Public-Private Partnerships in Innovation: The Exciting Dimension of Leapfrogging the Malaysian Surveying and Mapping Industry's Progress

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SUMMARY

The building of a technologically-advanced and globally competitive economy has been earmarked as one of the three basic pillars of economic priority by the Malaysian Government.

Against a backdrop of technology footprints that have been carved out over the years in the name of technological progress, the 2006 initiative of the Government to foster public-private sector interactions via the e-Cadastre Project was a collective effort that marked one of the first Government-Private Sector collaboration undertaken at the national level. Licensed Land Surveying practices were involved in the information-input of the Coordinated Cadastral Survey (CCS), the industry's major contribution to National Development.

These efforts have culminated in the recognition of the Government's role in technology policy and technology initiatives while Licensed Land Surveying firms should adopt a participative mind-set in order to make the partnership work.

In advancing the public-private sector interaction, the Association of Authorized Licensed Land Surveyors has identified Public-Private-Partnership (PPP) in Innovation as a collaboration vehicle to contribute to National Development.

A Strategic Plan for the Industry was launched in March 2007, which was followed by the launching of an Implementation Roadmap. Building on the focus on the Industry's New Growth Agenda, a PPP in Innovation collaboration proposal was submitted to the Department of Surveying and Mapping Malaysia (DSMM). This proposal is punctuated with success-driven elements like a Collaboration Vision, the DSMM-PEJUTA Collaboration Strategy and Collaboration Strategy Map. With this, PEJUTA has also taken things to the next level with the concept of *'Bridging the Gaps of Systematic Innovation between working cultures within the FIG'*.

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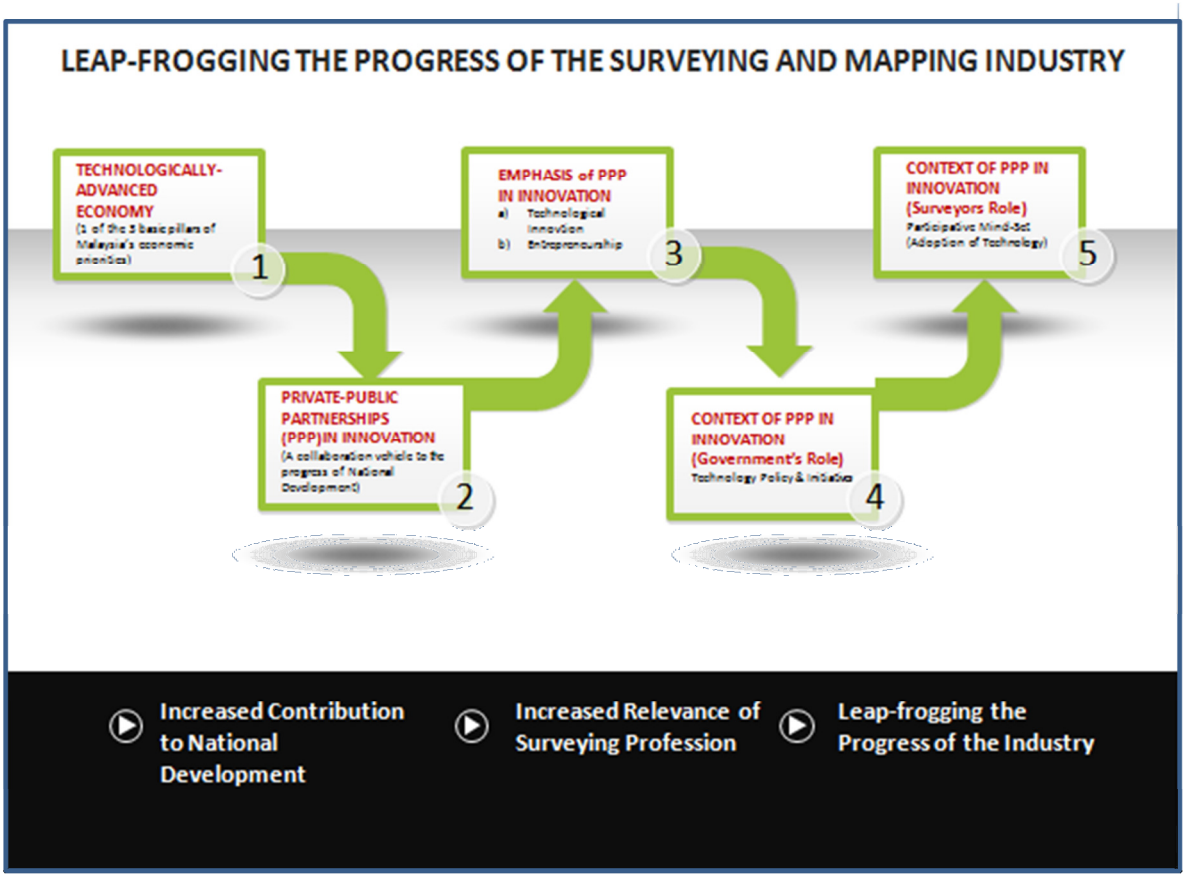
1 INTRODUCTION: MALAYSIA'S TECHNOLOGICAL ADVANCEMENT CONTEXT

MALAYSIA is a remarkable country that is blessed with a unique combination of **economic strength**: natural resources, high gross national savings, negative debt-service ratio, low unemployment rate, export-driven economy, vast geography, educated workforce, financial stable environment and more importantly, the government's commitment towards industrial development to promoting free trade and business incentives.

High on the country's economic priority list are **three basic pillars:** (a) the strengthening of **Malaysia's national identity** through aggressive social cohesion and bonding within the context of its multi-ethnic population; (b) the pursuit of developing high value-added, **knowledge-based economy (K-economy)** driven by higher standards of education and training; and (c) the building of a **technologically-advanced and globally competitive economy**. Additionally, the advent of globalization has made also the move towards K-economy rather compelling for Malaysia.

In Surveying and Mapping, we are looking at equating the significant contribution of the industry to the economic priorities of the country from the aspect of **National Development** and this is where the potentially successful implementation of Public-Private-Partnerships (PPP) in Innovation and wealth creation (the result of successful entrepreneurship practices) feature as promisingly **influential catalysts** to the future progress of the Industry.

2 THE SIGNIFICANCE OF TECHNOLOGICAL INNOVATION



Theoretical and empirical investigations have emphasized the crucial role that technological innovation and entrepreneurship play in fostering the development of today's industrialized nations. When dealing with technological innovation, another key component to be considered involve that of **technology policy**, hence implying the influence of the Government in the development and undertaking of technology innovation initiatives.

This has, in turn, perpetuated the **innovation-related perspective** of positioning 'technology' as the recipe for economic supremacy with high value added technology serving as the engine of growth, as evidence in the growth of industrialized countries, thus far.

In Malaysia, the previously-mentioned basic pillar of building a technologically-advanced economy has since been translated into a **new paradigm** that is resonating within (amongst) the collective consciousness of the Malaysian Surveying and Mapping Business Community. It is a paradigm that dictates the notion that **economic prowess** of **an increasingly technologically-driven Industry** like the Surveying and Mapping Industry, stems from technological advancement that result from technological innovation.

The exciting dimension of **Public-Private-Partnerships (PPP) in Innovation** in relation to discussing the topic of leapfrogging the Malaysian Surveying and Mapping Industry's

progress, is hinged on these two perspectives: (a) the **developmental role** of the Malaysian Government (the role of the Department of Surveying and Mapping Malaysia, DSMM) in **technology policy and innovation-based initiatives** and (b) the **participative mind-set** of the entrepreneurial-spirited **business community** of Licensed Land Surveyors, especially in the area of **technology adoption**.

Herein, the significance of technology innovation is further amplified in the developmental role of the **DSMM** (Malaysian Government) that serves to (forms) lay the foundation for the envisioned future of the Surveying and Mapping Industry, whilst (strategic) organizations like the **Association of Authorized Land Surveyors Malaysia** (PEJUTA) continue to nurture the **enabling environment** within which the participative mind-sets of the Licensed Land Surveyors can survive and thrive.

3 DEFINITIONS: INNOVATION AND PUBLIC-PRIVATE PARTNERSHIPS

From the perspective of the developmental role of the Government on technological innovation, the emphasis is on **systematic innovation** which is defined as 'the purposeful and organized search for changes'. This involves focusing on the need for accelerated growth and harnessing the abilities of citizens for technological innovation and entrepreneurship. Additionally, since the Government is paving the way for technological advancement, another aspect to be considered involves making the **appropriate choices of technology**.

From the aspect of the participative mind-set of the Licensed Land Surveyors, technology innovation means a significant **change within the organizations** within the business community in question or its line of **services or products** that (a) requires a substantial adjustment in functions and/or structures, and (b) that are successfully introduced, decided upon, and incorporated into the organization.

Public-Private Partnerships (PPPs) are widely recognized as vehicles structured to **achieve a range of public policy goals** where PPP projects must be designed to deliver specific performance improvements within a framework that shares key components between the public and private sectors. PPPs are long-term partnerships between the public and private sectors. The **benefits of PPPs** come in the form of the delivery of improved services and the delivery of other significant benefits in terms of increased quality of services.

A key feature of *Public-Private Partnerships in Innovation* as a **collaboration vehicle** involves the **capitalization of technology innovation** as the baseline for fostering smart partnering relationships between the Government and the Private Sector.

4 MALAYSIA'S TECHNOLOGICAL PROGRESS THUS FAR…

The key technological developments that have been planned and undertaken by the Government of Malaysia have not only brought about new work patterns across the management and supporting staff of the Malaysian Government machinery but have also had a major impact on the work paradigm of Malaysian Licensed Land Surveyors at a National

Level.

4.1 Driving the Technological Momentum

The Government of Malaysia has been, and will continue to be the catalyst for driving the wave-of-change in the area of technological advancements.

The Government's launching of the National IT Agenda (NITA) December in 1996 by the National IT Council (NITC), has provided the foundation and framework for the utilization of Information and Communication technology (ICT) to transform Malaysia into a developed nation in our own mould consistent with Vision 2020.

Part of the delivery of the NITA comprised the National IT Framework (NITF). It was a strategic and synergistic combination of a number of key components, working in tandem.

Alongside the delivery of the National IT Framework, the rapid development of Information and Communication Technologies (ICT) had also resulted in widespread reforms in the surveying and mapping industry.

With the theme "Turning Ripples into Tidal Waves", NITA focused on the development of people, infostructure and applications (3 levels) to create value, to provide equity and access to all Malaysians, and to qualitatively transform our society into a values-based knowledge society by the year 2020.

The enactment of the Licensed Land Surveyors Act 1958 had significantly complemented the increased visibility of land surveying as a profession in the 1960s that continued to see rapid progress and advancement in science and technology, communications and software engineering, as well as airborne and space observation platforms and global positioning and navigation technologies.

The significant technological progress of Malaysia's Surveying and Mapping Industry has since made its major impact at **all 3 levels**, spearheaded by key applications that were developed around the Infostructure (information-based platforms) and content needed by various constituents in the Land Surveying Community.

This emphasis on the development of appropriate and cost effective applications to fulfil the requirements of National Development has been the key terms of reference for DSMM to capitalise on this wave-of-change and the government's commitment to the NITA, thus resulting in the initiation of the Department's computerization program since the early 1980's.

4.2 Surveying and Mapping in Malaysia: Technological Footprints

The expanse and momentum of Surveying and Mapping-related technological initiatives undertaken by DSMM have been significantly fuelled, in effect, by the Malaysian Government's efforts.

The far-reaching initiative, on the part of the DSMM with its computerization program has, in itself been the 'ripple' that eventually evolved into various 'tidal waves' of technological advancements, that started with the Department's undertaking of various steps to modernize its field and office operations.

Over the course of the National Development Plans, DSMM's 'in-tandem' response to driving the technological advancements, has progressed to include the management of digital spatial databases as well as the dissemination of geographical information in support of end-users, especially the growing community of Licensed Land Surveyors.

Some of these technological advancements include:

- Moving from the 1960's, the need for an effective land information system to assist planning and development in Malaysia had been felt since the early 1970's and the first step towards initiating a Spatial Data Infrastructure was taken in 1992, when the Malaysian National Infrastructure for **Land Information Systems (NaLIS)** Task Force was assembled under the purview of the Ministry of Land and Cooperative Development (MLCD) to study the possibility of establishing a national information infrastructure.

  Funding the development of NaLIS, which involved the development of standards, policies, regulations and guidelines and the operations as well as the maintenance of the NaLIS Clearinghouses including its applications. LRAs continued to fund their respective programs to collect, produce and maintain Geospatial Information (GI) under their respective jurisdictions. allocation of funds for the NaLIS was focused on the implementation of NaLIS throughout the Country in four phases involving the various states of Malaysia (2001-2004).

- The implementation of the **Computerized Mapping System (CAMS),** had also expedited the production of digital and hard copy topographic map series, the creation and maintenance of National Topographic and Cartographic Databases and the dissemination of digital spatial information from these databases to all government agencies including the military. The national coverage for digital topographic maps were compiled at 1:25,000 and consisting of 1,048 map sheets was completed in 2006.

- a **Fast Mapping System (FMS)** was commissioned in 1995 to cater for the specific mapping needs of the military. Besides maintaining an imagery and digital geographic model database, the FMS was able to ingest non-conventional data from sources such as satellite imageries to produce fast maps on demand. Interfacing with CAMS it was also able to generate Digital Elevation Models (DEMS) and geographic data necessary for aircraft navigation, flight simulation and for mission rehearsal purposes. All in all, the introduction of FMS had placed the department in the forefront in the application of new mapping technologies such as digital softcopy photogrammetry and satellite mapping.

- In 1995, DSMM embarked on a modernization program that saw the dramatic computerization of both its office and field processes of its cadastral survey division. The **Digital Cadastral Database (DCDB),** which was the crown jewel of the department, was created by capturing the survey accurate information of all land parcels. This was the starting point for the **e-Cadastre Project**

- The Plan was focused on shifting the growth strategy from being input-driven towards one that is knowledge-driven. Focused on shifting the growth strategy from being input-driven towards one that is knowledge-driven. Emphasis was given to improving management and organizational techniques, upgrading R&D and science and technology, as well as strengthening innovative capacity, thereby enhancing potential output growth and accelerate structural transformation within the agriculture, manufacturing and services sectors. The Surveying and Mapping was one of the service sectors.

- A Utility Mapping Guideline was subsequently initiated by DSMM and was formulated to provide direction and assistance to the utility agencies.

- In line with the Malaysian government's efforts to enhance its public delivery system, DSMM, through the use of **real-time GNSS survey technology** embarked on a project aimed at providing centimeter accuracy real-time positioning service through GNSS network throughout Malaysia.

5 THE BEGINNING OF GOVERNMENT-PRIVATE SECTOR INTERACTIONS

In order to move the NaLIS concept beyond the Government sector to the Private Sector, there was a need to offer some incentives that would induce Licensed Land Surveying organisations to participate either or both as a producer or a user of **Geospatial Information (GI).**

To fulfill this aspiration, the Government approved the e-Cadastre Project in 2006, where the primary objective of e-Cadastre was to expedite the delivery system for land title survey. This entailed the creation of a survey accurate database at the national level and usage of the **Coordinated Cadastral Systems (CCS).**

The main objective of CCS was to develop a **homogeneous cadastral database** based on the geocentric datum with a spatial accuracy of better than 5 centimeter in urban area and better than 10 centimeter in semi-urban and rural areas. In order to achieve this intention, a dense cadastral control infrastructure grid of 0.5km spacing in urban area and 2.5km spacing in semi-urban and rural areas was established.

The underlying technologies needed included GPS positioning based on GDM2000 geocentric datum, and least squares adjustment. Once the dense cadastral control infrastructure was established the readjustment of the cadastral network was carried out and the 2006-2007 adjustment of the **National Digital Cadastral Database (NDCDB**) was to

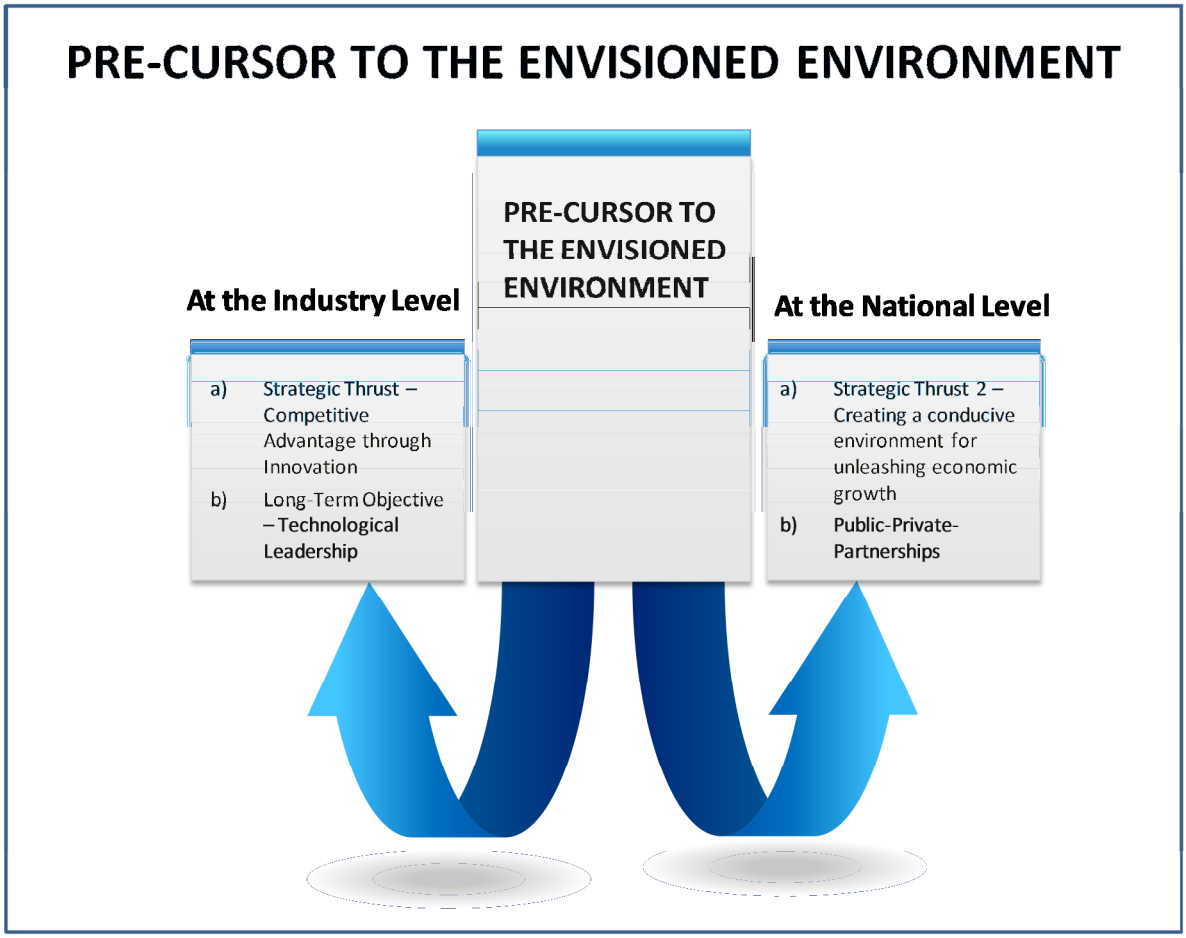
form the base layer for all future title surveys.

The readjustment used least square methodology will distribute the residues homogeneously in the large cadastral network. Under the e-Cadastre Project, DSMM had envisaged a significant reduction of time taken in any cadastral survey process from the existing **average of 2 years to within 2 months**.

The significant milestone that followed this initiation of e-Cadaster happened during the period of 2000-2003 during which the development of an Implementation Plan of Coordinated Cadastral System (CCS) for Peninsular Malaysia was undertaken. This (effort) signified **2 major milestones** for the progress of the Surveying and Mapping Industry.

A significant number of Licensed Land Surveying companies were involved in the CCS initiative. This collective effort marked one of the first Government-Private Sector collaboration undertaken at the national level and Licensed Land Surveying practices were involved in the information-input of the Coordinated Cadastral Survey (CCS), the industry's major contribution to National Development.

6 THE PRE-CURSOR TO THE ENVISIONED FUTURE



At the industry level, in terms of a relevant historical background to the articulation of the Envisioned Future of the Surveying and Mapping Industry, the Association of Authorized Land Surveyors Malaysia (PEJUTA) was established, in 1976, with the aim of expanding and safeguarding the interest of the growing community Malaysian Licensed Land Surveyor Members via the following **key objectives**:

a) To **foster, preserve and enhance the status, prestige and integrity** of the profession of Land Surveying through the promotion and encouragement of ethical practices by strict compliance with the code of professional conduct among Members of the Association;

b) To create and increase awareness in the community of the **role and contribution** by Authorised Land Surveyors in National Development;

c) To raise the levels of technical, professional and management expertise among Members of the Association by promoting **continual professional development**, the

upgrading and updating of skills, knowledge and instrumentation;

During the mid-to-latter part of 2006, earnest work began as the Consultative Panel and PEJUTA's own Strategic Planning Committee became engaged in a series of brainstorming sessions that were geared towards answering three (3) questions:

a) What does the Surveying and Mapping industry stand for?
b) What kind of industry / practice should the Surveying and Mapping industry seek to be (over the long-term)?
c) What short-term, medium-term and long-term objectives will help PEJUTA fulfill its role in the light of the interest of its Members?

The outcome of those meetings spearheaded the development of a **Strategic Plan** that encompassed PEJUTA's Mission and Vision statements as well as a Grand Strategy to be fulfilled via five (5) Strategic Thrusts to accomplish short-, medium- and long-term objectives.

'Competitive Advantage through Innovation" was the Strategic Thrust that was subsequently established to fulfill the **'Technological Leadership'** long-term objective of the Industry in the Strategic Plan.

On the other hand, at the national level, Malaysia's latest Development Plan, the **Tenth Malaysia Plan** (2011-2015) was launched this year. The Plan is being implemented based on strategic thrusts, programmes and allocations which are needed to realize Malaysia's **Vision 2020** and to advance the nation to high-income and developed nation status by 2020.

To achieve the aspirations of the Tenth Malaysia Plan, **five key strategic thrusts** were identified. The Strategic Thrusts that are most relevant to the Surveying and Mapping Industry involve the topic-relevant area of **Strategic Thrust 2: 'Creating a conducive environment for unleashing economic growth'.** This Thrust involves creating a Private Sector-led Economy, **Public-Private Partnerships [PPP],** Building World-Class Infrastructure and Cluster Development.

7 THE ENVISIONED FUTURE

The Envisioned Future of the Surveying and Mapping Industry is one that emphasizes the **technological advancement** areas of the Industry (i.e. at the Sectoral level] that are designed to support the Licensed Land Surveying Community's on-going transformation into firms that continue to succeed with the adoption of new technology and innovations. This will, in turn, help to satisfy Public and Private clients' needs contained in the myriad of business opportunities encapsulated within the **World-Class Infrastructure and Cluster Development** focus of Malaysia's Tenth Malaysia Plan.

It is envisaged that the Surveying and Mapping-related technology initiatives (which we have aptly referred to as 'Technology Footprints') that have experienced so much progress over the past few National Development Plans are poised to **make further lasting impact** in the Tenth Malaysia Plan.

With the government vigorously supporting the growth of the spatial information industry, the challenge is for the DSMM, PEJUTA and the Licensed Land Surveying Community to collectively evolve strategies and structures in order to ensure that both the Private and Public Sectors are well positioned to continue to serve the needs of the nation and lead the region.

8 RATIONALE BEHIND THE ENVISIONED FUTURE

Throughout the world, even in developed countries, it is evident that **technology innovation and knowledge creation** have become keys to long-term growth and prosperity. These countries see fundamental **combination of technology policy and innovation-related initiatives** as a key strategy to re-invent their economies and to position their countries for sustainable growth.

The Malaysian Surveying and Mapping industry holds a similar view point that has since been translated into a recognized need **to strengthen the nexus between technology innovation and entrepreneurship** (made possible via vehicles like PPP in Innovation initiatives) as a key focus of our government. In this context, the emphasis is on **strengthening the technology innovation framework** to derive greater economic value from Public-Private-Partnerships.

8.1 At the Home Front: Challenges Faced by the Industry

Back in 2006, PEJUTA embarked on the development of a Strategic Plan, part of which involved an initial 5-10 year foresight of issues, assumptions, opportunities and uncertainties suggests critical choices about potential challenges that both PEJUTA and the Surveying and Mapping industry might face.

From here, some key challenges were identified where amongst the most significant were:

- more clients seeking Total Solution Providers
- the Government's aspirations for efficient delivery systems
- adopting available and new technology on the part of Licensed Land Surveyors and
- the high capital investment in technology

When expanded, we have the potentiality of PPP in Innovation initiatives between DSMM and PEJUTA addressing all three challenges except that of 'more clients seeking Total Solution Providers which feature as an indirect challenge that will be addressed when success milestones are achieved with the PPP in Innovation initiative proposed by PEJUTA to DSMM). We have firstly, 'the Government's aspirations for efficient delivery systems'.

Alongside the delivery of the National IT Framework, the rapid development of Information and Communication Technologies (ICT) had also resulted in widespread reforms in the surveying and mapping industry. The significant technological progress of Malaysia's Surveying and Mapping Industry has since made its major impact at all 3 levels, spearheaded by key applications that were developed around the Infostructure (information-based platforms) and content needed by various constituents in the Land Surveying Community.

Expanding on the challenge related to 'High Capital Investment in Technology', the Industry has been dealing with a scenario where the capital investment on technology related to

Surveying and Mapping can be a significant burden to bear in the Surveying and Mapping industry. Often times, Licensed Land Surveyors face mounting challenges in obtaining the required funding to finance their projects, especially those that require advanced surveying and mapping technologies.

The remaining challenge, that of the 'adoption of available and new technology on the part of Licensed Land Surveyors', constitutes the fact that the Land Surveying profession, over the years, have been facing multiple challenges, including an ever accelerating rate of technological changes. Too often Licensed Land Surveyors found themselves having to focus on crisis management instead of planning how we can strategically respond to present and future challenges, especially those posed by technological developments.

All three 'challenging scenarios' has culminated in the critical need for both new and existing Land Surveyors to create and maintain viable and sustainable businesses.

8.2 Global Trends

Global trends continue to emphasize '***Technology Development'*** as the major driving force in the progressive evolution of the Survey and Mapping Industry.

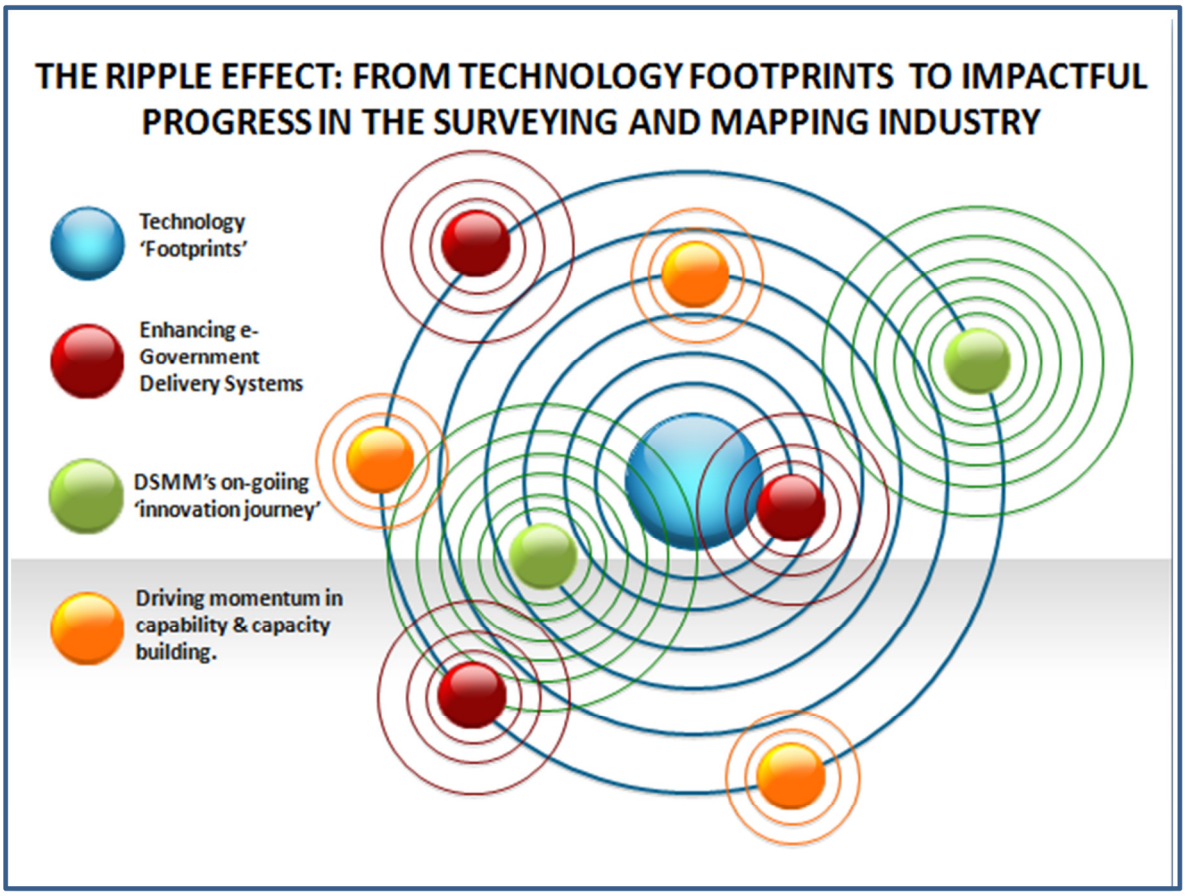
In particular, we have the advent of GPS technologies, high resolution satellite imagery, GIS technologies and not forgetting the World Wide Web and Internet that has been touted as the potential major medium for viewing and access to spatial data.

Furthermore, we have been observing the global trends on the adoption of Continuous Operating Reference Stations and in particular, a technology that we are familiar with - the utilization of the Global Satellite Navigation Systems.

Additionally, there is the Spatial Data Infrastructure [SDI] where Governments worldwide are creating policies and initiatives that emphasize partnerships between the public and private sector in the creation of infrastructure or enabling platforms.

All this goes to highlight the importance of innovation as more than just technology innovation activities that include continuous improvements in product or service design and quality, changes in routines and modifications to production processes.

9 SETTING THE STAGE FOR THE 'RIPPLE' EFFECT VIA PPP IN INNOVATION



When PEJUTA and its stakeholders went into action to establish a compelling picture of the Envisioned Future, one major viewpoint was discussed and deliberated many times. The word ***'Relevance'*** seemed to hold the greatest meaning for the team.

The word 'Relevance' covers four (4) key areas - how pertinent [or how significant], how connected, how applicable and how meaningful. Hence, when we set our sights on the next 10 years, we were focused on:

- How applicable our current business strategies will be

- How connected we will need to be in order that we can rally our collective strengths to face the on-set of Liberalization in 2012.

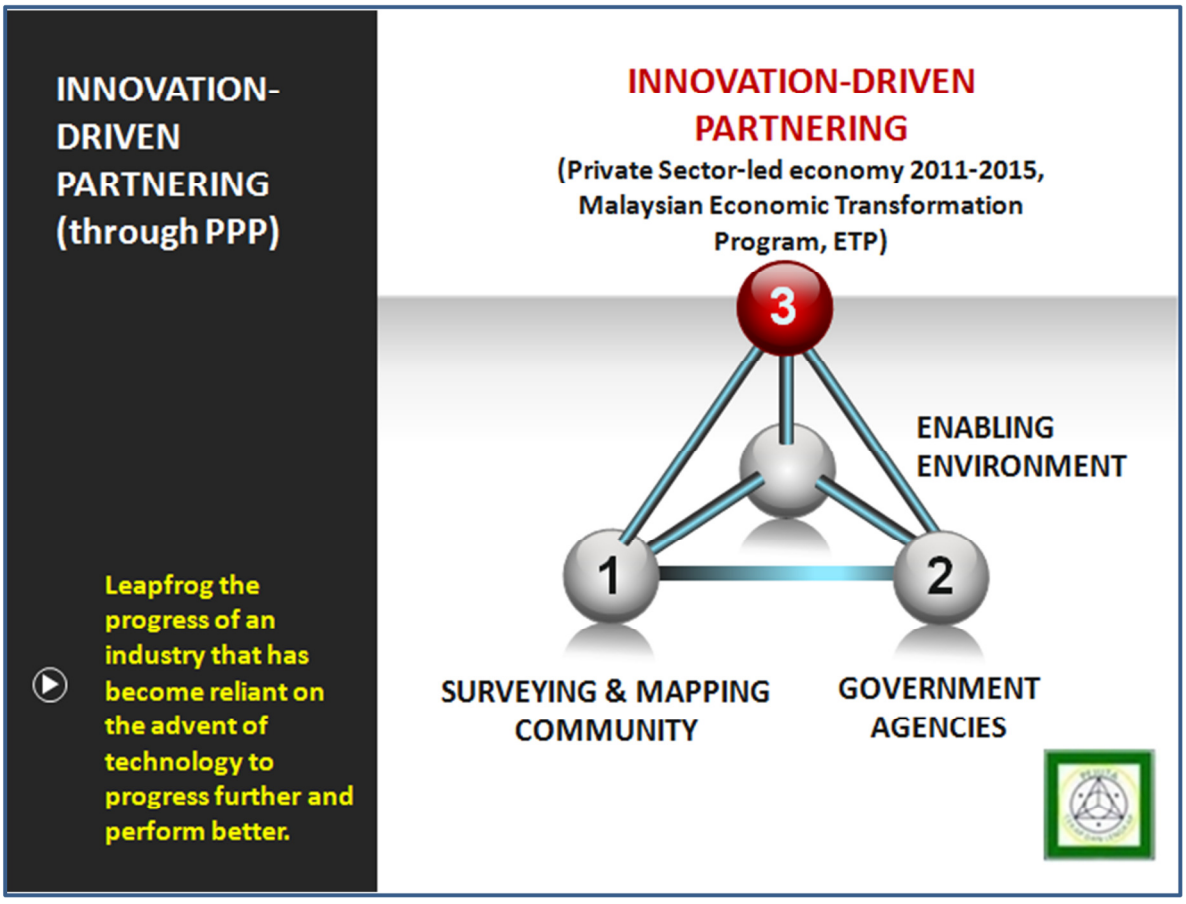
- How significant or pertinent ICT will be, as an enabler in enhancing the efficient delivery of our services, our competitive edge and our range of service offerings in meeting the expectation of clients who are increasingly demanding not only quality but efficiency and creative solutions.

- What kind of meaningful relationships can we establish with our government agencies and bodies where we can leverage each other's strengths to better the environment for our Licensed Land Surveying community.

All these **four areas of 'relevance'** have been the major influences on how PEJUTA presents itself to the world and to its members under the overarching umbrella of the Envisioned Future.

In this respect PEJUTA has been working on developing and nurturing an enabling environment to 'make things happen' via the exploration of more meaningful relationships that can be established with our Government. This effort, in effect, has contributed to the exciting dimension of initiating Public-Private Partnerships in Innovation as the significant vehicle to take things forward.

9.1 The Collaboration Vision



During the course of developing the Collaboration Vision for the PPP in Innovation with

DSMM, the need to visualize what each scenario would be like for us in the Envisioned Future was a priority because the clearer the picture, the sharper the focus of on our goals and plans for the next 10 years.

Beginning with the notion that Innovation should be viewed as the identification and application of new ideas, opportunities, technologies and partnerships, it is, in effect, a social process shaped by all parties involved and the Collaboration equation of DSMM and PEJUTA.

As such, **increased collaboration, alliances and smart-partnerships amongst Licensed Land Surveyors** were target areas identified with the aim of addressing competitive advantage factors like accelerated use of technology and high capital investment.

This has subsequently triggered increased attention and emphasis on the Government's key role in business environment enhancing policies, regulatory frameworks and more efficient delivery systems.

Any major initiative needs to realize a compelling vision while being guided by a purposeful mission. PEJUTA's proposed Collaborative Vision is one that focuses on ***'Reinforced Relevance of the LLS Profession and Surveying and Mapping Industry'***.

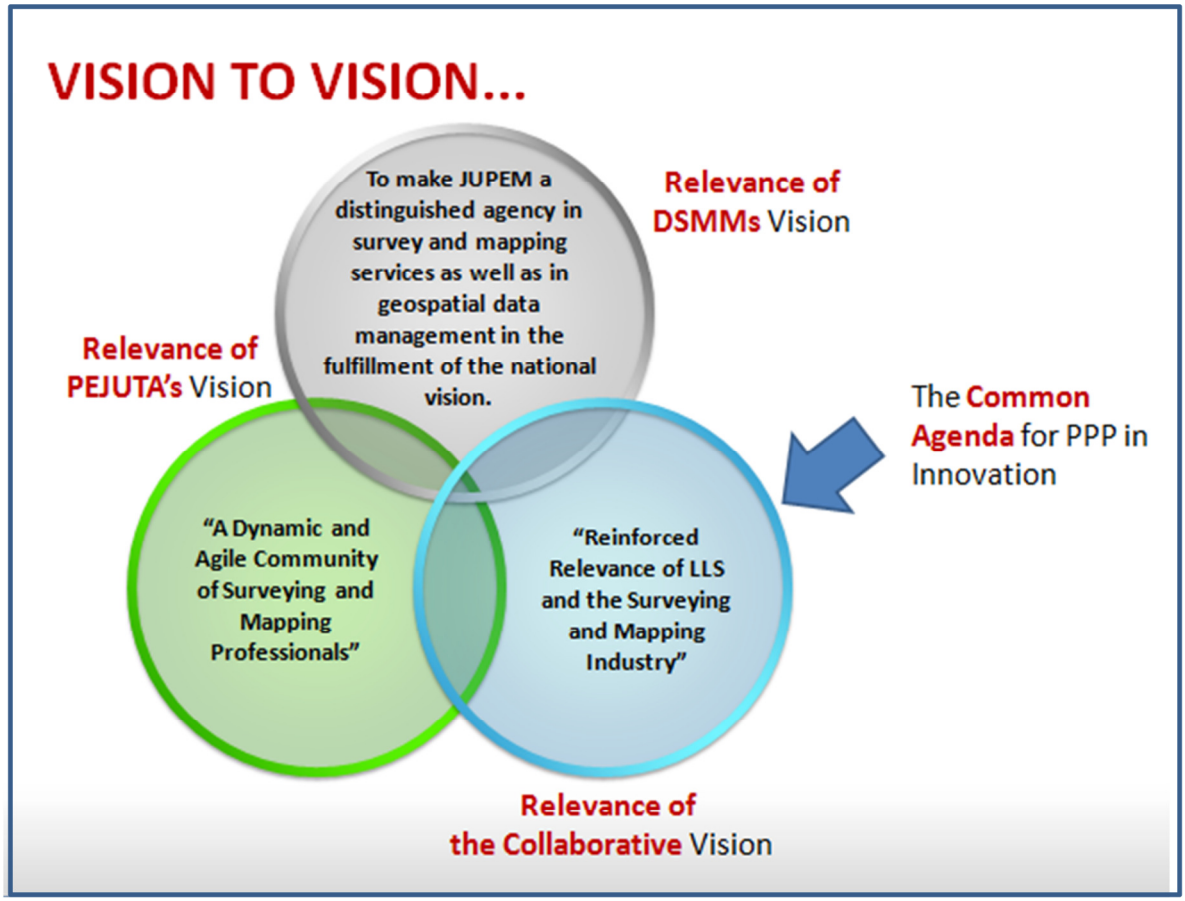
This Vision is supported by fulfilling the shared mission of ***'Enhancing the Enabling Environment for Licensed Land Surveyors through an Innovation-Driven collaboration.'***

9.2 The DSMM-PEJUTA Collaboration Strategy

In exploring the Synergy Equation of this promising relationship between two single-minded organizations, the collaboration areas will involve constantly enhancing an innovation-driven infrastructure and helping our Licensed Land Surveyors to adapt into a future that progressively emphasizes the importance of technology and innovation.

Pursuant to the dimension of 'vision', PEJUTA's proposed collaboration strategy encompasses PEJUTA's sincere intention to inspire everyone into taking action along the lines of the DSMM-PEJUTA-LLS Vision in terms of Partnership and Participation.

9.3 Synergy of Visions



The complementary aspects of the Visions of DSMM, PEJUTA and the Collaborative Vision help to emphasize the subject matter of *'Relevance'*.

The relevance of DSMM's Vision to the Collaborative Vision comes in the form of DSMM's on-going role that emphasizes extending its geospatial data management system to Licensed Land Surveyors, ie. **an innovation-driven infrastructure**.

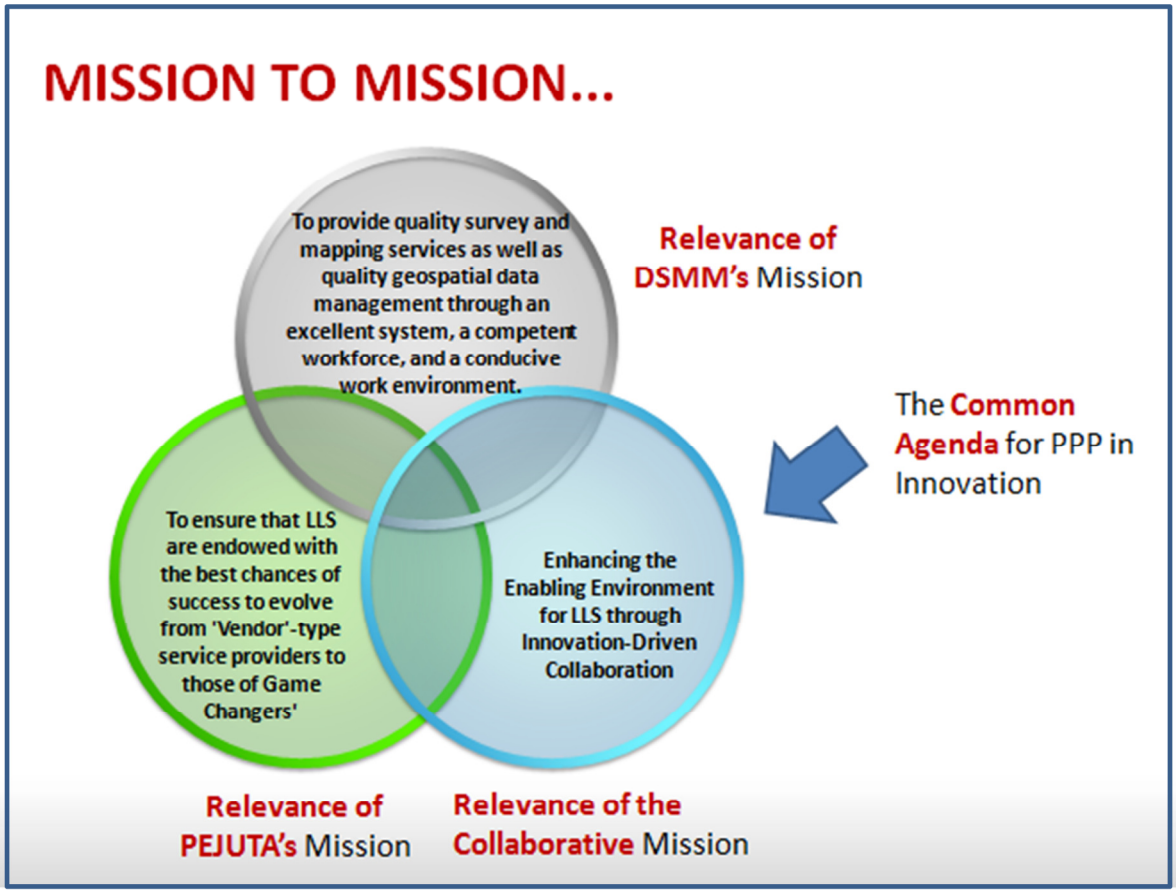
The relevance of PEJUTA's Vision to the Collaborative Vision involves the fact that its Vision is one that is focused on Licensed Land Surveyors. It is the aspiration on which the Collaborative Vision has been developed.

Here, the emphasis on the dynamic and agile community of professionals is on the adaptability of Licensed Land Surveyors to the scenario of **continuous technological developments** in Surveying and Mapping that have opened up opportunities in new types of services like Utilities Mapping, GIS, maritime and hydrographical surveys.

The resulting Relevance of the Licensed Land Surveying Community, as a result of the achieving success milestones in line with the two Visions, will in turn **impact the quality of**

services delivered that benefit end users and national development on a wider scale, thus complementing DSMM's Vision of making **DSMM a distinguished agency**.

9.4 Synergy of Missions



PEJUTA's endeavor to **create and enhance the Enabling Environment** to support Licensed Land Surveyors, is in alignment with PEJUTA's ongoing intention to ensure that its members are given the best chances of success.

The evolution from Vendor-type services to Specialist-type Providers and eventually Total Solution Providers and Game Changers require the grounding of innovation. This is where Innovation and technological developments can offer the cutting-edge to Licensed Land Surveyors to be more competitive and efficient.

The Survey and Mapping services and excellent geospatial data management system that DSMM has always aspired to develop and improve, has seen the light of success in the development of the Geospatial portal and other nation-wide initiatives like e-Cadaster.

Further collaboration in this area between DSMM and PEJUTA especially in the area of the joint capability development of Licensed Land Surveyors and access to the technological

advancement initiatives will be a big booster for the Community.

10 ATTAINING THE ENVISIONED FUTURE

It is envisaged that there are three key areas which will continue to propel the Malaysian Surveying and Mapping Industry:

a) At the DSMM level, further enhancements of land related information systems in the country in support of the government's effort in **enhancing our 'Electronic Government' delivery systems** which will bring us closer to our unified aspiration of achieving a knowledge-based K-economy;

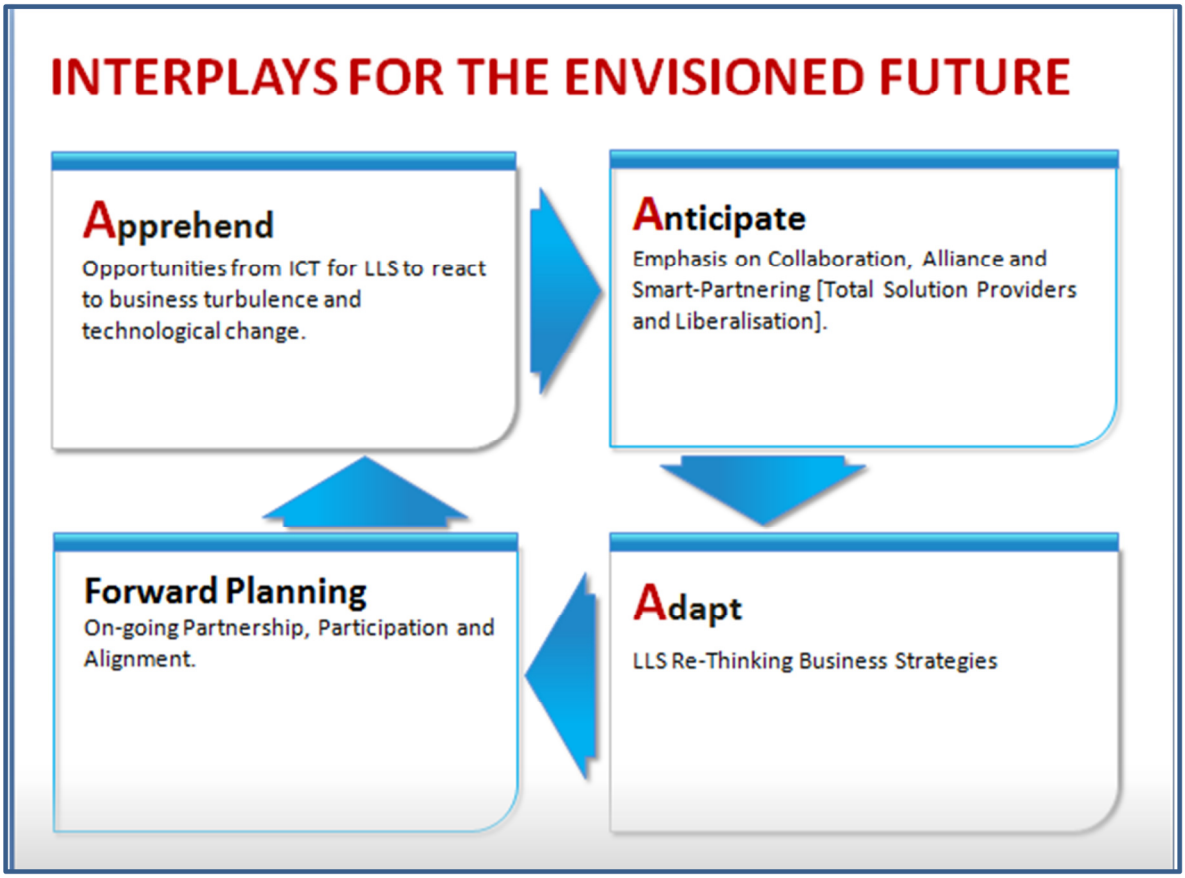
b) DSMM will continue on its innovation journey with the advancement and enhancement of e-Cadaster, and the Geodetic Infrastructure [Global Positioning System, MyRTKNet, Tidal Observation, Levelling Network, Gravity Survey and Boundaries.

c) Driving momentum in capability and capacity building in acknowledgement that growth will be led by the services and manufacturing sectors, adoption of ICT, biotechnology and other relevant technologies.

In effect, Malaysia will be witnessing in the next few years, the leapfrogging endeavours of DSMM working in tandem with the Surveying and Mapping Community to continue to harness the advancements in ICT to implement its strategic modernisation plans.

In so doing, DSSM will be able to fulfil its mission of providing digital spatial data as well as the geodetic referencing framework in support of the development of geographic and land information systems in the country.

10.1 Interplays for the Envisioned Future



PEJUTA's proposed collaboration under the banner of 'PPP in Innovation' seeks to adopt a participatory approach involving the Government (DSMM), PEJUTA and the Licensed Land Surveying business community.

To set thing in motion, there are four key areas to potentially work on.

We call it the '***3-A mind-set shift'*** that is supported by Forward Planning tasks to consolidate and to sustain the right partnership and participation culture for the common journey towards the Envisioned Future.

Here, we have mapped in the 3 key areas of the Envisioned Future in the context of:

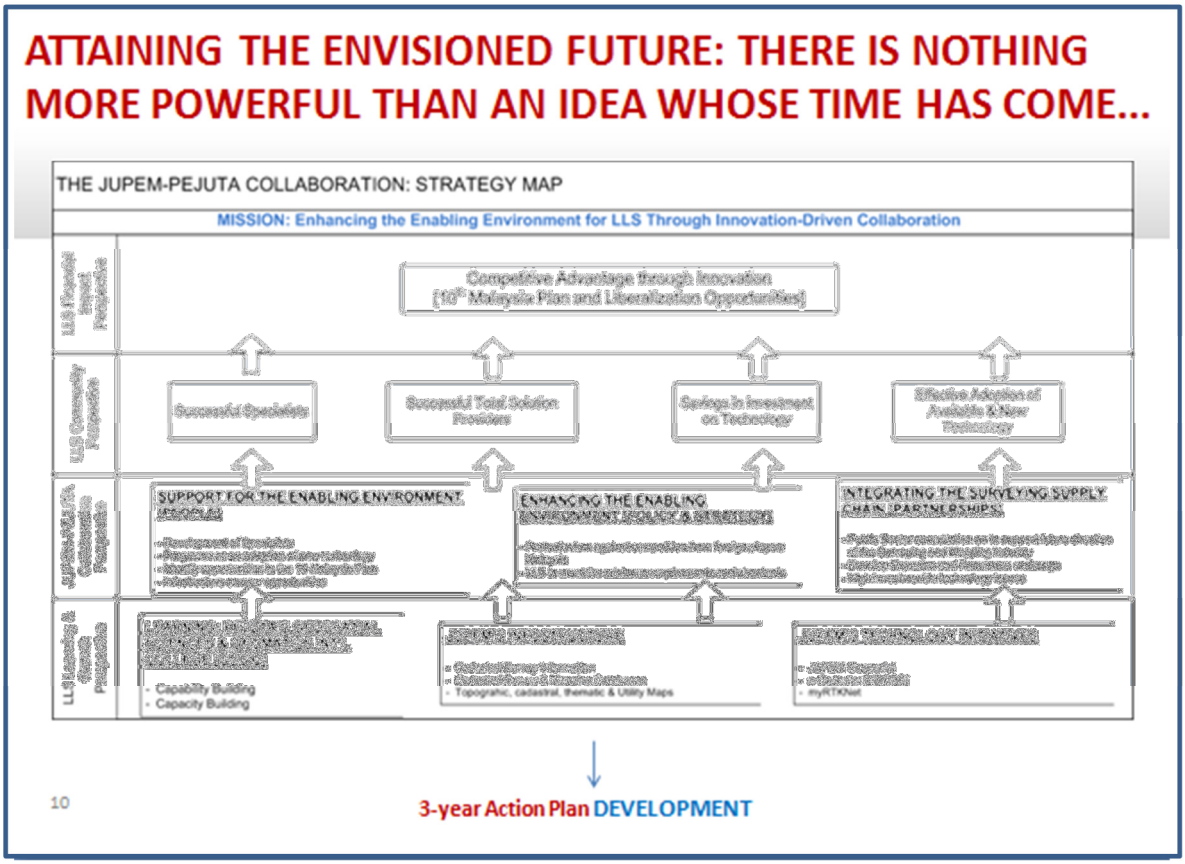
- Firstly, the need for DSMM and PEJUTA to be constantly ***'Apprehensive'***, meaning being alert and open to possibilities, about the potential and pervasive impact of ICT and related surveying and mapping technology.

- Secondly, for DSMM and PEJUTA to be in an ***'Anticipative'*** mould that places priority in collaboration and working together to achieve mutually-beneficial success in project undertakings and competitive advantage, especially when Liberalization will

be hitting our shores by 1 Jan 2012.

- The next major mind-set shift will be for Licensed Land Surveyors to consider re-thinking their business strategies ***('Adaptability')*** to complement the joint initiatives of DSMM and PEJUTA.

10.2 The Collaboration Strategy Map



Building on the 3-A Mindset Shift and Forward Planning task, PEJUTA has developed a Collaboration Strategy Map to describe how the Enabling Environment can be enhanced by connecting the priority areas of the:

- Licensed Land Surveyors' (LLS) Learning & Growth Perspective
- DSMM-PEJUTA Collaboration Perspective
- Licensed Land Surveyors (LLS) Community Perspective
- Licensed Land Surveyors' (LLS) Financial Impact Perspective

The LLS Learning and Growth Perspective highlights the focus on capability development by PEJUTA's Geospatial Sciences and Geomatics International College, DSMM's infostructure

[which comprises the delivery system of DSMM's Geospatial Data management System] and DSMM's technology initiatives like the DSMM Geoportal, e-Cadaster and myRTKNet.

The Learning and Growth Perspective will feature the 3-year Acton Plan as its deliverable under the Partnership umbrella of PEJUTA's Industry Engagement Model.

The DSMM-PEJUTA Collaboration Perspective will feature the implementation of the 3-year Action Plan developed under the LLS Learning and Growth Perspective.

Specific Key Results Areas (KRAs) have been mapped onto this alignment focus aspect of the Collaboration Strategy Map. They have been drawn up in relation to:

- Support for the Enabling Environment
- Enhancing the Enabling Environment
- Integrating the Surveying Supply Chain

The alignment of all parties, within this framework will set its sight on fulfilling the Mission and move towards realizing the Collaborative Vision.

11 THE 'END OF THE RAINBOW' OF LEAPFROGGING: SIGNIFICANT PROGRESS MILESTONES

So, what is it about our Envisioned Future that makes it so compelling and one that is set to drive significant progress in the next three years? Firstly, the Envisioned Future offers an interesting array of 'distant' scenarios that were the foundations upon which PEJUTA has developed the impactful strategy for collaboration between DSMM and PEJUTA.

In terms of the scenarios, we will experience scenarios that represent the new business mind-set of licensed land surveyors...

- Partnering aimed at enhancing competitive edge
- Vendor-type and Specialist-type of Land Surveyors changing the way they do business and moving towards multi-disciplinary quality services.
- Emphasis on Total Solution Providers comprising competent land surveying teams armed offering high-value consultancy and innovative solutions.
- The prominence of Mutual Recognition of professional qualification as the device for facilitating the efficient mobility of surveyors, where Liberalization will be opening up opportunities for the Land Surveying Community to venture abroad.
- In the ICT arena, we have the emergence of ICT-related challenges that encourage renewed efforts in opportunity-seeking Research and Development.
- Coupled with that, we have a knowledge management support-system that supports

new high-technology endeavours like utility mapping, space imagery, GIS-based analysis, maritime and hydrographical surveys, e-Survey services and the on-going operation of myRTKNet.

- We can expect increased collaboration, alliances and smart-partnerships amongst Licensed Land Surveyors to address competitive advantage factors like accelerated use of technology and high capital investment. This will trigger increased attention and emphasis on the Government's key role in business environment enhancing policies, regulatory frameworks and more efficient delivery systems.

With the successful implementation of the Collaboration Strategy Map, the corresponding success milestones will be experienced by the Licensed Land Surveying Community in four areas:

- Successful Specialists
- Successful Total Solution Providers
- Savings in Investment on Technology
- Effective Adoption of Available and New Technology

The visibility of these milestones would mean that the DSMM-PEJUTA Collaboration has been strategically relevant to the performance of the Licensed Land Surveying Community.

The success milestones achieved by the LLS Community will eventually impact the Licensed Land Surveyors' Financial Impact Perspective of the Collaboration Strategy Map.

The Financial Impact perspective offers the medium to long-term view of value and benefits to the business sustainability of Licensed Land Surveyors' professional practices.

Within this context, the Financial Impact Perspective emphasizes two scenarios, achieved through the stages of realizing the deliverables of the 3-Year Action Plan developed under the LLS Learning and Growth Perspective:

- Competitive Advantage through Innovation, and
- Significant revenue garnered from engagement and participation in business opportunities from the 10th Malaysia Plan and Liberalization.

12 THE QUEST FOR FORESIGHT: BRIDGING THE GAPS BETWEEN CULTURES

In taking the context of the DSMM-PEJUTA collaboration Strategy map 'across geographical borders' within the FIG and to create this exciting collaborative future, requires a **global industry foresight**.

Here, we would rather talk about foresight than vision. This global industry foresight should

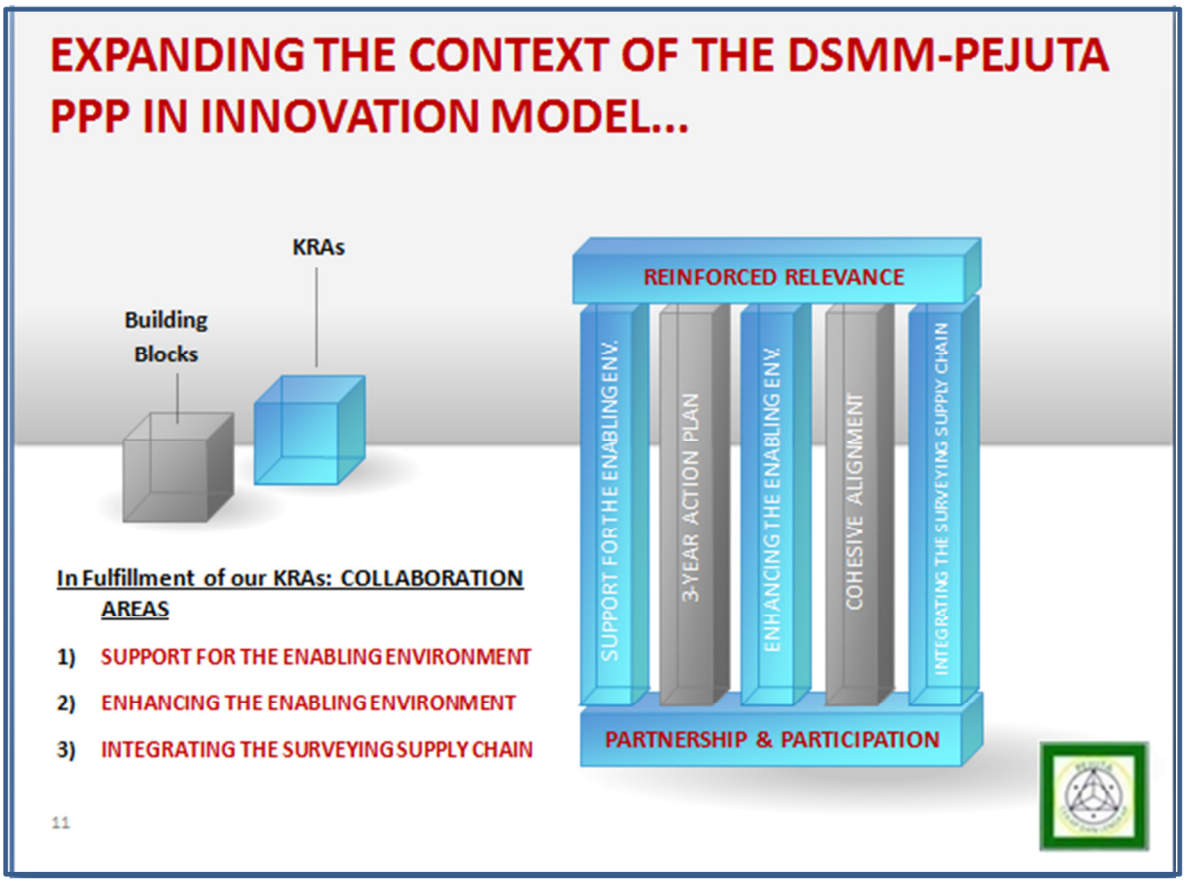
be based on deep and mutually-focused insights into trends in technology, regulations and legislative frameworks which can be harnessed to rewrite industry rules and create new 'collaborative space'.

The overall theme of the FIG Working Week is *"Bridging the Gap between Cultures"*. The theme addresses the changes in current world and the importance of cultures and understanding the differences in different parts of the world including professional development, traditions and legislation at the same time when the world is more harmonised with common standards and global markets. It is acknowledged that these issues are also being faced by surveying profession in all its fields.

By lending a new dimension to Technology Innovation and to the FIG working theme, PEJUTA is offering the concept of ***'Bridging the Gaps of Systematic Innovation between working cultures within the FIG'*** as a theme for future collaboration between FIG members. For this reason, the global industry foresight will be a synthesis of many FIG organizations' visions.

Given that technological change is inevitable, the real issue for FIG members is whether that change will happen belatedly, in a crisis atmosphere, or with foresight, in a calm and considered manner; whether transformation will be spasmodic and radical or continuous and peaceful.

Hence, the appropriate perspective on nurturing the global industry foresight on systematic innovation should emphasise the real objective of collaboration across borders as revolutionary in result and evolutionary in execution. This notion further reinforces the view about the future where it should be an ongoing initiative sustained by continuous discussions amongst FIG members, not a massive one-time effort.



Potentially, 3 Key Results Areas can be mapped into the expanded context of the DSMM-PEJUTA PPP in Innovation Model (these are the same three Key Results Areas adopted under the DSMM-PEJUTA Collaboration):

- Support for the Enabling Environment
- Enhancing the Enabling Environment
- Integrating the Surveying Supply Chain

12.1 The Potential Impact of Partnering for a Collective Global Technology Innovation

Creating the future of global technology transformation must be driven by a point of view about the future of the global industry: How do we want this global industry to be shaped in five or ten years?

What must we do to ensure that the global industry evolves in a way that is maximally

advantageous for us, the members of FIG? What skills and capabilities must we begin building now if we are to occupy the industry high ground in the future? How should we organize for opportunities that may not fit neatly within the boundaries of current industries and business?

As a series of multiple motives for an alliance amongst FIG members, PEJUTA seek to recommend that it will be useful to group the rationale for collaboration into technological and market motives to be discussed within the boundaries of the three Key Results Areas.

Technological reasons should include the cost, time and complexity of development. In the current highly competitive business environment, the R&D function, and to examine critically whether in-country development is the most efficient approach. Other potential areas include deriving Quick Wins from the identification of PPP opportunities in our respective countries, addressing issues related to high-capital investment in technology, and best practice sharing and networking.

This potential scenario will subsequently result in discussions on an *'Innovation-Driven Partnering'* approach to advance industry and economic development, where the addition of the element of *Innovation* into the partnership equation amongst FIG members, can become a potent platform that could potentially leapfrog the progress of a global industry that has become reliant on the advent of technology to progress further and perform better.

12.2 Furthering the Ties between FIG Members: Where It Matters

PEJUTA's proposal on the initiation of Partnering for a Collective Global Technology Innovation is meant to go beyond just getting to know better the cultural differences between FIG Member countries, and to accept each other despite the differences.

We are talking about considering an exciting dimension of innovation-themed collaboration to improve cooperation across all borders, a unifying model for each member country of the FIG to make a success out of Liberalization instead of fearing its impact on our respective home base, and synergistic relationships.

With this proposal, PEJUTA acknowledges the final 'take away' for the participants at the FIG Working Week (from this Paper), will be a discussion on the promising scenario when the context of the Collaboration Strategy Map is taken across geographical borders. We envisage that the building blocks contained within the DSMM-PEJUTA Collaboration Strategy Map will lend additional meaning to the Conference theme of *"Bridging the Gaps between Cultures"*.

13 PPP IN INNOVATION: A TRULY EXCITING DIMENSION

British writer, T.S. Eliot, once said: ***"Only those who will risk going too far can possibly find out how far one can go."*** This is true of most developing and advanced nations of the world who are all aiming far above the ground and gazing with colossal foresight.

In the years to come, PEJUTA hopes that the World will witness significant milestones in smart and effective partnerships between the Public and Private sectors amongst Malaysians to spearhead the wave of continuous change that is felt by the survey and mapping profession in the country.

In the years to come, it is PEJUTA's sincere hopes to see FIG member countries embarking on meaningful and impact partnerships in Technology Innovation that would have referenced its Collaboration Strategy Map as a baseline for execution.

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PEJUTA Strategic Plan 2007 – 2017

PEJUTA Implementation Roadmap (March 2011)

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