational football unit of a club. This is organised as such to ensure a personal relationship with that decision maker, as an analyst mentioned: "trust is everything" (confidential communication). Also the Cell is investing heavily in enlarging and maintaining its network. Informative presentations are held in various local teams, and community officers are regularly contacted to collect or share information.

Integration with external partners was found to be done through the sitting around the table on a weekly basis. This ensured close and trusted relationships between the partners.

Integration

Observations	*Effects on ILP processes*
• Close integration between analysts and decision makers in Rotterdam due to weekly meetings and assigned analysts • Integration of analysts and decision makers in in same room in O-Brabant. • Close integration between partners and decision makers	• Trust is established and information is shared easily • Latest insights can be shared quickly • Demands and supply of intelligence are constantly being aligned

Collaboration

From both regional units it became clear that collaboration is key for ILP. This is to be ensured both between analysts and operational decision makers as between the police and partners (the municipality, the public prosecution service, and the football club). In both units collaboration was actively realised.

In Oost-Brabant this is a relatively easy task as both the analysts and decision makers are part of the same unit and are physically working in the same room. Furthermore, collaboration is necessary for ensuring a proactive approach. In Oost-Brabant a so called 'think tank' is established during the preparation of a high risk match. In this think tank all information available is input for the development of operational scenarios. This allows decision makers to anticipate any special occurrences or incidents during a match, instead of being surprised by it. The think tank is a collaborative effort of operational decision makers, analysts, and partners in which all information is analysed by making use of the knowledge and experience of all involved.

In Rotterdam the analysts get together with the operational decision makers of the respective football unit once a week. Also with the municipality there is a regular meeting. During such meetings the available information and insights are shared and priorities for the collection of information and actions are set, even when there are no direct threats. This allows for a close alignment between information collection by police officers and the information demands of the analysts. In case the available information suggests that attention is to be given to certain people, the officers are encouraged to register information about these people. This in turn provides the analysts with more information, hence a better intelligence product. Due to these meetings, the Rotterdam police force is able to become more and more proactive. "We used to be very reactive, now we are able to 'get to the front of a fact', instead of acting after the fact" (confidential communication).

Collaboration

Observations	*Effects on ILP processes*
• In O-Brabant an think tank is established for special events in which partners take place • Analysts and decision makers work in same room • In Rotterdam close collaboration is established through regular meetings	• Sharing of information and insights between parties is quick • Close alignment between collection of information and needs for information

Trust

Both regions emphasise that personal relationships and mutual trust are of critical importance for ILP. Firstly, decision making based on intelligence requires trust in the quality (accuracy, timeliness) of the information and therefore it requires trust in the analysts and their capabilities. Operational decision makers often have a vast amount of experience and are inclined to base their decisions on their tacit knowledge and 'gut feeling'. Also, public maintenance tasks are all about preventing escalations. Therefore it is often easier for decision makers to deploy an overcapacity to make sure nothing happens. However, when decision making is based on intelligence, capacity should only be increased when information is available that justifies this need. It requires rational decision making which is sometimes conflicting with the risk averse attitude of decision makers.

Secondly, information is often obtained from trusted sources, sometimes from within supporters groups. The operational decision makers communicate with some supporters in order to obtain information or discuss their behaviour and actions. Decision makers can be hesitative to share this information within the police as it could hamper the mutual trust they have with their sources. As an operational decision maker states: "Trust is of great importance in 'football' [football & safety], it is about knowing and be known. This way you get to know more" (confidential communication). This implies also that information is not always shared within the entire police, but only within the trusted group of people. He admits that it is in fact strange that not everything is shared directly within the police, as "we are all colleagues" (confidential communication). However, he states that he would miss the "ins and outs" if his sources know he shares everything immediately.

For analysts to acquire the information that operational decision makers get from supporters and clubs, they have to be trusted by the decision makers. "This requires personal relationships. We invested heavily in these relationships. […] Now we see that our analysts are in WhatsApp groups of the operational football unit. That means that there is mutual trust which makes communication much easier" (analyst Rotterdam, confidential communication).

Trust

Observations	*Effects on ILP processes*
• Trust is high in small teams • Trust in intelligence is crucial for making risky decisions considering downscaling	• Sharing of sensitive information happens especially within teams, this is more difficult outside teams • When trust is established information sharing is enhanced

Incentive schemes

There are no monetary incentive schemes in place in both regions. This would, according to the experts, result in perverse incentives. However, informal rewards are of importance for analysts and decision makers. This is especially observed in Rotterdam. The Football Information Cell established a close feedback loop between the analysts and operational decision makers. They provide the

operational unit with feedback on their information collection and registration efforts. This means that officers get immediate feedback on registered information and receive compliments from the Cell when they have collected important information. “I oftentimes send compliments to community officers [Dutch: wijkagenten] when they registered information we could use. This way you probably get it again next time” (analyst Rotterdam, confidential communication). Also the Cell actively asks for feedback from the operational decision makers on the quality of their information products in order to improve them. As a result of this feedback loop, mutual recognition was established and the quality of the intelligence increased. As a result, the analysts are now able to steer the operational unit. “We are now sending them into the field with information collection tasks, they really enjoy that. […] Match day reports used to be very short, now we receive multiple pages” (analyst Rotterdam, confidential communication).

Incentive schemes

Observations	*Effects on ILP processes*
• Close feedback cycles established in Rotterdam • Actively complimenting good registration of information	• Continuous improvements are made • People take ownership over their work • Intelligence creation improves and is able to steer the operation

Management & leadership

In both Rotterdam and Oost-Brabant it was found that freedom to operate and to make decisions is crucial for ILP. Being able to collaborate between various units, and to enable officers to contribute to the common goal are mentioned as successful factors. This has implications for the managers. They should encourage professionalism amongst their employees. One operational decision maker mentions that when leadership is focused on exactly prescribing what everybody is ought to do, a reactive culture is likely to grow. Whereas a chief steers his subordinates based on why they have to do particular task, they are easier stimulated to become proactive. This results in better information registration and better actions. Hence, this proposition is not so much about proclaiming and publically supporting ILP, it is about leadership that enables employees to become proactive and participate in the reaching of objectives.

Management & leadership

Observations	*Effects on ILP processes*
• Operational decision maker in Oost-Brabant tries to leave professional freedom to officers	• Being provided a purpose for registration the registration of information improves.

Skills

The skills level of the officers have not been mentioned to be an inhibiting factor for ILP. Based on both regions, all people involved were adequately equipped for executing the tasks within the field of football & safety sufficiently. It is especially important how leadership makes use of these skills.

When looking at the type of required skills and knowledge it became clear that a mix of analytical capabilities and knowledge about the operations is valuable. In Rotterdam the analysts are of value because they have experience in the field of analysis, since two of the four members of the Cell come from the information unit, and the other analysts are former operational officers. A combination of these disciplines seems to be successful. The analysts with an analytical background are very skilled in doing analyses and search tasks, whereas the analysts with an operational background are valuable for

their ability to “speak the language of the street” (analyst Rotterdam, confidential communication). Also, they know what operational decision makers really demand, “They know the question behind the question” (analyst Rotterdam, confidential communication). This helps in interpreting information needs and shaping the intelligence products to these needs.

Skills

Observations	*Effects on ILP processes*
• Mix of analytical skills and operational knowledge is required • Talking the language of the street is important for analysts • Skills level is high enough for executing tasks	• Interpretation of information is smooth, less misunderstandings

Training and learning

This aspects has not come forward as an important aspect in the case study. They knowledge and skills required for ILP within the football & safety domain are of sufficient level and can be further improved on the job. As is proven in Rotterdam where the analysts brief and instruct the operational decision makers, and the operational decision maker in return provide feedback to the analysts. Establishing a feedback loop is thus an effective manner of increasing the quality of ILP. This combined with gaining experience appears in this case study to be enough to ensure sufficient skills amongst the people involved.

Skills

Observations	*Effects on ILP processes*
• Establishing feedback cycles leads to learning on the job • Current analytical skills are sufficient for doing the job	• Training does not hinder nor facilitate ILP in this case study Learning is done on the job

6.2.3. ILP outcome

For this case study it seems that Oost-Brabant is strongly able to make proactive decisions and therewith realise an efficient use of resources. Their motto is “maximal preparation, minimal execution”, which is a strong indicator of the purpose of their operations. Based on intelligence the operational decision makers draw up various scenarios. These scenarios are communicated downwards to the street officers. This means that all involved police personnel is prepared for various scenarios, hence they can *anticipate* various events and safety issues. Furthermore, when intelligence gives no indication of additional risks regardless of the ‘gut feeling’ of decision makers, the police deployment is scaled down. This indicates that decisions are truly based on intelligence and are rationally taken.

In Rotterdam the Football Information Cell is relatively new, however they are starting to realise proactive decision making. By constantly improving the information, and establishing communication channels, trusted relationships, and regular meetings to share intelligence, the quality of intelligence and the ILP processes increase rapidly. This is both recognised by the analysts as by the operational decision makers. They are shifting towards proactive decision making, whereas it used to be very reactive. An example of this proactive character is the fact that the control centre in Rotterdam is

informed prior to a match about the expected travel routes of visiting supporters from the away team. This allows the control centre to *anticipate* any increased amounts of traffic or incidents.

6.3. Case comparison

The case comparison of the findings on the enablers reveals large differences. Since the police tasks of both cases (maintaining public order and crime investigations) are inherently different, this might not be strange. ILP is an approach that can be applied to all police tasks it is theoretically legitimate to compare ILP over different tasks. However this can only be done with due consideration of the inherent differences between these police tasks and of the contextual differences between the cases.

6.3.1. Differences between cases

Scale

The scale of the two case studies differ greatly. Drugs crime is a topic that is dealt with by approximately 50 investigators in Oost-Brabant, whereas football & security in Oost-Brabant is dealt with by approximately 5 operational decision makers (and dozens of street officers, who are largely outside the scope of this research, apart from their role as registrars of information) (Politie, 2012a).

Environmental dynamics

The tasks executed within the football & safety case were to a large extent routines. For every match very similar processes take place and similar actions are undertaken. As such, the environment in which this case is embedded is considered very stable. Only in the case of special matches, such as international matches large adaptations might be necessary to the work processes. In the drugs case, the environment is far more dynamic. The criminal environment is developing fast and criminal networks are constantly emerging, changing and moving. New drugs are being introduced, new production methods are established, and new financing and money laundering practices are used. Due to it widespread scale and dynamics, drugs crime is problem that is difficult to fight and reduce.

Complexity of police task

Both cases entail complex police work, but given the amount and depth of the intelligence required the drugs case is considered more complex for the functioning of ILP. The environment is relatively stable for the football & safety case, but many aspects have to be organised properly. It takes place in an environment with multiple stakeholders (e.g. municipality, clubs, media, and supporters) which requires good stakeholder management. Furthermore the scale of the operations, in terms of amount of police personnel involved and amount of civilians attending the matches, requires great management and organisational skills. In the drugs crime case the police also has to collaborate with multiple stakeholders. Furthermore, investigational work on is considered a complex undertaking given analytical challenges that arise from analysing the vast amounts of data and information. There exists many links between criminals and between criminals and the society. Therefore interventions in this criminal environment can have many different (unintended) consequences and effects that are difficult to predict and account for. Furthermore, investigational work puts higher demands on the intelligence as this intelligence forms the input for eventually establishing proof for arresting criminals. In the case of maintaining public order, no proof has to be established as long as incidents are prevented which reduces the quality demands on the intelligence.

Investigation of criminal acts versus maintaining public order

Although both police tasks are considered complex, there exists inherent differences between the investigation of criminal acts and maintaining public order. The most prominent difference is that maintaining public order is completely focused on preventing problems to occur, whereas crime

investigational work is started after criminal acts have taken place. Maintaining public order could therefore be regarded as inherently proactive and criminal investigational work as reactive. However, proactive decision making is in this research defined as making decisions of which their effects on the safety of the society are anticipated. As such, when an investigation is started on a subject because it is, based on intelligence, anticipated that this is the best decision – as compared to other options – to reduce or prevent future crime, this decision can be considered proactive.

6.3.2. Comparing the findings

With these differences in mind, the cases do provide interesting insights into the organisational factors that affect the ILP processes. The following table summarises the findings in both case studies. In Appendix F a more detailed overview is provided of both case studies. As can be seen from the table, both cases have a distinctly different organisations in terms of structure, culture, technology and people. This section shows the differences between the two cases in a simplified manner. By contrasting these findings, with due consideration of the inherent differences in police tasks and their environment, lessons can be learned about organisational factors affecting ILP in general. The overarching findings on the propositions that are derived by comparing and contrasting these case studies are discussed in Chapter 7.

	Organised drugs crime O-Brabant & Central Unit		**Football & safety O-Brabant & Rotterdam**	
Enabler	**State of factor**	**Effect of state on ILP processes**	**State of factor**	**Effect of state on ILP processes**
Technology				
Linkage of data systems	Increasingly linked systems, but still manual transfer required. Lack of advanced analytical tools	-	Old system used, not linked to other systems. still manual transfer required	-
Structure				
Centralisation	High degree of centralisation towards tactical management	-	Low degree of centralisation	+
Formalisation	High degree of formalisation of tasks and control on output	-	Low degree of formalisation	+
Integration	Little integration between analysts and investigators. Varying level of integration with partners.	-	Close integration between analysts and decision makers and partners.	+
Culture				
Collaboration	Limited multi-disciplinary collaboration	-	Strong multi-disciplinary collaboration	+
Trust	Trust in integrity, low trust in capabilities	+/-	High level of trust, but in small group	+/-
Incentive schemes	No incentive schemes observed	-	Informal incentive scheme through personal feedback	+

Management and leadership	Focused on output performances and control	-	Common integral goal	+
People				
Skills	More advanced analytical capability required	-	Skills level sufficient (but requires lower level)	+/-
Training	Often not in place or inadequate	-	Learning on the job seems to be satisfactory.	n
Knowledge creation process				
Outcome of ILP				
Decision making based on intelligence	Often decision making is not based on intelligence from intelligence department, rather on information from within investigational unit		Analysts and intelligence are closely involved in decision making process	
Proactive decision making	Little proactive decision making due to shortage of good intelligence and lack of decision making based on intelligence.		In Eindhoven strongly able to be proactive. In Rotterdam this is quickly developing.	
Efficient use of resources	Wasted resources due to misalignments of intelligence need and supply. Effect of actions often not evaluated, hence efficiency is not monitored.		In Eindhoven it is the primary goal of operations. In Rotterdam this has yet to be integrated in decision making.	
Green (+) indicates that the state of the enabler has an overall positive influence on the ILP processes, Orange (+/-) that it has both positive and negative effects, and white(n) means that no effects have been observed.				

Figure 11: Case comparison

7. Findings on propositions

In Chapter 6 the state of the enablers within the case study settings were described and the effects of these enablers on the ILP processes were discussed within the case study setting. In the drugs crime case, most interviewees were rather negative about the functioning of ILP, whereas in the football and safety case most interviewees were extremely positive. This contrast provides insights for identifying enablers for ILP and for how they affect the functioning of the ILP processes. To this end also the expert interviews are used as input. As such this chapter deals with the third sub question of this research: *how do the enablers affect the functioning of ILP*?

The identification of the enablers and the findings on their effects on the ILP processes can help understand why ILP implementation efforts are often unsuccessful and could consequently be used as input for developing targeted strategies to improve ILP.

7.1. Technological factors affecting ILP

7.1.1. Proposition 1: Linkage of data storage systems positively affects the ILP processes.

The main technical factor that is studied in this research is the linkage of data storage systems. It was hypothesised that the linkage of data systems positively affects ILP. Both positive effects as negative effects of the linkage of data systems are found. Furthermore, other technological factors that affect ILP were identified: usability of systems, authorisation model, and advanced analytical tooling.

Linkage of data systems result in time savings, fewer errors, and (potentially) richer analyses

Where different data storage systems are not linked (e.g. BVH and summ-IT), operational personnel and analysts have to manually copy and paste data and information from one system to another system (which was especially observed in the drugs crime case). Also, they have to enter the same information multiple times in different systems (this was especially observed in the football & safety case). These handlings are very time consuming, can easily lead to errors, and are very demotivating for the personnel. Where systems are linked these problems are resolved.

Linkage of data systems can lead to an information overload

In both case studies it was found that, although various different systems are still not linked mutually, improvements have been made in the Dutch police organisation. Before the reorganisation of the Dutch police in 2013, the different units used data systems that were often not linked. Currently, the units use uniform data systems that allow for the linking of data and information between units. Consequently, more data and information than ever can be analysed and retrieved. This increases the potential for finding and analysing links between suspects, events, or other objects of interest to the police. However, the increased amount of data and information puts increased demands on the analytical capability of the police organisation. More advanced analytical tools are required, as well as higher analytical skills.

Advanced analytical tooling is required

Increased amounts and types of data and information make the analysis more complex. It requires analysis with advanced tooling, especially because this information is often unstructured (especially information from investigations). The current tools are considered outdated and far away from the state-of-the art level. Furthermore, access to new tooling is often restricted for security reasons, or hindered by slow and complex procurement procedures. This gives raise to the question to how a more efficient approach to acquiring and providing access to state-of-the art software can be established.

Authorisation systems hinder analysts

Lastly, the system that investigators use for storing investigation information is a too closed system. Analysts often have no access to this information which hinders their analytical work. The authorisation model is therefore hindering the creation of intelligence and is found to be a factor to be taken into account. Furthermore it was found that acquiring access to tools is difficult because of draconic access restrictions based on functions.

Usability

An additional factor that was mentioned by the interviewees was the *usability* of the systems. Where the usability was low (especially the case for summ-IT), analysts and investigators were hindered in registering and retrieving information and data. As a result the quality of the intelligence products is lower. Furthermore, it causes non-registration of information, or registration in 'unofficial' manners (e.g. MSWord files) which hampers analysts in return to retrieve this information.

Conclusion

The linkage of data systems has the potential to lead to time savings, better analyses and better intelligence. Consideration should be taken to the most important negative effect of the linkage of data systems: a risk of an information overload. It requires advanced analytical tools to deal with this amount of data. Additionally the factors usability and authorisation model were found to be affecting ILP. It was observed that getting access to state-of-the-art tools is difficult, which hinders the development of analytical capability and creation of intelligence.

7.2. Structural factors affecting ILP

The organisational structure was found to be an extremely dominant factor for the functioning of ILP. The cases observed in the case studies showed two very different structures for ILP. These findings are discussed below.

7.2.1. Proposition 2: Centralisation negatively affects the ILP processes.

In the case about drug crime it was found that a strong hierarchical structure seems to inhibit ILP. It is found that the resulting top-down flow of intelligence leads to the fragmentation of intelligence, which eats away capacity for investigators. Furthermore, the top-down flow of intelligence takes time due to the various levels and formalised stages it has to pass. This inherently means that the intelligence used for decision making at the top is often (out) dated intelligence. Furthermore, due to strict control on work processes by especially middle managers (tactical, and tactical/strategic mangers), investigators have little authority to change the course of their investigations, to establish new ways of working, or initiate collaborations with analysts or other investigation teams. Interestingly, many mentioned that common goals among the intelligence and investigational department were needed. Establishing common goals and working for this goal seems however to call for centralised decision making about such common goals.

The football case provides a different perspective on the structural factors affecting ILP. Decision making in the case of Football & Safety takes place on a lower hierarchical level. In this setting intelligence flows in a timely matter directly from analysts to decision makers that need the intelligence. Furthermore, analysts are closely involved in the operational decision making process which ensures a dominant role for the intelligence in the decision making process. Lastly, the analysts in Rotterdam are provided with almost full authority to establish new ways of working and new communication channels. This lead to the continuously improvement of intelligence products and decision making.

Conclusion

Based on the findings in both cases and by contrasting these findings, it can be concluded that centralisation hinders ILP and that decentralisation of decision making on the other hand enables ILP. Decentralisation allows for establishing new ways of collaboration and working processes. Furthermore, the distance between decision makers and analysts becomes shorter, which leads to a more timely and coherent intelligence supply. Given the difference in scale and dynamics in both cases, the applicability of decentralisation in larger, more dynamic and complex contexts than was observed in the football and security case requires attention, as coordination of work is likely to be more challenging in such contexts. One condition that was mentioned to make decentralised decision making successful is the establishment of, and compliance to a common goal. This requires a different type of management style which will be addressed in discussing the cultural factors.

7.2.2. Proposition 3: Formalisation negatively affects the ILP processes.

Formalisation of functional tasks and control on output performances have proven to be inhibiting factors to ILP. It reduces creativity and freedom to experiment with new approaches and methods. Investigational work and the creation of intelligence are creative processes in which a predefined outcome is difficult to establish (e.g. a new finding can change the course of an investigation, and new information can reveal new aspects worth analysing). Therefore a certain degree of creative freedom and experimentation is desired. Strict demarcations based on functional descriptions and control on predefined outputs make that creativity and collaboration is discouraged.

In the football case both the analysts and operational decision makers had a fairly large degree of freedom in task formalisation. For example, the Football Information Cell in Rotterdam got basically a ‘carte blanche’ for executing their tasks. This allowed them to become the ‘spider in the web’ between various departments and teams. They established a network and new methods, and influenced the traditional work processes by providing information that was not provided and known before. This allowed the decision makers to become more proactive and plan their resources better.

Conclusion

Based on the findings in both cases it can be concluded that formalisation of work processes and output performances hinders ILP. Where analysts and decision makers were given autonomy and flexibility to establish work processes, collaboration and creative initiatives were established. In these cases work processes and routines are established based on good practices and close feedback cycles.

7.2.3. Proposition 4: Integration positively affects the ILP processes.

In the drugs crime case there was almost no integration between the intelligence and investigations department. According to the interviewees, the work processes of analysts and investigators are largely similar as both collect and analyse information. As such, they could not indicate a clear border between where the work of the analyst ends and that of the investigator begins. The lack of integration

between the two departments creates an artificial boundary within these processes. As a result, it leads to misalignment of intelligence needs and supply. Investigators are unsatisfied with the quality of intelligence products, and analysts are unsatisfied with the little use that is made of their products. Especially at the tactical/operational level, there is hardly any integration.

Although many interviewees recognize this problem, efforts to better integrate and align work processes are only limitedly undertaken. One reason is the physical separation of intelligence and operational departments. Also, there are in both units simply too few analysts to be involved in all the tactical and operational operations. Another reason is that there is an abundance of work to do. As drugs crime is an enormous problem, investigators have always enough information to start a new investigation. The sense of urgency to collaborate with the intelligence department is therefore low. Lastly, managers are concerned with managing the capacity and goals of their own department, therewith hindering working on cross-departmental goals.

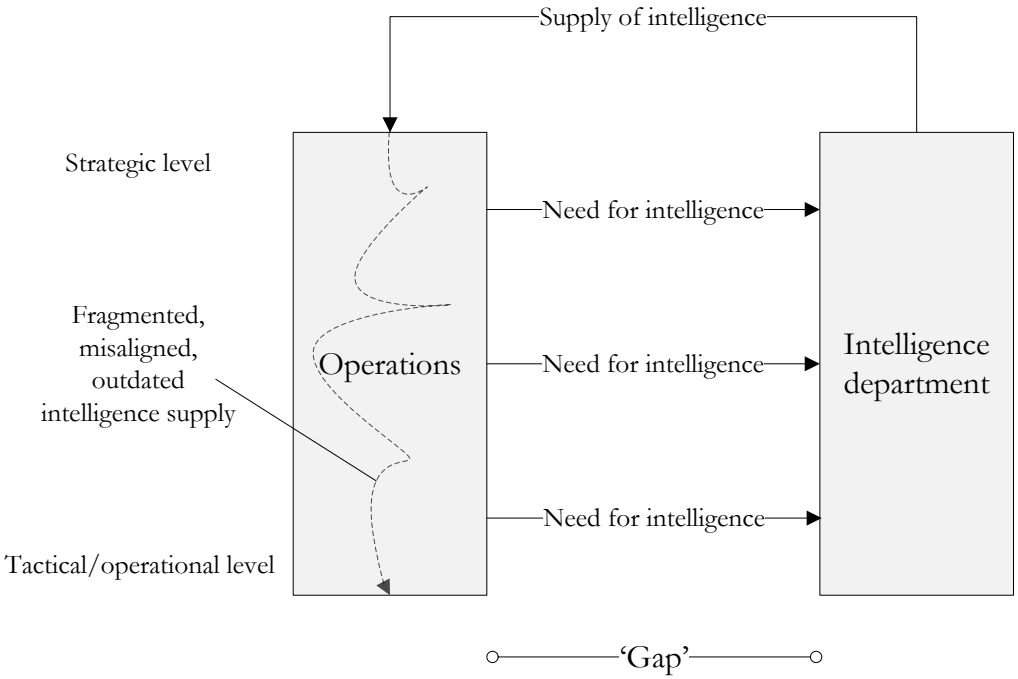

Figure 12: Structural gap

Figure 12 gives a schematic representation of the findings that have just been discussed. As can be seen there are two columns, the intelligence department and the investigational department. Information flows from the intelligence department to the top of the investigational department. There is little interaction at lower levels between the two departments even though there is a need for intelligence and analysts.

From the football and safety case it stems that integration of work processes between analysts and operational decision makers is enabling ILP. In this setting there is no structural gap identified. Perhaps due to the smaller scale of the tasks, small and closely collaborating multi-disciplinary teams are established. The intelligence unit is either fully integrated with the operational unit (Oost-Brabant) or investing heavily in close collaboration with the operational department (Rotterdam). The close working relationships allow for timely, efficient, and aligned supply of intelligence. Furthermore, it

allows for the continuous improvement of intelligence as direct feedback loops are established. Operational decision makers strongly recognised the added value of the intelligence unit, whereas in the drug crime case, investigators were very negative about the intelligence department.

Conclusion

By contrasting findings from both cases it can be concluded that integration between the intelligence department (analysts) and operational department (decision makers and investigators) strongly enables ILP. Integration enables close alignment between supply and demand of intelligence. Further it prevents department-specific goals to hinder collaboration, and facilitates the quick sharing of relevant information and contextual knowledge for the creation of intelligence.

As the rival explanations has brought forward in Chapter 4, integration risks that analysts are undervalued in multi-disciplinary teams, or that they cannot develop their specialised skills due to a lack of peers. This negative effect was however not observed in the football case, despite close integration. In Rotterdam this seems to be prevented by means of the Football Information Cell in which analysts come together to share experiences and develop their skills, while at the same time being flexible enough to closely collaborate and integrate with the operational units.

7.3. Cultural factors affecting ILP

By many interviewees remarks are made about the culture in the police organisation in general. The culture is often described as old fashioned, with a strong resistance to change. Innovation, creativity, entrepreneurship are values that are traditionally not promoted. Instead seniority, experience, 'old boys network' are terms that interviewees use to describe the culture in the Dutch police. In general, the interviewees, and especially the experts mention that for ILP to be successful, this culture needs to change. Four cultural aspects have been investigated in detail their effects on ILP will be discussed below.

7.3.1. Proposition 5: Collaboration positively affects the ILP processes.

Cross-disciplinary and cross-organisational collaboration is found to be an extremely important enabler of ILP. In the drugs crime case, especially collaboration between analysts and investigators was often mentioned as extremely problematic and it was often non-existent. In the football and safety case collaboration was mentioned as the prime contributor to the good functioning of ILP, both within the units as with external partners.

Sharing of contextual knowledge and establishing focus

In the drugs case it was observed that a lack of formal and informal collaboration hinders the sharing of *contextual knowledge* about ongoing operations (from the side of the decision makers) and analytical efforts (from the side of the analysts). The contextual knowledge is crucial for interpreting, weighing, and selecting information, and is crucial for aligning intelligence needs and supply. From the football and safety case it was observed that this improves the collection of information as a common focus helps to *select* relevant information. Also, collaboration provides analysts access to the *latest* information available in the operational teams that is not always stored in the systems or is hard to find in the systems.

Increased creativity

By collaboration between analysts, decision makers, street officers, and sometimes partners, creativity is encouraged and new approaches are developed. The combination of tactical/operational and analytical insights, skills, and knowledge enriches the quality of the intelligence products. It can even

lead to more action possibilities. An example of this is the collaboration of the tax service authority and the police in Oost-Brabant. Through collaboration with the tax authorities, criminal capital can be seized from drugs criminals, in addition to, or sometimes instead of the regular legal prosecution process.

Feedback cycle

Lastly, by collaboration a closed feedback cycle can be established, as was observed in the football and safety case. The usefulness of the intelligence product can be evaluated effectively and improved accordingly and the effects of actions can be evaluated for updating intelligence products. As such, an ongoing feedback loop can be established that can elevate the quality of intelligence. This feedback cycle was missing (and missed) in the drugs crime case. The feedback cycle results in increased awareness that registration of information is useful and increases the motivation for registering information.

Conclusion

Collaboration is found to be an essential enabler for ILP. In both cases this factor was brought forward as indispensable for the functioning of ILP, as it facilitates creating mutual understanding and focus, facilitates creative processes, and can generate a closed feedback loop. It is found that collaboration is limited when the organisational structure is not supportive and when managers do not actively encourage cross departmental collaboration.

7.3.2. Proposition 6: Trust positively affects the ILP processes.

On a personal level, trust in each other's integrity seems to be high among the people in both cases. Therefore this was not found to be a problematic factor for ILP. However, trust in the intelligence products and in the capabilities of the intelligence department is found to be low in the drugs case. When the perceived quality and reliability of intelligence products is low, decision makers loose trust the products and in the intelligence department's capabilities. This lack of trust in is detrimental for the willingness to use intelligence for decision making and the sharing of information to the analyst. In return, analysts loose trust in the willingness of operational decision makers to share information and to use the intelligence products: "I don't have the idea that they [investigators] really make use of our intelligence" (confidential communication). In the football case, the analysts and decision makers worked closely together. There the added value of intelligence was strongly acknowledged and operational officers actively gather and register information for the intelligence products.

Conclusion

Trust in colleague's integrity was not found to play a dominant role. However, trust in the quality of intelligence products, the capabilities of intelligence department, and in the willingness to use intelligence products are found to be important factors. It is therefore crucial to increase these levels of trust. It is found misalignments and a lack of collaboration leads to lower levels of trust. Therefore, ensuring collaboration could help to increase trust. Also higher skills of analysts for providing quality intelligence could positively affect the levels of trust.

7.3.3. Proposition 7: Reward schemes positively affect the ILP processes.

In both cases there are no official rewards schemes established that reward officers with monetary bonuses or other forms of extrinsic rewards. According to one of the experts this is a desired situation, as official rewards would easily result in perverse effects and undesired behaviour.

However, informal rewards, in terms of showing recognition and appreciation, is found to be an important enabler of ILP. This form of recognition is closely related to the previously mentioned feedback loop. Through this feedback loop, analysts can complement decision makers and street officers for registering and sharing relevant information. In the other way around, the decision makers can easily show their appreciation about the intelligence products to the analysts. This way mutual recognition is established and people are encouraged to execute the ILP processes better. The best example of this is found in Rotterdam, where the Cell actively compliments officers that register relevant information on match days and in their districts and provide feedback on what is done with this information in the creation of intelligence products. As a result, the registered input of information increased drastically.

Conclusion

ILP is often seen as an administrative burden because of the demands for the registration of information. Through actively providing positive feedback and compliments on such efforts, and showing the advantages of these efforts through the provision of better intelligence, ILP is positively affected. The feedback cycle is found to be an effective intrinsic reward scheme for ILP.

7.3.4. Proposition 8: Management and leadership positively affect the ILP processes.

Leadership is found to be paradoxical in the Dutch police. On the one hand the organisation is hierarchal and top-down oriented, in which managers attempt to impose large amounts of control over the work processes of their employees and the output performances. On the other hand, there seems to be a lack of accountability to ensure compliance to strategic, tactical, and operational goals.

In the drugs case, management and leadership was found to hinder ILP. Investigators and analysts were restricted in their autonomy to experiment and collaborate. Control on output performances, work processes, and functional demarcations further hinder ILP and is having a demotivating effect on the personnel. It was perceived that managers focused largely on departmental output performances and capacity management, instead of on effects that the police work has on the society. In the football and safety case, leadership was not so much an issue. These units were operating fairly independently within the police organisation and could design their own work processes. They were provided with a common focus 'ensuring public order and safety during football matches, while ensuring hospitality' and could operate to their own insights in order to reach that goal.

In the case studies and expert interviews two aspects of leadership come forward as important for enabling ILP. The first aspect is providing professional freedom and actively encouraging employees to experiment and collaborate across structural borders of the organisation. Especially for the increasing number of high skilled analysts and investigators having professional freedom is extremely important. From the drugs case and expert interviews it became clear that these people often leave the police soon, as they feel restricted in their ability to work to their full potential.

The second aspect is establishing and maintaining a clear common focus. Such a focus should be translated into outcome goals related to effects on the society (instead of on output goals such as the number of criminals caught and number of intelligence products made). However, from the drugs case it appears that where such goals are established – mostly on the strategic level – they are often not translated to the operations. This is also recognized by external partners of the police who complain about changing and instable foci of the police. It seems that managers at lower than strategic levels are not held accountable for translating these goals to their operations.

Conclusion

When management and leadership is focused on departmental-specific output performances (e.g. capacity, number of products made) and on strictly controlling work processes, it strongly hinders ILP. Providing professional freedom enables ILP, under the condition that common goals are established that are focused on achieving effects on the society. By establishing such common goals the professional freedom is directed. Translating these goals from a strategic level to the operational level is however found to be problematic. Accountability to achieving these goals is low for managers and should be ensured.

7.4. People factors affecting ILP

7.4.1. Proposition 9: Analytical skills positively affect the ILP processes.

The increased amount of available data and information, and the increasingly complex tools that are required for analyses demand for high skilled data analysts. Such analyst are crucial for leveraging the potential of data and information and also for *developing* new analysis tools and methods. Especially by the experts it is mentioned that high skilled analysts are able to make a great difference for the creation of intelligence.

Apart from advanced analytical skills for analysts, police officers at all levels need analytical skills for effectively collect, select, register, analyse and use data and information. This places increased demands on the overall educational level of the organisation. Many interviewees consider the progress made in increasing the average educational level as slow.

However, the interviewees emphasise that next to analytical skills, knowledge about the core operational police work is and will remain crucial for being valuable for ILP. Knowing what information is relevant, which questions should be asked to the analysis tools, and being able to interpret the information in the right context requires experience and knowledge about the core police work. Furthermore, by two experts it was mentioned that ILP is also enabled by lower level jobs as data collators and data registrars for ensuring good data collection and registration. They expect however that technological developments will eventually make these jobs obsolete.

Knowledge about privacy legislation and integral action possibilities

Knowledge about privacy legislation was in the drugs case found to be another crucial enabler for ILP. When this is not present or accessible in the organisation, people tend to get either too restrictive or too reckless with sharing intelligence (with partners). Also, authorisation models were designed based on faulty assumptions about this legislation, resulting in too many barriers for sharing.

The increased collaboration with external partners requires for knowledge about the action possibilities of these partners in order to collect and register the relevant information.

Conclusion

ILP increasingly requires people with (advanced) analytical skills. These skills allow for the quick analysis and interpretation of the increasing amounts of data and information. However these skills should always be combined with knowledge of the police operations in order to be valuable.

7.4.2. Proposition 10: Training positively affect the ILP processes.

Software tools are often provided without sufficient training. As a consequence time has to be invested in acquiring the required skills and systems are not used to their maximum capacity. Furthermore,

given the advancements of data analysis, advanced analytical skills can often not be acquired through training. This requires the external hiring of high skilled specialists.

Conclusion

New software is often not accompanied with training for using that software. Training is necessary to obtain the full potential from the systems. Advanced analytical skills can however often not be acquired through solely training. External hiring of highly educated specialist is therefore required. This brings up demands for the human resource management of the police organisation.

7.5. Towards an integrated framework

The findings have *identified* the enablers of ILP as observed in the case studies and expert interviews. Furthermore, it is presented *how* these enablers affect the functioning of ILP. These findings can help to target improvement measures for ILP at specific organisational enablers. In order to provide a cohesive structure and guidance for targeting improvement strategies, a framework is created: a maturity model. This model will be discussed in the next chapter.

8. Framework design: maturity model

The findings on the enablers for ILP as presented in Chapter 7 can help developing targeted strategies for the improvement of ILP. In order to provide structure and guidance to this effort, a maturity model is designed. The model is presented in Figure 13. The maturity model provides the answer to the fourth research question of this research: *How can the findings on these factors be used to design a framework for improving ILP in the Dutch police?*

8.1. Purpose and scope of maturity model

Maturity models are commonly applied for the as-is assessment of the current capabilities of an organisation with respect to given criteria, to derive and prioritize improvement measures, and to guide the progress (Pöppelbuß & Röglinger, 2011). A maturity model describes the development of capabilities – in this research the enablers of ILP – along a maturation path; from an 'infant'/underdeveloped stage to a 'mature'/optimised stage. They have been applied in various fields such as software development, project management, and knowledge management (Bruin et al., 2005; Pöppelbuß & Röglinger, 2011).

This research has identified organisational factors enabling ILP and has found how these factors affect the ILP processes. These findings could explain why ILP implementation efforts are oftentimes unsatisfactory in police organisations. By improving these enablers, the functioning of ILP can be improved. The maturity model is designed to be used as both a diagnostic tool of the 'as-is' situation regarding ILP as for providing a pathway for improvement, the 'to-be' situation. It is designed to be applicable to different organisational subsets such as the organisation as a whole, units, or departments. This allows for a broad applicability of the model, which is valuable given the large scale and great amount of organisational subsets of the Dutch Police. The target group for this maturity model is people that are concerned with or responsible for improving ILP within the police organisation, such as innovation managers, and strategic and tactical managers.

8.2. Design principles

The design of a maturity model is regarded as a design science research. Hence, the creation of a maturity model can benefit from following a structured design approach. To this end, the construction of the maturity model is guided by the maturity model design framework as established by De Bruin (2005). He distinguished five phases: *purpose, design of architecture, populate, validate, deploy,* and *maintain*. The first four phases are used for designing this model. As this model is not deployed yet, the last two phases will not be covered extensively. However, an outlook will be done on the applicability and usability in the deploy phase.

8.3. Architecture of the model

The architecture consists of two core elements of a maturity model: the dimensions and levels. The dimensions decompose the entity into several elements to account for the complexity in the domain

of research (Bruin et al., 2005). The dimensions for this maturity model are consistent with the categorisation of the enablers: technology, structure, culture, and people. Every dimension contains sub-components, being the individual enablers. The inclusion of sub-components is recommended for complex domains such as knowledge management or ILP as they enable an organization to gain in-depth understanding of their relative strengths and weaknesses to target specific improvement strategies (Bruin et al., 2005; Looy, 2014).

The levels describe the maturity level of the entity under investigation. In this research, ILP maturity is defined as the extent to which ILP enablers are in place and configured optimally for the functioning of ILP. The model is constructed of three levels:

- Level 0. This level is defined as the underdeveloped stage of ILP. In this stage the enablers are underdeveloped hindering the ILP processes. The organisation is not aware of the need for ILP. The most likely result is reactive policing.
- Level 1. In this level the awareness of the need to improve the enablers is largely present and initiatives such as pilots are undertaken to improve the enablers. In general reactive policing but in specific domains and projects proactive.
- Level 2: This level represents the ideal state of the enablers. In this level the enablers are optimally configured to enable the ILP processes. ILP is deeply integrated into the organisation and is continually improved upon. The result is a proactive or even predictively operating police.

8.4. Population of the model

The data used for the description of the various levels for each enabler are derived from the case studies and expert interviews. The description of the levels are formulated based on the findings in this research as presented in Chapter 0. The two cases provided problems and good practices which were valuable for determining and formulating different levels of maturity for each enabler. Furthermore, during the case study interviews and expert interviews, the interviewees were asked for all aspects that were discussed how they would see that aspect to be organised or designed ideally. This way, an ideal state could be determined and used as input for Level 2, even though this ideal state could not (yet) been observed in reality.

It is recommended to use other maturity models as a reference (Bruin et al., 2005). However, there are no maturity models for ILP found in literature[3] that could serve as references. A possibility is to use maturity models from the field of knowledge management as a reference. However, given the level of detail that is required in this stage of the research these models were found to show too few similarities with the findings of this research. For this reason the descriptions in the models are purely based on the data as obtained from the interviews. Given the limitations to the breadth of this data and the lack of reference models, it was chosen to construct three distinct levels instead of four or five levels that are often used for maturity models.

8.5. Assessment of the maturity model

The assessment of this model is based on an interactive approach in which the respondent is asked for each enabler what level best describes the state of that enabler. The respondent can select the level

[3] There is only one maturity model for ILP found in scholarly and grey literature, the model of Den Hengst (2012), but this model takes a different perspective on ILP maturity as its dimensions are ILP processes, whereas the maturity model of this research is based on the enablers.

from the maturity model that best fits his/her judgement about the concerning enabler. This way a maturity level is selected for each enabler. This approach allows for discussing why this level is chosen, and helps with identifying the exact problems that cause the enabler to be at a certain level.

The result obtained from applying the model can proof valuable on along three dimensions. First, the enablers provide a holistic overview on organisational factors required for the functioning of ILP. As a respondent might have been unaware of the importance of particular enablers this model helps to *identify* important organisational factors for ILP. Secondly, the user of the model can quickly identify which enablers in the concerning organisational unit are mature/optimised and which are still underdeveloped. Based on this insight, *priorities* can be determined for improving ILP. Thirdly, a *direction for the improvement* can be derived for each enabler to guide the improvement processes. The maturity model is presented in Figure 13.

8.6. Validation

In the validation phase, the model is tested for relevance and rigor (Bruin et al., 2005). In this research an expert review has been done to validate the model, which is a common method for maturity model validation (Bruin et al., 2005; Pöppelbuß & Röglinger, 2011). As the content of the maturity model is based on the findings as presented in the previous chapter, the validation of the maturity model serves also as the validation for the findings.

The expert is at the time of his review a member of an innovation team on Innovative Intelligence in the Dutch police, concerned with improving ILP. Before, he was a tactical manager (Dutch: Teamleider) in the intelligence department of the unit Oost-Brabant. He is therefore strongly familiar with both the ongoing practices with regard to ILP as well as with potential future possibilities and developments. He has assessed the following criteria during a three hour interview session.

Content validity

Content validity is about how complete the domain under investigation – ILP – is represented. To this end all enablers and their descriptions for each level have been carefully examined during the expert review. The expert found that the model's domains (technology, structure, culture, and people) represent the relevant areas of the organisation for ILP. In general the expert observed that all important aspects for ILP have been taken into account and that the model measures what it purports. Considering the descriptions of the enablers, some changes were proposed to either provide more detail to the descriptions or make to make some alternations in formulations. The exact changes that were proposed and made accordingly are documented in Appendix I.

Pilot assessment

Besides validating the model's elements and overall structure, the applicability was tested in a pilot assessment by the expert. The pilot assessment was executed in order to identify whether the model could provide sufficient detail and clarity for assessing the Dutch police organisation. During this pilot it was found that sometimes an enabler could be classified between two levels. This could give reason for establishing one or more extra levels in between two levels. However, as this was only the case for one enabler (skills). It was solved by splitting this enabler into two separate enablers: knowledge about privacy legislation and analytical skills. This way, both separated enablers could be classified into another level, therewith ensuring sufficient level of detail. The conclusion of the pilot assessment was that the amount of levels was sufficient for the purpose of the model and that the enablers provided sufficient level of detail to classify each of them.

8.7. Usability and applicability

The expert is directly involved in improving ILP within the Dutch Police and considers this model to be very helpful for this effort. He notes that the model could be very useful for identifying where the police organisation, or subsets thereof, are developed or underdeveloped with regard to ILP and where primarily improvement measures should be initiated. Furthermore, he mentions that the model could be used as a facilitator for discussions on the functioning of ILP. To this end he could imagine to use this model in meetings with ILP experts in order to structure discussions on setting priorities for improvement and discussing particular improvement measures. The model therefore seems to have successfully managed to meet its purpose. However, some notions should be taken into account when applying the model.

The model is especially suitable to police tasks for which complex analysis are required, such as the investigation of criminal acts and the fight and prevention of crime. Especially when regarding the technological enablers 'analytical tools', and the people enabler 'analytical skills', the descriptions in level 2 might describe a state that is more advanced than necessary for the execution or more simple police tasks such as simple law enforcement or maintaining public order.

The expert notes that the descriptions are especially suitable for people that have knowledge and insights about ILP on an organisational level. The descriptions are less suitable for operational personnel. To this end it could be valuable to create a second model that has more operationally oriented descriptions and assessment questions that help operational staff responding to the model. The current model is intentionally developed for tactical and strategic personnel that have overview of the organisational subsets under consideration. It falls outside the scope of this model to include an assessment tool for operational personnel. However, the inclusion of operational personnel in the assessment of the ILP enablers could provide very valuable insights. Therefore this argument is taken into account in the suggestions for future research.

Enabler	Level 0: unaware and underdeveloped	Level 1: aware and initiating	Level 2: optimising
Technology			
Linkage of data systems	Unlinked data/information systems and systems for analysis. Manual transfers often required. Risk of linkage blindness.	Linked storage systems, but not linked to systems for analysis. Risk of information overload.	Linked analysis- and storage systems. Use of open/external sources. Data/information is used optimally.
Usability of systems	Low usability and efficiency of data systems. Registration is strongly reduced. Workarounds in unofficial systems is are common practice.	Medium usability and efficiency of data systems. Reduced registration. Workarounds abundant, especially for complex tasks.	High usability and efficiency of data/information systems. Systems are not a hindering factor for registration. No workarounds.
Analytical tooling	Predominantly basic analytical tools (e.g. Excel) are used. Access to new tools is restricted.	Some advanced tools for analysing unstructured data are limitedly used. Access to new tools is time consuming.	Advanced and state-of-the art analytical tools for analysing unstructured big data are broadly accessible and used. New tools can be acquired efficiently.
Authorisation model	Authorisation model not in place.	Authorisation model in place but inert and ineffective (authorisations or restrictions for wrong persons).	Authorisation model is tailor made, flexible and effective.
Structure			
Centralisation	High degree of centralised decision making, no access to decision making process for analysts and lower level personnel. Little involvement of partners. Slow, fragmented flow of intelligence from intelligence department to operations.	Pilots are being held with largely autonomous teams provided with a specific task. In general decision making occurs without involvement of people from various levels.	Decentralised decision making. Involvement of different levels and disciplines (intelligence and operations) in decision making process and involvement of partners.
Formalisation	High degree of formalisation of functional descriptions and control on output performances. Little flexibility, slow adaptation to changes.	Pilots are being done with teams that are provided with professional freedom within the boundaries of a specific goal.	Standardisation of skills and professional freedom. Common focus established among intel and operations. Multi-disciplinary, flexible teams and processes.
Integration	Little to no integration of work processes of intelligence department and operational department. Little to no integration of work processes between police and partners. Physical separation of departments.	For certain specialised topics multi-disciplinary teams are established. Temporary multi-disciplinary projects are done. Integration with partners depends strongly on personal willingness and network. Several liaison officers to connect structures horizontally.	Work processes of intelligence department and operation are integrated, flexible and aligned over ILP processes and all levels. High degree of integration of work processes with partners.

Culture			
Collaboration	Collaboration happens only within structural demarcations. No sense of urgency and awareness to collaborate.	On a project basis collaboration is organised effectively, but not permanent. Potential for collaboration is acknowledged, but not institutionalised.	Multidisciplinary collaboration is standard. Through both virtual and face-to-face interactions (all SECI modes). Physical presence is ensured where required.
Management and leadership	Management focus on departmental goals, ILP processes are no priority. Cross-departmental or cross-organisational goals are not complied with. Awareness is for facilitating ILP is lacking. No provision of autonomy to high skilled employees.	Managers do not actively encourage ILP processes. Awareness about need for collaboration and a common focus, but not institutionalised yet. High skilled employees are provided with freedom in some specialised teams.	Managers promote and support ILP actively. Provision of professional freedom, within the frame of outcome goal (effect on society). Compliance goals and accountability is ensured. Provision of autonomy and inspiration to high skilled employees.
Trust	Trust in quality of intelligence, integrity, and willingness to use intelligence is low. Because of little interaction and collaboration and integration.	Trust is high among members of small teams. Outside small teams level of trust is low. Trust in capabilities of analysts and quality of intelligence is not high.	Cross-departmental trust in intelligence products, in the willingness to use the products, in integrity, and capabilities of analysts is established and maintained.
Incentive scheme (feedback cycle)	No extrinsic or intrinsic schemes to incentivise ILP processes. Perverse incentives due to counterproductive performance measurements.	In small teams feedback cycle is established. Feedback cycle does not cross structural borders. Limited shared celebration of success between intelligence dept. and operational dept.	Closed feedback cycles over ILP processes in all levels of the organisation. New measures for success of ILP are established. Shared celebration of success.
People			
Analytical skills	Overall low analytical skills. Overall education level is low.	Some high skilled analysts. Overall education level is low-medium.	Sufficient high skilled analysts. Overall education level is medium-high skilled.
Knowledge about privacy legislation and integral actions	No knowledge of privacy legislation and integral action possibilities.	Knowledge of privacy legislation and integral action possibilities at specialists. But specialists' knowledge level vary greatly. Much discussion and uncertainty. Other personnel has little such knowledge.	Detailed knowledge of privacy legislation and integral action possibilities at specialists. Accessible and communicated uniformly. Basic knowledge present for other personnel.
Training	No specific training on ILP in place	ILP related training integrated in standard training programs. Advanced trainings are mostly lacking.	Basic and advanced training available. New software tools are accompanied by trainings.
Outcome of ILP			
	Reactive policing. Decision making ad hoc, not based on intelligence. Low quality intelligence. Efficiency of resources not incorporated.	Reactive/proactive policing. Decision making based on intelligence. Limitedly proactive. Efficiency of resources not incorporated. Not yet applied on all levels (strategic, tactical, operational)	Decision making based on high quality intelligence. Proactive/predictive policing. Efficient use of resources. Applied on all levels.

Figure 13: ILP maturity mode

9. Conclusions and recommendations

9.1. Conclusion

Research on ILP suggests that for ILP to be successful it requires a broad range of organisational factors to be configured rightly. It seems that many police organisations have tried to implement ILP without due consideration of such organisation factors. However, knowledge is lacking about what these factors are, and how they affect ILP. This knowledge could explain why implementation efforts are often unsatisfactory and could be used to derive targeted strategies for the improvement of ILP. This research aimed to fill this knowledge gap by finding an answer to the following research question:

What organisational factors enable ILP, and how do these factors affect ILP in the Dutch police organisation?

Organisational factors affecting ILP

From the literature study, nine organisational factors were identified that served as starting point for identifying the organisational factors that enable ILP. These *enablers* are categorised into technological (*linkage of data systems*), structural (*centralisation, formalisation, integration*), cultural (*collaboration, trust, management and leadership, and incentive schemes*), and people factors (*skills* and *training*).

A multiple case study research was performed to examine whether these nine factors enable ILP, to identify additional factors that enable ILP, and to examine *how* the organisational factors affect ILP (sub question 3). Two police tasks have been studied: maintaining public order around football (soccer) matches, and the investigation of organised drugs crime. The execution of each tasks was observed in two units of the Dutch police. The most important findings will be discussed below:

Technological enablers

From the case studies the following technological enablers were identified that affect the functioning of ILP: linkage of data/information systems, analytical tools, usability, and authorisation model. It was found that the *linkage of data/information systems* provide potential for better creation of intelligence but that it should be accompanied with upgrading the *analytical tools* in order to prevent an information overload. The *usability* of the systems was found to positively affect the registration of information, as it prevents non-registration and workarounds in unofficial systems. An *authorisation model* that is ineffective (by providing or restricting access to tooling and data for the wrong persons) and inert (difficult to adjust to changing demands) was found to hinder the creation of intelligence. Technology cannot be regarded without considering the capabilities of the people that make use from it, the people enablers provide more insights to this aspect.

People enablers

Analytical skills, knowledge about privacy legislation, knowledge about integral action possibilities, and training were found to enable ILP. *Analytical skills* are increasingly important for the efficient collection

of information and creation of intelligence. The overall analytical level of the police organisation should therefore be higher than was required for traditional policing strategies. For analysing large amounts of (unstructured) data and working with advanced analytical tools, analysts require advanced analytical skills. In the absence of such skills, analysts struggle to provide added value to decision makers. *Training* is not always sufficient for obtaining these skills, therefore the hiring of highly educated specialists is necessary. It is found that training should accompany the implementation of new software in order to make optimal use of the software. Limited *knowledge about privacy legislation* leads to great uncertainties as to what the legal possibilities for information use and sharing are. Consequently, intelligence is unlawfully shared and used or not shared and used where this is in fact possible. *Knowledge about integral action possibilities* is required to facilitate collaborative actions with external partners. Without this knowledge, potential intelligence for such actions is not collected or created.

The technology and people are subject to the organisational structure, the influence of the structural factors are discussed next.

Structural enablers

Organisational structural factors were found to play an important role in facilitating or hindering collaboration. Decentralised decision making (as opposed to centralised decision making), including multiple disciplines enables ILP. Centralised decision making results in a fragmented, misaligned, and time consuming flow of intelligence towards lower organisational levels. Little formalisation of tasks (as opposed to strict functional demarcations and control on output performances) was found to enable ILP as it stimulates creativity, the development of new approaches, and cross-function collaboration. Integration between the intelligence and operational departments (as opposed to rigid 'columns' in the organisation) were further found to enable ILP. Work of analyst and decision makers often overlaps as both collect and analyse information. Imposing a structural border in between these work processes leads to misalignments of intelligence supply and needs. Especially the physical separation of the intelligence unit from the operations was found to impose a major barrier to the sharing and creation of intelligence.

The importance of structural factors give rise to the question what cultural factors affect ILP that could potentially work around structural barriers.

Cultural enablers

Four cultural factors have been identified to enable ILP: collaboration, management & leadership, trust, and incentive schemes. *Collaboration* through face-to-face interactions between analysts and operational decision makers, and partners was found to be one of the most important enabling factors for ILP. Through multi-disciplinary collaboration the supply and demand of intelligence can be aligned, knowledge can be shared easily, and creativity and innovation is facilitated. *Managers* have a crucial role in facilitating ILP. Managers enable ILP by providing professional freedom to employees for establishing new approaches, new communication channels, and collaboration. At the same time managers should provide employees with a clear focus, and accountability for the compliance to this focus should be established to prevent freewheeling. This focus should be a focus on achieving effects on the society instead of on departmental or administrative output performances (e.g. capacity management). *Trust* in the capabilities of the analysts and trust in the willingness to use intelligence was found to enable ILP as it directly affected the use and creation of intelligence. Creating a *closed feedback loop* between people involved in the ILP processes is an incentive scheme that strongly enables ILP. Through active feedback, complimenting, and the shared celebration success, continuous improvements can be achieved in the processes.

Maturity model

The identified enablers and their effects on the ILP processes provide insight into possible causes why the functioning of ILP is often unsuccessful. Where the enablers are underdeveloped or not configured rightly, the ILP processes are negatively affected and ILP is likely to produce an unsuccessful outcome.

In order for an organisation to be able to 1) *assess* to what extent the ILP enablers are in place and configured optimally for the functioning of ILP, 2) to *prioritise* improvement measures based on the relative maturity of each enabler, and 3) to provide a *direction for improvement* based on the desired/optimised state of each enabler, a maturity model is designed (sub question 4). Based on the maturity model, recommendations for improvement strategies can be derived for the Dutch police to optimise the enablers and therewith the functioning of ILP.

Resolving the problem statement

The problem statement that was at the basis for this research was the following: it is unclear *what* organisational factors enable ILP, *how* they exactly enable or hinder ILP, and how these factors should be configured in order to improve ILP in the Dutch police organisation. The answers presented above indicate that this problem statement has been resolved and that the objective of this research is met.

9.2. Recommendations for improving ILP in the Dutch Police

The maturity model provides a clear overview of the desired state for each enabler. It is designed to identify areas for improvement on the basis of which improvement measures can be prioritised and derived. However, the maturity model does not provide measures on *how* the optimised states can be arrived at. Therefore, this chapter provides recommendations for improvement measures that are derived from the findings and the maturity model. For each category of enablers (technology, structure, culture, and people) measures are derived to reach the desired state for these enablers.

9.2.1. Recommendations for optimising cultural enablers

Culture was by the interviewees perceived as the most important category of enablers. Therefore it will be discussed first. Improving these factors is likely to improve ILP, even before heavy investments in technology or human capital are done.

In order to bring these enablers (collaboration, management and leadership, trust, and incentive schemes) to the optimised level, various improvement measures are proposed.

1. ***Experiment with multi-disciplinary teams***

Collaboration was found to be a crucial enabler for ILP. The easiest way to ensure collaboration is simply to establish multi-disciplinary teams with a common goal. For example in the Central Unit initiatives are started with so called ‘clusters’. These clusters are multidisciplinary teams working on a specific topic. Such initiatives will generate lessons and best practices for future teams.

2. ***Dare to choose for a focus***

From the case studies and the analysis of the role of knowledge in intelligence creation, having a focus is found to be facilitating ILP. Having a common focus allows analysts and decision makers to build up knowledge about the matter at hand, and it provides an incentive for collaboration. That knowledge allows for more effective and efficient selection of information, intelligence creation, and time allocation. Analyst who have to work as generalists on multiple themes are not able to provide satisfactory in-depth intelligence as they lack knowledge. Assigning capacity to one theme inherently

means that it cannot be assigned to other themes. Therefore the choice for themes/problems should be clearly communicated internally and externally to partners to manage the expectations.

3. *Establish new measures of success*

In the optimised level, managers have shifted away from strictly controlling and prioritising their departmental output performances over common outcome goals. They advocate and establish cross-departmental and where possible, integral goals. These goals focus on effects on the society (outcome) instead of on output performances. To achieve this, measures of success need to be changed. For ILP, traditional measures as number of criminals caught, number of arrests, are often not suitable as these measures do not take into account the intelligence that has been created in the actions. A failed attempt for arresting a criminal in his house could for ILP still be successful if the gathered intelligence allows for more effective future actions.

4. *Ensure accountability*

Accountability for compliance to the goals (within the chosen focus) is crucial for realising these goals. Creating accountability is not a trivial task. Establishing a focus and outcome goals might in itself lead to more accountability as it stimulates the sense of ownership over the work (as was observed in the football and safety case). It intrinsically motivates police personnel if they feel that their work directly contributes to a safer society. The sense of ownership can be stimulated further by providing professional freedom. This way people are encouraged to initiate actions and be creative and inventive. Furthermore, accountability of managers could be improved by establishing new performance evaluation criteria and measures. Such criteria should be tailored to ILP principles. Another possible tactic is to create feedback loops, which will be discussed separately.

5. *Create closed feedback loops*

Closed feedback loops were found to improve the ILP processes continuously. It also helps with maintaining focus on the goal throughout the different processes (i.e. someone creating intelligence on a particular criminal group can ask street officers to look out for certain persons). Feedback loops facilitate accountability as feedback is provided on the work done. Feedback loops require mutual trust among the members, therefore social investments are likely to be necessary. Managers could facilitate and promote feedback loops by providing contexts for feedback, such as dedicated feedback meetings, WhatsApp groups, and by celebrating success with all people involved (also analysts, street officers and registrars of information).

6. *Educate managers*

Managers can be both the drivers as barriers to changing cultural factors. To enlarge the chance that managers advocate ILP and promote and facilitate it actively, the managers should be educated on the principles of ILP. They should know how their style of management affects ILP. Providing professional freedom, working with high skilled analysts, and making decisions based on intelligence require different approaches than traditional leadership in the police.

9.2.2. Recommendations for optimising structural enablers

The organisational structure can hinder ILP tremendously. Many recommendations mentioned above already help to work around or change ineffective structures (e.g. by establishing multidisciplinary teams, educate managers), but also two recommendations are done here.

7. Station analysts and decision makers at the same location

One very important structural barrier found is the physical separation of the intelligence department and operational department. When both are at a different location, face-to-face interactions and

collaboration are difficult to organise; whereas such interactions are crucial for (quickly) sharing intelligence (especially the knowledge part of intelligence).

8. Integrate work processes from in the preparation phase of investigations and creation of intelligence.

A lack of integration between the intelligence department and operations is found to strongly hinder ILP. It creates an artificial border between two overlapping work processes. In order to ensure alignment, integration should be established in the preparation phase of new intelligence and new operational actions to ensure alignment in later phases.

9.2.3. Recommendations for optimising technology enablers

In order to realise an optimised technological infrastructure, with regard to the linkage of systems, usability, analytical tools, and authorisation model, three improvement measures are derived.

9. Investments in the linkage of data systems should be accompanied by improved analytical tools and skills.

The linkage of data systems increases the risk for an information overload. In order to be able to process the increased amounts of data and information and to leverage its potential, advanced analytical tools are required. Therefore decisions regarding the linkage of data systems should only be made with due consideration of the level of analytical tools. When new links between existing systems are established or new data sources are used, the analytical tools should be upgraded accordingly. Consequently, with upgrading analytical tools the skills level of the users of these tools should be elevated. Therefore, training on these new tools should be provided.

10. Create a needs based instead of function based authorisation model

The authorisation model and strict functional demarcations hindered both analysts as operational personnel (especially investigators) to acquire new tools, use open data sources, or experiment with new approaches. It was found that the authorisation to the access of tools was based on the formalised function descriptions. However, these descriptions and authorisations often do not match to the needs in reality. Therefore an authorisation model should first regard the needs of employees instead of their functions (of course with due consideration of security issues).

11. Create fast and efficient procurement schemes

From the findings it was found that various analytical tools were recently implemented, but already considered outdated (especially summ-IT). Such tools are deployed uniformly over the organisation. The development and procurement of such systems takes usually a long time. Developments in software engineering are extremely fast-paced, the amount and types of data increase rapidly, and demands change fast (e.g. the emergence of cybercrime). Therefore, in order to be able to acquire state-of-the-art tools and to keep these tools updated, fast procurement schemes are required. For example, the placement of small orders could avoid the need for complex tender procedures. Also, decision making processes about the procurement of such tools should be speed up.

12. Stimulate innovation and in-house development of tools

Next to purchasing tools off-the-shelf, they could be developed in-house. High skilled software engineers within the organisation are able to develop tools that are tailor made for its purposes. To ensure fast development and implementation, short development cycles should be established within the organisation among skilled software engineers. Innovative efforts should be stimulated and facilitated by managers. This naturally requires high skilled software engineers/developers or data scientists. The hiring process is discussed next.

9.2.4. Recommendations for optimising people enablers

As was found in this research ILP requires higher analytical skills than former policing strategies and Analysts increasingly need advanced analytical skills (especially when they work in complex settings such as investigating organised crime or counter-terrorism). To achieve this two improvement measures are suggested recommended.

13. Evaluate and optimise current functions and requirements

Over the years, the demands for the analytical skills of analysts have changed rapidly. Also, many complaints have been raised about the intelligence department in the drugs crime case, pointing to a lack of quality. In order to reach and maintain at the optimised state for analytical skills, the current functions, requirements and people have to be evaluated. Requirements for operational and analytical functions should be critically evaluated. Because of the developments, existing functions might be outdated or requirements should be changed. Accordingly, the people positioning these functions might not meet the new requirements and might need to be replaced.

14. Evaluate and optimise human resource management

For meeting the increasing demands regarding analytical skills, the hiring process should be evaluated and optimised. It was found that advanced analytical skills can often not be acquired through training. It requires the external hiring of highly educated data analysts/scientists and software developers (especially when recommendation 3 as described above is followed). Hiring such people requires to offer attractive salaries, as they are highly demanded in other industries. These salaries might be justified that these salaries higher than those of line managers in the organisation. Also it requires different selection methods for applications and different forms of recruitment.

15. Institutionalise ongoing training programmes

Given the rapid developments and continuous upgrades of IT systems, trainings should closely follow these developments and should continuously be updated and provided. Also new methods of training could be considered such as YouTube video's or online learning.

10. Discussion and reflection

This chapter will discuss the results of this research. In 10.1, the findings in this research will be elaborated on by discussing the relevance of the research. Then the results (10.2) and the limitations (10.3) of this research are elaborated on and directions for future research are provided (10.4). Then, this chapter will reflect on a major assumption that is made in this research: that assumption that ILP requires knowledge management. Lastly, a personal reflection on the on the research processes is given.

10.1. Research relevance

10.1.1. Societal contributions

This study provides a broad insight into the problems that arise in the implementation of ILP in the Dutch police and potentially in other police organisations. The identification of the organisational factors and the development of the maturity model can serve as an important step towards eventually resolving these problems. The maturity model can be used to diagnose problems, prioritise interventions and derive targeted strategies for improving ILP in the Dutch Police and other police organisations. It can help to understand why ILP is more successful in certain organisations than in others. The recommendations that are provided in this research provide a starting point for these improvements.

Secondly, since 2013 the Dutch police is undergoing a major reorganisation. The reorganisation aimed amongst other objectives on the improvement of ILP. The assessment of organisational factors in this research contributes to the evaluation of this reorganisation. Most importantly, the findings indicated that the structural lay out of the units is hindering ILP in the context of fighting organised drugs crime. On the other hand, it seems that the reorganisation has resulted in better linked data systems. The findings in this research can be used to guide and prioritise the further steps in this reorganisation process.

Thirdly, the Dutch police considers ILP as an equivalent of Business Intelligence. This research provides evidence that that perspective is too narrow. Business Intelligence is especially about the creation of explicit knowledge, whereas this research shows the importance of managing tacit knowledge as well by providing contexts for the creation of tacit knowledge. Therefore this research can expand on the view of the Dutch police on ILP, which could lead to different priorities. In the past years, many investments have been done in IT technology. This research emphasises that face-to-face interactions, the 'human' side of ILP, are at least of equal importance and should be accounted for.

10.1.2. Scientific contributions

Firstly, there have been few empirical studies conducted on ILP. This study enlarges this body of literature by providing empirical findings on the implementation problems and improvement of ILP in

police organisations. Secondly, this study shows the applicability of knowledge management to the domain of ILP. The factors obtained from knowledge management provide a relevant and unique insight for explaining the state of implementation of ILP in a police organisation. It shows that evaluations of ILP not only focus on managing explicit knowledge but should regard mechanisms for creating both explicit and tacit knowledge. Thirdly, most qualitative studies on ILP take a narrow perspective, by focusing on singular factors of the organisation. This research applies a qualitative approach from a broad organisational perspective. This revealed relationships between the organisational factors, between organisational factors and ILP processes, and between organisational factors and the context/environment. Previous studies taking an organisation perspective on ILP were mostly of quantitative nature. This study can contribute to those findings by providing in-depth, relational, and contextual explanations to those findings as to how these factors affect ILP. Fourthly, this study has conceptualised ILP by separating processes, context, and outcome. This conceptualisation can help to increase the conceptual understanding of ILP, which is globally still considered in its infancy and is found in other studies to be a hindering factor to the adoption of ILP. Lastly, this study provides counter arguments for the theory describing ILP as a top-down policing approach. The findings indicate that the intelligence necessary for informed decision making resides largely at the operational and tactical levels of the police organisation, and that the transfer of such intelligence to the top level and back to the lower levels results in outdated and fragmented intelligence supply. Decentralised decision making at lower levels in the organisation seems to enable ILP as it allows for more creativity, innovation, and collaboration.

10.2. Discussion of results

10.2.1. Interrelations between structural factors

The structural factors that were observed (centralisation, formalisation, and integration) are to some extent interrelated. Interventions into one factor might lead to unintended consequences on the other factors; or interventions in one factor could prove more effective when other factors are taken changed as well. To provide an integrated analysis of these factors the framework of organisation structures by Mintzberg (1993) can be applied. This framework consist of many more factors than were included in this research. Therefore this analysis lacks sufficient empirical evidence to be presented as findings of this research. It does however provide some insights into the interrelations between the structural factors and it is therefore included in this discussion. The entire analysis can be found in Appendix I.

From the analysis it seems that ILP benefits from a structure that has characteristics of a professional bureaucracy and in some instances an adhocracy. A professional bureaucracy is an organisation that uses the standardisation of skills as the main coordinating mechanism and there is usually little control on output performances or action, and is decentralised. An adhocracy is characterised by the bringing together of professionals from multiple disciplines in order to enable a creative process to generate innovation and finding solutions for new problems. Decision making is decentralised, and mutual (informal) adjustment is the main coordination mechanism.

A professional bureaucratic structure is especially suitable for complex tasks in stable environments (such as the football & safety case). The adhocractic structure is especially suitable for complex tasks and dynamic environments (such as the drugs crime case) or for new units (such as the Info Cell in Rotterdam). A visual representation of the analysis of the interrelations between the structural factors is presented in Figure 14. Future research is necessary to study these interrelations in-depth.

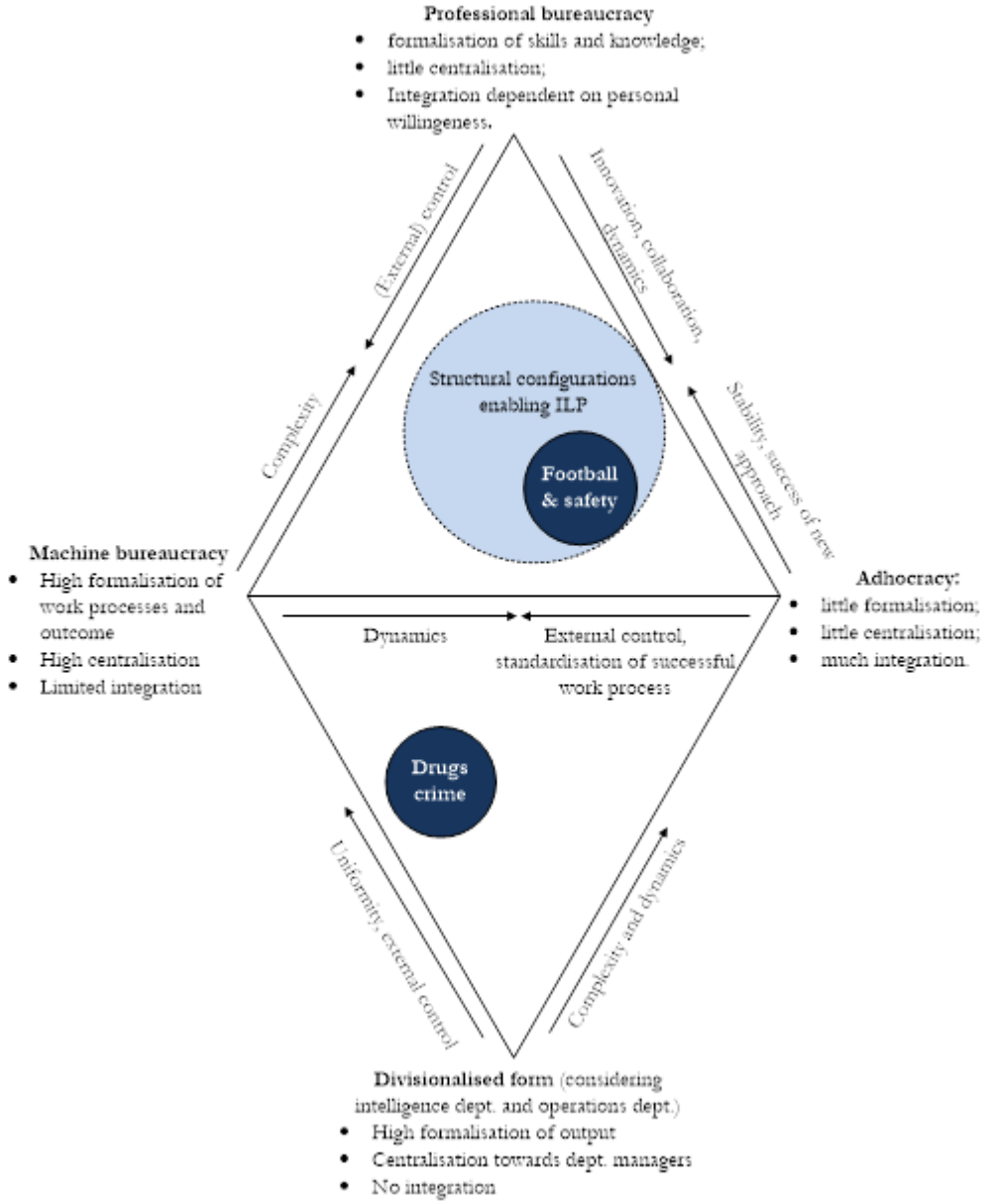

Figure 14: Interrelations between structural factors

10.2.2. Relative importance of the enablers

This research has identified enablers for ILP that were found by analysing expert interviews and case studies. As the objective of this research was to identify these enablers, it has not extensively dealt with the relative importance of these enablers. The interviewees were asked what they considered the most important factor. The answer to these questions were in the drugs case found to point towards the need for collaboration and integration between the intelligence department and investigational department. In the football and safety case these factors were mentioned as the most important reasons for the successful execution of the tasks.

The experts also emphasised the value of collaboration, and additionally mentioned the organisational culture and the role of leadership as most important factors. These responses tend to indicate that the police should already be able to realise a better functioning of ILP without investments in technological or human resources. Through changing the leadership culture and organising collaboration, benefits can be expected, regardless the skills level and technological infrastructure. When was asked to the

future state of ILP, technology and skills were more often mentioned as important enablers. This suggests that on the short term, culture and structure are important barriers to ILP, but that on the long term the technology and skills of people should be improved to face the future challenges. These responses are however inherently subjective. Empirical findings on which enablers are most influential for the successful functioning of ILP could provide more insight into the relative importance of these enablers.

10.2.3. Other influencing factors

Besides the factors that have been included in the scope of this study, some other contextual factors were of influence on the research findings. These will be elaborated upon here.

Perils of the reorganisation

The ongoing reorganisation of the Dutch police was found to still have an influence on the daily work. Uncertainties about positions and discontent about the reorganisation process could have caused a passive attitude among some employees towards initiating improvements. Also some vacancies are still not filled in, or people are assigned to positions that had not their preference. This could explain for example the lack of integration and collaboration between the intelligence department and investigations department that was found in both units in the drugs crime. Each department is still busy with organising the internal organisation which could explain the predominance of an intra-departmental focus. Furthermore, since the reorganisation the scale of the units has become larger and many police officers are still unhabituated to this larger organisation.

Political demands

Changing political demands and priorities can place a burden on the capacity of the police. When the government decides that the police should shift its focus (e.g. to counter-terrorism, the investigation of the MH-17 airplane crash, or cybercrime) the police are obliged to dedicate capacity to that specific topic. The build-up of expertise and intelligence on new topics requires often heavy investments and much time.

ILP capabilities of external partners

As mentioned in Chapter 3, the Dutch police is under dual authority. They are under authority of either the Mayor (e.g. for maintaining public order) or of the Public Prosecutor (for investigations). The ability, awareness, and willingness of these partners to work in coherence with ILP principles influences the possibilities of the police to do so. Where these partners are reluctant to share information or to base decision making on intelligence the police have limited influence to change this.

Media and societal pressure

Pressure from the society and media on the police can change the nature of the operations. For example in the football & safety case it was found that the high media attention caused risk averse behaviour. The media attention given to riots and incidents around football puts extra pressure on the shoulders of the analyst and decision makers. This makes them more hesitative to reduce the deployed capacity, even though intelligence provides sufficient foundations for doing so.

Financial resources and capacity

This research has not extensively analysed the extent to which financial resources and capacity of personnel was available. As this research focused on what enablers affect the ILP processes, these factors are left outside the scope as more capacity or more financial resources on itself do not actively affect these processes. However, they could be important (restricting) conditions for the extent to which the enablers can be improved. Investments in skilled people, technology, pilot projects all bring along costs. Regarding capacity this research has showed how certain enablers affect the efficient

allocation of capacity. For example, misalignment between work processes of the intelligence department and investigations department were found to waste capacity due to double work. During the case studies many remarks have been made about capacity. However, all interviewees emphasised that a lack of capacity was not the main reasons for problems regarding ILP. All mentioned that with the current capacity much better work could be delivered. For this reason this research has not made an in-depth analysis of the available and required capacity, it has tried to identify factors that could improve ILP without increasing the capacity in terms of quantity.

10.2.4. Continuous development of the maturity model

The maturity model has been designed on the basis of the findings in this research. Over time, more research will be conducted on ILP and new challenges for ILP will arise. New insights into ILP and new societal demands are likely to require changes to the model. Also, the model might be less suitable for particular organisational units or police tasks. This would require tailor made adaptions to the descriptions of the states of enablers. Therefore the model should not be regarded as a static instrument. Rather, the model should serve as input for discussions about the state of maturity of the enablers and there effects on ILP. When new knowledge or empirical insights are obtained this should be carefully evaluated and if necessary the model could be updated.

10.3. Limitations of the research

10.3.1. Generalisability

This research has conducted case studies on mainly two police tasks, being the investigation of organised drugs crime and maintaining public order around football matches. For the execution of other police tasks (e.g. law enforcement) these findings might be less suitable. Consideration of the differences between these tasks and settings should be ensured when transferring the findings of this research to other police tasks. This research has identified three differences that should be taken into account when interpreting the findings: the complexity of the police task, the dynamics in the environment, the scale of the unit under investigation.

Furthermore, this research is conducted in three of the eleven units. In other police units, the results findings might have been different, leading to other outcomes or organisational factors. Especially since the units have historically been very different. The generalisability of the findings is enlarged by contrasting the case studies with due consideration of the inherent differences. Also, it is increased by conducting expert interviews and an expert review, who were asked to reflect on ILP from an organisation wide perspective. Still it is recommended to conduct more research into the effects of the enablers and the applicability of the maturity model in other units and concerning other police tasks to enlarge the generalisability of this research.

As discussed before in this research, developments in digitalisations follow in a rapid pace. Therefore the applicability of these findings might be limited over time. The optimising level in the maturity model is based on future outlooks by ILP professionals and experts. These respondents were asked to reflect upon ILP by looking ten years ahead. Accounting for the fact that such long term outlooks are inherently uncertain, the model is expected to be accurate for about the next five years.

10.3.2. Methodological limitations

Per case study around eight people were interviewed (four in each separate unit). It is possible that these people do not have the sufficient knowledge to speak on behalf of their unit. More interviewees could have contributed to more robust results. Also it might have resulted in additional or different information as persons might have been biased or have an extreme opinion. The effects of biases are

reduced as much as possible by triangulation of findings, the use of rival hypotheses, and the open ended interview approach.

Secondly, as open ended interviews were undertaken, some interviews focused more on particular elements than other interviews. The course of the interviews was partly determined by what the interviewees regards as important for ILP and where they had most knowledge and insight about. As some aspects were considered more important than other aspects by all interviewees, some factors (e.g. training) received less attention in the interviews than other aspects (e.g. the structure and culture of the organisation).

Thirdly, case study research has the benefit of obtaining rich insights into the setting at hand, however, a limitation is that it considers a relatively small part of the entire organisation. A different method, such as a survey could obtain information from more units in the same time.

10.3.3. Theoretical limitations

Firstly, as was chosen to take a broad range of factors, additional factors within the categories (technology, structure, culture, and people) might have been missed. Some in-depth insights into these factors might have been missed in the constructing theoretical hypotheses and conducting the interviews. Each of these categories can be studied into more depth by specific instead of broad studies.

Secondly, the perspective of knowledge management was chosen as the basis for constructing the conceptual model. Other perspectives such as information management, big data analysis or business intelligence, could provide different and valuable insights. Especially in the required technological capabilities concerning analytical tools and data systems.

Thirdly, the selection of factors from literature on knowledge management provided this study with a structure for researching the case studies. However, these factors might have led to biases towards these factors. Other factors of importance might have been missed as a result. These biases are attempted to be reduced as much as possible by using an open ended interview structure in which the respondents were given open questions to what they experienced as important factors. Only when an entire category of enablers was not mentioned this was brought up in the interviews.

Fourthly, the choice for the RBV paradigm, which is considered an inside-out perspective on an organisation might have limited the focus on the environmental changes and capability to renew factors. To this end a dynamic capabilities perspective could provide more insight into the change capacity of the organisational resources.

Lastly, this study did not provide an extended weighing of the different factors. As such, the relative importance of the factors is hard to assess based on the findings in this research.

10.4. Recommendations for further research

Firstly, this research has identified enablers and explained how they affect ILP. As a next step it is recommended to conduct a quantitative research in order to assess the relative importance and significance of the influence of the identified factors on the ILP processes. This can provide further insights into what the explanatory power is of each enabler for the functioning of ILP. Furthermore, it could reveal interrelations between the enablers. For example a survey could be deployed among members of a unit or among members of different units.

Secondly, future research could deploy the maturity model as a benchmarking tool. This requires the development of a different assessment tool that is able to compare a large amount of responses. By executing such a benchmark, the police could identify the relative level of ILP maturity of specific organisational elements and units. As such stronger and weaker performing units can be identified and improvement efforts can be targeted. It could also provide insights into good practices considering the configuration of enablers and improvement strategies.

Thirdly, this study has taken a broad perspective on organisational factors. It is recommended to study the effects of the specific enablers on the ILP processes, as this allows for generating more in-depth insights. As an example: it could investigate what type and level of analytical skills are required for different functions.

Fourthly, this research has defined the outcome of ILP as a decision. Future research could attempt to measure the effects of ILP on the society; by including measures for the efficiency and effectivity of ILP. This might also help the next recommendation:

Fifthly, this research has stressed the need for using different measures of success. However, what these measures should look like and how they can be implemented and evaluated is not clear yet. Future research to the design and implementation of such measures is therefore recommended.

Sixthly, as this research provided recommendations for improvement, it is recommended to research what the effectiveness of these measures is. Also other improvement measures could be found by for example the gathering of best practices from other units, other police organisations, or even other institutions.

Lastly, it is recommended to repeat this research on other policing tasks and in other units to enlarge the generalisability of the findings. Especially for law enforcement it can prove valuable to conduct a similar study given the importance and challenges for ILP within this task domain. Such a study could identify additional or different factors that explain the functioning of ILP.

10.5. Reflection the assumption that ILP requires the management of knowledge

A major assumption that was taken in this research was that knowledge and knowledge management are required for ILP. In order to reflect upon the rigor of this assumption, a closer look at the role of knowledge in the process of intelligence creation is taken. This is done by regarding the intelligence that was used for decision making in the case studies, as well as the process of creating this intelligence. In every case study interview it was asked what intelligence and knowledge was used for decision making. Based on these responses, I can reflect upon the role of knowledge management.

10.5.1. SECI model

To analyse the nature of intelligence and the creation process, the model for knowledge creation of Nonaka et al. (2000) provides a helpful framework: the SECI model (Figure 15). This model for it is widely cited and applied on multiple industries and organisations (H. Lee & Choi, 2003; Scharmer, 2000). Also, it incorporates the creation of knowledge from an organisational perspective, which is in line with the perspective taken in this research.

According to Nonaka et al. (2000), knowledge is created in an organisation through the interactions between tacit knowledge and explicit knowledge. These interactions come in four modes: *socialisation* (converting tacit into new tacit knowledge through social interactions and shared experiences),

externalisation (articulating tacit knowledge into explicit knowledge through documents, images, conceptual models, etc.), *combination* (converting explicit knowledge into more systematic and complex explicit knowledge), and *internalisation* (embodying explicit knowledge into tacit knowledge by for example 'learning by doing', training programmes or by reading documents and analyses and reflecting upon them) (Nonaka & Toyama, 2003; Nonaka et al., 2000).

As mentioned in Chapter 3, knowledge is context-specific; in terms of time, place, and relationships with others. Therefore the creation of knowledge requires an 'enabling context' in which information is interpreted to become knowledge. Nonaka et al. (2000) describe this by the Japanese word 'ba'. They distinguish four types of ba's which correspond with the four types of knowledge creation. The *originating ba* facilitates the socialisation mode and is a common place in which individuals interact face-to-face to share tacit knowledge. The *dialoguing ba* offers the context for externalisation. It is a place where a collective of individuals articulate tacit knowledge (such as skills or mental models) into explicit knowledge (such as concepts and common terms) through collaboration and dialogue. The *systemising ba* offers the virtual place for the combination of explicit knowledge. Information technology such as databases and online networks offer this virtual space. The *exercising ba* provides the context for internalisation. Individuals embody explicit knowledge that is communicated through virtual media like written documents or training programs. Through action individuals embody this knowledge and convert it to their own tacit knowledge.

The modes of conversion form a spiral of knowledge creation (see **Error! Reference source not found.**)**Error! Reference source not found.**. Tacit and explicit knowledge is amplified through interactions. Ideally, the spiral becomes larger in scale, starting at the individual level and moving up through groups in the organisation and even across organisational borders (Nonaka et al., 2000).

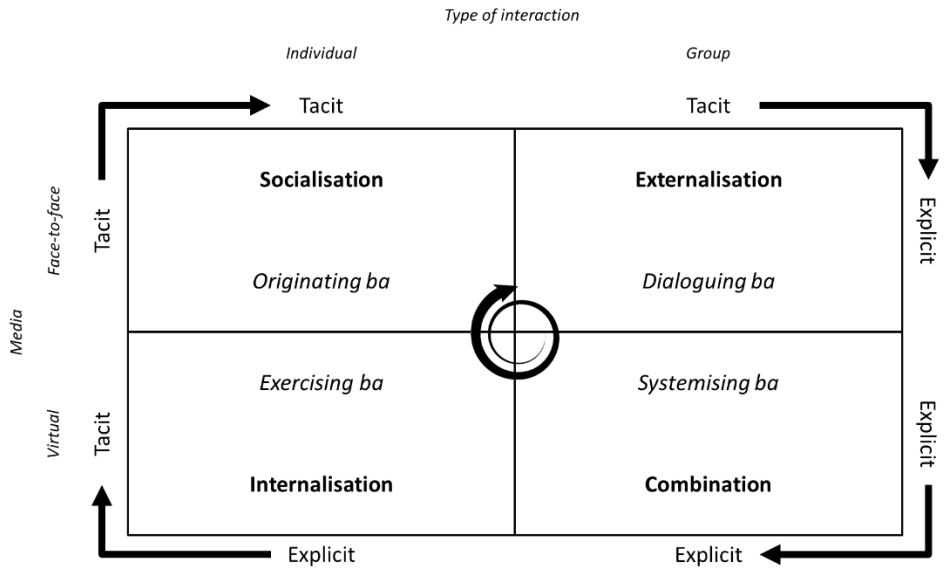

Figure 15: SECI model

10.5.2. Comparing the case studies

Appendix K provides the analysis with the SECI model of both cases, which are summarised here. In the drugs case, the processes of socialisation and externalisation did almost not take place among analysts and decision makers. Interactions take only place through virtual means by the exchange and combination of information through various data systems (combination) and the hand-over and interpretation of intelligence reports (internalisation). As socialisation and externalisation are lacking,

the ‘spiral’ of knowledge creation is broken. As a result, intelligence products are made without integrating tacit knowledge from the investigators.

In the football and safety case, socialisation and externalisation processes were strongly present. Through close collaboration and very regular one-on-one meetings between the analysts and decision makers the conversion of tacit to tacit knowledge (socialisation) was ensured (e.g. latest updates about behaviour of risk supporters, opinions about intelligence products, and even street ‘jargon’). Externalisation was facilitated by analysts by attending and involving in briefings and through giving presentations about the latest approaches and priorities to operational teams.

10.5.3. Conclusion

From comparing these findings it can be observed that all four modes of knowledge conversion seem to be required for the successful creation and use of intelligence. Without socialisation and externalisation, the intelligence products are likely to lack the contextual knowledge about the operation, the latest insights, a shared focus, and a shared understanding. Internalisation and combination are necessary for dealing with data and reporting intelligence to other people.

It seems that the ‘enabling contexts’ in which these four processes take place should be facilitated for the effective creation and use of intelligence. Where such contexts are not provide, for example by the physical separation of the intelligence and operation departments, these processes will likely not take place or be fruitful. This reflection strengthens the assumption that for the creation of intelligence and eventual use of intelligence, the conversion between both tacit and explicit knowledge is required and that the right contexts should be provided to enable these processes. Executing this effort is purely knowledge management (Nonaka et al., 2000).

10.6. Personal reflection on the research process

Literature

Before the start of this research, ILP was a completely new concept to me. As there was only a small body of research available, and definitions of ILP vary between different authors and countries, ILP proved to be a challenging concept to grasp. A lot of effort got into conceptualising ILP in a structured manner, in order to be able to scope the further efforts in my research. This conceptualisation resulted also in a change of scope. At the beginning of my research I had thought that Business Intelligence would be a suitable field of research for identifying factors for ILP. However, after the conceptualisation I realised that knowledge management might be a better option.

After having conceptualised ILP I needed to find an approach for identifying organisational factors. Finding the right theoretical angle was a process of long research. Once I got on the track of strategic management, and consequently RBV, I had found the right perspective that served the purpose of my research. The fact that I had no knowledge about the existence of these theories beforehand, it made the search for these theories sometimes feel like looking into the dark. However, once I had my theoretical perspective in place, it generated a lot of enthusiasm, as this provided me handholds to continue my research

Methodology

The decision for a case study research was largely made since this was one of the few options that was possible. As Berenschot had made arrangements with the police about which methods to use, I could not opt for other methods such as a survey. Looking back in hindsight this might actually have not been a problem, given the openness of the police organisation to researchers. However, at that time, my

colleagues at Berenschot and I did not know this. Conducting the interviews was the part that I enjoyed mostly, it allowed me to gain close insights into the police organisation and it learned me how incredibly complex and multifaceted this organisation is. Also it showed me how dedicated police officers are. Even though the reorganisation had some negative effects on people, they all kept working passionately to ensure the safety of the society. Their passion made the interviews very interesting and energising.

Interpretation

This research provides insights into factors that enable ILP in the Dutch police. Analysing the findings from the case studies proved to be difficult endeavour. The interviews resulted in a tremendous amount of information and it proved challenging to identify the relevant aspects of this information. Translating the findings on the enablers to useful improvement measures for the Dutch police was also a process that took long considerations. However, the eventual recommendations stem me satisfied and the reaction of the expert reviewing the model gave me confidence that these were relevant recommendations

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Appendices

A. Categorisation of barriers to ILP

The literature study on factors hindering the implementation and functioning of ILP has resulted in various *barriers.* The categorisation is performed in two steps:

1) Literature on ILP is assembled through search engines such as Mendeley, Google Scholar, Scopus and Science Direct. Only those studies are selected that studied police/law enforcement organisations that had already implemented ILP or are in the process of implementing ILP, because only these studies provide empirical insight into the problems that arise around ILP. The studies found have been summarised on the factors that were found.
2) The barriers found in these studies have been clustered. Each new factor was mapped in the serenity of the previously found factor that showed most resemblance. Halfway this process some categorised became visible. These categories were further substantiated by

Technological barriers	
Lack of analytical tools	(Cope, 2004; Ratcliffe, 2002)
No uniformity of systems for data storage and communication	(Sheptycki, 2004)
Incompatibility of data entry systems with reality	(Cope, 2004)
Inefficiency of data entry systems (time, # entries)	(Ratcliffe, 2005; Sheptycki, 2004)
Inferior data quality	(Cope, 2004)
Lack of information security	(Gibbs et al., 2015)
Analytical skills barriers	
Insufficient analytical skills analysts (training)	(Carter, 2016; Carter & Carter, 2009; Carter & Phillips, 2013; Chang, 2015; Cope, 2004; Darroch & Mazerolle, 2013; Gibbs et al., 2015; Ratcliffe, 2005; Sheptycki, 2004)
Limited articulation of coding process	(Cope, 2004)
No use of open sources	(Carter & Phillips, 2013)
Insufficient skills officers for working according to ILP (recording information/data entry and using information)	(Carter & Carter, 2009; Cope, 2004; Darroch & Mazerolle, 2013; Ratcliffe, 2005; Sheptycki, 2004)
Inferior quality intelligence products	(Carter & Phillips, 2013; Cope, 2004)
Lack of experience with ILP practices	(Gibbs et al., 2015)
Structural barriers	
Insufficient resources/budget for analytical activities	(Gibbs et al., 2015)

Insufficient chief executive commitment and support	(Carter, 2016; Carter & Phillips, 2013; Darroch & Mazerolle, 2013; Ratcliffe, 2005)
Lack of clear procedures, policies, standards, objectives and performance metrics (clear chains of command and areas of responsibility)	(Carter & Phillips, 2013; Darroch & Mazerolle, 2013; Gibbs et al., 2015; Ratcliffe, 2005)
No clear task/function description for analysts	(Carter & Phillips, 2013; Chang, 2015; Cope, 2004; Darroch & Mazerolle, 2013; Ratcliffe, 2011)
Unclear hierarchical position of analysts (hierarchy hinders analysts)	(Cope, 2004)
No conceptual clarity of ILP	(Chermak et al., 2013; Ratcliffe, 2005)
Lack of analytical capacity	(Carter & Phillips, 2013; Gibbs et al., 2015; Sheptycki, 2004)
Gap between data recording data and analysis/ closeness operation and information organisation	(Carter & Phillips, 2013; Sheptycki, 2004)
Bureaucratic boundaries between agencies due to job descriptions	(Sheptycki, 2004)
Terminology differences between organisations	(Sheptycki, 2004)
Lack of guidance for structure of intelligence units	(Cope, 2004; Darroch & Mazerolle, 2013)
No legal audit of ILP practices	(Carter & Phillips, 2013)
Organisational resistance	(Gibbs et al., 2015)
Lack of familiarity with ILP plan	(Carter & Phillips, 2013)
Cultural barriers	
No mutual recognition of value of knowledge (experiential knowledge of officers vs analyst knowledge)	(Cope, 2004; Sheptycki, 2004)
Lack of understanding of policing context by analysts	(Cope, 2004)
Lack of officers' understanding of potential of analyses	(Cope, 2004)
Power/prestige derived from withholding information	(Cope, 2004; Sheptycki, 2004)
Low status of analysts (feminine, evidence vs information, civilian grade vs officer grade)	(Cope, 2004; Sheptycki, 2004)
Limited connectivity between analysts and decision makers	(Ratcliffe, 2005)
Focus on evidence vs focus on information	(Cope, 2004; Sheptycki, 2004)
Clash with traditional policing	(Gibbs et al., 2015)
Performance management culture versus crime reduction culture	(Ratcliffe, 2005)

Table 2: Problem factors for ILP

The explorative studies that have been performed reveal factors that hinder the functioning of ILP. In this research I refer to these factors as 'barriers'. A literature review has identified factors that hinder the functioning and implementation of ILP. The factors are categorised in four categories: Technological factors, Analytical skills factors, Organisational factors and Cultural factors (see table above for the full list of factors).

The resulting selection of studies were eventually all academic resources. The grey literature that was found were mostly policy documents prescribing ILP practices, rather than evaluating them. For

evaluating studies, the academic papers proved to be more valuable. Eventually eleven studies were found that provided input for the identification of barriers to ILP. These barriers will be discussed briefly below.

Technological barriers

IT technology seems to play an important role for the successful functioning of ILP. Especially, the technological factors are related to data registration and data analysis. Data recording systems are often impractical in use, resulting in double entries and errors (Ratcliffe, 2005; Sheptycki, 2004). Another problem is that data recording systems do not allow for enough fine-grained inputs, resulting in oversimplified information (Cope, 2004).

Analytical skills barriers

Analytical skill, or a lack thereof is in many studies considered to be a major barrier for successful ILP. The skills are not only at the side of the analysts, also the decision makers need skills that enable them to interpret analyses and steer analysts towards making the right analyses. This results in inferior intelligence products and reduced use of intelligence in decision making (Carter, 2016; Carter & Carter, 2009; Carter & Phillips, 2013; Chang, 2015; Cope, 2004; Darroch & Mazerolle, 2013; Gibbs et al., 2015; Ratcliffe, 2005; Sheptycki, 2004).

Structural barriers

Many authors emphasise managerial support as an important facilitator for ILP implementation and functioning (Carter, 2016; Carter & Phillips, 2013; Darroch & Mazerolle, 2013; Ratcliffe, 2005). Another observation is the emphasis that various authors lay on the importance of clear policies, procedures and task descriptions (Carter & Phillips, 2013; Chang, 2015; Cope, 2004; Darroch & Mazerolle, 2013; Ratcliffe, 2011). This seems to be in line with a hierarchical nature of a police organisation and the presumed top-down approach necessary for strategy implementation in police organisations.

Cultural barriers

Culture seems to play a particularly strong role in police organisations. The difference in culture between analysts on the one hand and operational decision makers and officers on the other hand seem to impose a great barrier to the success of ILP. This seems to work out on several dimensions: conflicts over knowledge, conflicts over trust and acceptance, the power and prestige derived from knowledge and conflicts over the nature and objectives of policing (especially: Cope, 2004; Sheptycki, 2004)

B. Processes of ILP

Various authors have described processes of ILP. The following have been found and are used as reference for the selection of ILP processes in this research. The processes as described in the various models are visualised in the table blow. From these processes the four processes as used in this research are derived: collection, creation, use, and sharing of intelligence.

Author and/or model	*Processes*						
Intelligence cycle (IAEAI)	Planning	Collection	Collation	Evaluation	Analysis	Dissemination	Feedback
Cope (2004)	Acquisition	Analysing	Review	Actioning	Evaluation		
SARA model	Scan	Analyse	Respond	Assess			
4-i model (Ratcliffe, 2016)	Interpret	Influence	Impact	(Intent)			
Carter (2009)	Collection of information	Analysis of information	Creation of actionable intelligence	Integrating intelligence for strategic and tactical planning	Sharing of information		
NIM	Direction	Collection	Processing	Dissemination	Formal review		
Bell, Dean & Gottschalk (2010)	Acquire	Analysis	Assayed	Action			

C. Knowledge Management enablers

A literature study has been undertaken to identify knowledge management enablers and processes. The following table summarises most findings of this literature review, but this list is not exhaustive as other studies that are not in this table are also used.

Author	Enablers	Sub-elements	Processes	Performance	Method	Findings
Gold (2001)	Technology infra	Business intelligence technologies	Acquisition	Organisational effectiveness	Survey of 323 executives of KM activities	Causal path between capabilities and organisational effectiveness on all dimensions. These capabilities may imply that certain firms are predisposed for successful transformation.
		Collaboration technologies	Conversion			
		Distributed learning technologies	Application			
		Knowledge discovery technologies	Protection			
		Knowledge mapping technologies				
		Opportunity generation technologies				
	Structural infra	Formal organisational structures				
		Incentive systems for knowledge creation				
		Incentive systems for knowledge sharing				
	Cultural infra	(Stressing importance of) employee interaction				
		Corporate vision				
		Senior management support				
		Monitoring of knowledge				
Lee & Choi (2003)	Culture	Collaboration	Socialization	Organisational creativity (interm. outcome), Organisational performance	Survey among 426 listed Korean companies	
		Trust	Externalization			
		Learning	Combination			
	Structure	Centralisation	Internalization			
		Formalisation				
	People	T-shaped skills				

	Information Technology	IT support				
Allameh (2010)	Technology	Communication technologies	Creation	-	Survey among 156 employees	Findings show a significant relation between enabling factors and knowledge management. They support that improving enabling factors status in the organisation can be followed by the knowledge management processes improvement.
		Decision making technologies	Capture			
	Structure	Centralisation	Organisation			
		Formalisation	Storage			
	Culture	Collaboration	Dissemination			
		Trust	Application			
		Incentives				
Yeh et al. (2006)	Strategy & Leadership	Support of top management	-	Organisational effectiveness	Case study on two companies	For the strategy and leadership, corporate culture, people, and information technology enablers the important parts are respectively: top management support, the forming of a culture of sharing, training courses and channels of learning and incentive programs, the digitalization of the documents and the speedy search of knowledge for its re-use.
	People	Training				
		Channels of learning				
		Incentive program				
	Information Technology	Digitization of documents				
		Speedy search of knowledge				
	Corporate Culture	Culture of sharing				
Zheng et al. (2009)	Culture			Knowledge management & Org. effectiveness	A survey was among 301 organizations.	Knowledge management is not only an independent managerial practice, but also a central mechanism that leverages organisational cultural, structural, and strategic influence on organisational effectiveness.
	People					
	Structure					
Lee & Lee (2007)	People	T-shaped skills	Generating	Financial performance	Survey among 68 Korean firms (n=215)	This research presents strong evidence regarding the relationships among capabilities, processes, and performance of
	Structure	Centralisation	Accessing	Customer performance		
	Culture	Learning	Facilitating			
	Information Technology	IT support	Representing			
			Embedding			
			Usage			
			Transferring			

			Measuring			knowledge management.

D. Linking data to propositions

The following table shows schematically where the answers on the interviews can be placed. It does not mean that all the 'answer space' boxes need to be filled, only those relationships that are mentioned by the respondents will be described. Also, this is a conceptual representation, in fact the lay out and format of AtlasTi is used.

	Collection	Creation	Use	Sharing
Technology				
Linked communication systems	*Answer space*	*Answer space*	*Answer space*	*Answer space*
Linked data storage systems	*Answer space*	*Answer space*	*Answer space*	*Answer space*
Possible additional enabler	*Answer space*	*Answer space*	*Answer space*	*Answer space*
Structure				
Centralisation	*Answer space*	*Answer space*	*Answer space*	*Answer space*
Formalisation	*Answer space*	*Answer space*	*Answer space*	*Answer space*
Integration	*Answer space*	*Answer space*	*Answer space*	*Answer space*
Possible additional enabler	*Answer space*	*Answer space*	*Answer space*	*Answer space*
Culture				
Management support	*Answer space*	*Answer space*	*Answer space*	*Answer space*
Trust	*Answer space*	*Answer space*	*Answer space*	*Answer space*
Collaboration	*Answer space*	*Answer space*	*Answer space*	*Answer space*
Incentive schemes	*Answer space*	*Answer space*	*Answer space*	*Answer space*
Possible additional enabler	*Answer space*	*Answer space*	*Answer space*	*Answer space*
People				
Skills	*Answer space*	*Answer space*	*Answer space*	*Answer space*
Learning	*Answer space*	*Answer space*	*Answer space*	*Answer space*
Possible additional enabler	*Answer space*	*Answer space*	*Answer space*	*Answer space*

Table 3: Relationships enablers and processes

The scheme below helps with explicating the difference between tacit and explicit knowledge and the creation of this knowledge. The following table shows the format for documenting this. For purpose 4 a simple open box will be used to document this answer.

Type of knowledge & intelligence		**Tacit**	**Explicit**
		Answer Q1	*Answer Q1*
Generation of knowledge	**From - To**	**Tacit knowledge**	**Explicit knowledge**
	Tacit knowledge	Socialization	Internalization
		Answer Q 2-4	*Answer Q 2-4*
	Explicit knowledge	Externalization	Combination
		Answer Q 2-4	*Answer Q 2-4*

Table 4: Type and creation of knowledge/intelligence

E. Interview questions

Interview questions for expert interviews

Introduction	
	• Introduction about research and purpose of interview
State of ILP	

	• In hoeverre wordt binnen de Nederlandse politie informatiegestuurd gewerkt (geef definitie van IGP)
	  ○ Outcome: In hoeverre wordt preventief en proactief geopereerd? In hoeverre speelt informatie/kennis hierin een rol?
	  ○ Proces: in hoeverre is sprake van een gesloten intelligence cyclus van verzamelen – analyseren – sturen – evalueren?

Enablers – General	
	• Wat zijn de voornaamste factoren die informatiegestuurd werken verhinderen? • Wat is er in de politieorganisatie nodig om in staat te informatiegestuurd te kunnen werken?
Enablers – Technology	
General	• Welke systemen voor het opslaan van data, informatie en kennis zijn er gebruikt? • In hoeverre draagt de technologische infrastructuur (data opslag systemen en communicatie systemen) bij aan, of blokkeert deze informatiegestuurd werken? • Hoe ziet deze er idealiter uit?
Linkage – internal	• In hoeverre zijn de verschillende informatiesystemen gekoppeld geïntegreerd binnen de politieorganisatie? Waarom in zoverre?
Linkage - external	• In hoeverre zijn de verschillende informatiesystemen gekoppeld tussen de politieorganisatie en partners? Waarom in zoverre?
Enablers - Structure	
General	• Hoe is de organisatiestructuur vormgegeven binnen de aanpak Voetbal en Veiligheid / aanpak drugs • In hoeverre draagt de structuur van de organisatie (formele afdelingen, functieverdelingen, procedures) bij aan informatiegestuurd werken en waarom? • Hoe zit deze er idealiter uit?
Centralisation	• In hoeverre is de organisatie gecentraliseerd? Waarom draagt dit bij aan, of werkt dit informatiegestuurd werken tegen? Centralisatie = het hiërarchische niveau dat de autoriteit heeft voor het maken van beslissingen in de organisatie.
Formalisation	• In hoeverre is sprake van standaard procedures en strikte regels omtrent het werken? Waarom draagt dit bij aan, of werkt dit informatiegestuurd werken tegen?

Integration – external	• In hoeverre zijn de verschillende organisatieonderdelen en personen die een rol spelen binnen de aanpak structureel geïntegreerd (b.v. door een taskforce, liaison of samenwerkingsverband)? Waarom draagt dit bij aan, of werkt dit informatiegestuurd werken tegen?
Integration – internal	• In hoeverre zijn de verschillende organisaties die een rol spelen binnen de aanpak geïntegreerd (b.v. door een taskforce, liaison of samenwerkingsverband)? Waarom draagt dit bij aan, of werkt dit informatiegestuurd werken tegen?
Enablers – Culture	
General	• Hoe zou je de organisatiecultuur binnen de politie beschrijven? • In hoeverre draagt de cultuur in de politieorganisatie bij aan, of werkt deze informatiegestuurd werken tegen? • Welke karakteristieken heeft een ideale organisatiecultuur voor informatiegestuurd werken?

Trust	• In hoeverre speelt vertrouwen tussen personen een rol binnen informatiegestuurd werken?
	  ○ Tussen welke personen is dit vooral belangrijk?
	  ○ Wanneer merkt u dat vertrouwen belangrijk is?

Collaboration	• In hoeverre is sprake van samenwerking tussen verschillende personen en afdelingen binnen de organisatie? Is dit voldoende? Waarom wel, waarom niet?
Management support	• In hoeverre is er sprake van management support voor informatiegestuurd werken? • Wordt hier expliciet op gestuurd?
Incentive scheme	• Wordt er voldoende kennis en informatie gedeeld? • In hoeverre wordt het delen van kennis en informatie gestimuleerd en beloond in de organisatie? • Wat staat het delen van kennis en informatie in de weg?
Enablers – People	
Skills	• Welke kwaliteiten zijn nodig om informatiegestuurd te werken? • In hoeverre beschikken de mensen in de organisatie deze kwaliteiten? Waarom wel, niet?
Training	• In hoeverre is er sprake van training op het gebied van informatiegestuurd werken? Zo niet, op welke aspecten zou dit nodig zijn?
Check ex post	
	• (Zorg dat alle factoren zijn langsgelopen) Zijn er naast de zaken die we nu hebben besproken nog andere belangrijke factoren die nodig zijn om goed informatiegestuurd te werken binnen de politieorganisatie? • Welke van de besproken factoren vindt u het belangrijkst?
Future developments	
	• Welke ontwikkelingen ziet u aankomen die het politiewerk beïnvloeden en in hoeverre beïnvloed dit informatiegestuurd werken? • Wat is er nodig om in de toekomst de politie in staat te stellen (beter) informatiegestuurd te werken? • Welke risico's ziet u in de toekomst op het gebied van informatiegestuurd werken?

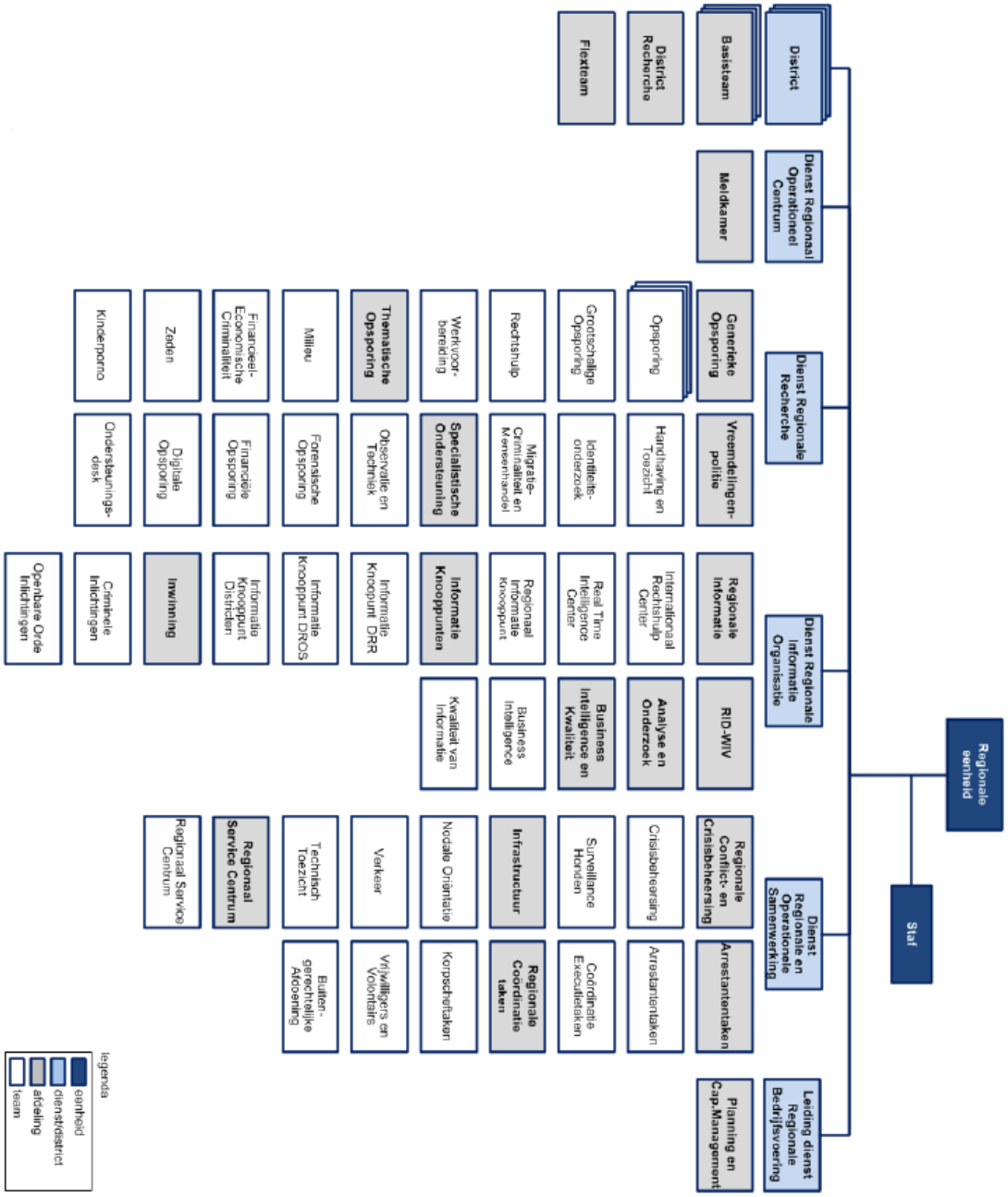
Interview questions for case study interviews

Introduction	
Introduceer onderzoek en context	
Intelligence/knowledge	
Type Creation Desired state	• Binnen de aanpak van Voetbal & Veiligheid / drugscriminaliteit, welke acties of beslissingen bent u verantwoordelijk voor ? Wat is uw taak? • Binnen de aanpak van Voetbal & Veiligheid / drugscriminaliteit, welke informatie/kennis is leidend voor de te ondernemen acties en te nemen beslissingen? • Hoe komt deze kennis tot stand? Waar komt het tot stand? Waar gaat het heen? (Knowledge generation – SECI) • Welk type kennis/informatie is nodig om de aanpak te verbeteren? • Hoe moet dit worden gecreëerd en vastgelegd in de toekomst?
State of ILP	
	• In hoeverre wordt binnen de aanpak voetbal & veiligheid / drugscriminaliteit informatiegestuurd gewerkt (geef definitie van IGP) • Outcome: In hoeverre wordt preventief en proactief geopereerd? In hoeverre speelt informatie/kennis hierin een rol? • Proces: in hoeverre is sprake van een gesloten intelligence cyclus van verzamelen – analyseren – sturen – evalueren?
Problems	
Current problems Future state	• Wat zijn de voornaamste factoren die informatiegestuurd werken verhinderen? • Wat is er in de politieorganisatie nodig om in staat te zijn binnen de aanpak voetbal & veiligheid / drugscriminaliteit informatiegestuurd te kunnen werken?
Enablers – Technology	
Current state Problems Future state	• Welke systemen voor het opslaan van data, informatie en kennis zijn er gebruikt? • In hoeverre draagt de technologische infrastructuur (data opslag systemen en communicatie systemen) bij aan, of blokkeert deze informatiegestuurd werken? ○ (link tussen system) • Hoe ziet deze er idealiter uit?
Enablers - Structure	
Current state Problems Future state	• Hoe is de organisatiestructuur vormgegeven binnen de aanpak Voetbal en Veiligheid / aanpak drugs • In hoeverre draagt de structuur van de organisatie (formele afdelingen, functieverdelingen, procedures) bij aan informatiegestuurd werken en waarom? ○ Ga indien nodig in op centralisatie, formalisatie, integratie (intern, extern) • Hoe zit deze er idealiter uit?
Enablers – Culture	
Current state Problems Future state	• Hoe zou je de organisatiecultuur binnen de politie beschrijven? • In hoeverre draagt de cultuur in de politieorganisatie bij aan, of werkt deze informatiegestuurd werken tegen? ○ Ga indien nodig specifiek in op trust, collaboration, management of incentives • Welke karakteristieken heeft een ideale organisatiecultuur voor informatiegestuurd werken?

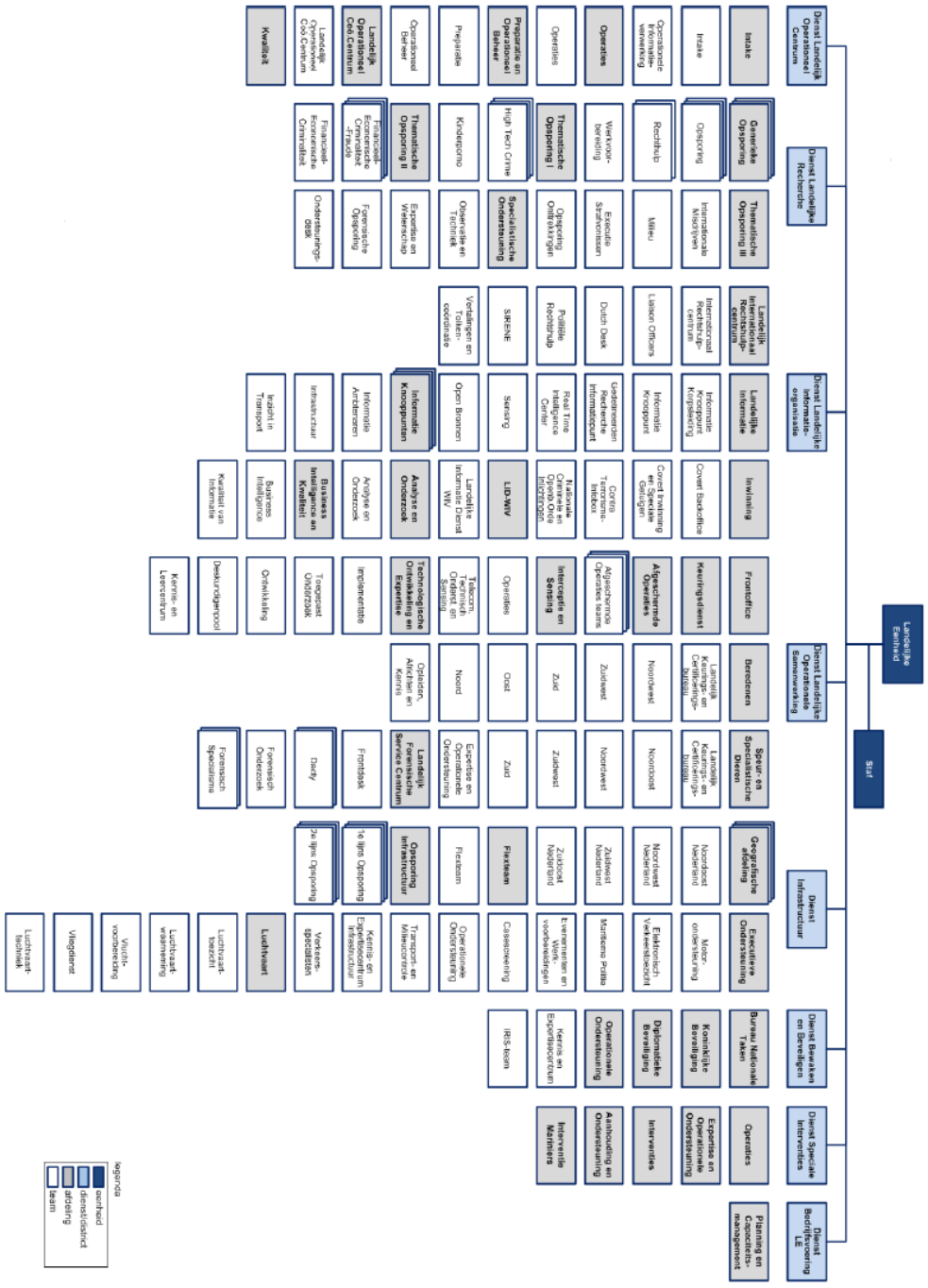
Enablers – People	
Current state Problems Future state	• Welke kwaliteiten zijn nodig om informatiegestuurd te werken? • In hoeverre beschikken de mensen binnen de aanpak van drugscriminaliteit/voetbal en veiligheid over voldoende kwaliteiten? Waarom wel, niet? • In hoeverre is er sprake van training op het gebied van informatiegestuurd werken? Zo niet, op welke aspecten zou dit nodig zijn? • Welke skills zijn er idealiter nodig?
Check ex post	
	• Zijn er naast de zaken die we nu hebben besproken nog andere belangrijke factoren die nodig zijn om goed informatiegestuurd te werken binnen de politieorganisatie? • Welke van de besproken factoren vindt u het belangrijkst?
Future developments	
	• Welke ontwikkelingen ziet u aankomen die het politiewerk beïnvloeden en in hoeverre beïnvloed dit informatiegestuurd werken? • Wat is er nodig om in de toekomst de politie in staat te stellen (beter) informatiegestuurd te werken? • Welke risico's ziet u in de toekomst op het gebied van informatiegestuurd werken?

F. Organogram Regional Unit and Central Unit

Regional Unit:



Central Unit:



G. Schematic overview of case study analysis

This appendix presents how the findings in the case studies have been collected and registered. As was introduced in Chapter 5, the enablers and their effects on the ILP processes are observed. The following tables present the findings on the enablers and their effects on the ILP processes.

Case comparison

Enabler	Drug crime Oost-Brabant & Central Unit	Football & safety Oost-Brabant & Rotterdam
Technology	Main findings	Main findings
1. Linkage of data systems	• No linkage of summ-IT and BVH • Obtaining information from sum-IT is problematic. Not structured, and various formats (including pdf files). • Analysts lack tooling to analyse unstructured data and lack access to open sources • Over protection of investigations	• No linkage of VVS and BVH, • Double manual entries of information are required
Structure		
2. Centralisation	• Little authority in operational levels for determining course of investigation. • Fragmented, limited, and slow top-down information sharing. • Analysts and intelligence are often excluded from decision making process	• Large amount of decision making authority close to operation. • Analysts closely involved in decision making process
3. Formalisation	• Lack of access to analytical and search tools due to functional demarcations. • Strong focus on departmental task execution, less on overarching goals	• Little formalisation, strong informal relationships. • Football Info Cell (Rotterdam) got 'carte blanche' • Clear common (integral) goal
4. Integration	Internal: • Strong gap between intelligence department and investigational department • Liaison structures are not in place or not effective	Internal: • Direct integration between analysts and operational decision makers (Oost-Brabant) • Close cooperation in Rotterdam (weekly personal meetings, on-call duties). • In both units a strong horizontal structural, as well as process integration

	• Inhibited information sharing and collaboration. Inferior alignment of intelligence needs and delivery. External: • Integration through RIEC is relatively new. Success is dependent on personal willingness to collaborate with partners. • Knowledge about possibilities and benefits of integral actions is often absent.	External: • Strong personal relationships with partners, regular meetings. • Continuity in approach due to established and stable working relationships.
Culture		
5. Collaboration	• Collaboration between analysts and investigators is lacking due to structural and often physical separation of the two departments. • Misalignment of intelligence supply and demand in both units. • A culture of multidisciplinary collaboration is not established. • Experiments with multi-disciplinary 'clusters' in the Central Units seem to be successful.	• Continuous collaboration between analysts and operational decision makers is standard in Oost-Brabant. • In Rotterdam, the analysts invest heavily in establishing communication channels and personal relationships. For it is crucial for identifying intelligence demands and needs. • Collaboration allows for close feedback loops resulting in continuous improvement of intelligence products
6. Trust	• Trust in intelligence products is low. • Trust in capabilities of intelligence department is low. • Low trust in willingness of investigators to make decisions based on intelligence.	• In Oost-Brabant trust was not an issue, as there are strong working relationships, both internally and externally. • In Rotterdam, the Information Cell is new, trust had to be and is earned by collaboration, feedback, and the delivery of added value.
7. Reward schemes	• Objectives of intelligence department and investigations department are conflicting. • Decision making based on intelligence is not encouraged. Instead, quick wins and personal insights of middle managers seem to dominate the choice of investigational priorities. • Experimenting, entrepreneurship, and innovation are not rewarded.	• Analysts actively compliment officers that registered valuable information. • Close feedback on results of information registration encourages officers to improve registration of information. • Feedback in both ways (between analysts and decision makers) encourages both to increase quality.
8. Leadership	• High skilled analysts require different leadership. They should be inspired rather than controlled. This is difficult for traditional police managers. • There is a strong focus on output performances, although the outcomes of investigational and	• Operational decision makers are given autonomy for the execution of tasks. • Analysts in Rotterdam got carte blanche. • Due to strong personal relationships with partners, a common goal/focus is a 'matter of course'.

	analytical tasks are hard to predict. That is confliction	• A challenge is to dare to plan capacity based on intelligence, risk aversion can lead to overcapacity.
People		
9. Skills	• More (high skilled) analysts are required. • Managers need skills to inspire high skilled analysts instead of controlling them. • As more and more information is available, not only high skilled analysts are required, also information collators and structurers. • Next to skills, particular knowledge is required for interpreting, sharing and collecting information (e.g. knowledge on privacy legislation and integral approaches).	• No problematic lack of skills of officers mentioned.
10. Training	• Hard analytical skills are difficult to train. For this reason external analysts are hired. • Furthermore, the provision about knowledge about integral approaches is not institutionalised. • Training doesn't come along with new tooling. People have to train themselves.	• As the skills are considered sufficient, training did not come forward as an important factor for ILP. • The most effective 'training method' was the provision of feedback between analysts and decision makers.
Outcome		
Decision making based on intelligence	Decision making is not systematically based on intelligence. Instead, decisions are made based on preferences of investigators, quick wins, and ad hoc opportunities.	Decision making is largely based on historical information. Current information is analysed and added to update operational planning.
Proactive decision making	Little signs of proactive decision making. Little evaluation of intelligence and actions. No feedback loop established to improve approach.	Oost-Brabant aims to maximise the preparation in order to minimise the execution efforts. Scenarios are developed for special matches, based on intelligence. In Rotterdam a shift takes place from reactive to proactive decision making based on intelligence.
Efficient use of resources	As decision making is not systematically based on intelligence, especially not on a tactical/operational level. The deployment of resources is not linked to the anticipated effect of the actions.	In Oost-Brabant Capacity is downscaled when current information provides sufficient substantiation for a lower risk classification. In Rotterdam, this is still in its infancy as they are unfamiliar with downscaling based on intelligence.

H. Old and new division of regional units

OUDE SITUATIE

25 politieregio's

1 Groningen
2 Fryslân
3 Drenthe
4 IJsselland
5 Twente
6 Noord- en Oost-Gelderland
7 Gelderland-Midden
8 Gelderland-Zuid
9 Utrecht
10 Noord-Holland-Noord
11 Zaanstreek-Waterland
12 Kennemerland
13 Amsterdam-Amstelland
14 Gooi en Vechtstreek
15 Haaglanden
16 Hollands Midden
17 Rotterdam-Rijnmond
18 Zuid-Holland-Zuid
19 Zeeland
20 Midden- en West-Brabant
21 Brabant-Noord
22 Brabant-Zuid-Oost
23 Limburg-Noord
24 Limburg-Zuid
25 Flevoland

HUIDIGE SITUATIE

1 nationale politie met 10 regionale eenheden

1 Noord-Nederland
2 Oost-Nederland
3 Midden-Nederland
4 Noord-West-Holland
5 Amsterdam
6 Den Haag
7 Rotterdam
8 Zeeland - West-Brabant
9 Oost-Brabant
10 Limburg

Figure 16: Old and new regional units (Rijksoverheid, 2013)

The left picture shows the old division of regional units. The right picture shows the current region units. The Central Unit is not showed on this picture. Although it is a separate unit, it is not a regional unit.

I. Changes made to maturity model after expert review

The following table shows what changes were proposed by the expert and what is done in response to these comments.

Table 5: Changes to model based on expert review

Enabler	Comments	Changes to the model
Technology		
Linkage of data systems	No changes proposed	
Usability of systems	More clarification to the concept 'usability' is required.	Workarounds and the effect on registration have been included.
Analytical tooling	For Level 3 also the accessibility to these systems is important	Accessibility is included to the description.
Authorisation model	Importance emphasised of relation to knowledge on privacy legislation	Knowledge on privacy legislation is included in model, but at the enabler skills. This was considered appropriate by the expert.
Structure		
Centralisation	Emphasise the alignment between supply and demand for intelligence	No changes made here, but more emphasised in enabler 'integration'.
Formalisation	Change formalisation of work processes to formalisation of functional demarcations, as this is more accurate	Proposed change is made.
Integration	No changes proposed	
Structural configuration	Provide more description to the meaning of configurations	More description is included.
Culture		
Collaboration	Physical presence is essential	This is included explicitly in the model.

Management and leadership	Change the term 'discourage' into 'do not promote' as this inherently negative, biasing the respondents.	Proposed change is made.
Trust	Emphasises importance of trust in intelligence capabilities	Explicitly added in last level.
Incentive schemes	After discussing this enabler, the celebration of shared celebration is included.	Change made accordingly.
People		
Skills and knowledge	Importance of knowledge on privacy legislation is emphasised	To increase the visibility it is made into a separate enabler
Training	No changes proposed	
Outcome		

J. Analysis of interrelations between structural factors

Centralisation, formalisation, and integration: an integrated perspective

For understanding the connection between centralisation, formalisation, and integration the five types of organisational structure by Mintzberg (1993) can prove helpful. Mintzberg distinguishes these types along three dimensions: the prime coordinating mechanism, the key part of the organisation, and the type of decentralisation.

The prime coordinating mechanism explains how organisations coordinate its activities. The most natural and simple coordinating mechanism is 'mutual adjustment'. With mutual adjustment work is coordinated through informal communication. The second mechanism is 'direct supervision', which means that one individual is responsible of the work of others, i.e. unity of command. The last three mechanisms are methods of standardisation. One option is the standardisation of work processes, meaning that the content of work is specified or programmed. The second method is the standardisation of output, which is the case when results of the work are specified. The last coordinating mechanism is the standardisation of skills. This implies that skills and knowledge of employees are standardised as the type of training that is required to do the work. Standardisation mechanisms are closely tied to formalisation, as formalisation is aimed at ensuring a degree of predictability which contributes to standardisation.

The second dimension is the key part in the organisation that plays the major role in determining the success or failure. Mintzberg distinguishes five parts:

The operating core, which are the employees that execute the basic tasks that directly contribute to the production of products and services. In the case of the police these are the street officers and investigators. *The strategic apex*, which is the top management and its support staff. In the Dutch police these are the national police chief and the regional police chiefs and support staff. *The middle management*, which are the managers which connect the strategic apex with the operational core. In the police organisation these are the department managers (such as the manager of the intelligence department and the manager of the investigations department), and managers of sub departments, team chefs. *The technostructure*, which consists of employees that control the operational core. They plan and improve work processes and make the organisation able to adapt to the environment. In the police organisation these are the analysts (although some might say that analysts are part of the operational core, given the importance and (intended) central role of intelligence in the operation). *The support staff*, which provides indirect services such as public relations, wage administration, and procurement. These functions are in the Dutch police largely centralised into the one centre (Personeel Diensten Centrum (PDC)).

The third dimension is the degree of decentralisation. There are two types of decentralisation: vertical decentralisation and horizontal decentralisation. In this research I focus on vertical decentralisation, which is the delegation of decision making authority to lower levels in the hierarchy.

By configuring the three dimensions in various ways, Mintzberg (1993) distinguishes five organisational configurations. These are presented in the table below. Based on these configurations, we can provide more insight into centralisation, formalisation, and integration.

Structural configuration	Prime Coordinating Mechanism	Key Part of Organisation	Type of Decentralisation
Simple structure	Direct supervision	Strategic apex	Vertical and horizontal centralization
Machine bureaucracy	Standardization of work processes	Technostructure	Limited horizontal decentralisation
Divisionalised form	Standardization of outputs	Middle line	Limited vertical decentralisation
Professional bureaucracy	Standardization of skills	Operating core	Vertical and horizontal decentralisation
Adhocracy	Mutual adjustment	Support staff	Selective decentralisation

Table 6: Five structural configurations (Mintzberg, 1993)

The structural factors observed in the drug crime case show resemblances to the divisionalised form and the machine bureaucracy

In the case study of drugs crime it was found that through vertical centralisation – hence, limited vertical decentralisation – the strategic and tactical managers in the departments have much decision making authority, and that decision making authority is pulled away from the operational core, the investigators. Further it seems that there is a degree of standardisation of work processes and standardisation and control of output performances. This is closely tied to formalisation, as it leads to the demarcation and prescription of behaviour (e.g. an investigator has to catch specific criminals and is not allowed to 'dig deeper' in the case, and an analysts is not allowed to use different software to develop new methods). The vertical centralisation and the formalisation seem to result in limited integration between the intelligence department and the investigations department.

The above described configuration of centralisation, formalisation (and standardisation) and integration as found in the drug crime case can be understood and interpreted by comparing it to the machine bureaucracy and the divisionalised structure as described by Mintzberg (1993).

A machine bureaucracy is an organisation of which the work that is been done by the operational core is largely routine work, often easy and repetitive. As a result, work processes are largely standardised. From the drug crime case study, the standardisation of some work processes and the resulting formalisation resemble similarities with the machine bureaucracy. Another similarity is the presence of vertical centralisation.

However, three structural characteristics that were found in the case study do not match the prototype of the machine bureaucracy as much. The machine bureaucracy assumes a dominant role of the technostructure (the analysts), which is supposed to have a great influence over the work that is done by the operational core (the investigators), by planning and standardising it. This seems not entirely the case in this drug crime case study. Analysts had in fact little influence over the investigators, as their information was often not used for decision making. Secondly, the standardisation of output, and

output control was perceived far more dominant in the case study than the standardisation of work processes. This does not match with the prototype of the machine bureaucracy. A machine bureaucracy is namely characterised by integrated units, for which controlling output performances is different as various units are interrelated. In the case study very little integration of the two departments was found, that constitutes the third characteristic that does not match the machine bureaucracy.

The three characteristics mentioned above show resemblances with the *divisionalised form*. The divisionalised form is characterised by quasi autonomous divisions lead by middle managers who strive for autonomy of and in their own division. Therefore they encourage vertical centralisation. Typical for a divisionalised structure is the standardisation of output, which provides the strategic apex with some form of control mechanism, as they have little influence on what is going on within a division (that influence is in the hands of the middle managers). As a result of the standardisation of output per division, the divisions become less integrated even more, which seems to be going on in the drug crime case. The division in this description are corresponding to the intelligence and investigations departments in the drugs crime case study. The strategic apex would in this case be the management of the entire unit, being the 'police chief' (Dutch: politiechef) and his staff.

Concluding from the above, the structural situations observed in the drugs crime case study (in both units) seems to resemble a mixture of a machine bureaucracy and a divisionalised form.

The structural factors observed in the football & safety case show resemblances to the professional bureaucracy and the machine bureaucracy

Looking at the state of implementation of the ILP processes in the case of football & security, we see that the situation is different. In this case study vertical decentralisation is strong. The operational decision makers have much decision making authority. Even for decisions where they formally do not have the authority over, they are in practice given that responsibility. Furthermore, there seems to be little formalisation in the execution of the ILP processes. The analysts have much freedom for experimenting with analysis methods and for establishing professional networks. The operational decision makers 'know what they have to do' and are allowed to execute their tasks as they think it should be done. Lastly, the intelligence department and the operations department are strongly integrated, either by working in one room at the same department (Oost-Brabant), or through close collaboration and regular meetings (Rotterdam).

These characteristics show resemblances with the professional bureaucracy. A professional bureaucracy is an organisation that uses the standardisation of skills as the main coordinating mechanism and there is usually little control on output performances or action. The operational core is the key part of the organisation and executes usually complex work. It is typically strongly decentralised where the operational core has relatively much autonomy and decision making authority. The structural situation found in the football & safety matches many of these characteristics.

There is strong decentralisation and on the large amount of autonomy for the operating core. The standardisation of knowledge and skills – obtained through training and especially on the job experience – can be observed in Eindhoven, where the operational decision makers and analysts established a form of standardisation; every match is approached in a similar way by using their experience and skills. This way, less integration between other parts of the organisation is established, as the professionals know what they are doing and as the environment is relatively stable, they can operate relatively autonomous.

In Rotterdam the situation is slightly different. The Football Information Cell is very young (instituted in January 2017). This Cell is therefore still in an experimenting phase and has little standardisation as to date. Therefore this Cell matches characteristics of the adhocracy. Compared to a professional bureaucracy, an adhocracy has almost no standardisation. It is characterised by the bringing together of professionals from multiple disciplines in order to enable a creative process to generate innovation and finding solutions for new problems. This is realised by selective decentralisation within different parts of the organisation, where mutual (informal) adjustment is the main coordination mechanism. This is seen in the case of the Cell, where close ties were established between analysts and operational decision makers and street officers, and experimentation with new intelligence products is ongoing. When new approaches are found to be successful, it is likely that these slowly become standardised. As such, an adhocracy often shifts towards a professional bureaucracy as time goes by.

Concluding, the configuration of structural factors as found in the case study of football & security shows similarities with a professional bureaucracy (especially in Oost-Brabant) and the adhocracy (especially in Rotterdam).

Synergy

From the interpretations of the findings on the structural factors of both case studies and the findings on the outcome of ILP in both cases, it seems that ILP benefits from an organisational structure that has characteristics of a professional bureaucracy and in some instances an adhocracy. These two types of configurations best describe the findings on structural factors in the football & safety case. On the other hand, a machine bureaucratic and divisionalised form configuration seem to inhibit ILP, as is be derived from the configuration of structural factors found in the drug case.

However, a certain level of machine bureaucracy is necessary. The police are officially under external control (in the Netherlands that is for operations the mayor, for investigations the public prosecution service, and overall the police fall under the responsibility of the minister) (Politiewet 2012, 2013). The external control demands a certain amount of accountability. The police has to render account for its actions to these authorities and a degree of control on its actions and performances is required. Since control is the core competence of a machine bureaucracy, a police organisation is to a certain degree a *control bureaucracy* (Mintzberg, 1993). Although it was not previously mentioned, also in the football & safety case this need for accountability is very important. A closer look at the case study reveals this as well. The analysts of the Cell in Rotterdam logged detailed what information was used for which actions. In case something would go wrong, and public disorder breaks out, they must be possible to explain the actions to the external control parties.

Therefore it seems that ILP is enabled by organisational structures that have elements of a *professional bureaucracy* and in some instances an *adhocracy*. Due to the external control imposed on the police, a certain level of control stemming from a *machine bureaucratic* configuration seems to be inevitable. However, this control, often imposed by standardisation of output or work processes, seems to inhibit ILP. For this reason the machine bureaucratic configuration is less suitable for ILP than the professional bureaucracy and adhocracy. A divisionalised structure is absolutely to be avoided. Note that this means a divisional structure in which the divisions are the intelligence department and the operations department *within* a certain regional (or the central) unit. *Between* regional units there could exists a divisionalised form, as geographic spreading requires different units to exist next to each other. The fifth organisational structure as defined by Mintzberg, the simple structure is not discussed as its characteristics did not apply to the case studies.

What does this tell about enabling structural factors for ILP and how to balance them? A couple of lessons can be drawn from the previous findings interpretations leading to different reasons to shift from one of the structural configuration to the other. These reasons are summarised in Figure 17.

Reasons to pull away from the divisionalised structure:

Firstly, standardisation of output and control on output performances inhibit ILP. It leads to the over-formalisation of work processes resulting in reduced possibilities for deploying professional skills and creative freedom for analysts, decision makers and investigators. The work that is done often too complex to capture in output performances or standardisation of work processes.

Secondly, when standardisation of output and control on output performances are imposed on the intelligence department and the operations department separately, it drives the departments apart, leading to the disintegration of the two departments. In order to integrate the departments better the organisation should shift towards the machine bureaucracy, in case of a stable environment and simple work, or towards the adhocracy (which precedes the shift towards a professional bureaucracy) in case of a dynamic environment and complex work (which is often the case in police work, especially in investigational work).

Reasons to shift from machine bureaucracy towards the professional bureaucracy:

To account for the *complexity* of work done by analysts and operational decision makers, the professional bureaucracy is suitable, as it provides them with autonomy to do their work and improve their skills. Furthermore, work can be standardised based on their skills and knowledge instead of on work processes and output performances that limit their freedom; as is often the case in a machine bureaucracy. Too much external control on the work of investigators, analysts and operational decision makers (professionals) hinders their work, limits their effectiveness and could make them either rebellious or passive as they feel that too much autonomy is taken away from them.

Reasons to shift from machine bureaucracy towards the adhocracy:

When changes in the environment occur, the standardised work processes established in the machine bureaucratic configuration are not suitable anymore. In this case a shift towards an adhocracy might be necessary to develop new approaches and methods in response to these changes. For this purpose the adhocracy is most suitable, as it is – more than the professional bureaucracy – configured for generating innovation.

Reasons to shift from professional bureaucracy towards the machine bureaucracy:

A risk of providing professionals with a lot of autonomy in a professional bureaucracy, is that they tend to be less loyal to the organisation and its goals and strategies (Mintzberg, 1993). This could be problematic for ILP as it requires a common focus and goal on particular aspects of the criminal environment (based on intelligence) in order to be effective. Also the goals of the police can change due to political influence or environmental changes (e.g. the emergence of cybercrime) and the operational core should move along with such a change. As such, a fully professional bureaucracy is not desired as operational personnel and analysts should always prioritise to the goal of the police: realising a safer country, over their personal professional goals. Furthermore, the external control requires a degree of control of the police's actions. The machine bureaucracy is the most capable configuration for establishing control on the work done (Mintzberg, 1993). However, the type of control imposed on the operational core in the machine bureaucracy is often inhibiting professionals

to do their job, as it does not account for the complexity in the work. Therefore, imposing machine bureaucratic control should be limited to the establishment of broad goals, instead of on specific output performances or work processes.

Reasons to shift from professional bureaucracy towards the adhocracy:

As the work is standardised by skills in a professional bureaucracy, this makes it a rigid structure (Mintzberg, 1993). When innovation is required, in terms of new intelligence products, analysis methods, or the fighting of new types of crime, i.e. when the environment changes, the professional bureaucracy is less suitable. In this case the adhocracy is more suitable, where there is no form of standardisation and multidisciplinary, experimenting teams are established.

Reasons to shift from the adhocracy towards the professional bureaucracy:

As the experiments done by the adhocracy are successful, they are likely to become standardised. This way the adhocracy changes into a professional bureaucracy almost automatically after some time. Furthermore, a certain level of standardisation is also demanded to ensure a continuity and uniformity of police performances. Therefore standardisation of skills and knowledge, for example by training, can be an effective manner to spread out new approaches or new methods over the organisation.

Reasons to shift from the adhocracy towards the machine bureaucracy:

An adhocracy can also shift towards a machine bureaucracy. When an innovative programme, method, or approach becomes a success it can be standardised and as such, the adhocracy is not required anymore. The programme survives in the machine bureaucracy and the adhocracy can eliminate itself. Therefore an adhocracy can also be established for a limited amount of time on purpose. Furthermore, as and adhocracy is not formalised and its structure is complex, (external) control and strategy formulation is difficult. Therefore, under the pressure of (external) control and accountability requirements, the adhocracy shifts towards a machine bureaucracy.

The reasons for shifting between the professional bureaucracy, adhocracy, and – to a lesser extend – machine bureaucracy, can be added to the previous visualisation of the structural configurations enabling ILP. Depending on the situational circumstances as mentioned in the reasons above, a shift towards any of the three configurations can be made to enable ILP.

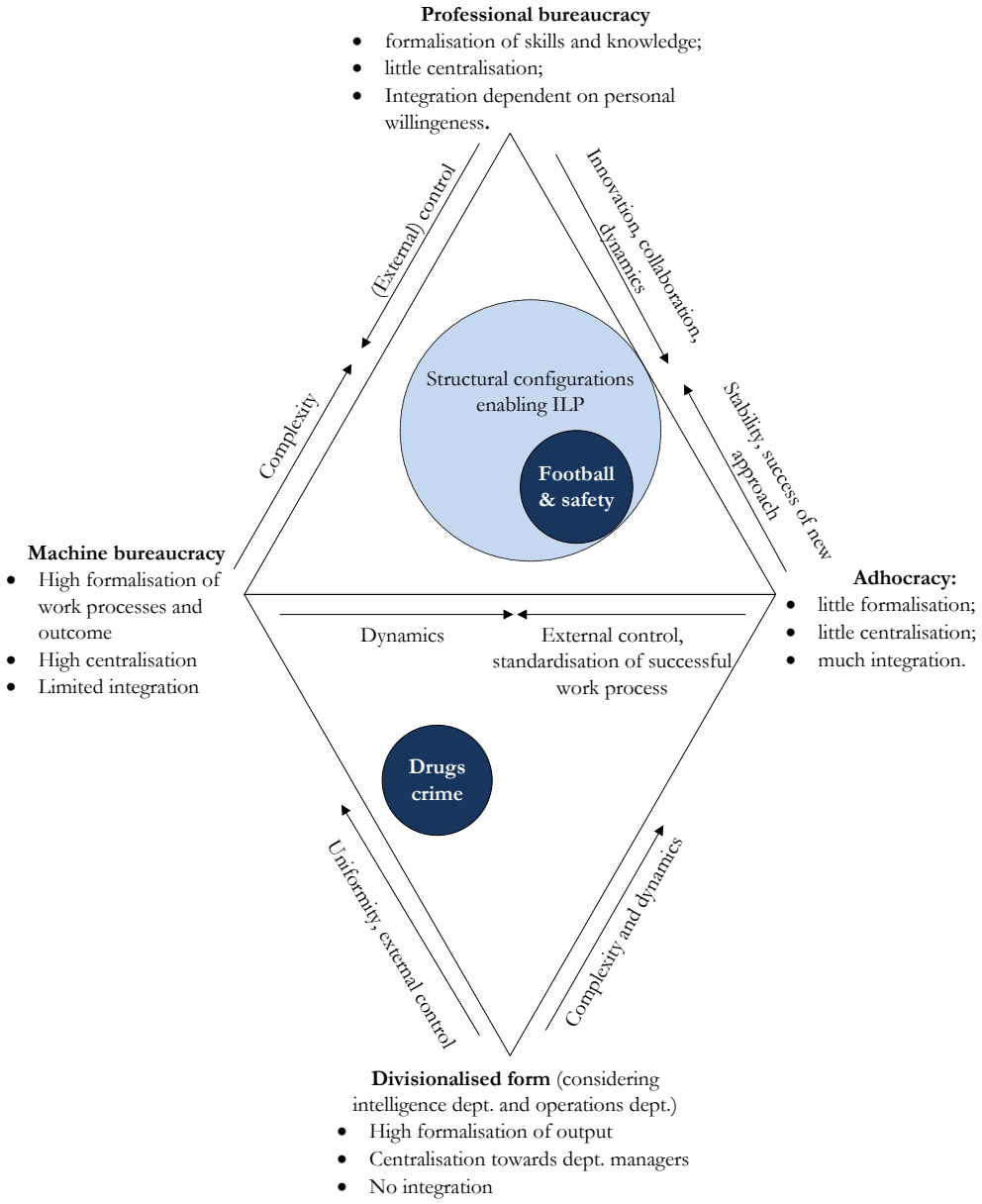


Figure 17: Structural configuration enabling ILP and reasons for shifting

K. Applying the SECI model to the case study findings

In order to reflect upon the assumption that ILP requires the management of knowledge, the SECI model has been applied to analyse the role of knowledge in the process of creating intelligence in the cases. In each interview it was asked what type of data, information, knowledge and intelligence was created and used for decision making. Also it was asked how it was created and through which interactions. Based on the input from the interviews, an analysis of the intelligence creation process can be made, based on the SECI model as presented earlier.

10.6.1. Intelligence creation process in the drugs crime case

In Figure 18, the findings on the four modes of knowledge conversion are summarised. Knowledge creation is ideally a spiral that continuously creates knowledge and enlarges the scale of this knowledge throughout the organisation.

From applying the SECI model to this case, it can be seen that especially the socialisation and externalisation are underrepresented in the knowledge creation process, and thus in the intelligence creation processes. Because of the structural and even physical separation of the intelligence department and investigational department, socialisation and externalisation processes between analysts and investigators do hardly take place. The interaction between analysts and investigators are rather based on combination and internalisation. As a consequence, tacit knowledge is not converted and created among analysts and investigators. Various interviewees have stressed this omission by stating that analysts often lack the contextual understanding of investigations. Analysts on the other hand often miss out on the relevant new information, as this is often not yet registered in systems. Also, much information is never registered in systems and is thus not arriving at the analysts. As one interviewee mentions: “an analyst who doesn’t speak with operational decision makers is handicapped, and vice versa” (confidential communication).

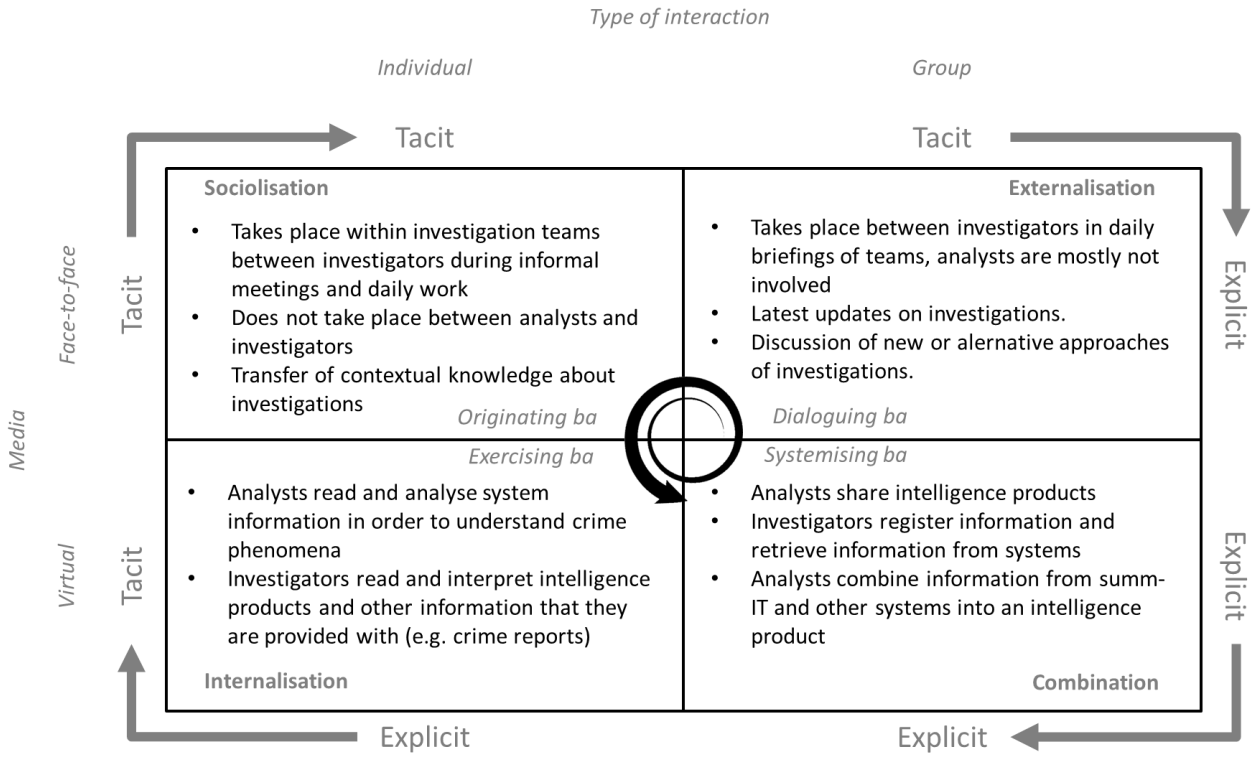


Figure 18: SECI model applied to drug crime case

10.6.2. Intelligence creation process in the football and safety case

Analysing this case by means of the SECI model shows that much of the important interaction are through socialisation and externalisation. Face-to-face interactions are in Eindhoven standard as analysts and decision makers work in the same room. In Rotterdam meetings are organised between analysts and decision makers every week. In the meantime analysts are in close contact through WhatsApp groups. In both units regular meetings are held with the municipality and clubs. Briefings are supplied with information from the analysts and the analysts themselves (in Rotterdam) give presentations about their approach, about new priorities, and about evaluations regularly. As was mentioned by the analysts, the face-to-face interactions facilitate increasing trust and helps to 'speak the same language'. As such it is found that intelligence and knowledge is converted through all four modes with inclusion of all relevant players, socialisation (meetings), externalisation (briefings and presentations), combination (intelligence reports), internalisation (sharing of reports with action perspective, e.g. for registration of information). These findings are summarised in Figure 19.

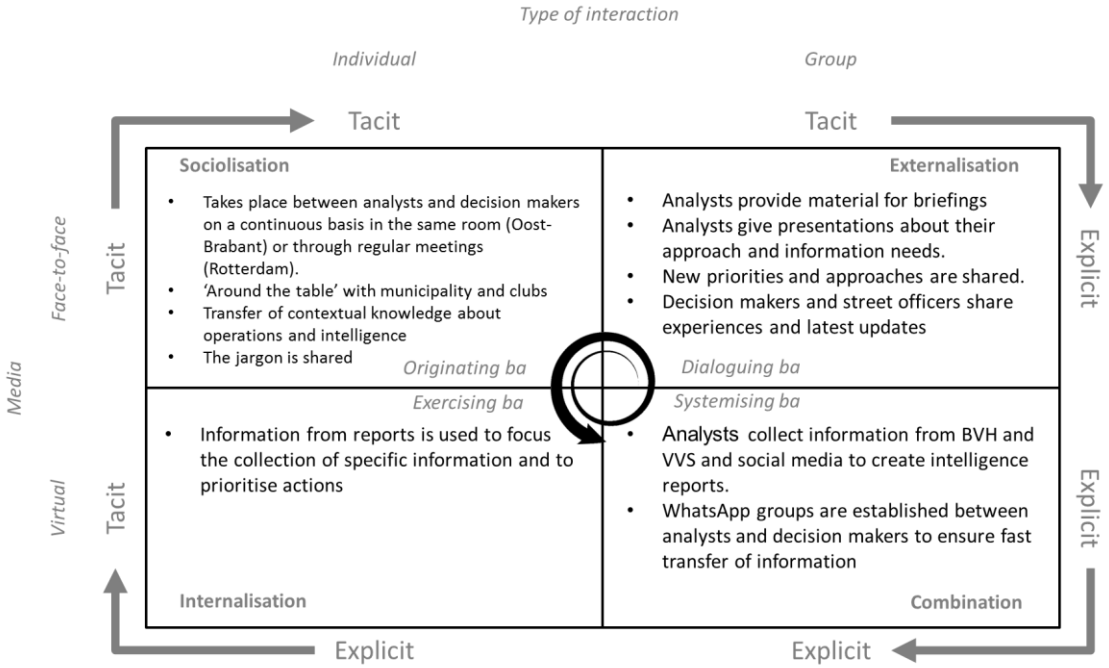


Figure 19: SECI model applied to the football and safety case