Bachelor Computer Science & Economics

Digital Compliance in Practice:

An Action Research Study of the Central

Database for Taxi Transport

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Abstract

The Dutch taxi sector is moving from the Boordcomputer Taxi (BCT) to the Central Database for Taxi Transport (CDT), a centralized digital system that registers working times and driving activities in near real-time. The CDT became law on 1 July 2025 and is mandatory across the sector by 1 January 2028. Its technical specification is well defined, but less is known about how a legally mandated digital compliance system is experienced inside an operational organization. This thesis asks how the introduction of the CDT affects daily work practices within a Dutch transport organization. The study follows the action research cycle of Susman and Evered through diagnosing, action planning, action taking, evaluating, and reflecting. It draws on interviews with four office staff members and ten drivers, two anonymous driver questionnaires (baseline $n = 20$, follow-up $n = 17$), and field notes recorded by the researcher in the dual role of implementation coordinator. The introduction of the CDT closes a regulatory detection gap that the diagnosing phase made visible, and it also reshapes work in ways that exceed the regulatory purpose. Phone traffic between drivers and the dispatch desk has dropped sharply, dispatcher work has shifted from interruption management toward data quality, and drivers in route and care transport encounter friction with the app's rigid trip model. Drivers and managers gain new transparency into the same data, with different consequences for each. The thesis contributes a detailed account of how a legally mandated digital compliance system enters and reshapes the daily work of a single medium-sized organization, intended as an empirical reference for other taxi organizations preparing for the 2028 deadline.

Contents

1 Introduction

1.1 Problem statement

Recent developments in regulation increasingly rely on digital systems to improve compliance, monitoring, and enforcement. In the Dutch taxi sector, this development is reflected in the legally mandated transition from the Boordcomputer Taxi (BCT) to the Central Database for Taxi Transport (CDT). The CDT requires transport organizations to register working times and driving activities in a centralized and near real-time manner. The CDT became law on 1 July 2025 and is mandatory for all licensed Dutch taxi organizations by 1 January 2028, with a transition period in between. While this system is intended to improve regulatory oversight, it also directly intervenes in daily work practices within transport organizations.

The scale of this transition is substantial. The Dutch taxi sector comprises thousands of licensed operators, ranging from large commercial carriers to small sole proprietorships. All of them must connect to the CDT before the 2028 deadline. For many of these organizations, the CDT is the first time that a compliance obligation is tied to a centralized, real-time digital infrastructure. The transition therefore asks organizations to change not only their registration tools but also the daily routines of drivers, dispatchers, and administrative staff who depend on those tools.

Mandatory digital transitions of this kind are organizationally challenging for reasons that go beyond the technical complexity of the new system. Transport work is decentralized and mobile: drivers operate independently across large areas, and their working day involves a sequence of decisions and events that cannot be supervised directly. Employees in this sector differ substantially in digital skills, in familiarity with smartphone applications, and in how closely their daily routines are shaped by the existing registration system. Replacing a physical in-vehicle device with a smartphone app does not simply swap one tool for another. It changes how drivers log in, how they register rides, and how they communicate with the dispatch center, which means that the organizational consequences of the transition extend beyond the moment of deployment.

Existing literature on regulation highlights that the effectiveness of regulatory systems depends not only on formal rules but also on how compliance is achieved in practice. Research on information systems shows that digital technologies do not have fixed effects once introduced but are shaped through everyday use by employees. Research on technology adoption identifies the gap between the deployment of a system and its actual use as a central problem, and shows that training, support, and user characteristics all affect whether that gap is bridged. These three bodies of literature have rarely been brought together in the same empirical setting. The case of a legally mandated digital compliance system, where the organizational and the regulatory dimensions are both present, provides an opportunity to study their interaction directly. An action research design is particularly suited to this question because it examines the transition from inside the organization while the implementation is still in progress, rather than reconstructing it after the fact.

Against this background, this thesis examines how the introduction of the Central Database for Taxi Transport affects daily work practices within a transport organization. It does so through a single in-depth case at a medium-sized Dutch transport organization that began the transition before the 2028 deadline.

1.2 Research questions

The central research question of this thesis is:

How does the introduction of the Central Database for Taxi Transport (CDT) affect daily work practices within a Dutch transport organization?

To support this main question, the following sub-questions are addressed:

1. How is the introduction of the CDT organized within the transport organization, and which choices are made regarding communication and support during this process?
2. How do drivers experience the implemented support measures, such as instructional materials, in terms of their ability to work with the CDT in daily practice?
3. How does this specific implementation of the CDT influence operational routines?

1.3 Thesis overview

This thesis is structured as follows. Chapter 2 reviews the theoretical background and related work. Chapter 3 describes the research methodology. Chapter 4 presents the diagnosing phase. Chapter 5 describes the action planning phase. Chapter 6 reports on the action taking phase. Chapter 7 presents the evaluating phase. Chapter 8 discusses the findings and reflects on the research. Chapter 9 concludes the thesis.

2 Background and Related Work

2.1 Regulation theory

Regulation is an important instrument through which governments seek to influence economic and social behavior. It is used to ensure compliance with legal standards, to protect public interests, and to steer activities in specific directions. Regulation should not be understood as a single law or rule, but as a broader process that includes rule-making, monitoring, and enforcement. This process often involves different actors and tools and operates across organizational settings [BCL11].

Baldwin, Cave, and Lodge emphasize that regulation extends beyond formal legal commands. In their view, regulation includes a wide range of mechanisms through which behavior is influenced, such as reporting obligations, monitoring systems, and enforcement practices. This broader understanding is especially relevant in sectors where compliance depends on access to reliable information and on the ability of regulators to observe behavior in practice [BCL11].

A central element of regulation concerns enforcement. Enforcement is not limited to imposing penalties after violations occur. Instead, it forms part of a wider regulatory process. Baldwin, Cave, and Lodge describe enforcement as involving several connected tasks. These tasks include identifying non-compliant behavior, developing rules and tools, enforcing these rules in practice, and evaluating whether the approach is effective. The effectiveness of regulation therefore depends not only on the rules themselves, but also on the systems through which information is collected and evaluated [BCL11].

One of the main challenges within this process is detection. Regulators often find it difficult to identify non-compliant behavior. This is particularly the case when activities take place across many locations, when violations are hard to observe directly, or when monitoring capacity is limited. As a result, some forms of non-compliance may remain outside the direct view of regulatory authorities. Baldwin, Cave, and Lodge refer to such behavior as remaining "off the screen". This can weaken both enforcement and the assessment of regulatory performance [BCL11].

2.2 Digital compliance and algorithmic regulation

To address these challenges, regulators increasingly rely on digital systems for reporting and monitoring. Such systems are described in the literature as regulatory instruments that make use of continuous data collection to monitor behavior and detect deviations from prescribed rules [Yeu18]. These systems aim to improve the availability and accuracy of information and to reduce dependence on occasional inspections or checks after the fact. While digital systems may strengthen regulatory oversight, their introduction also raises questions about their impact on organizational practices and on the people who are subject to regulation.

2.3 Technology-in-practice

Insights from information systems research help to address these questions. Orlikowski argues that technology should not be seen as a neutral tool that produces fixed outcomes once it is introduced. Instead, the effects of technology emerge through its use in everyday work. Organizational structures are shaped by how technologies are used over time as these technologies become part of daily routines [Orl00].

From this perspective, the introduction of new digital systems does not automatically lead to uniform patterns of use or compliance. Research on information systems shows that employees may respond differently to new digital systems, as such systems can interfere with existing work routines and practices [Orl00, LR05]. As a result, the organizational effects of digital systems develop gradually.

2.4 Resistance to information technology

While the technology-in-practice perspective explains how the effects of technology emerge through use, it does not specifically address how and why employees resist new systems. Lapointe and Rivard propose a multilevel model that explains resistance to information technology implementation as a process that can develop and change over time [LR05].

Their model identifies five components of resistance: resistance behaviors, the object of resistance, the subject (who resists), perceived threats, and initial conditions. Resistance behaviors exist along a spectrum, ranging from apathy and passive resistance to active and aggressive resistance. The model treats resistance as neither inherently good nor bad. Resistance can be disruptive, but it can also signal genuine problems with a system or its implementation [LR05].

A central argument of the model is that resistance is not static. When a new system is introduced, users first assess it in terms of the interaction between the system's features and their existing conditions, such as established work routines or the distribution of responsibilities. If this interaction is perceived as threatening, resistance behaviors follow. Over time, the object of resistance can shift: initially, users may resist the system itself, but as the implementation progresses, resistance can turn toward the broader significance of the system or toward those who advocate for it. These shifts are driven by triggers, which include consequences of system use, events during implementation, and actions by other groups. Triggers can activate or change initial conditions that were previously inactive. In early implementation, group resistance tends to emerge from independent individual behaviors. In later stages, individual behaviors may converge as group-level conditions become active [LR05].

This perspective is relevant for the present study because the CDT changes established registration routines and introduces new digital requirements for different groups within the organization. Drivers, dispatchers, and management each have different work routines and different relationships to the compliance process, which means they may perceive different threats from the new system and respond in different ways.

2.5 Technology adoption and implementation support

Introducing a new digital system does not guarantee that employees will use it effectively. Research in information systems identifies a persistent gap between the technical deployment of a new technology and its actual adoption in daily practice. Whether employees accept a system, use it as intended, or develop their own workarounds depends on factors that go beyond the technical design of the system itself.

2.5.1 Technology adoption

The Unified Theory of Acceptance and Use of Technology, in its second version (UTAUT2), provides a framework for understanding why people accept or reject a new technology in practice. Venkatesh, Thong, and Xu identify several factors that shape adoption: performance expectancy (whether the technology is seen as making the job easier), effort expectancy (how easy the technology is to use), social influence (whether others in the social environment use and endorse it), facilitating conditions (whether the necessary resources and support are available), hedonic motivation (whether using the technology is enjoyable), habit (whether use has become automatic over time), and behavioral intention (whether the user intends to use the system) [VTX12].

In settings where technology use is mandated rather than voluntary, behavioral intention is not a free choice: employees are required to use the system. Performance expectancy and effort expectancy remain relevant regardless. A driver who perceives the app as making the job harder, or who finds it difficult to use during a shift, will engage with it differently from a driver who finds it straightforward and useful. These differences are visible in the patterns of use that emerge over time and in the amount of support users need during and after the rollout. Because the follow-up questionnaire in this study is grounded in the UTAUT2 constructs, the framework provides a direct link between the theoretical background in this chapter and the measurement instrument described in Chapter 3.

2.5.2 Training and support during technology rollout

Training is the primary mechanism through which organizations bridge the gap between technical deployment and actual use. Venkatesh and Bala show that training interventions which are timed close to actual use and which address both skill development and user motivation have larger positive effects on technology acceptance than training provided well in advance or focused on skills alone [VB08].

The effect of training also depends on how well the training approach fits the characteristics of the users and the complexity of the task. Sharma and Yetton find that the impact of training on successful information systems implementation varies with the technical complexity of the system and the level of task interdependence among users [SY07]. Users with low prior experience and high task complexity benefit more from structured, hands-on support than from self-directed materials. A single training format is therefore unlikely to reach all user groups equally well.

These insights are relevant for the present study. The transport organization employs drivers who differ substantially in tenure, in daily routine, and in prior experience with smartphones and apps. The support approach described in Chapter 5 was built around the same logic as Sharma and Yetton's contingency argument: different formats for different groups, timed close to the actual switch. Whether the layers reached the groups that needed them most is examined in Chapter 7.

2.6 The CDT in context

The Central Database for Taxi Transport (Centrale Database Taxivervoer, CDT) is a new system for registering working times and driving activities in the Dutch taxi sector. It replaces the Boordcomputer Taxi (BCT), a physical device that was installed in every taxi vehicle and stored trip data locally. Under the BCT, each driver was required to log in with a personal driver card (chauffeurskaart) at the start of every shift. The driver card recorded working and rest times and served as the primary means of enforcement: during roadside inspections, the Inspectie Leefomgeving en Transport (ILT) could read the driver card directly to check compliance. In addition, companies could download data from the BCT using an operator card (ondernemerskaart), which supervisory authorities could then request. The CDT was introduced through the Regeling Centrale Database Taxivervoer, which took effect on 1 July 2025 [cdt]. A transition period applies until 1 January 2028, during which transport organizations may continue to use the BCT. After this date, the CDT becomes mandatory for all taxi operators and drivers.

The CDT differs from the BCT in several ways. Under the BCT, all trip data was recorded and stored on a device inside the vehicle, and enforcement depended on physical access to the driver card or the device itself. The CDT instead sends data in real time to a central database through an

ICT service provider. The data that needs to be registered is also more limited: the CDT focuses on information relevant to regulatory oversight, such as the driver, vehicle, operator, shift start and end times, loaded and unloaded moments, pause times, total kilometers, and fare in the case of street hails. Another difference is that the CDT is form-free (vormvrij), meaning that transport organizations are not required to use a specific hardware device. Instead, the system can be operated through a smartphone app, as long as the ICT service provider meets the requirements set by the regulator.[1] Finally, the operator card and system card that were required under the BCT are no longer needed. The driver card (chauffeurskaart) remains a legal requirement under the Wet Personenvervoer 2000 as the personal certification that proves a driver is authorized to drive a taxi, but it is no longer used to log in to the registration system. Drivers log in to the CDT using their driver's licence.

The transport organization studied in this thesis uses Driver Connect as its CDT solution.[2] Driver Connect is a smartphone app developed by Beedr, which is also the developer of the WinTax dispatch system already in use at the organization. The app allows drivers to log in with their driver's licence and to register the start and end of their shift, individual rides, and pauses. Because Driver Connect is a smartphone app rather than a fixed in-vehicle device, drivers carry the registration tool with them and operate it on their own phone.

2.6.1 Legal framework for taxi working and rest times

The CDT is the digital instrument through which the Arbeidstijdenbesluit vervoer (Atbv, BWBR0009386) is enforced for taxi [atb]. Article 2.4:2 of the Atbv names the CDT as one of the two registration routes that the employer, the driver, and the self-employed driver as defined in Article 2:7(1) of the Arbeidstijdenwet are required to use. The Regeling Centrale Database Taxivervoer sets out how that registration takes place [cdt], but the substantive working-time, rest, and break norms that the registration is read against are set by the Atbv. Table 1 summarizes the norms that apply specifically to taxi work.

Non-compliance with any of these norms is an administrative overtreding under Article 8:1(1) of the Atbv. Article 8:1(2) assigns the resulting liability to the employer whenever the driver is a werknemer, and Article 8:1(3) sets out a due-diligence escape: the employer is not held responsible if he can show that the necessary orders have been given, the necessary measures taken, the necessary means provided, and the reasonably required supervision exercised to secure compliance. This second clause is the legal counterpart to the implementation approach described in Chapter 5 and returned to in Chapter 8.

[1] A list of approved ICT service providers is maintained by the ILT: https://www.ilent.nl/onderwerpen/taxi/arbeids--en-rusttijden-registreren-taxi/centrale-database-taxivervoer-cdt/aangesloten-ict-dienstverleners

[2] https://www.beedr.nl/oplossingen/driver-connect

Table 1: Working-time, rest, and break norms for taxi under the Arbeidstijdenbesluit vervoer [atb]

Norm	**Atbv article**	**Limit**
Daily continuous rest	Art. 2.5:1(4)(a)	at least 10 hours per 24 hours
Weekly continuous rest	Art. 2.5:1(4)(b)	at least 36 hours per 7 days
Daily working-time cap	Art. 2.5:7(4)(b)	at most 12 hours per dienst
Weekly working-time cap	Art. 2.5:7(4)(a)	at most 60 hours per week
16-week average	Art. 2.5:7(4)(c)	at most 48 hours per week on average
Break trigger	Art. 2.5:6(1), via Atw 5:4	30 minutes after 5.5 hours of work
Night work	Art. 2.5:4(3)	at most 52 night shifts per 16 weeks and 140 per 52 weeks, or 38 hours between 00:00 and 06:00 per 2 weeks

2.7 Technical architecture of the CDT

The CDT is structured as a centralized event store that transport organizations populate through certified ICT service providers. Data flows in one direction. The driver's registration tool, in this case Driver Connect on a smartphone, sends events to the central application of the ICT provider. The provider's application validates the events, buffers them locally if there is no connection, and then forwards them to the CDT database operated by Kiwa Register. The database functions as the audit trail. The ILT does not receive a real-time push. It queries the database when it needs the data, both during roadside inspections and during company audits [Ins25c].

What is registered is a discrete set of work events rather than continuous tracking. The main events are the start and end of a service (the working shift), the start and end of each ride, and the start and end of each break. Each of these events is sent as a separate *melding* (notification) to the CDT. In addition, the system defines a set of fault codes (M100–M113) that are sent automatically when something goes wrong on the device side, such as loss of GPS for more than three minutes, loss of the data connection for more than one minute, or a device restart. The CDT does not store a continuous GPS track. It also does not store passenger details. Only the data needed for working-time and driving-time oversight is transmitted, which is a deliberate privacy choice in the design [Ins25b].

Each melding carries three timestamps: the moment the event happened on the device, the moment it was registered locally by the application, and the moment it was sent to the CDT. The differences between these three timestamps are visible to the regulator. A company that systematically buffers data before sending it produces a pattern in which the third timestamp lags the second by more than the network would explain, and this pattern can be flagged. The three-timestamp design therefore makes the timeliness of the data inspectable, not just the data itself.

At the start of every shift, the driver authenticates by holding the electronic Dutch driving licence against the phone, which reads the licence number through NFC. The licence is the session identity. Drivers can use the same phone, switch phones, or use a backup phone supplied by the company, but each session is bound to the specific licence used to log in. Before an ICT provider is allowed to send live data to the CDT, it must pass a test suite covering the full state machine of services, rides, and breaks, the fault-code behavior, and the offline buffering described above, as well as an on-site audit by the regulator [Ins25a]. Re-assessments take place at least once every three years and immediately after major functional changes.

2.8 Research gap

Bringing together regulatory theory and a practice-based view of technology suggests that legally mandated digital compliance systems may have effects beyond improved monitoring alone. While such systems can improve detection and enforcement, they may also change daily work routines and how regulatory control is experienced [BCL11, Yeu18, Orl00]. Despite the growing use of digital compliance systems, there is limited empirical research on how these systems are used in practice within organizations. This is especially the case in operational sectors where digital skills and work routines differ widely [LR05].

3 Methodology

3.1 Research design

This study follows a qualitative action research approach. Action research is a research method in which the researcher actively participates in the situation being studied while simultaneously conducting research on it. This approach is appropriate in settings where organizational change is already taking place and where the researcher is involved in practice. In this case, the change concerns the legally mandated introduction of the Central Database for Taxi Transport (CDT). The system is imposed by regulation and was not designed by the researcher.

The aim of this study is not to improve or optimize the implementation of the CDT, but to understand how the system is introduced and used in practice and how it affects daily work routines within the organization. The action research approach allows these developments to be studied over time while maintaining an analytical focus. The research is structured around five phases: diagnosing, action planning, action taking, evaluating, and reflecting [SE78].

3.2 Action research phases

Susman and Evered describe action research as a cyclical process consisting of five phases: diagnosing, action planning, action taking, evaluating, and specifying learning [SE78]. This study follows these phases, and the thesis is structured accordingly.

Diagnosing. The first phase focuses on understanding the situation before the introduction of the CDT. This includes existing work practices, registration routines under the BCT, and the roles of the different groups within the organization. Data is collected through interviews with the director of the organization and the operational manager, as well as through observations of daily operations. The purpose of this phase is to establish a baseline of how compliance was organized prior to the transition. This phase is presented in Chapter 4.

Action planning. In the second phase, the organization decides how to introduce and support the CDT. Because the CDT is mandated by regulation, the system itself is not a choice. The actions planned in this phase concern the measures that the organization puts in place to prepare employees for the transition. These include instructional videos for drivers, a training session for dispatchers, and the selection of role model drivers. This phase is presented in Chapter 5.

Action taking. The third phase covers the actual introduction and use of the CDT within the organization. During this phase, the researcher observes how employees interact with the new system in their daily work. Attention is paid to how registration practices change, how employees deal with the new requirements, and how the support measures are received. This phase is presented in Chapter 6.

Evaluating. In the fourth phase, data collected after the introduction of the CDT is analyzed. This includes follow-up interviews, observations, and other data gathered during and after the transition. The findings are compared with the situation described in the diagnosing phase to identify changes in work routines and in how employees experience the new system. This phase is presented in Chapter 7.

Reflecting. The final phase involves reflecting on the findings in relation to the theoretical framework of the study. The results are interpreted using insights from regulatory theory, the technology-in-practice perspective, and the literature on resistance to information technology. This phase connects the findings from the case to broader discussions on digital compliance in operational work settings. This phase is presented in Chapter 8.

3.3 Case selection

The study is conducted at a medium-sized Dutch transport organization. The organization provides both contract transport (regular routes for fixed clients such as municipalities and care institutions) and ad-hoc taxi services. It consists of three main groups: management, centralists (dispatchers who plan and coordinate rides), and drivers.

The organization is a suitable case for this study for several reasons. First, it is required to transition from the BCT to the CDT, which means it is directly subject to the regulatory change under investigation. Second, it decided to begin the transition before the 2028 deadline, which means the implementation process can be observed as it happens. Third, the researcher has a background as a former dispatcher at the organization and currently coordinates the CDT implementation, which provides close access to daily operations and to the people involved.

3.4 Researcher positionality

The researcher has a prior connection to the organization studied in this thesis. He worked as a dispatcher at the organization for two and a half years, which gave him direct experience with daily operations, the BCT system, and the routines of both dispatchers and drivers. In December 2025, the director of the organization asked the researcher to coordinate the implementation of the CDT. This means the researcher is both studying the transition and actively involved in organizing it.

This dual role has implications for the research. On one hand, it provides close access to participants and to the situations being studied. The researcher is familiar with the organizational context and is present during the implementation process, which allows for detailed observations that would be difficult to obtain as an outside observer. On the other hand, this involvement means the researcher is not a detached observer and may have preconceptions about the organization and its employees. To maintain analytical distance, the research is structured around clearly defined phases, data collection follows a systematic approach, and findings are regularly discussed with the thesis supervisor.

3.5 Data collection methods

Data for this study is collected through three methods: semi-structured interviews, a driver questionnaire, and field notes. Each method serves a different purpose within the research design and is used at multiple points during the study. The interview guides and questionnaires are included in full in Appendix A through Appendix E.

Semi-structured interviews. Semi-structured interviews are used at two points in the study: during the diagnosing phase and during the evaluating phase.

In the diagnosing phase, interviews were conducted with the director and the operational manager of the organization. The same set of questions was used for both interviews to allow for comparison between the strategic and operational perspectives. The interviews focus on the organizational context before the CDT, current registration practices under the BCT, problems and frustrations with the existing system, and the reasoning behind the decision to begin the transition now rather than waiting until the 2028 deadline. The questions also address the timing of the transition, as the high season for transport begins at the end of March 2026 and this timing is relevant for why the organization chose to implement the CDT when it did. Both interviews were recorded with the consent of the participants. Both participants are referred to in this thesis by role only and are not identified by name. The interview guide is included in Appendix A.

In the evaluating phase, two sets of follow-up interviews are conducted. Both sets of follow-up interviews are structured around four thematic categories: implementation, experience, impact, and side effects. These categories are derived from the research questions. Implementation covers how the transition was organized and supported (sub-questions 1 and 2). Experience addresses how participants work with the app itself (sub-questions 2 and 3). Impact focuses on the effects of Driver Connect on daily work (sub-question 3 and the main research question). Side effects capture broader personal effects of both the app and the implementation trajectory (main research question). Within each category, questions move from broad to specific, following a funnel approach. This structure is informed by Kallio et al., who argue that a semi-structured interview guide should consist of main themes grounded in the research questions, with follow-up questions that direct conversation towards more specific aspects of the study subject [KPJK16]. The thematic categories serve as an organizing framework for the researcher and are not made explicit to participants during the interviews. Each interview is planned to take approximately 45 minutes to one hour.

The first set consists of interviews with ten drivers about their experiences with Driver Connect after the transition. The purpose is to collect qualitative data on how drivers experience the new system in daily practice. These interviews are anonymized. The interview guide is included in Appendix C.

The second set of follow-up interviews is conducted with four members of management and office staff: the director, the operational manager, the manager responsible for large clients, bookings, and invoicing, and the manager responsible for disability transportation and employee absenteeism. The latter two are also operationally involved in daily activities and serve as backup dispatchers. The same set of questions is used for all four interviews to allow for comparison. The questions follow the same four thematic categories as the driver interviews but are tailored to the roles of office staff. In addition, the management interviews include retrospective questions about the implementation process. For the director and the operational manager, these follow-up interviews can be compared directly with their earlier interviews from the diagnosing phase. The other two managers provide additional operational perspectives that were not captured in the first round. All four participants are referred to by role only and are not identified by name. The interview guide is included in Appendix D.

Driver questionnaire. Two anonymous questionnaires are used in this study: a baseline questionnaire before the transition and a follow-up questionnaire after the transition.

The baseline questionnaire was distributed to drivers before the company-wide switch to Driver Connect. The purpose is to collect baseline data on how drivers experience the BCT in their daily work. The questionnaire is short and uses a mix of scaled questions (Likert scale) and open questions. Topics include how often drivers use the BCT, how easy or difficult they find it, what problems they encounter, and how satisfied they are with the current system. The questionnaire is included in Appendix B.

The follow-up questionnaire was distributed in May 2026, after the organization had fully transitioned to Driver Connect, and was completed by 17 drivers. It is organized in six blocks, each with a specific purpose. Block A collects background information that supports the cross-cuts in Section 7.4: tenure at the organization, total years of experience as a taxi driver, type of transport, and age group. Block B covers the implementation process itself, with five items on the instructional video, the explanation of the early transition, the support from the office, the help from fellow drivers, and which form of support was most helpful. Block C is grounded in the Unified Theory of Acceptance and Use of Technology version 2, UTAUT2, by Venkatesh, Thong and Xu [VTX12]. UTAUT2 extends the earlier UTAUT framework to consumer technology use and provides validated items for performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, and behavioral intention. Driver Connect runs on the driver's personal phone, but its use is required by the employer and by the CDT regulation, so the price value construct does not apply: drivers do not face a purchase decision. The remaining seven UTAUT2 constructs are covered by nine items in block C, one item per construct except for performance expectancy and facilitating conditions, which have two items each, adapted from the validated wording in the UTAUT2 appendix. Block D is designed to test, with the broader driver group, the recurring themes from the interviews reported in Section 7.3: the reduction in phone contact with the dispatch center, the calmer experience while driving, the shift from phone calls to in-app messages, the use of the hours history, and the trip-order inflexibility encountered by route and care drivers. Block E retains the scaled questions on problem frequency and a direct comparison with the BCT so that the distributions can be compared with the baseline side by side. Block F contains two open items. The original seven-point UTAUT2 scale is reduced to five points so that the items in blocks C and E remain directly comparable to the baseline questionnaire. The follow-up questionnaire is included in Appendix E.

Field notes and observations. Throughout the implementation process, the researcher collects field notes based on observations during daily operations. Because the researcher is present at the organization as the CDT implementation coordinator, he can observe situations that would be difficult to capture through interviews or questionnaires alone. These observations include informal conversations with drivers and dispatchers, reactions to the training measures, and practical problems that arise during use of the new system. Field notes are recorded as close to the observed event as possible to preserve accuracy.

3.6 Data analysis approach

The data collected in this study is analyzed using two approaches: thematic analysis for the qualitative data and descriptive analysis for the questionnaire responses. Field notes are used as a third source that supports and contextualizes the other two.

All interview transcripts are analyzed following the six phases of thematic analysis described by Braun and Clarke [BC06]. The first phase is familiarization. The cleaned Dutch transcripts and the English translations are read side by side, with the audio recordings consulted where the wording matters for interpretation. The second phase is the generation of initial codes. A code is a short label that the researcher attaches to a passage of transcript to mark something relevant to the research question. For example, a passage in which a driver describes calling the dispatch center much less often than before might receive the code *reduced phone contact*. Many such codes from across the interviews are then grouped into broader themes in the next phase, such as the change in driver-dispatcher communication reported in Section 7.3. Each transcript is coded independently before any cross-comparison, so that the codes from a single interview are not pulled toward themes that are already developing elsewhere in the data. The third and fourth phases group the codes into candidate themes and then review them against the full data set, checking whether each theme holds across the interviews in which it appears. The fifth phase defines and names the themes that survive this review. The sixth phase is the writing up of the themes in Chapter 7.

The follow-up interviews were structured around four pre-defined thematic categories: implementation, experience, impact, and side effects. These categories were used to organize the interview guide but not to predefine the codes. Coding is therefore inductive within a deductive frame. The four categories serve as containers for the codes that emerge from the data, and any code that does not fit one of them is kept and treated as a candidate for an additional theme. The theoretical framework introduced in Chapter 2 (technology-in-practice, resistance to information technology, algorithmic regulation, and knowledge transfer) is not used to generate codes. It is brought in during the reflecting phase in Chapter 8, where the themes identified in the evaluating phase are interpreted through it.

Within each group of interviews, comparison runs along two axes. For the management interviews, the four follow-up transcripts are first compared with each other and then, for the director and the operational manager, with their diagnosing-phase interviews. For the driver interviews, the ten follow-up transcripts are aggregated to identify themes that recur across a broader group, and divergences are noted by role (route driver, single-trip driver, contract driver) and by tenure. Quotations selected for the report are checked against the original transcript before they are used.

Both driver questionnaires consist of scaled questions (Likert scale) and open-ended questions. The scaled responses are analyzed using descriptive statistics: frequencies and distributions are reported for each question. Because the questionnaires were completed anonymously, individual responses cannot be matched between the two rounds. Comparison is therefore made at the aggregate level, by reporting the distribution of responses for each round side by side and noting the direction and size of the shift. For the UTAUT2-grounded items in block C of the follow-up questionnaire, the score on each construct is reported as the mean of its items on the five-point scale, and the scores are split by age group and by type of transport where this is relevant for the cross-cuts in Section 7.4. The items in block D are read alongside the recurring themes reported in Section 7.3: the reduction in phone contact, the calmer experience while driving, the shift from phone calls to in-app messages, the use of the hours history, and the trip-order inflexibility encountered by route and care drivers. The questionnaire therefore acts as a check on whether the themes that emerged from the ten driver interviews also appear in the wider driver group. The open-ended responses are coded against the same themes that emerge from the interviews, which makes it possible to test whether the patterns in the interviews also appear in the broader questionnaire group. Because the number of respondents is limited, the questionnaire results are treated as indicative rather than statistically generalizable. They describe patterns in driver experiences and are not used to test hypotheses. The direct comparison question in the follow-up questionnaire provides an additional measure of how drivers evaluate Driver Connect relative to the BCT. For two follow-up questionnaire items (Q3 and Q9), several respondents marked more than one option; counts for these items are reported as the number of selections per option rather than as a share of the total respondent group.

Field notes and observations are used to supplement and contextualize the interview and questionnaire findings. Where the three sources point in the same direction, the field notes are used briefly to add concrete detail. Where they diverge, the divergence is reported in Chapter 7, with the interview evidence given priority and the questionnaire treated as indicative. Observations from the researcher's role as implementation coordinator are flagged as such whenever they are reported, so that the reader can distinguish between data collected from participants and observations made by the researcher in the course of his second role.

The analysis has one limitation that should be stated up front. All coding is done by a single coder, the researcher. To reduce the risk that codes reflect the researcher's preconceptions, the procedure described above is followed systematically and intermediate coding decisions are discussed with the thesis supervisor.

3.7 Ethical considerations

Participation in this study was voluntary. In the diagnosing phase, both interviewees agreed to participate and gave their consent for the interviews to be recorded. Although both participants initially agreed that they could be identified by name and role, the decision was made during analysis to anonymize all interviewees. This was done to apply a single, consistent standard across the office staff and the drivers and to limit the risk of indirect identification. Both participants are therefore referred to in this thesis only by their organizational role.

The same applies to the follow-up management interviews in the evaluating phase. All four participants are referred to by role only. As with the diagnosing-phase interviews, anonymization was applied across the board after data collection to maintain consistency with the driver interviews and to reduce the risk of indirect identification through descriptions of role and responsibility. The organization itself is also not named, and identifying geographic details have been removed.

The follow-up driver interviews are anonymized. Drivers were informed that their participation was voluntary, that the interviews would be recorded, and that their names would not be used in the research.

Both driver questionnaires were distributed anonymously. Drivers were not required to provide their name, and the responses cannot be traced back to individual participants. Questionnaire results are reported at the group level, and individual open-ended responses are presented without identifying information. The version of each questionnaire that was physically distributed to drivers identified the organization by name. The versions reproduced in Appendix B and Appendix E have been anonymized in line with the anonymization decision applied across the rest of the thesis.

The researcher's dual role as both implementation coordinator and researcher was made known to all participants. Drivers were aware that the questionnaires and interviews were part of a research project conducted alongside the CDT implementation. This transparency was important to ensure that participants understood the purpose of the data collection and could make an informed decision about their participation.

4 Diagnosing

4.1 Organizational context

The organization is a medium-sized Dutch transport company that provides both contract transport and ad-hoc taxi services. Contract transport involves regular routes for fixed clients, such as municipalities and care institutions. Ad-hoc taxi services are individual rides that are assigned as they come in.

The organization consists of three main groups. Management includes the director and the operational manager. The director has held the position since 2017 and is responsible for overall management, strategic decisions, and client relations. Before joining the organization, he was director at another transport company from 1995 to 2017. The operational manager has worked at the organization for approximately sixteen years and oversees the continuity of planning, schedules, vehicle allocation, and day-to-day operational decisions. The office also includes two other managers: one responsible for large clients, bookings, and invoicing, and one who oversees transportation services for individuals with physical and intellectual disabilities and manages employee absenteeism. Both are operationally involved in daily activities and serve as backup dispatchers when needed.

The second group is the centralists, the dispatchers who plan and coordinate rides. They form the central point where all operational lines come together. Dispatchers assign rides to drivers, manage vehicle schedules, and handle communication between the office and drivers on the road.

The third and largest group is the drivers. The driver questionnaire shows that the workforce includes a mix of newer and more experienced employees: four of the twenty respondents have worked at the organization for less than one year, one for one to three years, seven for three to five years, and eight for more than five years. Drivers work at different times and locations across the region, which means they operate largely independently from one another and from the office.

The organization uses WinTax as its dispatch system. WinTax is developed by Beedr and has been in use since the organization's founding. All ride assignments, scheduling, and planning are managed through this system. At the time of this study, every taxi vehicle also had a BCT installed for the registration of driving and rest times.

4.2 The situation before the CDT

Before the transition to the CDT, the organization used the BCT to register driving and rest times as required by law. Each driver logged in to the BCT using a personal driver card at the start of every shift. The device then recorded the driver's activities throughout the shift. In addition to registration, the BCT also served as a screen through which drivers could receive ride assignments sent from the dispatch system.
The BCT was used frequently: thirteen of the twenty questionnaire respondents reported using it for every ride, and five reported using it for most rides. Only two drivers indicated that they used it sometimes or rarely. The system was therefore deeply embedded in daily routines.

However, the BCT also caused substantial frustration. Table 2 summarizes driver responses on ease of use, problem frequency, and overall satisfaction with the BCT. While roughly half of the drivers found the system easy or very easy to use, the remaining half were neutral or reported difficulties. Problems were widespread: fourteen of the twenty drivers experienced issues at least sometimes, with six reporting problems often or very often.
The open-ended responses paint a clear picture of the types of issues drivers encountered. Connection drops, malfunctions, and hardware failures were the most frequently mentioned problems. Several drivers reported that the BCT was slow, frequently broken, or required garage visits. Others mentioned problems with logging in, unresponsive screens, trips not coming through or arriving late, and persistent beeping during rides. One driver described the BCT as outdated and stated that an app would be more appropriate for the current time. Another noted that the device was placed in an awkward position in the vehicle. Figure 2 shows what such a malfunction looks like to the driver during a shift.

Figure 1: Driver inserts the driver card into the BCT to log in at the start of a shift.

These problems were confirmed and elaborated on in the management interviews. The director described malfunctions as the biggest problem with the BCT, noting that the data was "never fully complete" because of unreliable connections. He highlighted a costly consequence: when the BCT malfunctions, drivers are not allowed to drive. This forces the organization to keep reserve vehicles available. "Every vehicle that sits idle is a loss," he explained. The operational manager similarly pointed to frequent malfunctions and added that the BCT required significant maintenance. He noted that the company pass needed to be inserted periodically and that neglecting this could cause the device to stop working entirely. In some cases, a BCT could no longer be repaired and needed to be replaced, which he described as expensive.

To deal with these problems, the organization developed workarounds. Both managers described the use of paper trip sheet forms when the BCT failed, so that drivers could still demonstrate what they had driven. The operational manager also mentioned the use of WhatsApp and phone calls to communicate trip information to drivers when the BCT was not functioning. These workarounds kept the operation running but were not ideal. As he put it: "It really often comes down to those little things that cause malfunctions. And yes, it is sometimes just so much that we feel like: this really needs to change."

These workarounds show how daily work adapted to the limitations of the BCT. The paper trip sheets were prescribed by the company as a fallback, but the use of WhatsApp and phone calls to relay trip information emerged informally as employees found ways to keep operations running. Orlikowski describes this kind of adaptation: when a formal technology does not function as intended, employees develop practices around it to maintain their daily work [Orl00]. This means that the system the CDT replaces is not only the BCT device itself, but also the set of practices that had grown around it.

Table 2: Driver questionnaire responses on BCT experience ($n = 20$)

Question	**Response**	n
Ease of use	Very easy	5
	Easy	6
	Neutral	6
	Difficult	2
	Very difficult	1
Problem frequency	Never	1
	Rarely	5
	Sometimes	8
	Often	3
	Very often	3
Satisfaction	Very satisfied	3
	Satisfied	4
	Neutral	6
	Dissatisfied	5
	Very dissatisfied	2

Satisfaction with the BCT as a registration system reflected this mixed experience. As shown in Table 2, opinions were divided almost equally between satisfied, neutral, and dissatisfied responses. The open-ended comments at the end of the questionnaire reinforce this picture: while some drivers noted that the system worked or was handy for administration, others called for replacement and expressed hope that the app would work better. One driver pointed out that the hour registration did not always match the actual hours worked. This mismatch is operationally significant because the hour data is precisely what Article 2.5:7 of the Arbeidstijdenbesluit vervoer requires to evidence compliance with the 12-hour-per-dienst cap and the 48-hour weekly average over 16 weeks [atb].

The divided responses are relevant for the transition to the CDT because they indicate that drivers did not start from a uniform position. Some drivers had found ways to work with the BCT effectively, while others experienced persistent frustration. Lapointe and Rivard describe initial conditions, such as existing work routines and experiences with the current system, as a factor that shapes how employees respond to a new technology [LR05]. The variation in BCT satisfaction suggests that the transition to Driver Connect would be received differently across the driver group, depending on each driver's prior experience.

Beyond the technical issues with the BCT, the period leading up to the transition was also marked by uncertainty among drivers. The researcher, who was present at the organization as the CDT implementation coordinator, observed that many drivers were uneasy about the upcoming changes in the weeks before the switch. Some drivers approached the researcher with concerned or frustrated expressions and asked many questions about the transition. Because the exact timeline of the implementation was not yet fully established, it was not always possible to provide definitive answers. The researcher reassured them that the management team was working to ensure that the

Figure 2: The BCT displays a malfunction notice during a shift.

transition would proceed as smoothly as possible. This helped to calm some of the concerns, but it also illustrated that organizational change can create uncertainty among employees, even when the change is intended as an improvement. Lapointe and Rivard describe a similar pattern in the early stage of resistance, where employees assess a new system against their existing conditions and may perceive it as threatening [LR05].

4.3 Management perspective on the transition

Both managers were interviewed on 9 March 2026, two days before the company-wide switch to Driver Connect on 11 March. The interviews focused on the organizational context, problems with the BCT, and expectations for the CDT transition.

Both shared the view that the BCT had reached the end of its useful life and that the transition to the CDT was necessary. Their reasons for starting early, before the 2028 deadline, reflected both strategic and practical considerations.

The director emphasized that beginning early would allow drivers to get accustomed to the app gradually rather than having to switch all at once. He noted that new employment contracts already include the requirement to use the app on the employee's own phone, which means the organization is building the transition into its standard processes. "Better gradually and on time, than in a panic at the last moment," he said. From a strategic perspective, he expected the CDT to bring significantly fewer malfunctions than the BCT. He also anticipated better insight into hours worked, breaks, and driver locations, which would allow the office to plan more effectively. For situations where a driver's phone fails, he mentioned that the organization has backup phones ready at the office, which he saw as more flexible than the BCT's requirement to deploy a different vehicle.

The operational manager focused more on day-to-day implications. He highlighted the expected benefits for the planning department, which he described as the place "where all the lines come together." This was also where the BCT's malfunctions caused the most disruption. He expected the app to bring more calm to the planning process, better communication with drivers, and more accurate vehicle tracking. He also pointed to a specific operational benefit: the CDT would prevent the double-booking of vehicles, which was an existing problem under the BCT. On the question of why the organization chose to begin now, he mentioned that the alternative to the app, a fixed MDT device, was very expensive. The smartphone app was both cheaper and expected to produce fewer malfunctions.

Both managers expressed similar concerns about the transition. The director was concerned that older drivers might struggle with the app because they are accustomed to a physical device in the vehicle. He noted that some drivers may resist switching because "they do not like working with apps and a phone." The operational manager raised a related concern: some drivers do not have a phone on which the app can be installed, and some older drivers are not familiar with how apps work. Despite these concerns, both expressed confidence that the transition would be worthwhile. As the operational manager put it: "We do expect that over time it will simply bring a great deal of convenience."

One additional point emerged at the end of the operational manager's interview. When asked whether he had anything to add, he noted that the work involved in getting drivers up and running with the new system was "really a more difficult part than I had thought." This remark, made during the final days before the company-wide switch, suggests that even from the management perspective, the practical effort required for the transition exceeded initial expectations.

The management interviews also connect to the regulatory framework outlined in Chapter 2. The director's observation that BCT data was "never fully complete" and the malfunctions described by both managers point to a gap between the formal compliance requirements and the actual data that reached the regulator. Baldwin, Cave, and Lodge describe this kind of gap as a detection problem: when a monitoring system does not reliably capture the behavior it is meant to record, non-compliance can remain outside the view of regulatory authorities [BCL11]. The norms in question are concrete: Articles 2.5:1 and 2.5:6 of the Arbeidstijdenbesluit vervoer require ten hours of continuous rest per 24 hours and a pauze after 5.5 hours of work, while Article 2.5:7 caps a dienst at 12 hours and the weekly average at 48 hours over 16 weeks [atb]. The decision to begin the transition early was not simply about adopting new technology. It was driven by the recognition that the existing system no longer fulfilled its regulatory function in practice.

4.4 Summary of the diagnosis

The diagnosing phase reveals an organization that was ready for change but faced real uncertainties about how that change would unfold in practice.

The BCT, while legally compliant when functioning, was a source of persistent operational problems. Malfunctions were common, maintenance was expensive, and the organization had developed workarounds such as paper trip sheets and WhatsApp communication to keep daily operations running when the device failed. The driver questionnaire confirmed that these issues were widespread: the majority of respondents experienced problems at least sometimes, and satisfaction with the BCT was divided.

Management's motivation for beginning the CDT transition early was driven by pragmatic reasoning. Both the director and the operational manager saw the transition as an opportunity to address the limitations of the BCT. They expected fewer malfunctions, better planning capabilities, and more efficient communication with drivers. At the same time, both recognized that the transition would not be straightforward. Concerns about older drivers, phone compatibility, and the general effort involved in changing established routines were openly acknowledged.

The observation of driver unease in the weeks before the switch added a further dimension to the starting situation. While the BCT's technical problems provided a clear rationale for change, the prospect of a new system also created anxiety among the very employees who would be most directly affected. Together, the frustration with the BCT and the uncertainty about the new system describe the starting situation. The following chapters use this as a reference point to identify what changed after the transition.

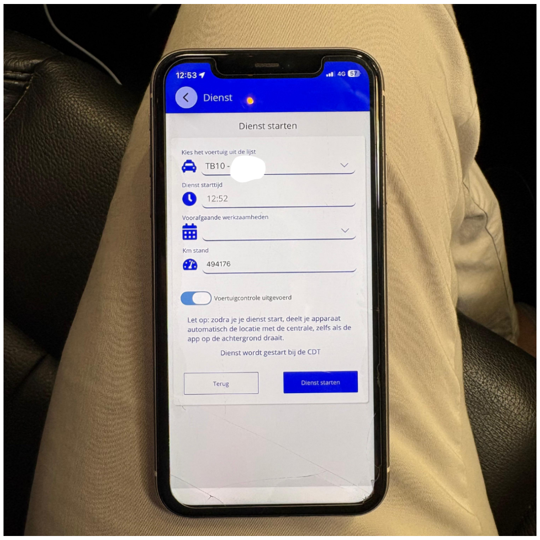
5 Action Planning

This chapter describes how the organization chose to introduce and support the CDT. It addresses the first sub-question of this thesis: how is the introduction of the CDT organized within the transport organization, and which choices are made regarding communication and support during this process?

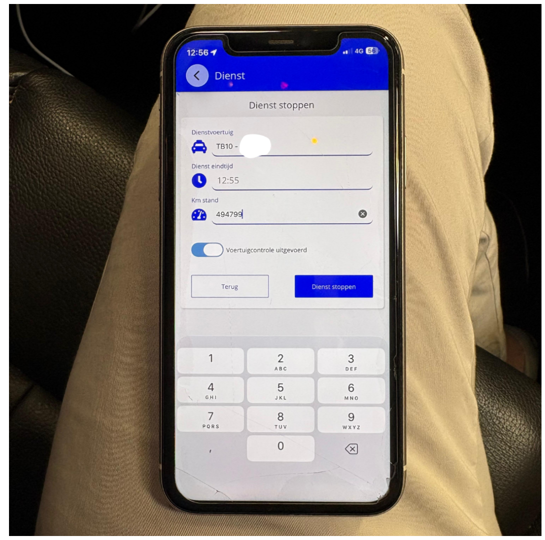
5.1 Implementation approach

The CDT is mandated by regulation and was not designed by the organization. The system itself is therefore not a choice. What the organization can influence is how the transition is organized and how employees are prepared for working with the new system. This section describes the CDT solution used at the organization, the measures put in place to support the transition, and the reasoning behind them.

Driver Connect. The organization uses Driver Connect as its CDT solution. Driver Connect is a smartphone app developed by Beedr, which is also the developer of the WinTax dispatch system that has been in use since the organization's founding. Because both systems come from the same developer, Driver Connect integrates with the existing dispatch workflow, making it the logical choice for the CDT implementation. The app allows drivers to log in with their driver's licence and to start and end shifts, register breaks, send messages to dispatch, receive ride assignments, review completed rides, and monitor their own working hours. This last function gives drivers more direct insight into their registered hours than the BCT provided, which increases transparency. Figure 3 shows the start and end screens of a shift in Driver Connect.
The organization adopted a layered approach to prepare employees for using Driver Connect. This



(a) Starting a shift.



(b) Ending a shift.

Figure 3: The two ends of a working day in Driver Connect: vehicle, time, and odometer reading at start and end.

approach consisted of four measures, each targeting a different group or need within the organization.

Role model drivers. On 11 February, two drivers were personally trained by the researcher on using Driver Connect. One drives taxis and one drives coaches, so that each group of drivers has a central contact person with hands-on experience. These drivers were selected based on willingness and the expectation that they would be approachable for colleagues. By training a small group first, the organization tested the implementation on a small scale and created visible examples of how the app works in daily practice. The role model drivers are kept anonymous in this thesis.

Dispatcher training. On 26 February, the researcher gave a training session to the dispatchers (centralists) at the organization. The goal was to teach dispatchers how the CDT and Driver Connect work, so that they could support drivers from the planning side once the transition started. Dispatchers were trained before the broader driver group because they are the first point of contact when drivers have questions or run into problems during a shift. By ensuring that dispatchers understood the new system, the organization aimed to create a support layer between drivers and the implementation coordinator, reducing the dependence on a single person for answering questions. Venkatesh and Bala describe training as one of the key pre-implementation interventions that can influence how employees experience and adopt new technology [VB08]. In this case, the dispatcher training serves a dual purpose: it prepares dispatchers for their own changed workflow, and it enables them to act as an informal support channel for drivers.

Instructional videos. To prepare the broader driver group, instructional videos were produced that explain how Driver Connect works. The videos cover the key steps: logging in with a driver's licence, starting and ending a shift, and handling common situations during a ride. They were designed to be short and practical so that drivers could watch them on their own phone. This approach was chosen because drivers work at different times and locations, which makes a single group training impractical. Research on information systems implementation shows that training is a key factor in whether employees successfully adopt new systems [SY07]. By providing material that can be accessed independently, the organization aimed to ensure that all drivers could prepare at their own pace. The videos were distributed on 2 March, shortly before the company-wide switch to Driver Connect.

WinTax training video. On 5 March, a six-minute training video was created for dispatchers explaining which WinTax settings and functions they must use to ensure Driver Connect works correctly for drivers. This additional measure was introduced because it became apparent that incorrect dispatcher operation of WinTax caused obstacles for drivers in the Driver Connect app. For example, if a dispatcher does not correctly assign a vehicle or shift in WinTax, the corresponding information does not appear in Driver Connect, which prevents the driver from registering their activities properly. The video walks dispatchers through the relevant WinTax procedures from start to finish.

5.2 Rationale for the layered approach

The implementation approach follows a layered structure. Role model drivers were trained first, followed by dispatchers, then instructional videos for the broader driver group, and finally a targeted WinTax training video for dispatchers. This sequence was chosen deliberately to distribute knowledge across the organization rather than concentrating it with one person.

Drivers have different schedules and work independently across different locations. A single training session would not reach all drivers effectively. By building layers of support (dispatchers who understand the system, role model drivers who can help colleagues, and videos that can be watched independently), the organization aimed to create multiple channels through which drivers could get help. This approach draws on the idea that knowledge transfer within organizations is more effective when it is embedded in existing work relationships rather than delivered through a single top-down communication [Non94]. The addition of the WinTax training video reflects a practical insight that emerged during preparation: the CDT does not operate in isolation, and successful use of Driver Connect depends on correct operation of the existing dispatch system.

This layered approach is operationally motivated, as described above, but it also reflects a legal expectation. Under Article 8:1(2) of the Arbeidstijdenbesluit vervoer, liability for non-compliance with the working-time and rest norms falls on the employer whenever the driver is a werknemer; Article 8:1(3) lets the employer escape that liability only by showing that the necessary orders have been given, the necessary measures taken, the necessary means provided, and the reasonably required supervision exercised [atb]. The four pre-implementation measures described in this chapter, together with the on-site support added during the rollout (Chapter 6), map onto these four requirements: the videos and the training sessions are the orders and the measures, the phones and the app accounts are the means, and the dispatcher channel and the implementation coordinator together provide the supervision. The same arrangement that distributes practical knowledge across the organization also documents the employer's due-diligence position.

5.3 Implementation timeline

The following timeline summarizes the key dates of the implementation process, from the initial preparations in December 2025 through the follow-up data collection in May 2026:

- **16 December 2025**: Meeting at the headquarters of Beedr with the account manager to discuss the implementation of the CDT and Driver Connect, including the technical setup and cost structure.
- **January 2026**: Quotation approved. Chamber of Commerce (KvK) details and Kiwa permit documentation submitted to Beedr.
- **February 2026**: Beedr registers the organization with the ILT and completes the technical setup to connect WinTax with the CDT. The researcher collects employee data required for CDT verification, including driver's licences and driver cards, and registers all vehicle licence plates through a smart card reader system.
- **11 February 2026**: Two role model drivers (one taxi, one coach) trained individually on Driver Connect.
- **26 February 2026**: Dispatcher training session on the CDT and Driver Connect.
- **2 March 2026**: Instructional videos distributed to the broader driver group.
- **5 March 2026**: WinTax training video created and distributed to dispatchers.
- **11 March 2026**: Company-wide testing phase begins. All employees required to actively use Driver Connect during their shifts. BCT devices remain installed in taxis as a legal fallback. Paper trip sheets continue to be used as a backup.
- **April 2026**: BCT devices removed from all vehicles. All drivers operate fully through Driver Connect. Paper trip sheets are maintained alongside the app as a safeguard for salary calculation and ILT compliance regarding driving and rest times.
- **April 2026**: Follow-up interviews with drivers and management on experiences with Driver Connect after the transition.
- **May 2026**: Follow-up driver questionnaire distributed and completed by 17 drivers, for comparison with the baseline measurement.

The timing of the implementation was shaped by a practical constraint. The company's high season for transport begins in April, during which a significantly higher number of trips are carried out. This increases the pressure on both drivers and dispatchers. Introducing a major operational change at the start of this period would be too disruptive. It was therefore essential to begin the testing phase in March, so that all employees could familiarize themselves with Driver Connect before the workload increased.

6 Action Taking

This chapter reports on the actual introduction and early use of Driver Connect at the organization. It contributes to all three sub-questions: how the introduction was organized in practice, how drivers experienced the support measures, and how the implementation influenced operational routines.

6.1 Chronological account of the CDT rollout

The CDT rollout at the organization began in December 2025 and unfolded over several months. This section provides a chronological account of the process, based on the researcher's observations as implementation coordinator and on organizational records.

Preparation (December 2025 – February 2026). On 16 December 2025, the researcher and management met with the account manager at the headquarters of Beedr to discuss the implementation of the CDT and Driver Connect. The meeting covered the technical setup, the integration with WinTax, and the cost structure. In January, the organization approved the quotation and submitted the required Chamber of Commerce (KvK) details and Kiwa permit documentation to Beedr.

In February, Beedr registered the organization with the ILT and completed the technical configuration to connect WinTax with the CDT. During the same period, the researcher collected all employee data required for CDT verification. This included driver's licences and driver cards for all active drivers. In addition, all vehicle licence plates were registered through a smart card reader system. Once personnel and vehicles were prepared in the system, the researcher began working with two role model drivers, as described in Chapter 5. The remaining support measures (dispatcher training, instructional videos, and the WinTax training video) followed in the weeks leading up to the company-wide switch.

Company-wide testing phase (11 March 2026). On 11 March, all employees were informed that they were required to start actively using the Driver Connect app during their shifts. This marked the beginning of the company-wide testing phase.

At this stage, the BCT devices were still installed in all taxis. This ensured that if drivers made errors while using Driver Connect, the organization could still rely on the BCT for accurate registration of working times. In addition, paper trip sheets continued to be used as a backup. The testing phase was designed to run until the beginning of April.

The timing of the testing phase was deliberate. The company's high season for transport begins in April, with a significantly higher number of trips. Starting the testing phase in March gave all employees several weeks to get accustomed to the app before the workload increased. Introducing a major operational change at the start of the high season would have been too disruptive for both drivers and the planning department.

Subsequent steps. In April, all BCT devices were removed from the vehicles. From that point on, all drivers operated fully through Driver Connect. Even after the removal of the BCT, paper trip sheets remained in use alongside the app. This serves as a safeguard to ensure that driver salaries can still be calculated correctly in case of errors, and that the organization maintains a reliable backup for ILT compliance regarding driving and rest times.

6.2 Reception of support measures

The support measures described in Chapter 5 were received differently across the organization. This section reports on how each measure was used in practice during the first weeks after the switch.

Instructional videos. The instructional videos produced a mixed response. Around 25 drivers watched the video shortly after it was distributed, and several of them contacted the researcher with follow-up questions. These drivers were generally able to start using Driver Connect with relatively little difficulty.

At the same time, there was notable resistance from drivers who were unfamiliar with how to use apps on their phone. When the researcher asked these drivers whether they had watched the instructional video, this was often not the case. This pattern suggests that the video was effective for drivers who engaged with it, but did not reach those who needed the most support.

The resistance observed here fits the early stages of the process described by Lapointe and Rivard [LR05]. Their model predicts that when employees perceive a new system as threatening to their existing conditions, they respond with resistance behaviors. In the early implementation stage, these behaviors tend to be individual rather than coordinated: employees may disengage from preparatory materials, avoid the new system, or express frustration without organizing collectively. The pattern observed at the organization matches this description. The drivers who did not watch the video were not actively opposing the transition, but they were not engaging with it either. This form of passive resistance is significant because it meant that the drivers who needed the most support were also the least prepared when the switch happened.

On-site support. In addition to the pre-planned support measures described in Chapter 5, the researcher began providing on-site support during March. This was not planned in advance but emerged as a response to the volume of questions and technical issues that arose after the switch. The researcher was physically present at the office every Monday and Tuesday between 09:00 and 12:00 to answer questions and provide hands-on help with setting up and using the app. This allowed drivers who came to the office to receive direct assistance. The on-site presence also made it possible to identify common problems quickly and address them before they spread further.

Dispatcher training. The dispatchers took the training seriously and began working with the new system immediately. Because dispatchers understood how WinTax and Driver Connect interacted, the number of errors within the app decreased as correct data was being entered and transmitted from the planning side. In addition, dispatchers were able to step in and assist drivers when they encountered difficulties during their shifts. This confirmed the intended effect of the layered approach described in Chapter 5: by training dispatchers before the broader switch, the organization created a support layer that reduced the dependence on the researcher as the sole source of help. Venkatesh and Bala describe training as a pre-implementation intervention that shapes how employees engage with a new system [VB08]. In this case, the dispatcher training served both to improve data quality in the system and to extend the capacity for driver support across the organization.

Role model drivers. The two role model drivers, who had been trained individually on 11 February, served as reference points within the driver group. Drivers at the organization frequently interact with each other in the company canteen, at airport pickup zones where the organization serves its aviation clients, and at shared pickup points where they often wait together before assignments. These informal meeting points created an environment in which the role model drivers could support colleagues with the app during regular work situations. Their experience was drawn upon informally by drivers who had questions about logging in, handling breaks, or navigating the app.

6.3 Observations of early use

Beyond the issues that arose during the first weeks (discussed in Section 6.4), the introduction of Driver Connect also brought visible changes to everyday work routines.

NFC scanning. Scanning the driver's licence using a smartphone proved to be a practical challenge for many drivers. Logging in to Driver Connect requires holding the phone against the driver's licence so that the NFC reader can verify the identity of the driver, as shown in Figure 4. In practice, several problems occurred. Some drivers had phone cases that were too thick for the NFC signal to pass through. Others did not position their phone correctly against the licence, or placed the licence against a part of the phone where the NFC reader was not located. These were not software errors, but physical handling issues that required individual guidance.

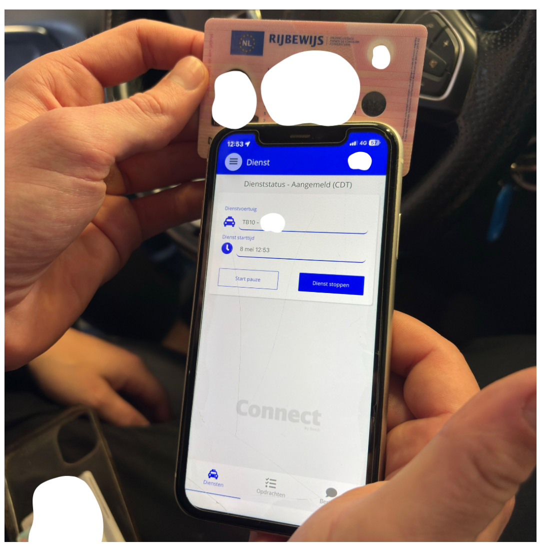
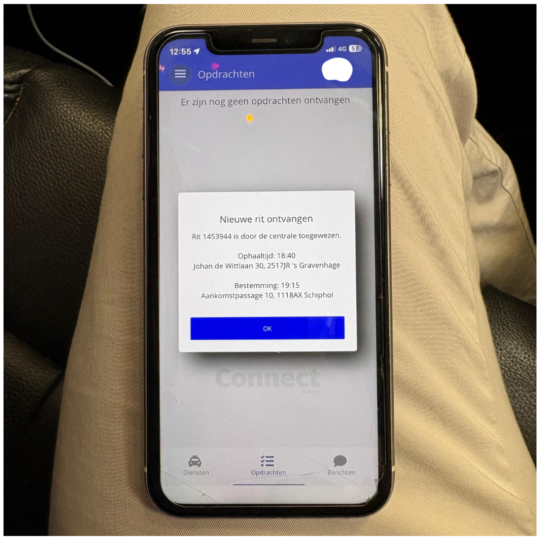
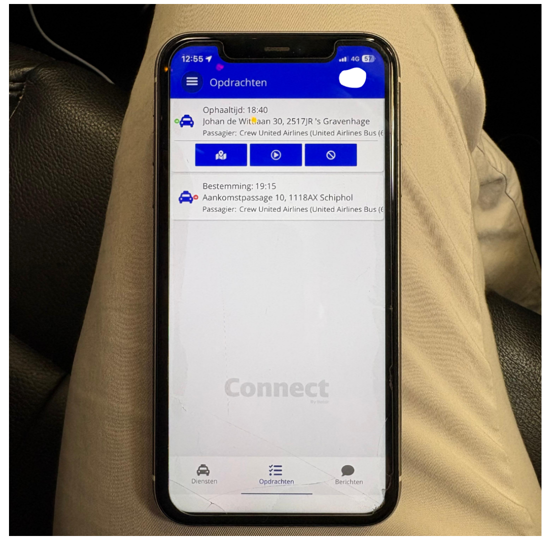


Figure 4: NFC scan of the driver's licence to log in to Driver Connect.

Changes in communication. A more structural change concerned the communication between drivers and the dispatch center. Under the BCT, drivers would call the dispatch center by phone when they had no active rides and needed their next assignment. With Driver Connect, a messaging function became available that allows drivers to contact the dispatch center directly through the app and receive their next assignment digitally. This significantly reduced the volume of phone calls between drivers and dispatchers. Figure 5 shows how a new ride is presented to the driver, and Figure 6 shows the in-app messaging flow on both sides.



(a) Notification of a new ride.



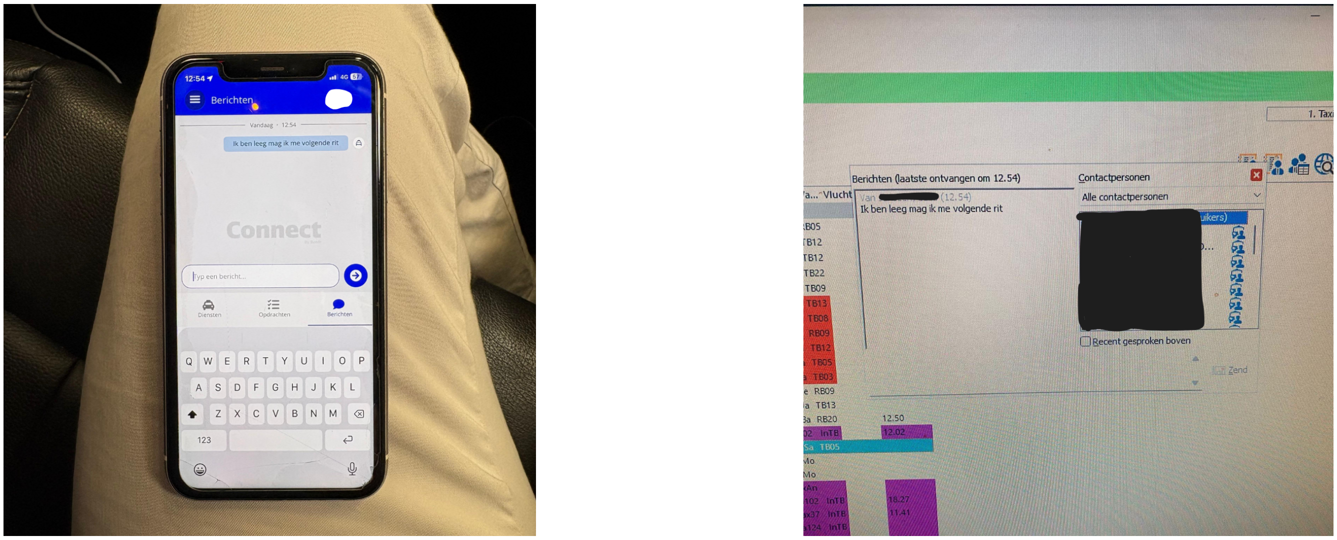
(b) Ride list with pickup and destination.

Figure 5: A new ride as it appears to the driver in Driver Connect.

This shift in communication is an example of how a new system can reshape routines beyond the specific function it was designed for. Driver Connect was introduced to register working times and comply with the CDT regulation, but its messaging function also changed how operational coordination takes place. Orlikowski describes this type of effect as an outcome of technology-in-practice: the actual patterns of use that develop when people engage with a new system in their daily work may differ from or extend beyond the intended purpose of the technology [Orl00].

Changes in dispatcher workflow. The introduction of Driver Connect also changed the daily work of dispatchers. When trips are entered correctly into WinTax, dispatchers benefit from reduced phone traffic because they can assign rides and communicate with drivers directly through the system. However, the new system also requires a higher level of precision from dispatchers. Addresses must be entered correctly so that WinTax can automatically calculate travel times based on distance. If invalid addresses are used, this functionality does not work. Flight times for aviation clients must be entered in the correct fields so that drivers can access this information in the app. Dispatchers must also ensure that vehicle mileage is accurately registered in WinTax, especially at the start of a driver's shift when discrepancies may arise.

More broadly, the system demands a higher standard of accuracy from all employees. Under the BCT, data was stored locally and errors in registration were less immediately visible. Under the CDT, incorrect data is transmitted directly to the ILT, which can lead to compliance issues. This means that mistakes by dispatchers or drivers are no longer contained within the organization but become part of the regulatory record. The compliance issues are concrete: a missing or late shift end can produce an apparent breach of the daily rest requirement in Article 2.5:1, a delayed



(a) Driver sends a message in Driver Connect.

(b) Dispatcher receives the message in WinTax.

Figure 6: The in-app messaging flow that replaced phone calls between driver and dispatch.

break can produce a breach of Article 2.5:6, and an unfilled tail of a dienst can produce a breach of Article 2.5:7 of the Arbeidstijdenbesluit vervoer [atb].

This shift illustrates a central feature of the regulatory change described in Chapter 2. Baldwin, Cave, and Lodge argue that the effectiveness of regulation depends on the ability to detect non-compliant behavior [BCL11]. Under the BCT, detection depended on physical access to the device or the driver card, and data gaps caused by malfunctions could go unnoticed by the regulator. The CDT removes this gap: data flows to the ILT in near real-time, and errors are visible immediately. Yeung describes such systems as a form of algorithmic regulation, where continuous data collection replaces periodic inspection [Yeu18]. For the employees at the organization, this means that the margin for error has narrowed. Compliance is no longer something that is checked occasionally. It is recorded continuously, and every entry matters.

6.4 Emerging issues and responses

Several issues emerged in the first weeks after the company-wide switch on 11 March. These can be grouped into technical problems, usability difficulties, and system errors.

Technical problems. Some drivers did not have phones that were compatible with the smart card reader required for NFC-based login. Others lacked a mobile data connection, which prevented the app from transmitting data to the CDT. These were hardware limitations that could not be resolved through training or instructions alone. Most drivers who initially lacked a suitable phone quickly took action and obtained a device with an NFC reader and a working mobile data connection on their own. For drivers who were unable to arrange this themselves, the organization provided a phone with mobile data on a loan basis.

Usability difficulties. Despite the instructional video, many drivers struggled with basic operations in the app. Common difficulties included starting and ending breaks, beginning and ending trips, ending shifts, and scanning the driver's licence. These problems were most frequent among drivers who had not watched the video and who were less experienced with smartphone apps.

System errors. Dispatchers also made errors in WinTax during the first weeks, which resulted in incorrect information being sent to the Driver Connect app. For example, if a vehicle or shift was not correctly assigned in WinTax, drivers would see wrong or missing data in the app. In addition, vehicle mileage data was sometimes inaccurate because of incorrect input in WinTax. These errors were not caused by Driver Connect itself, but by the interaction between the dispatch system and the app.

Organizational response. Initially, all feedback about problems and errors came directly to the researcher, who was the primary point of contact for the implementation. However, because the researcher had trained both dispatchers and office staff on the correct use of the system, more people within the organization gradually became capable of assisting drivers with technical issues. This created a continuous feedback loop: errors were reported, resolved, and then communicated across the organization to prevent the same mistakes from recurring. Through intensive use by all employees, most issues were identified and eliminated within the first weeks.

This pattern of gradual knowledge distribution across the organization reflects what Nonaka describes as organizational knowledge creation: knowledge that is initially held by a few individuals becomes shared through practice, interaction, and communication within the organization [Non94]. In this case, the practical knowledge of how to use Driver Connect and how to resolve common problems moved from the researcher and the dispatchers to the broader group of drivers and office staff.

7 Evaluating

This chapter presents the evaluating phase of the action research cycle. It draws on ten follow-up interviews with drivers, four follow-up interviews with management and office staff, a follow-up driver questionnaire completed by 17 drivers, and the researcher's field notes. The chapter addresses the second and third sub-questions of this thesis, on how drivers experienced the support measures and how the implementation influenced operational routines, and feeds into the main research question on how the CDT affects daily work practices.

7.1 Analysis of follow-up data

The follow-up data was collected in April 2026, in the four to six weeks after the company-wide switch to Driver Connect on 11 March. The follow-up interviews follow the four thematic categories from the interview guide: implementation, experience, impact, and side effects. Each driver interview was anonymized and coded with an identifier (D1 through D10), so that views from a single driver can be tracked across themes. Office staff are referred to by their organizational role.

The interviews were analyzed following the thematic procedure described in Chapter 3. Codes were generated inductively per interview and then clustered into themes that recur across the data set. Section 7.2 compares the follow-up data with the baseline measurements from the diagnosing phase. Section 7.3 reports the changes in work routines that recur across interviewees. Section 7.4 reports the differences between groups: drivers compared with office staff, older drivers compared with newer or younger drivers, and route or care drivers compared with drivers who do mainly single-trip work.

The follow-up driver questionnaire was distributed in May 2026 and completed by 17 drivers. Its aggregate-level results are reported alongside the interview themes in Section 7.2 and Section 7.3, where they act as a check on whether the patterns in the ten driver interviews also appear in the wider driver group.

7.2 Comparison with baseline

The baseline data, presented in Chapter 4, described an organization that worked frequently with the BCT but found it unreliable. Fourteen of the twenty questionnaire respondents experienced problems at least sometimes, and satisfaction was divided across satisfied, neutral, and dissatisfied responses (Table 2). The director and the operational manager described malfunctions and maintenance costs as the main motivation for beginning the CDT transition before the 2028 deadline.

The follow-up interviews speak to the same three points the baseline questionnaire measured: ease of use, problem frequency, and satisfaction. On problem frequency, the picture has shifted clearly. Baseline respondents described the BCT in their open responses through repeated mentions of malfunctions, dropped connections, late or missing trips, and devices that needed to be replaced. The follow-up interviews report the opposite. D6 says the BCT had "quite a few problems... problems of all kinds. Now with this new app we have many more possibilities. Compact and clear". D5 reports that under the BCT he had problems multiple times per month, and that since switching to the app he has had no comparable malfunctions. On ease of use, several baseline respondents had already hoped that an app would work better than the BCT, with one writing simply that the BCT was outdated and an app would suit the current time better. The follow-up interviews indicate that this hope has been realized for most drivers, with the qualifications discussed in the rest of this chapter for older drivers and for route or care drivers. On hours registration, one baseline respondent noted that the BCT's hour registration did not always match the actual hours worked. The follow-up interviews describe a clear change here: drivers can now check their registered hours directly in the app, and the operational manager reports that they "check for themselves what they have driven and compare that with their payslip".

The follow-up interviews also indicate that several expectations expressed in the diagnosing-phase management interviews have materialized. The director had expected significantly fewer malfunctions, better insight into hours worked, and more efficient planning. In the follow-up, both managers and drivers describe the new app as more reliable than the BCT. The director reports that the cost picture per driver is now visible at the end of each shift: "This gives me a very sharp picture of the total hours worked within a month, which means we can already make a quick estimate of wages." The operational manager describes a similar gain in transparency.

The concern that the management interviews raised about older drivers struggling with the app is also confirmed in the follow-up data, but with a qualification. Several older drivers (D7, D8, D9) found the transition difficult, especially in the first weeks. None of them, however, rejected the system outright. D9 describes how she watched the instructional video twice and was helped by her grandson and by the office, and now uses the app in daily practice. D7 continues to find the loss of a continuously visible screen difficult, and notes that he prefers "personal attention when introducing systems" because "computer-like things are difficult for me". The baseline anxiety about older drivers was therefore justified, but the layered support described in Chapter 5 narrowed rather than removed the gap.

The follow-up driver questionnaire ($n = 17$), distributed in May 2026, allows the baseline distributions to be compared with a follow-up measurement at the aggregate level. Table 3 sets the baseline ($n = 20$) and follow-up responses side by side for ease of use and problem frequency. The shift in problem frequency is the most visible. Under the BCT, six of twenty drivers reported problems often or very often. Under Driver Connect, three of seventeen report problems often and none very often. Ease of use is roughly stable in absolute counts but slightly stronger in proportion: 11 of 20 baseline respondents (55%) found the BCT easy or very easy, against 11 of 17 follow-up respondents (65%) for Driver Connect. The follow-up questionnaire also includes a direct comparison item that the baseline does not. When asked how Driver Connect compares to the BCT, 11 of 17 respondents rate it better or much better, three rate it about the same, and three rate it worse. No respondent rates Driver Connect much worse than the BCT.

Table 3: Driver questionnaire responses on system experience: baseline (BCT, $n = 20$) compared with follow-up (Driver Connect, $n = 17$)

Question	**Response**	**BCT**	**Driver Connect**
Ease of use	Very easy	5	5
	Easy	6	6
	Neutral	6	3
	Difficult	2	2
	Very difficult	1	1
Problem frequency	Never	1	1
	Rarely	5	5
	Sometimes	8	8
	Often	3	3
	Very often	3	0

A direct comparison at the level of individual responses is not possible because both questionnaires are anonymous and may have been completed by overlapping but not identical groups of drivers. The questionnaire patterns are therefore reported as aggregate-level shifts that complement the interview evidence rather than replace it.

7.3 Changes in work routines

Figure 7 contrasts the driver's working day before and after the transition. The same seven moments in a shift are shown in the top and bottom rows: the start of the shift, logging in, receiving the next ride, communicating with the dispatch desk, taking the pauze, washing or refuelling the vehicle, and ending the shift. Each step has changed in form. The themes that follow describe what those changes meant in daily practice.

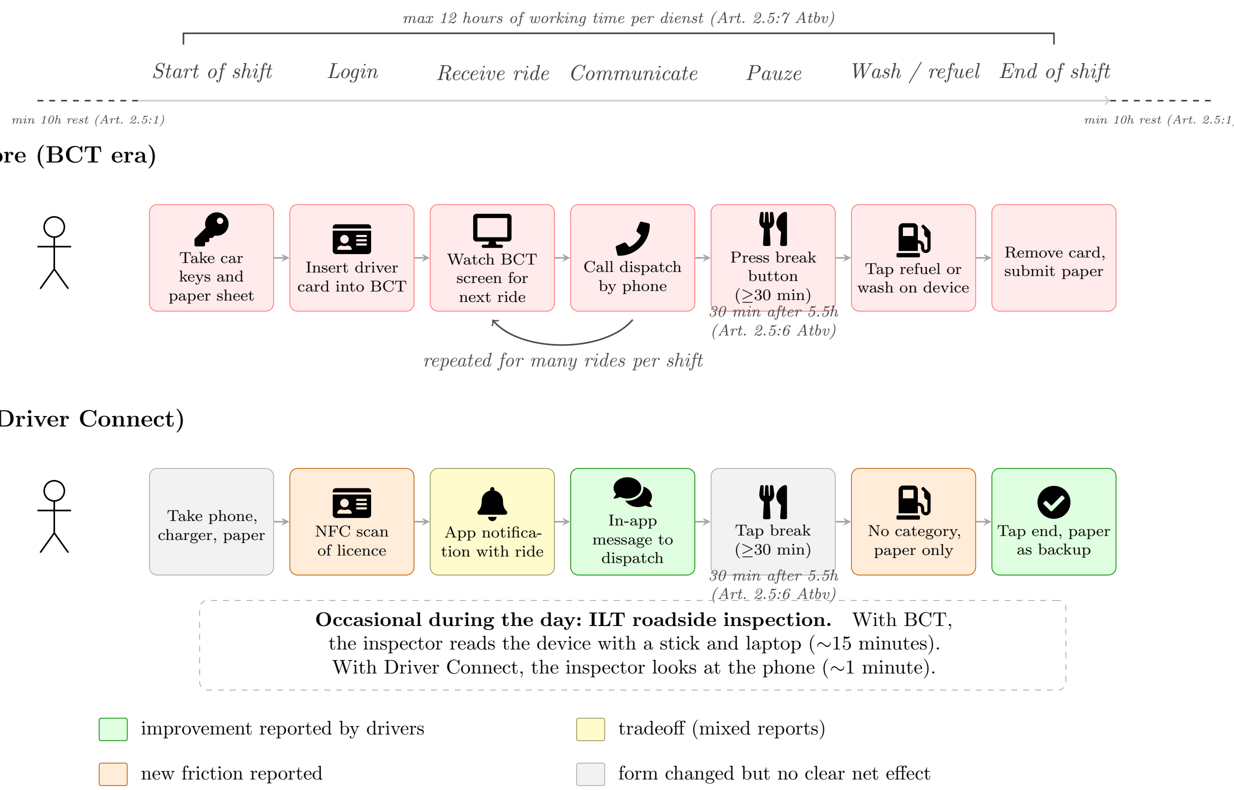


Figure 7: The driver's working day before and after the CDT transition. The same seven moments in a shift are shown for the BCT routine (top, red, baseline) and the Driver Connect routine (bottom), reading left to right in time order. A loop arrow between the rows reflects that most of these steps repeat for each ride within a shift. The Driver Connect boxes are colored by the net finding from the follow-up interviews reported in Section 7.3: green for improvements, orange for new friction, yellow for mixed reports, and gray where the form changed but the net effect on the working day is unclear. The dashed block at the bottom marks an event that does not occur every day but, when it does, takes a markedly different shape under the two systems. The bracket above the column headers marks the maximum daily working time of twelve hours per dienst, and the dashed extensions of the time arrow on each side mark the minimum ten hours of continuous rest required before and after the shift; the small italic annotations under the lunch boxes mark the pauze norm of thirty minutes after 5.5 hours of work [atb].

Seven recurring themes, plus one emergent structural gap, run through the follow-up interviews. Table 4 lists each theme together with the drivers, office staff, and questionnaire items that support it. Figure 8 shows the same coverage as a stacked bar chart, so that the relative weight of each theme across the interview round is visible at a glance. The themes are then presented in turn below.

Table 4: Themes in the follow-up data and the sources that support each one.

#	Theme	Drivers	Office staff	Questionnaire
1	Reduced phone traffic and calmer work	D2, D5, D6, D10	Dir, Ops	Q19, Q21
2	Phone hardware as friction	D3, D7, D9	Ops	Q14
3	Dispatcher workload toward precision	D7	Dir, DA	–
4	Inflexibility for route and care drivers	D1, D4, D8, D9	–	Q23
5	New mutual transparency	–	Dir, LC, Ops	Q22
6	ILT inspections under the new system	D2, D3, D4, D6, D10	–	–
7	Surveillance as a felt experience	D3, D4	–	–
8	Emergent: licence renewal gap	D9	–	–

Office abbreviations: Dir = director; Ops = operational manager; LC = manager responsible for large clients, bookings, and invoicing; DA = manager responsible for disability transportation and employee absenteeism.

7.3.1 Reduced phone traffic and calmer work

The most consistently reported change is a sharp reduction in phone calls between drivers and the dispatch center. D6 estimates that "the phone traffic has certainly decreased by 90%". D10 reports that he "almost never call[s] the dispatch anymore. If I call the dispatch, then we have a problem". D5 describes how he handles the same situation now: "I just click empty. Then I send a message and I get a message". The director and the operational manager confirm the change from the office side. Several drivers connect the reduced phone traffic to a calmer experience while driving. D2 says "you are calmer in traffic" because "in one image on your phone everything is clear". D6 states that "you are also much more focused on the ride" and that the app brings "much more peace". D10 links the calm directly to road safety. With the previous device, dispatchers "crammed you completely full of rides", whereas now "they send ride for ride", so that "the stress is much less than before with the BCT". This change is consistent with the technology-in-practice perspective described by Orlikowski: the messaging function of Driver Connect was introduced as part of the regulatory transition, but in daily practice it has reshaped the operational routine of how drivers and dispatchers communicate [Orl00]. The follow-up questionnaire echoes the same pattern in the wider driver group: 11 of 17 respondents report calling the dispatch center less than under the BCT, and 10 of 17 prefer in-app messages over calls when they need to flag a status change to the dispatch desk (Q19, Q21).

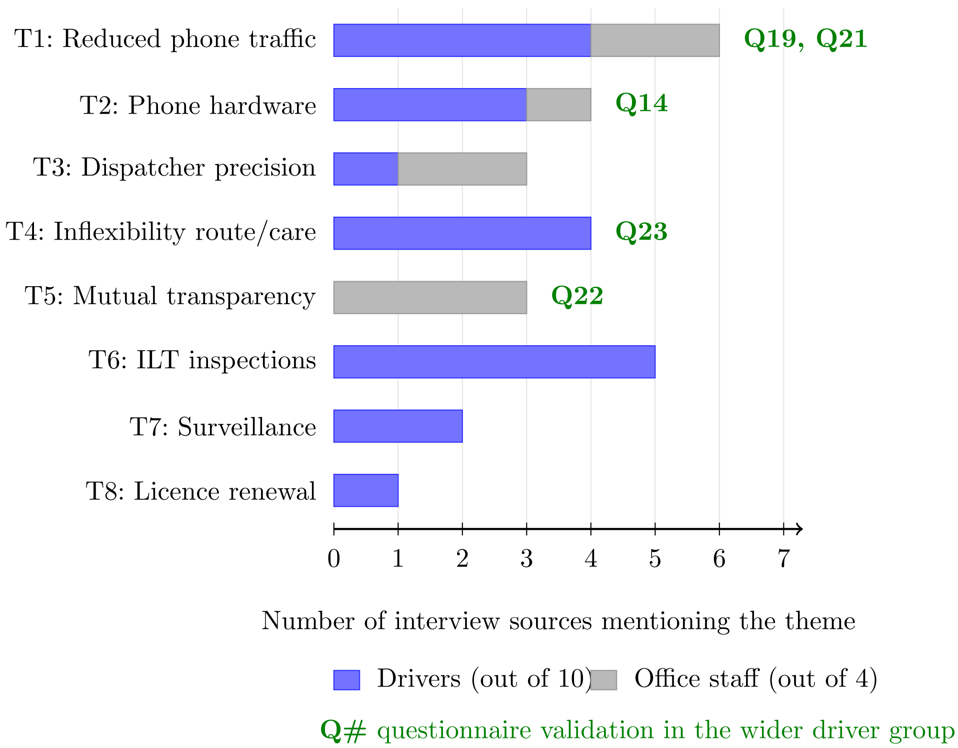


Figure 8: Coverage of each theme by the interview participants quoted in the corresponding subsection (7.3). Drivers (blue, out of 10 interviewed) and office staff (gray, out of 4 interviewed) are stacked. Where the wider questionnaire group ($n = 17$) validates the same theme, the relevant items are listed at the right. The same data is given by name in Table 4.

7.3.2 Phone hardware as a source of friction

A new set of practical problems has appeared with the move from a fixed in-vehicle device to a personal smartphone. D9 reports that “if you leave it on, the battery runs down quickly”. The operational manager confirms that “some drivers underestimate the battery of their phone, especially during longer shifts”. D7 describes a more structural issue: with the BCT he could keep the screen continuously in view, but “to keep your phone on for a whole day during your 10-hour shift, that is just not feasible”. He adds that to read each new ride he has to “constantly stop, take your phone out” and that this “costs too much time”. D3 raises a related driving-safety concern: “your phone, you do not want to have it in your hand while driving. Because the fine is just around the corner.” NFC handling, already discussed in Chapter 6, continues to require physical handling that some drivers find awkward. These problems are not software bugs. They are properties of the device class on which the registration tool now runs. The questionnaire confirms that the hardware dependency is felt across the group rather than by a few drivers only: three of seventeen respondents disagree that they have the equipment they need (phone, charger, holder, internet) to use Driver Connect (Q14).

7.3.3 Dispatcher workload shift toward precision

Reduced phone traffic does not mean reduced dispatcher workload. The director observes that "dispatchers have to work much more precisely, because it is really in the details. Addresses must be entered exactly". The manager responsible for disability transportation gives a concrete example: "the moment the kilometre registration deviates by one kilometre, you cannot get into the app anymore. That all costs time". Where the BCT tolerated approximate input because data was stored locally and used after the fact, the CDT propagates errors immediately. D7 reports that on the evening shift the dispatchers "do not know everything very clearly" and that "I can be glad if there is someone at their post". The new system has not eliminated dispatcher work; it has changed its content from interruption management to data quality management.

7.3.4 Inflexibility for route and care drivers

Drivers whose work consists of multiple overlapping pickups, rather than single sequential trips, encounter friction with the app's trip model. D1, a route driver in disability transport, says: "the order of boarding and alighting is not flexible enough in this system. I always have to click the top boarding person, even if I am not there". D9, who works in care transport, reports a similar problem from a different angle: "there is no way to scroll on the screen. If I have a client who has to be picked up first... that next one does not belong there in that place", and adds: "I have that every day". D8, an instructor and long-time driver, notes that the app "cannot create a continuous time overview for a whole day" and that activities such as car washing cannot be entered. D4 describes the same gap: "I am missing a whole lot of extra data that you actually could fill in yourself", for events such as a wash, a refuel, or a traffic jam. Behind these reports lies how rides are entered into the dispatch system. In WinTax the dispatcher composes a route by adding individual rides in chronological order of their planned boarding and alighting times. The app receives this composition as a fixed sequence and the driver can only confirm the ride at the top of the active list before moving on. In daily route and care work, the actual order routinely deviates from the booked one: a client is not yet ready, a detour shortens the loop, the return leg unfolds in a different sequence. For an organization that runs dozens of routes a day with hundreds of clients, booking each ride in a way that matches the driver's actual sequence one-to-one is not administratively realistic, and every dynamic adjustment would require the dispatcher to rewrite the composition in WinTax in real time. These limits do not affect drivers who perform a single ride at a time, but they affect daily work for drivers in the disability and care segments and for drivers who need to account for their full working day. Among the 11 questionnaire respondents who do route or care work, four disagree that the order in which Driver Connect presents passengers matches their daily reality, against five who agree (Q23). The interview pattern is therefore not an artefact of the small number of route and care drivers in the interview round.

7.3.5 New mutual transparency

A second consequence of the centralized data flow is that both drivers and managers now have a clearer view of the same information. The director notes that "the cost price of a driver has now become much more transparent", and the manager responsible for large clients adds that "you can now actually see at the end of the driver's shift how many hours he has worked, so how much he costs. And how much he has turned over". The operational manager reports that drivers now "check for themselves what they have driven and compare that with their payslip". This mutual transparency was not the primary purpose of the regulatory transition, which is concerned with working-time and driving-time oversight by the regulator. In daily practice, however, it has emerged as a side effect with consequences for the relationship between drivers and the office. The questionnaire shows that this practice has spread beyond the interview sample: eight of seventeen respondents use the in-app history function to check their own hours, against four who do not (Q22).

7.3.6 ILT inspections under the new system

The shift from the BCT to the CDT has changed not only how data is recorded but also how it is read. Several drivers describe inspections that took place under the new system. D2 says the check "can be done within a minute. Then they can be on it. Maybe thirty seconds", because everything is in the phone. D6, who was inspected at an airport pickup zone, reports that the ILT was positive, having seen that the technology only mandatory in two years was already being used correctly. D4 was inspected twice. In both cases the inspectors were unfamiliar with the new app and the check passed without comment. D3 describes a similar encounter, in his case with the police rather than the ILT. D10 reports that ILT colleagues who had checked other drivers were "very surprised" but interested in the new system. The contrast with the BCT-era check is concrete: where previously, as D10 puts it, the ILT had to "read out your BCT with a stick and laptop" for about "a quarter of an hour", the inspector now looks at the phone for about a minute. The inspection itself has become faster and lighter on both sides, even before the regulator is fully familiar with the new system.

7.3.7 Surveillance as a felt experience

The same data flow is described differently when the perspective shifts from the office to the road. D4 articulates this most clearly: "where can you be tracked once the device is working?... you are tracked everywhere. Well, it is work-related, so I do not find it that bad. But you do give up something". D3 voices a related concern about being judged on data the regulator sees without operational context: "because I do not do this today, I do not commit such things. And then to hear something afterwards. Or get a fine or a complaint". The CDT does not transmit a continuous GPS track, as set out in Section 2.7. What these drivers describe as being seen is therefore not actual location tracking but the loss of a buffer between their working day and the regulator's view of it. Yeung describes this kind of regulatory presence, in which continuous data collection replaces periodic inspection, as algorithmic regulation [Yeu18]. The drivers do not use the term, but they describe its felt consequences.

7.3.8 An emergent structural gap

A specific issue surfaced in the follow-up data that is unlikely to be unique to this organization. D9 reports that her driving licence was due to be renewed and that the new licence would not yet be linked to the CDT system on the day she was due to drive: “I can therefore drive, but I cannot log in on Wednesday morning”. She suggests that “this will become a big problem nationally too if you run into that”. The system links a session to the licence number, and a routine event such as a renewed licence requires manual intervention before work can resume. The intervention itself sits inside WinTax: a user with elevated personnel-administration rights has to update three fields in the driver’s record, namely the licence number, the expiry date, and the MRZ code on the new licence. WinTax does not synchronize these fields automatically and is not connected to the RDW database, which means the update has to be entered by hand for every renewal before the new licence is recognized by the CDT and the driver can log in again. The technical architecture described in Section 2.7 does not yet handle this case automatically.

7.4 Experiences across groups

The themes in the previous section recur across the data, but they are not distributed evenly. Four group-level patterns are visible in the follow-up interviews.

Drivers and office staff. Office staff describe the transition primarily through what it has made possible: clearer cost calculation, more accurate planning, easier verification of compliance. Drivers describe it primarily through changes to their daily work: less calling, more autonomy, a different physical relationship to the registration tool. The two groups talk about the same system, but they highlight different consequences of it. The manager responsible for large clients says “the drivers... are actually quite positive about the new app”, and notes that he had expected more resistance to the change. Drivers are more mixed. The reduction in phone traffic is welcomed, but D4 notes a side effect: “it is less personal, it is just purely, it is sent through and you do your work and that is it”. He adds that he and his colleagues now “come by regularly to have a chat, because that is how you keep that contact”. The shift is therefore not a one-sided improvement; it has redistributed contact rather than removed it.

Older and newer drivers. The drivers who needed the most personal support during the transition are the ones with the longest tenure or the least familiarity with apps. D7 attributes his difficulties to age: “I am at an age now. Computer-like things are difficult for me.” D9 describes needing help from her grandson, from the operational manager, and from the researcher: “otherwise I would not have got out of it... my brain does not work like yours”. D8 notes that with the previous on-board computer “it was very hard to see the numbers. If you have slightly older eyes... you really had to stand still and calmly look”. The newer or younger drivers, including D5 and D6, describe the transition more straightforwardly. D5 actively helped colleagues, and D4 describes being shown how the app worked by D10 in the canteen and then passing on the same explanation to a colleague himself. These exchanges took place in the canteen, at shared pickup points, and in the drivers' own private group chat. D2 explicitly credits the group as a place where small mistakes are quickly resolved or flagged, and D10 notes that the group has been "deliberately kept private among drivers" so that management cannot read along. The pattern is consistent with what Nonaka describes as knowledge creation through practical interaction within the organization: the drivers who were quickest to adopt the system became informal channels of help for colleagues who needed more time [Non94].

Route and care drivers compared with single-trip drivers. The inflexibility theme described in Section 7.3 is concentrated among drivers whose work consists of multiple overlapping pickups (D1, D8, D9). Drivers who do mainly single-trip airport transport (D2, D6, D10) describe the app as well suited to their work and report fewer problems with the trip model itself. The technology-in-practice perspective set out by Orlikowski helps explain this: the app encodes a particular model of how a trip works, namely a sequential pickup and drop-off, and that model maps better onto some kinds of taxi work than onto others [Orl00]. The friction is not in the app's reliability; it is in the fit between the app's model and the actual structure of daily work for route and care drivers.

Early adopters and reluctant adopters. The two role model drivers and the early adopters served as informal teachers in the weeks after the switch. D10 had used the system before the company-wide rollout and continues to be enthusiastic about it. D5 describes helping colleagues during the early weeks and validates the phased approach: "you provided for reasonably good feedback from those drivers... that is of course the way you should implement". The drivers who avoided the preparatory materials, observed in Chapter 6 and predicted by Lapointe and Rivard's account of early-stage individual resistance, are also visible in the follow-up data [LR05]. D7 describes minimal engagement with the formal materials and a continuing preference for personal instruction: "I have not watched it because I like personal attention when introducing systems". The pattern documented in the action-taking phase has therefore not disappeared at the four-to-six-week mark; it has narrowed but persisted.

8 Reflecting

This chapter reflects on the findings reported in Chapter 7 through the theoretical framework introduced in Chapter 2. It then answers the research questions, sets out the limitations of the study, discusses implications for practice and for further research, and presents a set of recommendations addressed to the regulator that follow from the practical issues identified in this study.

8.1 Key findings and discussion

Four lines of analysis connect the themes from the evaluating phase to the literature.

Technology-in-practice and the gap between design and use. The themes in Chapter 7 confirm Orlikowski's argument that the effects of a technology emerge through use rather than through design alone [Orl00]. Driver Connect was introduced to satisfy the regulatory requirement set out in the Regeling Centrale Database Taxivervoer [cdt], but its everyday consequences extend beyond that requirement. The reduction in phone traffic between drivers and the dispatch center (eleven of seventeen drivers in the follow-up questionnaire report calling the dispatch center less than under the BCT, Q19), the migration of paper trip sheets from the BCT-era backup to a parallel record kept by individual drivers, and the inflexibility encountered by route and care drivers (Section 7.3) all describe ways in which the actual practice has diverged from the formal design. The system encodes a particular model of taxi work, namely a sequence of single trips. Where that model fits the reality of work, the app has been adopted with relative ease. Where the model does not fit, drivers have adjusted to the friction by adapting their own workflow rather than by abandoning the system.

A related dynamic appears with the move from a fixed in-vehicle device to a personal smartphone. Mazmanian, Orlikowski, and Yates describe an autonomy paradox in which mobile devices simultaneously increase and diminish the autonomy of their users: the device offers flexibility and control in the short term, but it also raises expectations of constant availability and erodes the boundary between work and the rest of the day [MOY13]. The drivers in this study experience an analogous tension. Their phones reduce calls from the dispatch center and produce a calmer working day, yet they also require the driver to carry, charge, and attend to the device throughout every shift, and to keep it in view while driving (D1, D3, D7). The same hardware that frees the driver from the BCT also sets new conditions on how the working day is organized.

Resistance shifts and narrows but does not disappear. The pattern observed in the action-taking phase, in which drivers who avoided the preparatory materials struggled most after the company-wide switch, is still visible at the four-to-six-week mark. Lapointe and Rivard describe early-stage resistance as primarily individual, expressed through disengagement rather than through coordinated opposition [LR05]. The follow-up data is consistent with their account. Resistance has narrowed in the sense that no driver in the follow-up rejects the system outright, and several have moved from skepticism to qualified acceptance. It has also shifted in object: where initial resistance was directed at the prospect of using a phone instead of a vehicle device, the residual resistance in the evaluating phase concerns specific limitations, such as the loss of a continuously visible screen for the evening-shift driver, or the fixed trip order for route drivers. The resistance has become more specific and less sweeping as the system has become familiar.

Algorithmic regulation and the felt experience of being seen. The CDT closes a detection gap that Baldwin, Cave, and Lodge identify as a central challenge of regulation: the difficulty of observing dispersed, mobile work [BCL11]. The diagnosing phase showed that BCT data was often incomplete because of malfunctions, which meant that the regulator could not always rely on what the device reported. The technical architecture of the CDT, set out in Section 2.7, removes this dependence on a vehicle-mounted device and replaces it with a centralized event store that the regulator can query [Ins25b]. Yeung describes this kind of arrangement, in which continuous data collection replaces periodic inspection, as algorithmic regulation [Yeu18]. The norms that this continuous data flow is read against are the daily rest, break, and working-time limits set out in Articles 2.5:1, 2.5:6, and 2.5:7 of the Arbeidstijdenbesluit vervoer [atb]. The inspection theme reported in Section 7.3 shows the operational consequence: a roadside check that previously took roughly a quarter of an hour with a card readout now takes about a minute on the phone, because the data is already in the central database rather than stored on a device inside the vehicle.

The felt side of the same change is what the follow-up data describes as a sense of being seen. This is not about location tracking, which the CDT specification explicitly excludes, but about the loss of separation between the working day and the regulator's view of it. The same data flow that the office describes as transparency the road describes as being watched. The asymmetry is significant: drivers on the road and managers at the desk draw on the same data, but they interpret its implications differently. A useful comparison is the study of Uber and Lyft drivers by Lee et al., who find that drivers under algorithmic management develop peer channels to make sense of opaque data systems [LKMD15]. The drivers in this study show a similar pattern: the private group chat (D2, D10) and informal canteen and pickup-point conversations serve as channels through which drivers share what they have learned about Driver Connect and about what the data shows. The setting differs from Lee et al. in that the data flows to a regulator rather than to a platform that assigns and prices work, but the peer sense-making response is recognizable.

Knowledge transfer through informal channels. The layered support approach described in Chapter 5 placed instructional videos at one end and personal hands-on help at the other, with role model drivers and dispatcher training in between. The follow-up data indicates that the layers were unevenly used. The video reached drivers who were already comfortable with apps. Older drivers, drivers on irregular shifts, and drivers in care or disability transport relied more on the role model drivers, on the dispatchers, and on the on-site support that emerged informally during March. Several interviews also point to the drivers' own private group chat, kept deliberately separate from management, as a parallel peer channel for these exchanges (D2, D10). When asked in the follow-up questionnaire which form of support helped them most, eight of seventeen drivers selected personal explanation by the implementation coordinator, more than selected the instructional video or help from fellow drivers (Q9). Nonaka describes this kind of distributed learning as the practical mechanism through which organizational knowledge is created: knowledge moves from a small group of carriers to a broader group through interaction within ongoing work [Non94]. The distribution of support use across channels also maps onto the constructs discussed in Section 2: drivers with higher effort expectancy and stronger facilitating conditions engaged with the self-directed video, while those who found the app more demanding relied on the hands-on layers, which is consistent with Sharma and Yetton's argument that users with less prior experience and higher task complexity benefit more from structured support [SY07]. The implication for the implementation is that the formal materials and the informal channels are complements, not substitutes. Read from the legal side, the same arrangement is also the employer's due-diligence record under Article 8:1(3) of the Arbeidstijdenbesluit vervoer: the orders, measures, means, and supervision that secure compliance with the working-time and rest norms summarized in Table 1 [atb].

Synthesis. The four lines of analysis are not independent of each other. The technology-in-practice lens shows that the CDT reshaped routines in ways the designers did not specify. The resistance lens explains why some drivers absorbed that reshaping more smoothly than others, and how resistance narrowed once the system became familiar. The algorithmic regulation lens places the individual experience in its regulatory context: the sense of being seen is not a subjective distortion but a response to a genuine shift in how working time is observed. The knowledge transfer lens explains how the organization bridged the gap between the formal deployment and actual use.

Together, the four lenses describe a system that was introduced as a compliance instrument and became a coordination tool, an audit tool, and a felt presence in the working day all at once. No single lens captures this: each highlights a different part of what happened when the CDT entered daily work.

8.2 Answering the research questions

The findings of this study allow each of the sub-questions and the main research question to be answered directly.

Sub-question 1. *How is the introduction of the CDT organized within the transport organization, and which choices are made regarding communication and support during this process?* The organization adopted a layered approach, sequenced over the months leading up to the company-wide switch on 11 March 2026. Two role model drivers were trained first, dispatchers second, instructional videos for the broader driver group third, and a targeted WinTax training video fourth. On-site support during March was added during the rollout in response to the volume of questions that emerged. The choice of Driver Connect was shaped by its integration with the existing WinTax dispatch system. The timing of the rollout was shaped by the start of the high season for transport in April, which made it impractical to introduce a major operational change later. The sequence itself was deliberate: training role models and dispatchers before the broader driver group spread practical knowledge across the organization rather than concentrating it with a single coordinator, so that questions during the rollout could be absorbed at multiple points.

Sub-question 2. *How do drivers experience the implemented support measures in terms of their ability to work with the CDT in daily practice?* The instructional videos worked for drivers who watched them. Drivers who did not watch them, or who did not engage with the prepared materials, were also the drivers who needed the most support after the switch. The role model drivers and the dispatchers turned out to be the most consistently used channels, supplemented by the on-site presence of the implementation coordinator. The follow-up interviews indicate that personal, hands-on help was the most effective channel for drivers with less experience using apps. The pattern is consistent with the literature on training as an implementation intervention [VB08, SY07]. On-site support and the drivers' own peer channels emerged during the rollout rather than being planned, and they complemented rather than replaced the formal materials: drivers who engaged with the videos still used the informal channels for follow-up, and drivers who avoided the videos used them as their primary route into the system. The follow-up questionnaire confirms the same ordering in the wider driver group: when asked which form of support helped them most, drivers named personal explanation by the implementation coordinator most often (8 of 17), followed by the instructional video (6) and help from fellow drivers (5); some respondents named more than one channel (Q9).

Sub-question 3. *How does this specific implementation of the CDT influence operational routines?* The most consistent operational change is the reduction in phone traffic between drivers and the dispatch center, which has produced a calmer work experience for drivers and a more focused workload for dispatchers. Dispatchers now spend less time fielding interruptions and more time ensuring that data entered into WinTax is accurate, because errors propagate immediately to Driver

Connect. The shift from interruption management to data quality is not a reduction in dispatcher workload but a change in the kind of work that fills the desk. Drivers in route and care transport experience friction with the app's trip model, which assumes a sequential pickup-and-drop-off pattern that does not match overlapping multi-passenger work. Both drivers and managers gain new visibility into the same data, which produces transparency in some interactions and a felt sense of surveillance in others. The new visibility is asymmetric: the office reads the data flow as planning insight, while drivers on the road more often experience it as a loss of buffer between their working day and the way it is seen elsewhere. The follow-up questionnaire confirms these shifts at the aggregate level: 11 of 17 drivers report calling the dispatch center less than under the BCT, four of the eleven route or care respondents disagree that the app's trip order matches their daily reality, and eight of seventeen drivers use the in-app history function to check their own hours (Q19, Q23, Q22).

Main research question. *How does the introduction of the CDT affect daily work practices within a Dutch transport organization?* The introduction of the CDT closes a detection gap that the regulator identified, but it also reshapes the organization of work in ways that exceed the regulatory purpose. Communication between drivers and dispatchers has been restructured around the app rather than the phone. The dispatcher role has shifted toward data quality. Drivers in single-trip work experience the change as autonomy and calm; drivers in route and care work experience it as added rigidity. Both drivers and managers gain transparency into the same data, with different consequences for each. The system was introduced as a compliance tool. In daily practice it has become a coordination tool, an audit tool, and a felt presence in the working day all at once. The net effect is therefore neither a clean improvement nor a clean burden but a redistribution: the gains in calm, autonomy, and transparency, and the costs in rigidity, new device-class dependencies, and the felt presence of the regulator, are not evenly spread across the groups in the organization.

8.3 Limitations

This study has several limitations that should be stated alongside the findings.

The first concerns the dual role of the researcher. As described in Section 3.4, the researcher is also the implementation coordinator. This provides close access to daily operations but means the researcher is not a detached observer. The mitigation followed in this study, set out in Section 3.4 and Chapter 3, is procedural: a defined data-analysis approach, regular consultation with the thesis supervisor, and explicit flagging of observations made in the implementation role. The risk that drivers withheld critical views from a researcher who is also a coordinator cannot be fully eliminated.

The second concerns the case. The study is conducted at a single medium-sized transport organization. Other organizations in the Dutch taxi sector differ in size, in client mix, and in their relationship with the ICT service provider. The findings of this study describe how one organization experienced the transition. They are not directly generalizable to taxi organizations with different structures or to other regulated sectors.

The third concerns the data. The two driver questionnaires are anonymous, which means the comparison between rounds is at the aggregate level only. The follow-up questionnaire was completed by 17 drivers, against 20 for the baseline, which keeps the comparison indicative rather than statistically generalizable. The follow-up window for the interviews, four to six weeks after the switch, is short relative to the timescale of organizational change. Patterns visible at this point may continue, may attenuate, or may shift as the system becomes routine.

The fourth concerns external factors. The high season for transport begins in April 2026, and several factors outside the scope of this study influence the work that takes place during this period. Geopolitical tensions between the United States and Iran, fluctuations in oil prices, and changes in flight volumes through the regional airport all affect the contracts and the volume of work the organization handles. These factors interact with the CDT transition without being caused by it. The findings should therefore be read as describing the experience of the transition under the conditions of spring 2026, not under all conditions in which a CDT transition might take place.

A fifth limitation concerns the composition of the interview sample. No dispatcher (centralist) was interviewed. The dispatcher role is central to the operational findings reported in Chapter 7, but the conclusions about dispatcher workload rest on the views of the director, on the views of the two managers who occasionally serve as backup dispatchers, and on what the drivers say about their interactions with the dispatch desk. A direct dispatcher voice is missing. A related sampling asymmetry concerns the diagnosing phase: only two interviews were conducted before the company-wide switch, both with management. Driver experience under the BCT is therefore captured in the diagnosing phase only through the baseline questionnaire and through what management said about drivers, not through the drivers' own qualitative voices. Both points should be kept in mind when reading the comparison between the diagnosing and evaluating phases.

8.4 Implications for practice and further research

8.4.1 Implications for practice

This study suggests five points that other taxi organizations preparing for the 2028 deadline can take forward. Each is grounded in specific findings from the implementation and the follow-up data.

Plan for personal, hands-on support from the start. The layered support model used in this study was effective overall, but the formal instructional videos were not sufficient on their own. When asked which form of support helped them most, eight of seventeen drivers in the follow-up questionnaire selected personal explanation by the implementation coordinator (Q9), more than selected the video or help from fellow drivers. Drivers who did not engage with the videos needed the most support after the switch, and that support came primarily through informal, face-to-face contact. The implication is that personal, hands-on support should be planned in advance rather than added in response to demand. For organizations where the implementation coordinator is not permanently on-site, this means scheduling a dedicated support period immediately after the company-wide switch.

Train dispatchers before drivers, and focus on data quality. Dispatchers are the second most important support channel after the implementation coordinator. They also control the data quality in the dispatch system that the driver-side app draws on directly. When a dispatcher enters an incorrect odometer reading or assigns a vehicle incorrectly in WinTax, the driver is blocked from logging in and must call the dispatch desk to resolve it. Training dispatchers early and focusing their training on data accuracy reduces the volume of these interruptions and makes the rollout smoother for the driver group. This was the experience in the present study: the dispatcher training on 26 February 2026 preceded the company-wide switch by two weeks and was one of the factors that kept the volume of login problems manageable after 11 March.

For route and care transport, prepare for trip-order friction. The CDT's trip model assumes a sequential pickup-and-drop-off structure. For single-trip taxi work this matches daily reality well. For route drivers who carry multiple passengers in a fixed round, the match is poor. Four of the eleven route or care respondents in the follow-up questionnaire disagreed that the app's trip order matches their daily reality (Q23). In the driver interviews, this friction was one of the most consistently mentioned issues across route drivers. Organizations with a significant share of route or care transport should plan ahead: a paper parallel record in every vehicle, a clear escalation path to the dispatcher when reordering is needed, and an early conversation with the ICT provider about what flexibility the application allows.

Complete the rollout before peak season. The timing of the rollout matters. The transition in this study was completed by 11 March 2026, several weeks before the high season began in April. This left a window in which the new system could become routine before the volume of work increased. Organizations that delay the rollout until after peak season begins will face the double burden of a new registration system and a higher operational load at the same time. The reasoning behind the early timing was articulated clearly by the director and is described in Section 5.

Anticipate routine identity events. A practical issue emerged in the follow-up data that is not covered in any implementation guidance: driving-licence renewal. When a driver renews their licence, the licence number, expiry date, and MRZ code stored in the dispatch system must all be updated manually by personnel administration before the driver can log in to the CDT again. Until the update is made, the driver is blocked from starting a shift. This is not an edge case: it will happen to every driver on the organization's roster at some point. Organizations should build a procedure for licence-renewal updates into their administrative workflow before the transition, so that drivers are not blocked unexpectedly when they return with a renewed licence.

8.4.2 Directions for further research

Three research directions follow from the limitations described above. The first concerns the timeframe: the patterns observed in the four-to-six-week follow-up window may change as the system becomes routine, and a six- or twelve-month follow-up would test whether the early adoption patterns persist, attenuate, or shift once the CDT is fully embedded in daily work. The second is comparative: studying the same regulatory transition at organizations with different sizes, client mixes, and ICT providers would identify which findings are properties of this case and which are properties of the regulatory instrument itself. The third concerns the felt experience of algorithmic regulation. The drivers in this study describe a sense of being seen that the technical specification of the system does not produce in literal terms. Further research could examine how drivers in mobile-work settings articulate and respond to centralized real-time data collection, and whether the gap between the technical and the felt experience is a stable feature of digital compliance systems more broadly.

8.5 Recommendations for the regulator

The technical specification of the CDT is published by the Inspectie Leefomgeving en Transport (ILT) and is grounded in the Regeling Centrale Database Taxivervoer [cdt]. ICT providers such as Beedr build their registration applications against this specification, which means that the choices the application enforces in daily use, including the rigid trip order and the strict odometer validation, are not provider-specific design choices but consequences of the regulatory specification itself. The specification was designed primarily to close the regulatory detection gap described in Section 2.7, and the inspection findings in Section 7.3 suggest that it succeeds on that point. The same findings, however, show a number of practical situations that are not yet represented in the specification. The observations below are drawn from one organization's experience and are not directly generalizable to the wider sector. They are offered as practitioner-level feedback from a setting that was not directly visible at the time the specification was drafted.

Tolerance for unavoidable edge cases. A number of practical situations are not currently representable in the specification. The clearest example is the period at the end of a shift in which a driver, having completed all rides, takes the vehicle to a car wash, refuels, or carries out small maintenance before returning the vehicle. These activities are part of the working day and are paid time. They count as arbeidstijd within the meaning of Article 2.5:7 of the Arbeidstijdenbesluit vervoer, so they fall inside the same 12-hour-per-dienst envelope as the rides themselves [atb]. The driver can register a break in the app, which is visible to the dispatch desk in WinTax, but he cannot register that he is washing or refuelling the vehicle. As a result the digital shift end falls considerably later than the last completed ride, and the payroll administrator has to compare the paper trip sheet against the digital end manually to confirm that the late end is legitimate. A second example is a network outage on the side of the mobile provider. The current application requires an active data connection: when the connection drops, the driver cannot log in and an active session can drop. There is no offline buffer in the application, which is why the transport organization in this study keeps a paper trip sheet in every vehicle as a fallback. The specification itself offers no built-in handling for this situation. Three changes would address this class of issues. First, define a small set of non-trip work events, such as car wash, refuelling, maintenance, and sustained traffic delay, so that the working day can be accounted for without unexplained gaps. Second, add an offline buffer requirement to the specification, so that the application can continue to record events locally during a network outage and forward them once the connection returns. Third, allow a maintenance mode in which an authorized technician can move a vehicle for testing without disturbing a driver session.

Modality-independent requirements for safe and workable use. The form-free design of the specification leaves the choice between a mobile application and a fixed in-vehicle device to the ICT provider, and both modalities are already on the market. What the specification does not yet do is set requirements that hold regardless of the modality. The most important of these requirements concerns interaction during driving. Operating a hand-held mobile device while driving is prohibited under Dutch road traffic law. A registration application that requires a driver to tap, scroll, or accept items during a ride therefore creates a direct tension with that prohibition, even when the device is in a holder. The follow-up data shows that this tension is real: D7 reports that he has to stop the vehicle to read his next ride; D1 and D3 report that they avoid touching the phone while driving for fear of fines. Two changes would help. First, require that any mobile registration modality meet the same hands-free criteria that already apply to navigation applications, so that the actions a driver must perform during a ride can be carried out by voice or by a single confirmation gesture. Second, set modality-independent user-interface requirements covering minimum button size and spacing, readability across light conditions, and clear separation between consecutive or overlapping rides. These requirements are now filled in implicitly by each ICT provider, with predictable variation across products.

Trip-order rigidity for route and care transport. The trip object set out in the specification assumes a sequential pickup and drop-off, and the dispatcher composes a route in WinTax in chronological order, which is sent to the app as a fixed sequence. On the outbound leg of a route, the driver must press the start button at each client when that client has boarded; only then can he move to the next entry. On the return leg, he can mark the next client only when the previous one has been dropped off at home. Reordering at the driver's discretion, which happens routinely when a client is not ready or when traffic makes a different sequence faster, is not supported in the app: the dispatcher has to update WinTax for every such change. For an organization that runs route transport at the volume reported in this study, that level of dispatcher intervention is not realistic to maintain in real time. Three changes follow. First, allow non-sequential trip handling in the specification, so that the driver can mark the client he is actually serving rather than the client at the top of the chronological list, with audit completeness preserved. Second, allow overlapping rides, where ride B begins before ride A has ended, as a valid event sequence. Third, future revisions of the specification should be consulted not only with ICT providers but also with drivers from different sector segments, including care transport, contract transport, airport crew transport, and student transport, so that this kind of edge case becomes visible before rather than after implementation.

Workload realism for the odometer reading and the dispatch desk. The odometer requirement is the clearest case in which a strict validation rule produces a chain of avoidable interruptions. At the start of every shift the driver selects a vehicle in the app and is shown the closing odometer reading entered by the previous driver. He compares this to the odometer in the vehicle itself. If the two do not match, he cannot log in. He must call the dispatch desk and ask the dispatcher to correct the value in WinTax before he can proceed. At the end of the shift the driver enters the closing reading himself. A typing error becomes the opening reading for the next driver, who runs into the same block and must call the dispatch desk again. During peak hours, this places repeated load on both the driver and the dispatcher for a registration step that has no operational value beyond the audit trail. The time consumed by these repeated calls is itself arbeidstijd under Article 2.5:7 of the Atbv, so the administrative cost is also a small but non-zero compliance cost. Three changes would help. First, allow a small tolerance band on the odometer at service start, with the deviation logged for the regulator rather than blocked. Second, allow a driver to enter a corrected opening reading himself, with a reason, without requiring a call to the dispatch desk. Third, allow the dispatch desk to enter corrections after the fact within a defined window, such as twenty-four hours, so that the driver is not blocked while the correction is being processed. The general point holds beyond the odometer: the specification currently turns minor entry errors on either side into hard blocks. In an organization that runs several hundred rides a day, with vehicle changes, last-minute replanning, and ad-hoc adjustments where every minute counts, this level of administrative precision is not realistic to sustain in real time.

The four observations above point in the same direction. The current specification reflects a thorough technical design from the regulator's side but a model of transport work that omits some of its day-to-day variability. The cases described here are not unusual. They are everyday situations: a driver washing the vehicle at the end of a shift, a network outage at the mobile provider, a route driver reordering a route on the spot, a typing error in a closing odometer reading. The fact that the specification has no good answer for any of them suggests that a future revision would benefit from a wider consultation, including drivers, dispatchers, and payroll administrators alongside the ICT providers who already take part. A formal review cycle on a known schedule, with input from a mix of transport organizations of different types, would also let the specification keep pace with how digital compliance is actually used in the sector.

9 Conclusion

This thesis has examined how the introduction of the Central Database for Taxi Transport affects daily work practices within a Dutch transport organization. The study followed the action research cycle of Susman and Evered through diagnosing, action planning, action taking, evaluating, and reflecting [SE78]. It drew on interviews with management and drivers, two rounds of an anonymous driver questionnaire (baseline $n = 20$, follow-up $n = 17$), and field notes recorded by the researcher in the dual role of implementation coordinator.

The introduction of the CDT closes a regulatory detection gap that the diagnosing phase made visible: BCT data was incomplete because of malfunctions, which meant the regulator could not always rely on what the device reported. The CDT's centralized event store, queried by the regulator on demand, replaces this dependence on the vehicle-mounted device. Within the organization, this regulatory shift has led to a wider rearrangement of work. Phone traffic between drivers and the dispatch center has fallen sharply. Dispatcher work has shifted toward data quality management. Drivers have gained autonomy and a calmer work experience. Route and care drivers have absorbed friction with the app's trip model. Drivers and managers now share visibility into the same data, which produces transparency in some interactions and a felt sense of being seen in others.

The contribution of this study is not an evaluation of the CDT, but a detailed account of how a legally mandated digital compliance system enters and reshapes the daily work of a single medium-sized organization. As more taxi organizations approach the 2028 deadline, this account suggests that the implementation will rearrange roles and routines in ways that exceed the regulatory purpose, and that the organizational work of preparing for the transition is at least as consequential as the technical work of connecting to the database.

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A Interview Guide

The following questions were used for the semi-structured interviews with both the director and the operational manager of the transport organization. The same set of questions was used for both interviews. The interviews were recorded with consent. In this thesis, both participants are referred to by role only.

Introduction: This interview is part of a bachelor thesis on the introduction of the CDT at the transport organization where you work. The conversation will be recorded. You will be referred to in the research by your role within the organization, not by name.

1. Could you describe your role within the organization and how long you have held this position?
2. How does the BCT currently fit into daily operations?
3. What problems or frustrations does the BCT cause in daily practice? And what are the positive aspects?
4. Are there any workarounds or habits that have developed around the BCT?
5. How does the organization currently handle regulatory compliance and ILT inspections?
6. Why has the organization decided to begin the transition to the CDT now?
7. What do you expect will change in daily operations once the CDT is introduced?
8. Do you have any concerns or positive expectations about this transition?
9. Is there anything else about this transition that we have not discussed?

B Driver Questionnaire

The following questionnaire was distributed anonymously to drivers before the company-wide switch to Driver Connect. The purpose is to collect baseline data on driver experiences with the BCT.

This questionnaire is anonymous. It is part of a study on the transition from the BCT to the CDT at the transport organization where you work. Your answers will help us understand how the current system works in daily practice.

1. How long have you worked as a driver at the organization?
   - ○ Less than 1 year
   - ○ 1 to 3 years
   - ○ 3 to 5 years
   - ○ More than 5 years
2. How often do you use the BCT during a typical shift?

- ○ Every ride
- ○ Most rides
- ○ Sometimes
- ○ Rarely
- ○ Never

3. How easy or difficult do you find the BCT to use?

   - ○ Very easy
   - ○ Easy
   - ○ Neutral
   - ○ Difficult
   - ○ Very difficult

4. How often do you experience problems with the BCT?

   - ○ Never
   - ○ Rarely
   - ○ Sometimes
   - ○ Often
   - ○ Very often

5. What kind of problems do you typically encounter with the BCT?
6. How satisfied are you with the BCT as a system for registering your working times?

   - ○ Very satisfied
   - ○ Satisfied
   - ○ Neutral
   - ○ Dissatisfied
   - ○ Very dissatisfied

7. Is there anything else you would like to share about your experience with the BCT?

C Follow-up Driver Interview Guide

The following questions were used for the semi-structured follow-up interviews with drivers at the transport organization, conducted in April 2026 after the company-wide switch to Driver Connect. The interview guide is organized around four thematic categories derived from the research questions: implementation, experience, impact, and side effects. Within each category, questions move from broad to specific. These categories were not made explicit to participants during the interviews. Drivers are anonymized in this thesis.

Introduction: This interview is part of a bachelor thesis on the introduction of the CDT at the transport organization where you work. Your answers will help us understand how the transition from the BCT to Driver Connect is going in daily practice. The conversation will be recorded. Your name will not be used in the research.

Context

1. Could you briefly introduce yourself: how long have you worked at the organization and what kind of transport do you mainly do?

Implementation

2. How did you experience the transition from the BCT to Driver Connect overall?
3. Did you use the instructional video or other materials during the transition? How helpful were they?
4. Did you receive help from colleagues when learning to use Driver Connect? What did that look like?
5. How was the support from the office or dispatchers during the transition?

Experience

6. How do you find working with Driver Connect on a daily basis? What goes well, and what problems have you run into?
7. How does Driver Connect compare to the BCT in terms of ease of use and usefulness?

Impact

8. In what ways has Driver Connect changed how you carry out your daily work?
9. How would you describe the interaction with the office or dispatchers since the switch?
10. Have you been inspected by the ILT since the switch to Driver Connect? If so, how did that go compared to inspections under the BCT?

Side effects

11. How has the transition affected you beyond just the app, for example your work pressure, workload, or how you feel about your work?

D Follow-up Management Interview Guide

The following questions were used for the semi-structured follow-up interviews with management and office staff at the transport organization, conducted in April 2026 after the company-wide switch to Driver Connect. The interview guide follows the same thematic structure as the driver interview guide, organized around four categories: implementation, experience, impact, and side effects. The questions are tailored to the roles of office staff and include retrospective questions about the implementation process. The same set of questions was used for all four participants: the director, the operational manager, the manager responsible for large clients, bookings, and invoicing, and the manager responsible for disability transportation and employee absenteeism. The latter two are also operationally involved and serve as backup dispatchers. The interviews were recorded with consent. All four participants are referred to in this thesis by their organizational role only.

Introduction: This interview is part of a bachelor thesis on the introduction of the CDT at the transport organization where you work. The conversation will be recorded. You will be referred to in the research by your role within the organization, not by name.

Context

1. Could you briefly describe your role within the organization and how you have been involved in the CDT transition?

Implementation

2. How would you describe the CDT transition process so far from your perspective?
3. How do you assess the support measures that were put in place, such as the instructional videos, dispatcher training, role model drivers, and on-site support?
4. Looking back, what would you do differently about the implementation process?

Experience

5. How do you experience working with Driver Connect and the CDT system in your own role?
6. What has gone well technically or practically, and what problems have come up? How were those problems handled?

Impact

7. What changes have you noticed in daily operations since the switch?
8. How has the transition affected the workload of dispatchers and office staff?

Side effects

9. Have there been any unexpected benefits or drawbacks of the transition?
10. How do drivers seem to be responding to the new system, and has that affected how the office works?
11. Is there anything else about this transition that we have not discussed?

E Follow-up Driver Questionnaire

The following questionnaire was distributed anonymously to drivers in May 2026, after the organization had fully transitioned to Driver Connect. It is organized in six blocks, each with a specific purpose. Block A collects background information that supports the cross-cuts in Section 7.4 (tenure, total driving experience, type of transport, age group). Block B covers the implementation process itself, so that the support measures described in Chapter 5 and Chapter 6 can be assessed by the wider driver group. Block C is grounded in the Unified Theory of Acceptance and Use of Technology version 2 (UTAUT2) [VTX12], with one item per construct adapted to the Driver Connect context: performance expectancy (item 10 and 11), effort expectancy (item 12), social influence (item 13), facilitating conditions (item 14 and 15), hedonic motivation (item 16), habit (item 17), and behavioral intention (item 18). The price value construct from UTAUT2 is not included because the app is provided by the employer and drivers do not face a purchase decision. The original seven-point scale is reduced to five points so that the ease-of-use, problem-frequency, and BCT-comparison items remain directly comparable to the baseline questionnaire in Appendix B. Block D is designed to validate the recurring themes identified in the qualitative interviews and reported in Section 7.3, including the reduction in phone contact, the calmer experience while driving, the shift from phone calls to in-app messages, the use of the hours history, and the trip-order inflexibility encountered by route and care drivers. Block E retains the scaled questions that mirror the baseline so that the distributions can be compared side by side. Block F contains two open items.

This questionnaire is anonymous. It is part of a study on the transition from the BCT to the CDT at the transport organization where you work. You completed a questionnaire on the BCT before the switch. This second questionnaire concerns your experiences with Driver Connect now that the system is fully in use. Your answers will help us understand how the new system works in daily practice. Completing the questionnaire takes approximately ten minutes.

Section A. Background

1. How long have you worked as a driver at the organization?
   - ○ Less than 1 year
   - ○ 1 to 3 years
   - ○ 3 to 5 years
   - ○ 5 to 10 years
   - ○ More than 10 years

2. How many years have you worked as a taxi driver in total, including previous employers?
   - ○ Less than 2 years
   - ○ 2 to 5 years
   - ○ 5 to 10 years
   - ○ 10 to 20 years

- More than 20 years

3. What kind of transport do you mainly do?

   - Route or care transport (multiple passengers per shift)
   - Single taxi rides (for example airport transport)
   - Contract rides for a regular client
   - A mix of different types

4. Which age group do you fall in?

   - Younger than 35
   - 35 to 50
   - 50 to 65
   - Older than 65

Section B. The introduction of Driver Connect

5. The instructional video helped me understand Driver Connect.

   - Strongly disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly agree

6. The explanation of why the organization is switching to Driver Connect now, rather than waiting until 2028, was clear to me.

   - Strongly disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly agree

7. During the transition I felt sufficiently supported by the office and the dispatchers.

   - Strongly disagree
   - Disagree
   - Neutral
   - Agree

- Strongly agree

8. During the transition, help from fellow drivers contributed to me getting up to speed.
   - Strongly disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly agree

9. Which form of support was the most helpful for you personally?
   - The instructional video
   - Help from fellow drivers
   - Help from the office or dispatchers
   - Personal explanation from the implementation coordinator
   - Not applicable

Section C. Acceptance and use of the app

10. Driver Connect is useful to me in my daily work.
    - Strongly disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly agree

11. Using Driver Connect helps me carry out my work more quickly.
    - Strongly disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly agree

12. How easy or difficult do you find Driver Connect to use?
    - Very easy
    - Easy
    - Neutral

- Difficult
- Very difficult

13. People whose opinions I value (colleagues, supervisors) think it is sensible that I use Driver Connect.

    - Strongly disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly agree

14. I have the resources I need (phone, charger, holder, internet) to use Driver Connect.

    - Strongly disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly agree

15. When I run into problems with Driver Connect, I can get help from others.

    - Strongly disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly agree

16. Working with Driver Connect feels pleasant to me.

    - Strongly disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly agree

17. Using Driver Connect has become routine for me.

    - Strongly disagree
    - Disagree

- Neutral
- Agree
- Strongly agree

18. I intend to keep using Driver Connect as it now works.
    - Strongly disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly agree

Section D. Effects on daily work

19. Since the switch I call the dispatch center less often than I did in the BCT period.
    - Strongly disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly agree
20. Since the switch I feel calmer while driving.
    - Strongly disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly agree
21. To pass on changes to the dispatch center (for example running late, going empty, on the way), I more often use messages in the app rather than phoning.
    - Strongly disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly agree
22. I use the history function in the app to check my hours, for example next to my payslip.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

23. Only complete this item if you do route or care transport: the order in which Driver Connect presents passengers or addresses matches how my work actually unfolds in practice.

    - Strongly disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly agree
    - Not applicable

Section E. Comparison with the BCT

24. How often do you experience problems with Driver Connect?

    - Never
    - Rarely
    - Sometimes
    - Often
    - Very often

25. How would you rate Driver Connect compared with the BCT?

    - Much better
    - Better
    - About the same
    - Worse
    - Much worse

Section F. Open questions

26. What problems or improvement points do you experience with Driver Connect?

27. Is there anything else you would like to share about the transition or about how the app is used in daily practice?