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Thales Position Paper

in answer to OGCIO Public Consultation for Hong Kong 2014 Digital 21 Strategy

We are pleased to propose our feedbacks in answer to the Digital 21 Strategy Public Consultation unveiled in September 2013 by the Office of the Government Chief information Officer of the Commerce and Economic Development Bureau under the Government of the Hong Kong SAR.

Thales supports and encourages Hong Kong strategy to leverage on its excellent ICT infrastructure or on latest technologies to further integrate operations of services to the citizens and to better utilize the massive flows of data available. Integration means added value for both users and operators.

We would like to particularly focus on 2 key areas of application: Mobility and Security.

We make ourselves available to work jointly with Hong Kong authorities and local operators to leverage this data and use to support the decision-making process, to anticipate, act and react accordingly to the operating environment. This brings a major competitive advantage, and enables better service to citizens by understanding trends and behaviours, driving engagement and enabling more informed choices.

Thales is committed to contribute making a *smarter Hong Kong* for *smarter living*!

↗ A changing world

Running a major city like Hong Kong is an increasingly complex challenge. The high concentration of people poses many challenges, including congestion, pollution and security. But, recent advances in technology that interconnect urban systems open up new opportunities for policymakers and operators. By enhancing urban transportation operation and infrastructure security in a sustainable fashion, Hong Kong should attract new opportunities, improve the quality of life for citizens, and strengthen its position as a leading global destination for business and leisure.

↗ Thales's answer: Thales VivaCity

World leader in Transport and Security systems, Thales has built an established presence within urban markets, including road, rail, tram, ticketing, passenger-information, supervision and control systems. Now, Thales VivaCity takes city integration to the next stage, with solutions for the smart city that deliver even greater synergies by leveraging concepts such as interoperability, connectivity, and the widespread availability of data. The approach offered by Thales VivaCity is to work together, with city authorities and operators, and implement individually tailored solutions for the smart city, that put the citizen first, drive citizen engagement, enable informed choices, and provide a better quality of life.

↗ Thales's added value

A key enabler for delivering Smart City benefits is the Thales's ability to harness the power of data through advances in data mining. Analysis of all the data made available by closed integration of systems allows operators and administrators to better plan, operationally and strategically, for the future city development.
Based on all these city wide connected assets, and the emergence of new technologies, Thales offers fully open and interoperable city systems, that provide an urban environment where citizens can travel easily using private or public transport, in cities where they feel safer, in a more eco-friendly environment.

The StrasMap in use in Strasbourg, France.

↗ Thales VivaMobility

Thales VivaMobility builds on today's multi-modal transport systems to provide an expanding range of passenger services including reservation, travel information, multi-modal ticketing and route choices, updated in real-time and able to be delivered to any connected device including smart-phone and tablet. Innovations in automatic train control enable measurable reductions in power consumption and emissions, and the automated adjustment of capacity to match peaks in passenger demand. When cars are the only option, free-flow road tolling, and automated traffic control enables traffic flow to be smoothed out throughout the city which results in measurably lower journey times.

As a result, Thales encourages Hong Kong to deliver a seamless integrated transport policy that blurs the boundary between public and private, and which enables greater use of transport modes.

Integrated Road Traffic Management

High-performance traffic management systems can be crucial to the success of a city planning and transportation policy. The challenge is increasingly being addressed by integrated technology solutions that bring together traffic management, parking and road charging systems.

Thales encourages Hong Kong authorities to further integrate road traffic management that enables city administrators and highway operators to manage traffic, and empowers road users to make informed choices about vehicle use. A central traffic management system should be also utilized as a powerful tool for the city officials to provide a high standard of services to its citizens and decrease significantly traffic congestion and, thus, carbon emissions.

Collecting data from all traffic signals, wayside CCTV cameras and other field detectors and controllers should be made not only to supervise and manage the in-city traffic but also to prioritize trams and buses and, in specific cases, emergency services.

Implementation of specific algorithms analysing vehicles speed and the space between vehicles would also enable congestion prediction and subsequent prevention.

Statistics should be automatically generated and exploited to provide operations and maintenance teams with additional insight being offered by the latest developments in big data and new approaches to business analytics. Consequent analysis will drive them to strategic planning and enhanced usage of their systems and resources.

Dynamic updated road traffic information can be presented in real-time via traffic information road signs indicating travel times, road works and congestion, and of course, integrating this with other systems can also provide complementary information such as real time indication of car park capacities.

Aggregating information and presenting this in real-time to road users through websites and/or mobile apps is crucial to the provision of increased choice. Connected through smartphone, a road user needs to be notified about any traffic disruption, can be proposed an alternative itinerary, or to leave his/her car in a parking and continue by public transportation.

Extending the core traffic management system to other existing or additional systems enables fleet management for public transport to be included, as well as specialist management systems for higher risk routes such as tunnels or bridges.

Last but not least, integrated road traffic management system can be also coupled to a police or first responders operation centre with responsibility for incident detection, video-surveillance, and overseeing the dispatch and management of resources in the field.

"On the move" tolling

"On the move" or full free-flow electronic tolling will also benefit to Hong Kong citizens and environment: journey time will be shorter (freer traffic flow and fewer bottleneck areas, e.g. in tunnel entrances); roads will be safer (accident likeliness will drop); and, finally, carbon emission will drastically decrease.

The technology enables variable payment schemes to be implemented according to the vehicle type, time of day, or traffic conditions. This approach to managing vehicle entry into the city or specific districts seeks to present

road users with a requirement for direct payment according to their use and/or carbon emissions.
This enables an economic sum to be factored into decision-taking when considering whether or not road vehicles are the preferred means of transport within the city centre or specific districts.

Smart Car Parks Systems

Car use plays an important role in fulfilling the first or last mile. Thales, therefore, encourages Hong Kong authorities to implement smart parking systems.
For instance, "park-&-ride" systems and associated policies should be further implemented. Car users could enjoy the Octopus card to park their vehicle and, then, travel by metro, bus or ferry. Incentives should be offered to ease the adoption and use of park-&-ride systems.
To the same extent, other user-friendly functionalities can be realized, such as identification of parking location and real-time parking slot availability, not only along the road but also through online and mobile applications or tools for parking slots reservation prior to travel.
Typically, the system can link an Octopus card number (or any other identity badge) to a specific vehicle with automatic number plate recognition and vehicle classification. This ensures that car parking transactions are, then, correctly matched against each vehicle entire and leaving the car park. It also enhances security measures and reduces vehicle theft.
Smart car park systems can also be extended to guidance functions to lead the drivers to the closest car park slot.

Pre-requisites for success

As discussed above, the range of technology solutions available today address the entire need for city centre traffic management, and includes city centre road toll systems, high-performance traffic management systems, car parking systems. But they can only be effective when combined together to ensure the success of a city planning and transportation policy. These solutions need to address several key features which are outlined below.

Interoperable systems enable the closer operation and co-operation between not only the individual road transport systems but also rail, tram, bus, parking and other service operators for multi-mode transport. Interoperability can be achieved through demanding the use of open architectures and standards during system implementation which ensures that not only can new systems be integrated together, but also existing systems can also be included. The result is seamless travel for countless millions of users, and endless opportunities for tighter integration through forward-looking initiatives such as urban park-&-ride.
Solutions need to be designed and implemented to have a minimum additional impact to road users. This impact can be understood in terms of daily operation and also maintenance. Daily operation by road users should be as unobtrusive as possible, and ideally be included within an existing transport framework. This could mean the introduction of free-flow tolling payment systems that do not require traffic to slow to a halt, and therefore maintain traffic flow as far as possible. These features increase "usability" and decrease barriers to adoption. Ease of maintenance should be a designed-in feature that ensures the maximum availability and operational uptime of the system. Features that ensure ease of maintenance could include remote solutions that enable user problems to be addressed quickly and easily at a distance.
Often, as is the case for parking or toll payment systems, payment transactions are being made. The desire from an operational point of view is the make the transaction as quick and easy as possible. But, road users also expect transactions to be secure. Rapid payment may mean the use of vehicle registration plate recognition that requires users to provide personal details including their banking details, or the use of the Octopus card to enable the transaction. To ensure public confidence in the system, road users expect all payments to be secure and all their personal information to be safeguarded. This enables the public to be confident in the knowledge that all users pay their fair share and that their own privacy will be respected.
A key feature of any integrated traffic management system should be the ability to

demonstrate the improvements delivered following adoption. This is another means to ensuring continued support and provides a means of showing that change has delivered positive results. City dashboards provide a means of delivering this type of information to authorities, operators, and citizens alike, and include global indicators such as air quality, emissions, as well as quantifying subjective improvements such as traffic fluidity by the use of average journey times and traffic density.

↗ Thales VivaSecurity

Thales VivaSecurity provides a multi-agency crisis management and control capability, where city authorities effectively coordinate emergency services and civil security forces to efficiently manage their emergency and disaster response. Citizens feel safer, and more secure. This citizen-centric approach to security has been proven to deliver a measurable increase of people security and safety as well as reduction in vandalism, delinquency and criminality -- by as much as 35% since deployment in Mexico City, for example.

Furthermore, bringing together city security agencies with transport authorities, within a single operational control environment, offers an advanced approach to safety and security. Leveraging recent advances in public transport and traffic video surveillance, and passenger or public information announcement systems, provides the ability to effectively address all safety and security aspects of large event management.

As Hong Kong grows, the need for urban security is steadily rising. City authorities should be driven by the objective to make Hong Kong an even more attractive place to be for citizens, business and tourism.

Hong Kong authorities need to consider the guarantee of the safety and well-being of their citizens, but also and after all, protect city assets.

Key assets are property of primary significance which requires a higher level of protection. This incorporates a diverse range of critical national infrastructures such as ports and airports, museums, prisons, water supply, electricity distribution network, etc.

The interruption of public or private services can have serious consequences on the city security, governance, public health and safety, economy and public confidence.

The security of key assets is crucial for the government and private operators. In case of event, they need to have a quick strategic overview of the situation in order to prevent, identify, protect, respond and recover a full range of hazards. They need to coordinate different security agencies to prevent daily incidents, reduce incident rates and response times, and manage unpredictable crisis situations (e.g. epidemic disease, major pollution) or natural disasters.

Multi-agencies coordination is also a means to make optimum use of city resources in daily operations. An integrated approach to urban security would indeed allow Hong Kong authorities and operators to share technologies, communication infrastructures and citizen services to optimise the use of resources and drive efficiency gains. It helps to keep pace with an increasingly mobile world, manage major events, improve crisis preparedness and make the city more attractive to business and the voting public. Above all it will make Hong Kong smarter and more attractive for all citizens.

Anticipating the changes

As the Hong Kong population become more and more concentrated in urban corridors, safety and security has become the cornerstone of urban development. For planning broad new

urban communities or updating existing infrastructure in smaller spaces, a well-defined urban security master plan is a clear necessity.
To address this imperative, Thales draws on its expertise and global leadership in the security market to provide fully integrated and scalable urban security and safety solutions.
An integrated system with the capacity to fuse data from multi-systems providing global situation awareness and with the capacity to incorporate advanced decision support tools will enable an efficient coordination of day-to-day operations plan, major events management and provide high-level oversight in crisis situations by allowing multi-agencies coordination.
Integrated systems also allow business intelligence and data analytics. Data from the city's transport, security and other systems is archived and can be analysed to yield greater insight into the changing urban context in order to manage resources and plan future developments.

Modular, scalable solutions

With the growing number of security threats of different types, there has been a corresponding increase in the systems and technologies that public safety agencies need to manage. Thales recommends the choice of an open, modular approach whereby each control system and functional application operates within a Service Oriented Architecture to deliver capabilities that are useful to one or more security agencies in a wide range of scenarios.
Thales provides a collaborative control and management capability for major event security, crisis management and disaster recovery as well as routine emergency operations. The solution is resilient and adaptable, allowing individual agencies to coordinate their resources with those of other organisations — and even other security systems (public transport, crowd management, etc.) — and review their roles and procedures as their missions evolve or as part of a broader roadmap.

Tailored support packages

Thales offers a full range of services to help customers define their priorities and describe their concepts of operations, develop the best solutions for their cities and operate them to best effect. Tailored support packages include planning support as well as operational services such as system administration and hosting, additional software development, performance tracking and procedure refinement, hotline support and operator training in immersive environments.
Thales is a recognised expert in virtualisation technologies and secure cloud architectures, providing platform maintenance and cyber protection to support customer-operated services.
City authorities and agencies have access to an open data platform to develop web-based and mobile services, keeping the public informed in real time, remaining transparent and accountable to their stakeholders and sustaining the trust of the citizens they serve and protect.

↗ Conclusion

Hong Kong authorities' investment in further developing the ICT infrastructure should focus in improving the flow of traffic throughout the city and in seeking to address the seamless integration of public and private operators.
First of all, in the mobility domain, commuters will have the ability to make an increasingly informed choice about their travel, from a range of viable options that includes public or private, rail, road or sea.
In the security domain, bringing together security and public services operators within a single operational control environment will offer an advanced sophisticated approach to manage events from simple incident to major crisis.
Combining the two will be a key driver to make a *smarter Hong Kong* for *smarter Living*.

↗ Selected references

Mexico City: The world's largest urban security system

In Mexico City, a megacity of 22 million people, Thales and telecommunications operator Telmex implemented a solution for urban security. Built around the intelligent use of data, with multi-agency coordination, the solution has significantly increased security for Mexico City's population. Emergency response times have shortened on average by a factor of three, crime in the metro has fallen by 80%, car thefts reduced by almost 10%, and criminal activity down by 35% in some areas.

Mexico City urban security control centre

Auckland: A single multi-modal travel pass

The multi-modal travel pass supplied by Thales makes it easier for passengers to travel around the city, on trains, buses and ferries, with just one single ticket. Passengers are even able to use their mobile phones as contactless travel passes. At the same time, city authorities can manage their transport systems centrally and analyse passenger and transport network statistics so that transport services can be tailored continually to passengers' evolving needs.

NFC payment enabled in Auckland metro

Strasbourg: Transforming traffic flow throughout the city

A city-wide traffic control system delivered by Thales regulates traffic flow, and is also linked to the city's operations support and passenger information system. These systems work effectively together to allocate priority for buses and trams, which encourages greater use of public transport. The automatic traffic information and control system has been extended to manage pedestrian areas and available parking spaces. An application, Strasmap, is available online or as a downloadable app that enables citizens to access up to the minute travel news and information.

Integrated traffic control centre in Strasbourg

Bilbao: EV charge network management

Use of Electric Vehicles (EV) becomes more practical with the automated charge network management solution developed by Thales, including a back-office management system accessible by users via a website or a downloadable app. This innovative solution means that the EV is a manageable proposition for everyday fleet use, and supports the migration of fleet users towards EV use. This solution has been implemented by the charge infrastructure operator IBIL, a JV between the Basque Government and REPSOL.

Bilbao Open feet management app and charging point

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