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Creating Interoperable Systems for a Truly Mobile Philippines

Digital Pilipinas

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Introduction

It would be an understatement to say that economic productivity depends on mobility and transport. These sectors facilitate the movement not just of goods, but also of manpower and human resources crucial to business transactions. A weak mobility and transport sector contributes to a weaker economy thus a retooling and empowerment of the country's mobility and transport systems will translate to progress among communities, economic sectors, and local governments they work with.

Given its importance, it is concerning that many segments of the mobility and transport sector are slow to adapt to change and to optimize the use of technology to decrease costs, increase revenue margins, and to promote efficiency throughout their operations. In spite of the presence of evolving technology such as global positioning systems, Internet of Things connectivity, route optimization tools, and other innovations, the mobility and transport sector is still struggling to overcome problems such as traffic congestion, faulty road infrastructure, and weak coordination. It can be said that national and local networks, both business and regulators, can boost the efficiency, productivity, and economic gains of the sector with closer coordination, policy refinement, and purposive and legitimate interventions through sector leaders.

According to a study by the Japan International Cooperation Agency in 2018, the Philippines lost a monumental PHP 3.5 billion in “lost opportunities” daily. Manila has a 43% traffic congestion level and an average of 98 hours are wasted on traffic annually. That means Filipinos spend four days in traffic every year, placing it in 8th rank for the worst traffic congestion in the world.¹ The country's water transport systems have also faced similar challenges: infrastructure investment for water transport represented only 3% of gross domestic product from 2011 to 2016, well below the 4% threshold recommended by the World Bank for developing countries.²

Intermodal transport systems are particularly vital to the Philippines' mobility and transport sector given its geographic context. Because the Philippines is an archipelago, persons and entities who are traveling and transporting cargo require flexibility and interoperability among land, sea, and aerial transportations, which remain to be a concern in the nation's public transport system. Although existing technologies provide fairly accurate mapping systems within cities, the same could not be said in regional and provincial areas, especially those that are geographically divided by smaller islands and different bodies of water.

¹ Rilloraza, B. (2022, September 10). *Manila traffic is 8th worst in the world, study says*. Techno Baboy. Retrieved February 1, 2023, from <https://www.technobaboy.com/2022/09/10/manila-traffic-is-8th-worst-in-the-world-study-says/>

² Daily Guardian. (2022, November 7). *Address water transport woes for balanced economic growth—PIDS*. Daily Guardian. Retrieved February 2, 2023, from <https://www.dailyguardian.com.ph/address-water-transport-woes-for-balanced-economic-growth-pids/>



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The challenge is to bring down costs for and reduce friction in intermodal travel and make transportation efficient through the creation of an interoperable transport platform. An interoperable transport system is one where different modes of transportation such as buses, trains, boats, and planes work together seamlessly. An interoperable transport system also makes it possible for different systems to efficiently store and exchange information such as best routes, police assistance centers, repair and refueling hubs, anticipated construction projects, threats to vehicles and passengers, and other hazards forming in the roadway. An interoperable transport system improves passenger safety, assists route optimization, reduces overall transport costs, and introduces opportunities for resource and information sharing among concerned networks.

Working from the ground up for transport

It must be acknowledged that creating a nationwide (province or region wide) interoperable transport system is not possible without the cooperation of local government units (LGUs). LGU leaders and representatives understand both the terrain of their local area and the transportation needs of their local community. They will also be able to guide concerned regulators and agencies, whose functions may have been devolved to or co-performed with the LGUs, to resources and systems available, or which can be established with low cost, to help identify, avoid, solve, or mitigate transport woes.

Involving LGUs in finding solutions to transport and mobility issues will also ensure that any solutions are integrated with existing solutions and infrastructure and supported by law and regulation. In fact, the implementers may tap into the programs and projects for which there are budget allocation and personnel tasked and which are to be supported by the agencies under their mandates. Thus, such solutions will be efficient, effective, and more responsive to the needs of multiple stakeholders from local residents to public transportation providers and even private operators. Finally, working with LGUs will render the programs and interventions credible, trustworthy, and easily replicable as long as the models and blueprints are made available.

Of course, LGUs must first be convinced of the pressing need for an interoperable and intermodal transport infrastructure in the first place. For this to happen, the key is to create education initiatives which emphasize and detail the benefits of interoperable and intermodal transport for inter-LGU or intra-LGU use.

First, interoperability is crucial to improving transport safety. Once operators of the different modes of transport are able to seamlessly communicate information in real-time then data on emerging road hazards, rerouting, and even turbulent weather can be collected and



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disseminated to vehicles in transit. This should significantly reduce accidents in land, sea, and air.

An interoperable transport system can feature a consolidated booking and unified payment system to offer greater convenience to commuters. Interoperable payments can also help transport operators manage revenue more effectively, as they can access real-time data on ticket sales, demand patterns, passenger behavior, seasonal and route information, and use this information to optimize pricing and revenue collection. Analysis of such data over a period of time can help operators coordinate with regulators for the alignment of policies and a more nuanced enforcement of rules in the context of now interoperable systems.

It must be highlighted to LGUs how, in concrete ways, an interoperable transport system reduces costs, encourages commerce and tourism, and thus raises revenues. For starters, interoperability allows for better transitions between different modes of transport, reducing travel time, ensuring consistency, increasing reliability, and thus generates patronage volume and efficient use of infrastructure and assets (whether public or private). When different transport operators can exchange data and communicate, it also becomes significantly easier to coordinate services and align trip schedules and to eliminate bottlenecks on the road, optimize routes, and reduce aggregate fuel consumption. Finally, interoperable payment settlement can reduce costs by eliminating the need for separate payment systems and reducing the need for manual intervention in the payment process, thus freeing up personnel and office resources for other important tasks. Creating and sustaining an interoperable transport system will compel all entities involved in transportation and mobility to follow a uniform, coherent set of standards, resulting in an improved transport experience for commuters. In a way not available to them before, people will have access to transportation which eliminates inefficiency in several aspects of their lives—health, education, employment, and quality of life.

Improved transport accessibility, lowered costs, and a safer transport experience will encourage greater mobility and boost productivity of the student, workforce, and business sectors. This will eventually produce a domino effect resulting in overall economic growth for the country.

Leveraging tech for interoperability

Technology is a crucial component of enabling interoperability. The ability to facilitate the real-time transfer of information depends on robust cybersecurity, Internet of Things (IoT) technology, data analytics, and so much more.



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Cybersecurity increases the integrity of connected parties by keeping personal information and locations private, creating a secure environment where information can be freely exchanged without worrying about outside interference. Cybersecurity is especially important as connected devices represent a larger surface area for hackers to exploit. Investing in a robust cyber security protocol will minimize the risk of any disruptions to transport and financial loss.

IoT devices form the backbone of interoperable transport: embedded sensors and smart devices are responsible for transmitting live data about the movement of people, vehicles, and goods. IoT technology is even used to automate processes such as ticketing and fare collection and help move people along faster.

Data analytics can help interoperable transport systems by providing valuable insights into the performance of the system and identifying areas for improvement. For example, data analytics can be used to identify any usage patterns or transport behavior (such as when the busiest times of the day are). The collected data can be used to optimize routes, reduce congestion, and improve overall efficiency. Data analytics can then be used to predict potential transport problems and alert areas for maintenance, prevent system downtime, and improve passenger service.

All of the elements above must work together to create a truly interoperable transport system. Neglecting just one of them leaves the system vulnerable to inefficiencies and even possibly cyberattacks.

Creating interoperability on the ground

Turning interoperable transport into a reality must start with identifying LGUs which either utilize intermodal transport or have infrastructure, systems, and policy environments which may be cultivated towards the desired direction. Some destinations—which may cover several LGUs (provinces, cities, and municipalities)- that can be targeted as pilot hubs for interoperable transport systems are Boracay in Caticlan, Aklan, Puerto Princesa and Coron in Palawan, and Roxas City in the province of Capiz. In these areas, residents and tourists must use a combination of airplanes, boats or ferries, tricycles or motorcycles, and cars or jeepneys to get to their destinations. The LGUs (region, province, city, municipality, and barangays) within these territories can be the launch sites not only for education initiatives but even pilot programs concretely illustrating how interoperable transport systems are created, linked, and optimized.

As a follow-through or parallel to the efforts at the LGUs, joint implementers of the interoperable systems may already look into coordination with and assistance from the Civil Aviation Authority, Maritime Industry Authority, Philippine Ports Authority, Land Transportation



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Franchising and Regulatory Board, and the local permits and licensing offices in the LGUs concerned for grants and/or augmentation of common carrier franchises and permits to operate for entities which will utilize or share the (intra-LGU and inter-LGU) routes connecting the jurisdictions of the pilot LGUs. These can be done simultaneously with the drafting of inter-LGU (Province, City/ Municipality, Barangay) Memorandums of Agreement in coordination with the Departments of Transportation, Tourism, Labor and Employment (and DICT where applicable) aimed towards the pilot, implementation, and monitoring of an interoperable transport program.

Conclusion

The road to an interoperable transport system in the Philippines must begin with education initiatives at the LGU level. LGUs that value efficient and high-quality intermodal transport will easily realize that investing in interoperable transport infrastructure will certainly result in benefits for commuters, local economies, public and private transport operators, and other sectors.

There must then be a pilot program for amenable LGUs to see what an interoperable transport system will look like once it is implemented in the context of those target destinations. The program can be kickstarted with the creation of an app intentionally targeted for initial use within LGUs with high use of intermodal transport.

Overall, many of the pain points facing the mobility and transport sector are not novel, identifiable, and solvable. Problems such as traffic volume, congestion, and faulty infrastructure have been around for centuries, with the scale of the problem being the main difference.

Yet what is also different is the new technology available to solve these problems. Used correctly, the new technology and tools at the disposal of people, government, and entrepreneurs could be the key to ushering in a new era for how we get around and how we uplift communities.