GS1 Hong Kong Positioning on Re-Industrialisation

1.　　Re-industralisation Trend

Re-industralisation, aka Industry 4.0 or Industrial Internet of Things (IIoT), refers to the development of high value-added industries and manufacturing processes which make use of smart production, data analysis and Internet of Things.

The purpose of re-industrialisation is to increase automation of processes, monitor resources and processes, make smarter business decisions faster, predict consumer needs more accurately and optimize inventory, in a truly productive and connected manufacturing environment.

As smart factories drive digitalisation, Hong Kong can benefit from the huge demand for advanced technological solutions and complimentary products and services that opens up opportunities for Hong Kong's entrepreneurs to thrive in light and technology-intensive, high value-added manufacturing and supporting services ventures.

2.　　Implications to Hong Kong

Despite Hong Kong's socio-economic strength and reputation, there are numerous issues that can hamper the long-term growth of Hong Kong, that includes 1) the rapidly aging population, 2) the rising demand for elderly healthcare, 3) the labour shortage work force, and 4) the shortage of land supply.

We believe the workforce and aging issues can be alleviated with the advent of re-industrialisation initiatives, in areas of healthcare, food service, etc. Re-industrialisation not only help to reduce labour shortage associated with the labour-intensive industries, but also make the best use of land that produce high value-added, service-oriented product offerings.

Gerontechnology, a combination of elderly services and innovative technology, is a good example that not only helps address the elderly issues, but also reduce the burden and stress of carers and care staff, like using anti-wandering vests, clothes management and inventory management systems which have adopted use of the Radio Frequency Identification (RFID) technology. We understand Social Welfare Department (SWD) has plans to procure products like mechanic hoists and lifters to help elderly get up, anti-wandering vests that make use of RFID technology to locate elderly, bed monitoring system and multi-sensory therapy equipment, etc.

In food and food service industry, smart ideas like centralised dishwashing centre for restaurants chains are excellent reindustrialization examples where the operation lines can be fully automated, and it takes just an hour to finish cleaning,

sterilising and packing thousands of tableware. One latest innovation includes an automatic "stir-fry" cooking machine with which the cook need only put together appropriate ingredients into the "wok" and the dish will be "stirred" ready in 2 minutes.

These innovations, with the correct policy, will become the puzzle pieces for reindustrialization that help resolve the healthcare and labor issues.

The action that HKSTPC taking on negotiating with individual factory operators to surrender the unused plot ratio and encourage them to surrender premises which have not been fully utilised is a correct approach to quickly provide industrial buildings or units to meet some of the needs of entrepreneurs shifting the production line back to HK.

3.   Hong Kong and Mainland Development Intertwined

Reindustrialization initiative in mainland is referred as "Made in China 2025", sets the goal for China to become a world manufacturing power by 2025 - in Premier Li Keqiang's words: "to go from "Made in China" to "Created in China". The initiative has a far border context: to have innovation-driven, process-oriented manufacturing, emphasizing on quality over quantity, achieving green development, promoting development of not only advanced industries, but traditional industries and modern services, optimizing the structure of Chinese industry, as well as nurturing human talent.

With massive development efforts underway, Hong Kong could fit in the mainland's bold plan and may yet play a bigger role through leveraging its competitive advantages: 1) is a financial hub; 2) has a robust ICT infrastructure and is consistently ranked among the best in the world in terms of digital readiness and internet access capabilities; 3) has a sound legal framework and a well-established intellectual property system.

Hong Kong has always been service economy, where the share of the services sector in GDP in 2014 is almost 93 per cent. We believe the Bay Area initiative, coupled with reindustrialization, will further strengthen Hong Kong's role in service sectors. Some of the growth areas we foresee include trade finance, e-logistics and e-arbitration.

3.1   Hong Kong Development of Trade Finance in Industry 4.0 Era

Reindustrialisation usually requires huge financial input, thus trade financing is a definite development area capitalizing on the trend.

It is encouraging to see Hong Kong has been doing paying much efforts in facilitating financial innovations to better integrate in the region. Supporting china

reindustrialization, the Hong Kong Monetary Authority (HKMA) is working on a strategy project on trade finance cross-border infrastructure to facilitate cross-border trade and financing, poses positive lights on the re-industrialisation.

This initiative, once implemented, should bring significant benefits to financiers, importers and exporters by enhancing the transparency of cross-border trade finance processes, improving operational efficiency and reducing the risk of frauds.

3.2 Hong Kong Development of e-logistics in Industry 4.0 Era

E-logistics is a dynamic set of communication computing and collaborative technologies that transform key logistical processes to be customer centric by sharing data, knowledge and information with supply chain partners. The ultimate objective of e-logistics is to deliver right products in right quantities at right place and time to the right customer.

The transport and logistics industry are the backbone of global supply chains, especially Hong Kong is acting as the logistics hub in the region. However, there is keen competition in the region in the logistics industry. E-Commerce has brought new challenges, as well as opportunities to logistics management.

Leveraging its sophisticated telecommunications infrastructure, Hong Kong facilitates the information flow along the supply chain, improving supply chain transparency, thus, speeding up the goods movement smoothly and improving the enhancing customer fulfillment rate.

3.3 Hong Kong Development of e-abitration in Industry 4.0 Era

Hong Kong is a prime venue for commercial dispute resolution through arbitration and mediation, given its mature and well-developed legal and IP system and the existence of a large pool of experienced professionals.

Arbitration awards made in Hong Kong are enforceable through the courts of most of the world's trading economies.

With increasing opportunities on the mainland after China's WTO accession and continued market opening, more foreign investors or companies have transacted with their mainland counterparts. Hong Kong is a suitable "third" place for settling disputes involving Sino-foreign projects, as many foreign companies prefer to settle disputes in a "third" place, while mainland enterprises are also increasingly using Hong Kong as an arbitration centre.

4. GS1 HK Standpoints and Recommendations

With this world of potential awaiting Hong Kong, it will take a concerted effort from all players in the city's technology ecosystem to connect the dots and unlock the potential of successful re-industrialisation:

4.1   GS1 HK advocates the integration of IoT technologies, analytics, on labor-intensive industries to rejuvenate their businesses, and alleviate the labour challenge on services like aging healthcare, autonomous retail, and food services.

4.2   Riding on Hong Kong's competitive advantages, strengthen Hong Kong's role in service sectors like trade finance, e-logistics and e-arbitration.

4.3   Re-industrialisation involves adoption of devices and sensors. With the growing interconnectivity of machines, devices, sensors, products, parts, and human, international standards that define the interaction between these elements are paramount. GS1 HK supports adoption of standards to facilitate interoperability of data among different devices and applications, so a sustainable re-industrialisation ecosystem could be achieved.

4.4   GS1 HK strongly supports nurturing and development of talents on IoT and technology which are fundamental to the success of re-industrialisation.

Technology is rapidly transforming, such as artificial intelligence (AI) and robotics, and the new skill set for talents is in demand. A lot of trainings on new technology and skills development such as process controls are needed to keep employees with up-to-date knowledge. Government should provide subsidies to industries on acquiring of new technologies and skill sets.

4.5   To encourage industries adoption of technology for re-industrailisation, appropriate recognitions and incentives are needed. The ITB ICT Award is a good means for recognition of excellence in technology and intellectual property development as well as its contribution to industry. Meanwhile, tax incentives should be provided to industries attesting to successful implementation.

Appendix I – GS1 Global Standards in Industry 4.0

GS1 Standards for identifying, capturing, and sharing information—about products, business locations, and more— are making it possible for this industry to achieve true supply chain visibility and achieve leaps in operational productivity, managing (spare) parts and finished products before, during and after production.

GS1 is also coordinating global standardisation efforts related to Industry 4.0 covering engineering, construction, mass transit, mining and defence:

- Unique identification and IoT (Internet of Things)
- Digital Factory (Industry 4.0), Innovative Technologies, Spare Parts Management & Automation
- Direct Parts Marking
- Maintenance and Repair Operations (MRO) & Serialisation

GS1 standards drive interoperability within these activities and processes, leading to greater efficiency and lower costs.

GS1 standards, which uniquely identify individual parts, products and shipments for near realtime monitoring along the supply chain, in aftermarket sales and services and in life cycle management, enable interoperability across all processes.

By encoding a Serialised GS1 Global Trade Item Number® (SGTIN) into a GS1 barcode on a part's label or in an EPC/RFID tag, all trading partners can verify the authenticity of the part and exchange data in real-time on its attributes, performance and maintenance and repair operations (MRO) activities.

Appendix II – Re-industrialisation Examples

Example 1: Siemens and Bosch

Siemens and Bosch are creating intelligent digital factories where individual products, parts, raw materials and machines all communicate within an IIoT and cooperatively drive production. in the Siemens factory finished goods, in particular customised ones, are created as they find their way independently through the production process, aided by RFID technology. Likewise, Bosch is implementing the concept of Industry 4.0, using RFID in its network of plants to create transparency in its entire value stream. To ensure interoperability between its different entities, Bosch has already started adopting GS1 standards in its internal processes.

GS1 standards can provide the needed identification of "things" for the digital factory, which promises considerable economic gains. Inventory management is also significantly enhanced since suppliers and manufacturers can now easily identify products and parts on hand, especially for MRO and aftermarket sales.

As maintenance and other aftermarket activities are performed, the serialisation of each item by means of the SGTIN can provide valuable and detailed information for improved maintenance planning and downtime prevention, helping to save time and costs. Other GS1 standards like the Global Individual Asset Identifier (GIAI) that uniquely identifies assets and the Global Document Type Identifier (GDTI) for document identification help to streamline all aftermarket sales and services processes.

Example 2: Trafikverket

Trafikverket, a Swedish government agency responsible for transport, is effectively tracking rail vehicles and sharing rail traffic data for safe and efficient operations. It uses the GS1 GIAI encoded in EPC/RFID tags to uniquely identify individual vehicles, and the Global Location Number (GLN), to identify vehicle location. The GS1 standard EPCIS enables Trafikverket to share information with other rail operators, infrastructure companies and even cargo owners about the physical location and movement of individual rail vehicles and entire trains as they travel from country to country. Trafikverket plans to investigate how to use serialised GS1 identifiers on rolling and fixed railway materials for efficient MRO and increased safety.

"As we add more traffic and faster trains, it's imperative that we care for our existing infrastructure," says Karl Åkerlund, Rail Infrastructure Manager for Trafikverket. "We need to understand what vehicles are on our tracks, because if there's a bearing problem or a flat wheel, it affects our rail operations. "With GS1 standards, as an industry we can create more intelligent solutions to achieve greater efficiencies, especially in the areas of safety and maintenance. Yet, this can

only be done with industry players adopting a common set of standards to share information."

Sharing information for interoperability starts with two applications as the foundation for the use of EPCIS in rail. These applications include tracking vehicles as they travel within and across different countries for improved asset management and associating vehicle data with the Wayside Train Monitoring System (WTMS) data for enhanced preventive maintenance. By using EPCIS in their rail operations, Trafikverket is saving 30-60 minutes on each train that arrives at the harbour, eliminating extra manual work and improving production.