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Teaching Case
Balancing Innovation and Operations: A Systems Analysis Case of Technology Adoption in a Trucking Company

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ABSTRACT

This case presents a classic systems analysis and design conundrum: how to incorporate new technology into existing ongoing operations without hurting the bottom line? Antelope Trucking and Logistics, a small regional trucking business, is faced with adapting its aging information technology systems to take advantage of global positioning capability. Because of the company's size and relative inexperience with technology, they don't have the expertise to identify the most efficient ways to implement changes. In the past, they successfully relied on faculty and students from a local university to act as consultants and developers for small projects, but now they need to make a much bigger change. The needed functionality will impact their core competitive advantage, i.e., deliveries. They must decide how to proceed: negotiate with their incumbent vendor and possibly pay too much for a product, further customize a stalled student project and pay less money (or almost none) but maintain full control, do nothing, or seek out another solution entirely. This case takes students through the decision-making process from the point of view of a small company entrepreneur, from problem identification to researching unknown technologies, and ultimately, how to decide what to do. It also introduces students to the information technology used in the complex freight and logistics industry.

Keywords: Freight and logistics, Systems analysis & design, Geotagging, Small business, GPS, Outsourcing

1. INTRODUCTION

Julie Ireland put down the phone and sighed. She had logged yet another call from a truck driver dutifully reporting that a load had been delivered to its final destination. As the President of Antelope Trucking and Logistics, she shouldn't have to take such calls herself, but half her staff was out sick. As the owner of a small business, many tasks fell on her to fill in the gaps. Julie only knew so much about information systems, but she knew there had to be some way that didn't involve her phone ringing off the hook every time a load got delivered. This was the 21st century after all, wasn't it? If her phone could automatically keep track of her whereabouts, why couldn't technology be used to do the same with 100+ truck drivers? And how could she quickly and easily make that happen, without interrupting operations or potentially bankrupting her company? Could that information systems student intern down the hall solve the problem? What about their current logistics software vendor? Was it worth dealing with unprofessional IT support? They were so hard

to deal with; why did they speak to her so rudely, as though she didn't know anything about technology? Was the support so terrible because Antelope was a small vendor compared to their other customers? Every time Julie called the vendor's support, she wanted to hang up, which was frustrating.

Julie next considered calling the nice faculty person she had met at the local university. Maybe the faculty person could talk to the vendor on her behalf? As an information technology (IT) consultant, they "spoke IT" after all, whereas Julie was better at "trucker lingo." Plus, that faculty person spoke to her like a normal human being, and they had a keen business sense for what Antelope needed. Their last project together had been wildly successful. Julie wondered how it might work, how long it might take, and at what cost, to update the company's workflows to the latest industry standards. *Now, what was that technology called again?* Julie pondered. *Geofencing? Geo-tagging?* Whatever it was called, if it would cut down on the phone calls and the constant interruptions, she'd take it! Julie picked up the phone to call the university and set up yet another Zoom call.

2. BACKGROUND INFORMATION

Antelope Trucking and Logistics is a regional boutique-style logistics and trucking company. In business for approximately 25 years, the company's annual revenue had grown close to $10 million, effectively on the cusp of becoming a medium-sized enterprise. As shown in the organizational chart in Appendix A, Antelope's corporate structure is not based on command-and-control; Julie prefers to encourage a service-oriented culture. Because the truck drivers are the lifeblood of the company, Julie sees her role as President as supporting the drivers, not vice versa. Antelope drivers haul Business-to-Business (B2B) goods all over the United States. The company employs fewer than 100 drivers (full-time and owner-operators), although that could change as they scale up. In the home office, the company employs 10 employees in Dispatch. Typically, four people are on duty per shift. One of their tasks is answering driver phone calls. Another five to ten people are employed in administrative and supervisory roles, including Julie as President, human resources, and seasonal workers, as needed. All of Antelope's networking and computing needs are outsourced to independent companies. Antelope takes great pride in its "team culture" and engagement with the local community. It donates to local charities, and most of its drivers live in the region. Julie herself serves on local boards of directors to help the community.

Although they carry and use smartphones like most people in the U.S., neither Julie nor the truck drivers are trained in systems development or IT strategic management. Antelope does not maintain a full-time IT person on its staff. To save money and support local growth, in the past, Antelope periodically hired college interns to build highly customized, minor IT projects. These projects benefited Antelope by reducing costs while simultaneously allowing them to implement their vision for the business. Antelope's innovative approach to business means that Julie does not readily find customized off-the-shelf (COTS) software solutions to meet the business's unique needs. For example, in one such project, Julie wanted to offer a way for employees to reward other employees for excellent work. She worked with the faculty IT/consultant from the local university to design a project that was used in a fourth-year capstone course. She ended up not implementing the student's full solution, but she learned a lot in the process. These prior projects helped Antelope minimize expenses and find unique, customized solutions tailored to its distinct needs. As Julie considered the problem at hand, she wondered how she could find an IT solution that fit Antelope's needs and budget.

One of the ventures with the local university was especially successful, but it meant that Julie personally spent about 50 hours working with students from information systems and media arts majors. Student teams carefully gathered requirements and designed a new peer-to-peer website and backend database system. The student teams used .NET, SQL Server, and Amazon Web Services (AWS) to build full-stack prototypes. Using an agile approach, the teams completed three sprints over the course of a semester. Based on students' competitive presentations of their final solutions (which were judged by invited faculty and industry experts), Antelope worked with the finalists to install the proposed system. This partnership saved the company around $20,000 in development fees – not to mention countless subscription costs that other providers of this type of software would typically demand. Despite the upfront investment

of Julie's time, the experience taught Antelope quite a lot about creating a system from scratch and the requirements gathering process involved in setting up websites, databases, and IT security from a high-level user perspective. Because of that experience, Julie had developed a more realistic idea of the level of work that might be required if she wanted to bring her ideas to fruition. Not for the first time, she wished for a project manager on staff to manage projects such as the one presently before her.

Julie recognizes that she has a very basic understanding of the solution that Antelope needs, which is one of the issues that makes it especially difficult to try to find something that fits their needs. She knows that the current process of tracking loads via driver phone calls is becoming cumbersome as the business continues to grow. Antelope needs a system to track deliveries in real time without requiring drivers to make voice calls with their physical locations. Julie vaguely understands that GPS can track people's phones, but the sheer volume of GPS products offered on the market is dizzying. Although one of these COTS products may meet Antelope's needs, the costs may be higher than Antelope can reasonably afford. Julie prefers to spend Antelope's money, time, and effort as wisely and prudently as possible, especially for technology to support their core business.

Anyone that Julie might hire for this project (whether a vendor, a staff person, or a student) would need to understand Antelope's current IT systems and work processes. Due to its growth from a small business to a medium-sized enterprise, Antelope's IT systems are cobbled together, using different computer systems to run various operations. Its core business – deliveries – is managed through a database system provided by Goliath Enterprises, and most of the information related to deliveries is kept within Goliath's cloud system. Because Antelope's core business data is housed in Goliath's cloud systems, Julie feels nervous purchasing software services from one of Goliath's competitors. How long might it take to transition to a new platform, simply to add GPS tracking to deliveries?

Further, considering the state of logistics today, Julie cannot spare the six to nine months it would take to invest herself and her company in another semester-long student project. (Although a semester is 3 to 4 months, it took that long (2 months before and after the semester) to set up the project and then implement the final solution.) Antelope needs this solution, like, yesterday. On the other hand, that process worked before, and it could work again. It is a proven process, and she learned a lot to do differently next time. The previous student project was helpful for the business in that it supported employee well-being, but it did not impact their core business. The current project does. What was Antelope allowed to do with their own data, without affecting their contract or longstanding relationship with Goliath? Would Goliath cooperate or balk? Goliath had advertised a GPS product – still in beta, but the new product did not meet Antelope's needs. Should Julie consult with legal first? Julie felt like the underdog David getting ready to confront Goliath with less than a slingshot.

Goliath supports trucking companies throughout the United States and Canada, many of them much larger than Antelope. Each trucking company is assigned to an account rep and a technical support person. Antelope Trucking does not have a chief information officer (CIO) or information systems staff to deal with IT vendors, and they are sometimes at a disadvantage. As a smaller customer, Antelope may be a lower priority for Goliath. Some of Goliath's other customers have more expertise in writing software, supporting databases, or other IT applications. Although Julie could learn these skills if she had unlimited time, her time is better spent on Antelope's core advantage, i.e., logistics. Therefore, an IT person with more advanced technical skills could provide significant value to Antelope moving forward, assuming they can find, hire, and pay such a person in the current labor market.

2.1 The Business of Logistics and Trucking

At its simplest, a trucking company's primary business model is to move freight from one location to another. A "worldwide $1.45 trillion logistics industry makes sure finished products arrive on store shelves or on our doorsteps" (Premack, 2018). Trucks account for about 71% of U.S. freight (Premack, 2018). E-commerce has skyrocketed consumers' desire for goods. The trucking industry is expected to grow 5% per year, reaching a whopping $532 billion by 2030 in the U.S. alone (GeoTab Team, 2024). The U.S. Bureau of Labor Statistics (2024) predicts that this industry will average over 240,000 job openings each year, primarily to replace workers transitioning to retirement or other industries. In other words, business is good

for Antelope, which transports goods for Fortune 500 companies as well as local and regional companies. Julie would like to grow her company at a moderate pace for the foreseeable future, but she still needs to consider how her decisions will impact operations.

Typically, a trucking company uses two types of drivers: employees and owner-operators. Employees drive trucks owned by the company, but an owner-operator is a driver who owns their own truck and works as a contractor. Owner-operators are NOT employees of a single company; they may (and often do) work for multiple trucking companies at the same time. It is customary practice for them to sign an exclusive contract with one trucking company at a time for a certain duration, but that is not always the case. In some ways, an owner-operator is like a time-share driver for the trucking industry. When a trucking company has a load to deliver, it offers it to an owner-operator, who then decides whether to accept it.

Antelope receives trucking jobs from sites called "load boards." A load board is an online marketplace for finding and posting delivery jobs (McCareins, 2024). Antelope pays for a subscription to find trucking jobs posted on a specific load board. When a business customer posts a delivery job on the load board, trucking companies such as Antelope bid to fulfill the job. Speed is an important element of bidding for a route, because more than one trucking company may bid on a route. The dashboard of the load board identifies shipments, locations, payments, required delivery date, and time from many different companies. In addition, the load board lists the company and contact person, the origination and destination addresses, the dates, and the payment amount for that job. Antelope uses the system to select which shipments it wants to deliver in hopes of being selected by the business customer who offered the job. For an example of the load board information as it appears after manual entry into the Goliath system, see Appendix B.

In general, Antelope selects shipments in geographic regions where it has available drivers for a given time period. Antelope tracks certain areas and routes that they deem "high risk" due to traffic, weather, and other criteria. Antelope prefers to avoid jobs in high-risk areas. These criteria are taken into account when selecting a shipment. In many cases, Antelope confirms with its drivers beforehand if they're willing to deliver a specific trip (especially owner-operators), in order to avoid committing to a delivery it cannot fulfill. These criteria are one way that Antelope reduces risks of delivery jobs.

After Antelope receives a job assignment, it is free to determine the best route. Once the job is confirmed, Antelope dispatches the driver to pick up the trailer at the customer's business location. Upon delivery at the final destination, Antelope receives payment from the customer and, at the same time, pays the driver for the job. To better manage jobs, reduce the likelihood of losses, and plan for future jobs, Antelope needs to track the location of every load from pickup to delivery and everywhere in between. In Antelope's current process, drivers call Dispatch to report the status of the load at multiple points along the route, thereby keeping headquarters informed of the load's location from strategic points along the route. For obvious safety reasons, Antelope recommends its drivers call only when they are stopped. As a general rule, drivers are expected to call when completing a shipment and if a shipment is delayed; the home office operates on the principle that "no news is good news."

Pursuant to federal and state regulations, drivers must take mandatory breaks along their routes and are not allowed to drive for too many hours within a given time frame (Federal Motor Carrier Safety Administration, 2022). To deliver loads by a specific day without harming drivers' well-being, drivers sometimes need to transfer the remainder of their trip to a relief driver to complete the job. However, transferring a job from one driver to another requires special logistics, such as finding an available driver in the area and planning a location to swap the load from one driver to the other. This process would be simpler if Antelope knew where to find all its drivers and loads in real time, at a moment's notice.

However, to date, Antelope relies on the very manual process of answering a physical phone line. Whoever answers the phone speaks with the driver, then manually updates the load locations and statuses in the database. These phone calls take anywhere from 5 minutes to an hour of the dispatchers' time. This method is the only way for Antelope to tell customers where their load is at any time, and if the driver is between stops, the information may be stale. If anything were to happen to a driver, such as an accident (whether involving the driver or their route, delaying delivery), Antelope may not hear about it for hours after the fact.

Julie did not want her business to fall victim to the growth trap, which could hurt its ability to grow strategically if not managed well (Markides, 2025), as had happened at Southwest Airlines. Granted, Southwest is a large airline, not a small land-based trucking business, but they are both in logistics, and it doesn't hurt to learn from others' mistakes. Like Antelope's need to track drivers, Southwest struggled with tracking its pilots and airplanes in real time. As Southwest grew, they continued using a manual process to track flight crews and equipment. But the manual process spectacularly failed when winter storms grounded many their flights all at once. Customers and employees alike were stranded without an easy way to find, move, or help them get home. Southwest lost an estimated $1.1 billion in revenue and weeks of headache to dig themselves out of their technical debt (Witman et al., 2024). As Julie quickly began to realize, Antelope's old-fashioned way of working – although effective for a small startup – could struggle to scale up as they continued to grow. In fact, it could quickly become a liability, as it had for Southwest, and it was already affecting her personal work-life balance.

2.2 Potential Technologies: Geofencing, Geotagging & GPS

For a small company with limited in-house IT experience, selecting a solution to a given problem is daunting and cost-prohibitive. Often, the mantra is: "It's not broke, don't fix it." Julie had read about geofencing and geotagging in a trade magazine, and the terms stuck in her mind, but she didn't know how to apply them in her business. These services promised to help her grow her company, engage with customers, and locate people's locations (Awati, 2022). They promised to deliver exactly what Antelope needs, but Julie needed more information before she could decide. Would these solutions serve Antelope's unique needs? How much would they cost? Which technologies would best meet their needs, and how should they implement them? Although several companies offer GPS solutions for the trucking industry, Antelope has limited resources to determine which will be the most cost-effective in the short and long term. Although Antelope had first approached Goliath, the current database system vendor, about the issue, Goliath's solution would take considerable time to customize, and it was expensive.

Geotagging automatically attaches a person's GPS location to a picture, social media post, or other online interaction. As drivers pass through a checkpoint while on a job, rather than calling, they use geotagging to automatically text their GPS coordinates to the home office. Similarly, but in the other direction, geofencing lets companies track customers' locations and send a message when a customer's phone goes near a specific geographic region. Julie wondered if something like geofencing services might be used to track drivers' phones, but the implementation might be tricky. Geotagging and geofencing were primarily used in marketing and social media, rather than specifically for logistics. Could Antelope somehow use either of these solutions to track trucks? And if so, how could Antelope implement them quickly and effectively, without overburdening their drivers with extra steps or additional training that would take time away from driving?

Additionally, the use of location-based technologies raises significant privacy issues for drivers, not while at work, but rather, after they go home. Drivers use their personal phones for work; most cannot afford a second phone dedicated to work, and Antelope certainly does not supply one due to the costs involved. Antelope operates as a Bring-Your-Own-Device ("BYOD") shop. BYOD allows drivers to use their own mobile phones for work, which reduces costs, and to date, Antelope has not created formal policies about BYOD use (LaPlante, 2016). Julie knew that if Antelope started requiring drivers to use their personal phones for work, it would need clear BYOD policies. BYOD could introduce a whole host of information security and ethical issues, and Antelope would need to be sure they protected both the company's sensitive data as well as drivers' personal privacy.

Although employees and drivers are assumed to be honest and treated as part of the corporate family, Antelope has no legal or ethical right to drivers' locations or personal information when they are off-duty. What information would be tracked when drivers took reasonable meal breaks while on-duty? Julie didn't believe that Antelope has the right to know how long drivers take to eat meals. What if drivers turned off their phone's GPS and forgot to turn it back on? Would the tracking process stop working entirely? Although it might be possible to put GPS on the load or on drivers' trucks, those hardware-based solutions would require buying additional, possibly expensive physical devices, installing them, and then training

and expecting drivers to use them. Could Antelope impose physical devices on owner-operators' personal trucks or apps on their phones? What if they refused to use them? Again, these possibilities seemed cost-prohibitive and fraught with legal and ethical concerns. Julie worried about the costs and logistics involved in identifying the proper solution, paying for it, and implementing it quickly, without impairing day-to-day operations.

3. SYSTEMS ANALYSIS

As Julie began reviewing the existing systems and evaluating the options, she debated which path would best fit Antelope's needs. She knew that the company employed a plethora of computer systems from different vendors, none of which spoke to each other. These information systems include payroll, accounting, and dispatch systems. Each system is supported by an outside vendor. Julie personally vetted each vendor to ensure they would be good partners who are easy to work with. However, when Antelope has needed to transfer data from one system to another, it has proven to be a manual, labor-intensive process. Julie worried that adding another vendor would add more burden to Antelope's workload. How could GPS functionality be incorporated into or piggybacked onto the delivery system without delaying existing and future deliveries? Would drivers have sufficient cell phone coverage in remote areas? If not, how would that affect a load tracking system? Should Antelope risk going through the difficult and confusing process of hiring a dedicated professional to manage IT systems? Would Antelope have sufficient work to justify paying the salary and benefits to bring someone on full-time? Julie added these questions to her list of decisions to make on this project. "Conduct comprehensive SWOT analysis," Julie wrote, "and ask about total costs of hardware, software, database(s), networking, implementation, and support. Will we need training, and how much? What about drivers who rarely come to the office (because they are on the road most of the time)?" How would proposed systems affect drivers' privacy and expected workloads?

Julie groaned in frustration.

3.1 Goliath: The Current System Vendor (The As-Is System)

Antelope currently tracks its freight delivery jobs through Goliath's proprietary database. Goliath, as an outside software vendor, hosts and maintains the system for a fee. As a business-savvy executive, Julie recognizes Antelope's position with respect to Goliath's total portfolio, i.e., that Antelope is a small client among many, and thus, not a top priority for Goliath. Goliath's product was designed to serve logistics companies of ALL sizes. Similar to an airplane cockpit panel specialized for airplane pilots, the interface is complex, and yet it displays all the relevant information about a logistics job on a single screen. Due to the sensitive nature of the information, user logins to Goliath's system are limited and expensive. Once committed to the system, errors are difficult to undo or backout. As a result, Antelope only allows highly-trained administrators to use Goliath's database. A single mistake could directly impact Antelope's $10 million in annual revenues.

Furthermore, Goliath's tech support was courteous but inflexible. Julie disliked dealing with them, because their answers could be curt and confusing. Rather than plain business terms, they confused her with technical jargon. Even in response to what seemed like simple requests from Julie's point of view, Goliath's tech support would answer that they didn't understand the request or why anyone would ask such things. Antelope paid for a limited level of tech support per month from Goliath, so extended requests to them added up quickly.

Since Goliath controls the heart of Antelope's operations – its delivery job listings – disentangling these systems might cause major problems, at least in the short term. If Antelope didn't get paid by business customers, then drivers and vendors might go unpaid, and Antelope might lose its positive reputation for on-time, reliable deliveries. It seemed short-sighted now to realize that Antelope did not fully control the data related to its core competitive advantage, but as a small business starting out, they hadn't had a choice in the matter. Now it might be too late to change. If they had to transition to a new system, how would they do it without interrupting operations? And would Goliath cooperate with Antelope, or would they delay the process? Would they sabotage Antelope's efforts to transition to another solution or another vendor?

However, by continuing to use Goliath's system, Antelope continues to risk putting its competitive advantage in someone else's control. As a skilled entrepreneur, Julie recognizes the inherent risks of relying on an outside company to host Antelope's data, particularly data related to its core business. As this case has made clear, Antelope needs to either learn to work with Goliath or part ways, which may be painful either way. Their "as-is system" is not meeting their current needs, but how can this system be improved or changed?

3.2 "Fleetr": Stalled Student Side Project or Workable Solution? (Potential To-Be System)

Six months ago, Antelope had started a side project with students as a short-term workaround. In part, the side project was in response to Julie's frustration trying to get help from Goliath, but also, it was to pilot test a new solution. In formal strategic terms, the side project was a type of "bolt-on," which added some rudimentary GPS functionality to existing systems (Rouse, 2016). As a bonus, the side project supported students from the local university. Antelope hired two student interns (one from computer science and one from computer information systems). The interns worked together to build a separate, standalone database named "Fleetr." The premise behind Fleetr was that Antelope would extract data from Goliath's systems and present it in a format that might be more user-friendly for truck drivers. Like most users, truck drivers' technical expertise varies widely. Antelope hoped that Fleetr could make work easier and faster, with minimal specialized training.

Based in PHP and MySQL, Fleetr provided a simple login interface for drivers with smartphones which allowed them to update their individual load status. Antelope owned the intellectual property rights to Fleetr, so they maintained control over the functionality. The company paid $50 per month to host Fleetr on Google Cloud, compared to commercial solutions similar to Goliath's, which cost anywhere from $25 to $50 per month per vehicle. As a cloud-based solution, Fleetr was easily scalable; if Antelope needed more storage space, they simply paid for what they needed. Example screens from Fleetr are shown in Appendix D. The first figure identifies the loads available for a specific driver. The second figure shows examples of critical check points for Antelope drivers to select the continue button to identify their location. Antelope knew this system was an incomplete proof of concept at best (Kirvan, n.d.), i.e., a prototype, but they hoped it could eventually provide a means to capture and display the most important information quickly and in real time.

Fleetr worked great as a proof of concept (see Appendix D), but it was incomplete, because it did not work in real time, which is Antelope's real need. In order to work, data had to be manually transferred from Goliath's database system by a person. Data could be entered into Fleetr in one of two ways: manually by an admin or by uploading a spreadsheet from the Goliath system. From a technical standpoint, Fleetr uses the same primary keys in its database as Goliath, which facilitates matching and ease of updating. Fleetr assumes that the latest data from the vendor's system is the most accurate so any information input from the vendor's system overwrites what is in Fleetr. When Antelope began the project, they did not realize how difficult it would be to link Fleetr with Goliath's system. They had hoped to automate that process within Fleetr.

However, after Fleetr was built, Goliath stated that they were unwilling to provide an automated process to provide Antelope with a way to download the spreadsheet for Fleetr. As a result, in order to use Fleetr, Antelope enters information twice: once into Goliath and then again into Fleetr. Furthermore, the standard (free) data provided in the initial spreadsheet from Goliath was minimal and not very valuable by itself. The spreadsheet included only a few fields of data (see Appendix C). Fleetr's current design relies on significantly more data, and Goliath insists that if Antelope wants this data, they must pay for it every time they request it. Furthermore, even if Antelope was willing to pay the additional costs (whether on a regular or ad hoc basis), someone would have to manually upload the spreadsheet of data into Fleetr to transfer it from Goliath's systems. This additional cost would have to be passed on to customers by adding the charges onto every load. So although Fleetr provides the custom functionality that Antelope wants (to let drivers check-in via a phone app rather than calling), so far it is only adding to their workload, rather than reducing it. The cost to add jobs to Fleetr is minimal from a data storage perspective, but costly from a human resources perspective.

Fleetr is also ineffective from a business workflow perspective, in that when a driver updates the job status in Fleetr, the system sends an e-mail to the home office with the driver's update message. This process saves time making and answering phone calls but is only a half-measure. It still requires that someone at the home office update the job in the Goliath system because Fleetr and Goliath do not talk to each other. From a security standpoint, Fleetr cannot be used to update Goliath at all, because in addition to the legal ramifications, Antelope does not want to potentially open a backdoor into the Goliath system that could affect Goliath's other customers.

As part of a Phase 2 effort for Fleetr, Antelope could access a real-time or close to real-time feed from Goliath into Fleetr. This option would allow the data to be input more quickly and easily and make the process and data more accurate and efficient. However, Antelope has so far been unable to reliably get up-to-date job information in a spreadsheet from Goliath with which to update Fleetr. Fleetr was originally set up with partial data, but that data is now out of date. Fleetr's codebase would need to be updated. One concern with Fleetr is the relative inexperience of the student developers, and that the system would be only as current as the last spreadsheet upload.

Further, communication with Goliath to create this sync process has entirely broken down. Initially, Goliath stated they could provide the data via SQL queries if Antelope provided them, which Antelope did (see Appendix C). Goliath later reversed their decision and reduced the amount of data they were willing to extract from the database to a partial list. This incomplete data was useless for Fleetr. Goliath then stated they would not provide any more data unless Antelope paid additional subscription fees. Julie suspects that Goliath's reluctance could be a thinly-veiled attempt to strongarm her company into purchasing Goliath's new services. Julie wonders if Fleetr co-opts functionality that Goliath wants to charge for. This experience has somewhat soured Antelope's relationship with Goliath.

3.3 What About a Third Option? (Research an As-Yet Unknown System)

Time is of the essence but is there a third option that Antelope hasn't considered? How long would it take to identify? Would it be more expensive than syncing Fleetr with Goliath's system? What might it entail? Would Goliath cooperate in converting data to the other system? Would Antelope need to archive their past data, and if so, how? Would Antelope have to fulfill their contractual obligations with Goliath before moving to another company? Should Antelope reconsider a hardware solution rather than continuing to attempt finding a software solution? Julie felt overwhelmed by the number of options to choose from.

3.4 Do Nothing (The First and Last Option)

One option for Antelope Trucking is to do nothing at this time. For all of the reasons stated previously, this would probably not be ideal. However, the costs and benefits of the other options are daunting, to say the least. Since technology advances rapidly, maybe something else will be available to solve Antelope's business requirements in the near future. Perhaps as a small to medium-sized business owner, Julie should resign herself to more driver phone calls. Maybe she could hire a few temporary workers in the short term. Or maybe she could look into some sort of artificial intelligence tool to transcribe voice calls. How would that even work? Would it cost more than the options already before her?

4. DECISIONS

Julie firmly believes that Antelope can no longer operate effectively without GPS-tracking its driver loads. The current situation places the company at a competitive disadvantage and potentially opens them up to a host of security hazards. With a new Amazon headquarters moving in practically next door and a volatile industry market predicted (Premack, 2018), Antelope wants to be poised to meet future market demand. Antelope needs the most cost-effective, scalable solution to track loads in real time, preferably with minimal downtime for the business.

To help Julie decide what to do, address the following questions and prepare a cost-benefit analysis for each, identifying strengths, weaknesses, opportunities, and threats (SWOT). Use online resources to research each option, recognizing that as a small business owner, Julie has limited time and resources to

research and compare more than a handful of possibilities. Based on your analysis of each option, what do you recommend Julie do for her company, Antelope Trucking? Consider the following questions:

1. Should Antelope hire a technical person to work for them full-time in order to create and support their systems? Should this person work full time on projects, or should they also support hardware and software such as personal computers and networking (rather than outsourcing those services)?
2. Should Antelope hire an outside consultant (or student interns) to complete the Fleetr application and sync it with Goliath's system? Who will support the finished product? Who will provide maintenance and updates in the future?
3. Should Antelope consider an entirely new, custom solution to link with Goliath's systems? Do they have time to afford this option? Who will build it, and how will they deal with getting access to live data from Goliath's system? What features and requirements will it need? What might it look like?
4. Should Antelope source a completely new vendor, thereby scrapping Goliath and Fleetr altogether? How might Antelope transition to a completely new system without losing money in the short-term? What features and requirements will it need? What might it look like?

5. ACKNOWLEDGMENTS

This case is based on a real trucking company and an actual problem they faced, although we have taken some liberties with the details. Names have been changed to protect their identities.

6. REFERENCES

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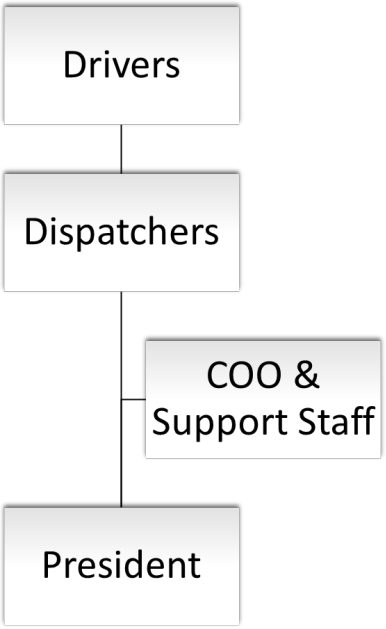
APPENDICES

Appendix A. Antelope Trucking Corporate Structure, as Envisioned by the Company Owner



Appendix B. Job Load Data Entered Into Goliath Database

Order 123

BILL

Caller	Caller Phone
Amy	703-555-1212
Customer:	ABC
Bill:	ABC

● Prepaid ○ Collect ○ 3rd Party

SHIPPER

Address	123 Mickey Parkway		
CityStateZip	Kissimee	FL	34741
Contact	Fred Jones	Phone	407-555-1212
PU Date	07-01-2020	Ready	12:00 Close 12:00

CONSIGNEE

Cons	XYZ		
Address	123 Mickey Parkway		
CityStateZip	Kissimee	FL	34741
Contact	Fred Jones	Phone	407-555-1212

BILLING

Freight	$2,000
Discount	$0
Total	$2,000
Balance	$2,000

VENDOR

Name	Antelope Trucking
Phone	540-555-1212

SPECIAL INTRUCTIONS

Pick-up by Loading Dock, Driver must turn in the bill To the broker

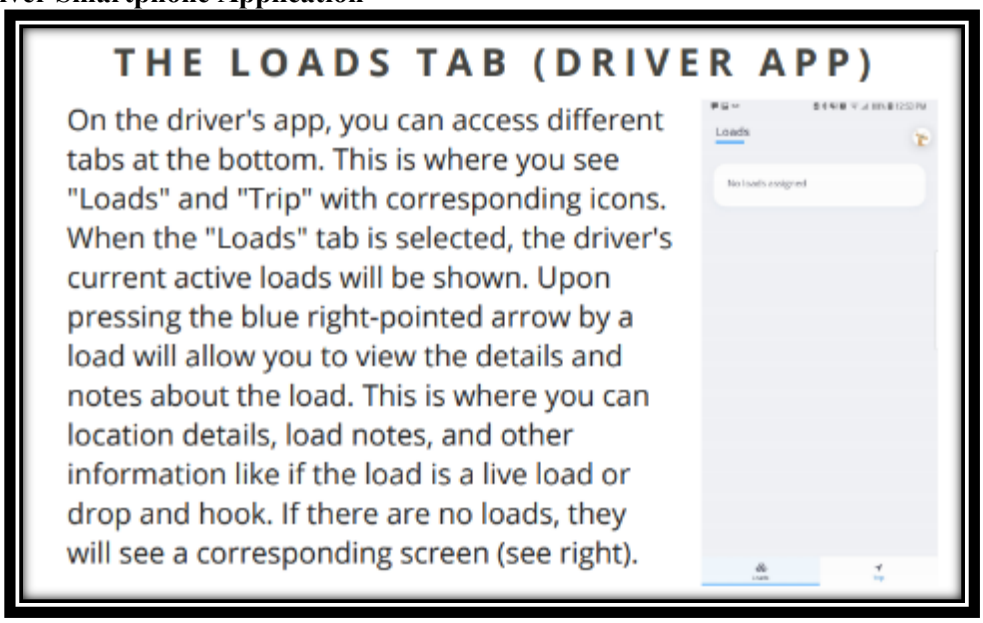
Appendix C. Sample Data Extracted From Goliath Database

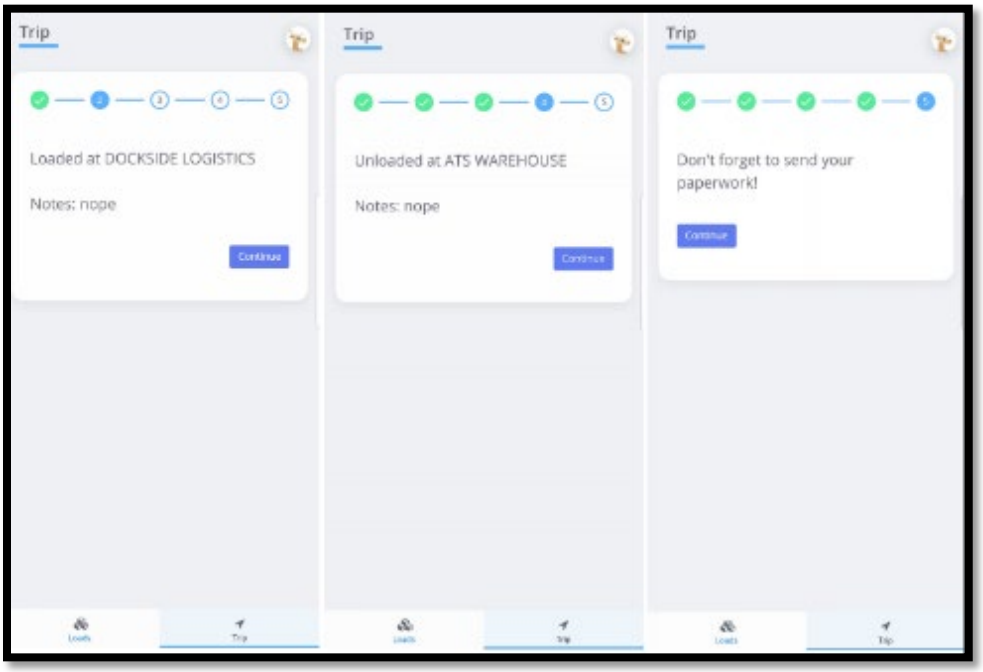
LoadID
CompanyID
DriverID
Origination Address
Origination Contact Person
Destination Address
Destination Contact Person
Special Instructions

Note: The LoadID is a unique identifier used for this shipment. The DriverID provides the key to the Driver's information such as name and telephone number that is stored in another table. The CompanyID does the same thing as the DriverID except for a company.

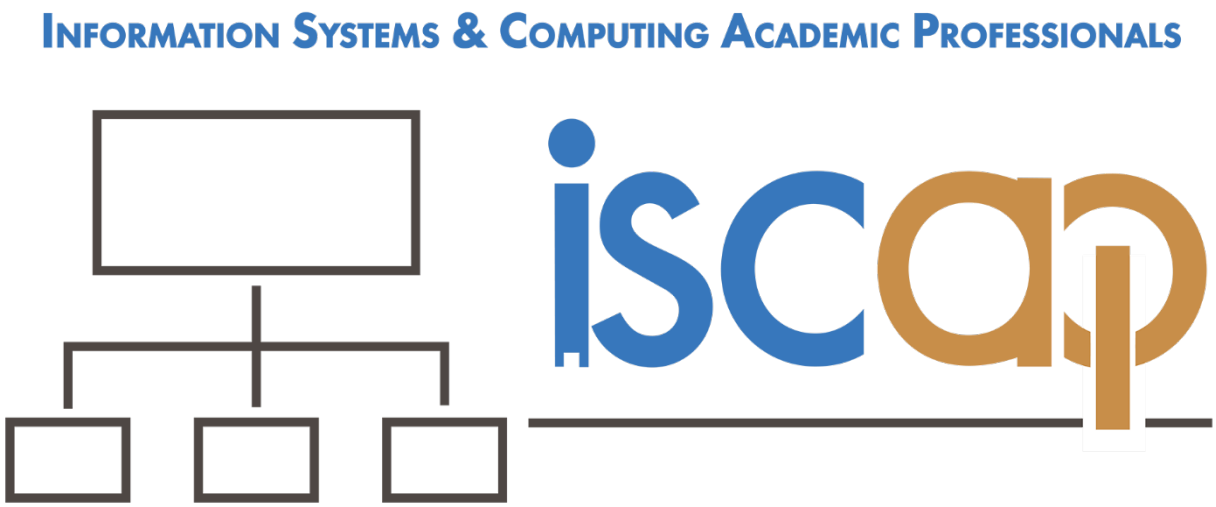
Appendix D. Fleetr Documentation Examples

Driver Smartphone Application





The Driver selects an option on their smart phone when they arrive at the designated location.



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