

# Construction IT in Malaysia



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# Overview

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- Malaysia is a rapidly developing country in the Asian region and has undergone rapid economic growth since the 1970s. One of the key sectors that contribute to the continuous growth is the construction sector (Chan, 2001). The Contractor Service Centre (PKK) was formed on the 11 of April 1984 under the supervision of the Implementation and Coordination Unit (ICU).



# Overview

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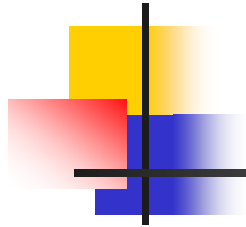
- An ICU is a unit which resides within the of Prime Minister's department. It has taken over the function of the Public Works Department (JKR) as the central registration body for all contracting works both at the federal and the state level. It is functioning as well as a profile reference centre. With effect from 1988, only contractors who have registered with the PKK can tender for government projects.



# Overview

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- In the case of private sector projects, contractors are registered either with PKK or the Construction Industry Development Board (CIDB). It is mandatory for construction works both in the public and the private sector to be registered with the CIDB prior to commencing any form of work (AsiaContract, 1997).



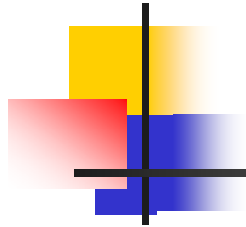
- Several researches carried out by Rashid (2002) and Rashid and Morledge (1998) showed that construction procurement in Malaysia was highly fragmented and adversarial and that the processes were facing constraints in a variety of resources and functions.



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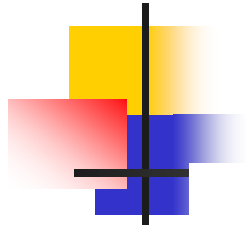
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- The research suggests that the presence of the constraints might inhibit the level of construction output necessary to become a fully developed nation by 2020. They contended that the effort is required to rejuvenate and reinvent the construction sectors in efforts towards achieving 2020 challenge, through the use of a Web-based tendering.



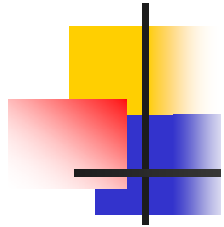
## **Executive Summary**

The Construction Industry (CI) is a very dynamic industry that includes many varied players. The CI includes professional architects, engineers, quantity surveyors and planners on the private side with equally accomplished professionals on the public side. There are highly skilled developers and contractors as well as very basic and hands-on SME contractors. Finally, there is a varied group of companies along the entire value chain that support the industry, which are not necessarily considered as being directly involved in the CI, but there nonetheless. The CI is important to the country in that it contributes between 3% to 4% to the GDP and employs over 9% of the workforce in the Malaysian economy.



The Malaysian CI is somewhat fragmented, primarily in its inability to come together as an industry in order to be more competitive and to meet the global challenge. One specific body or organization needs to represent the entire industry and therefore help guide it through the web of information, data and required changes anticipated. This study provides some insight to the lack of information and data on the industry as well as certain inaccuracies to existing databases. Each individual association or organization represents a segment of the CI without any holistic representation. To add to the poor condition of the industry, information or data available on the industry is either outdated or has become redundant. If the Malaysian CI is to compete locally, regionally and globally, it can only achieve this as a united front.





The objective of this report is to provide the CI with a manner to circumvent the inevitable. The inevitable being an industry that will not cooperate, that is not willing to share data or information and that will render itself ineffective through outmoded business models and ongoing traditional business processes. With an IT Strategy Plan for the CI, it is considered that the industry could become more competitive through adoption of IT Tools, IT Applications and IT Processes. By streamlining operations and processes through IT use within the industry, coupled with the integration of all interrelated industry players along the value chain from both the private and public side of the industry, the CI would eventually become globally ready. The introduction and rationalization of international standards in the adoption of IT Tools, Applications and Processes is recommended in this report. The implementation of “best practice” through IT would help the industry address some concerns related to improved efficiencies. The various IT tools and applications are only one aspect of the industry requirement for change. What is recommended for the CI from the findings of this study may seem extreme, but necessary.



**The Malaysian construction industry will need to address the following key areas of concerns:**

- Inefficient and ineffective methods and practices in contractors registration and administration procedures, procurement methods and practices, contracting approaches, construction methods, building plan submission and approval procedures.
- Inability to attract and develop local workforce for the industry mainly due to the dirty, dangerous and difficult image of the industry.
- Inability to provide total integrated solutions in foreign projects, unlike Japanese, Korean and German construction companies that could provide total solutions that include financing package and equipment.
- Difficulty in securing timely and adequate financing at the various stages of construction, and difficulty in repatriating profits/dividends from overseas.

**ACT 1994 [ACT 520]**

An Act to establish the Lembaga Pembangunan Industri Pembinaan Malaysia and to provide for its functions relating to the construction industry and for matters connected therewith.

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**Part 2 . 4 (1)**

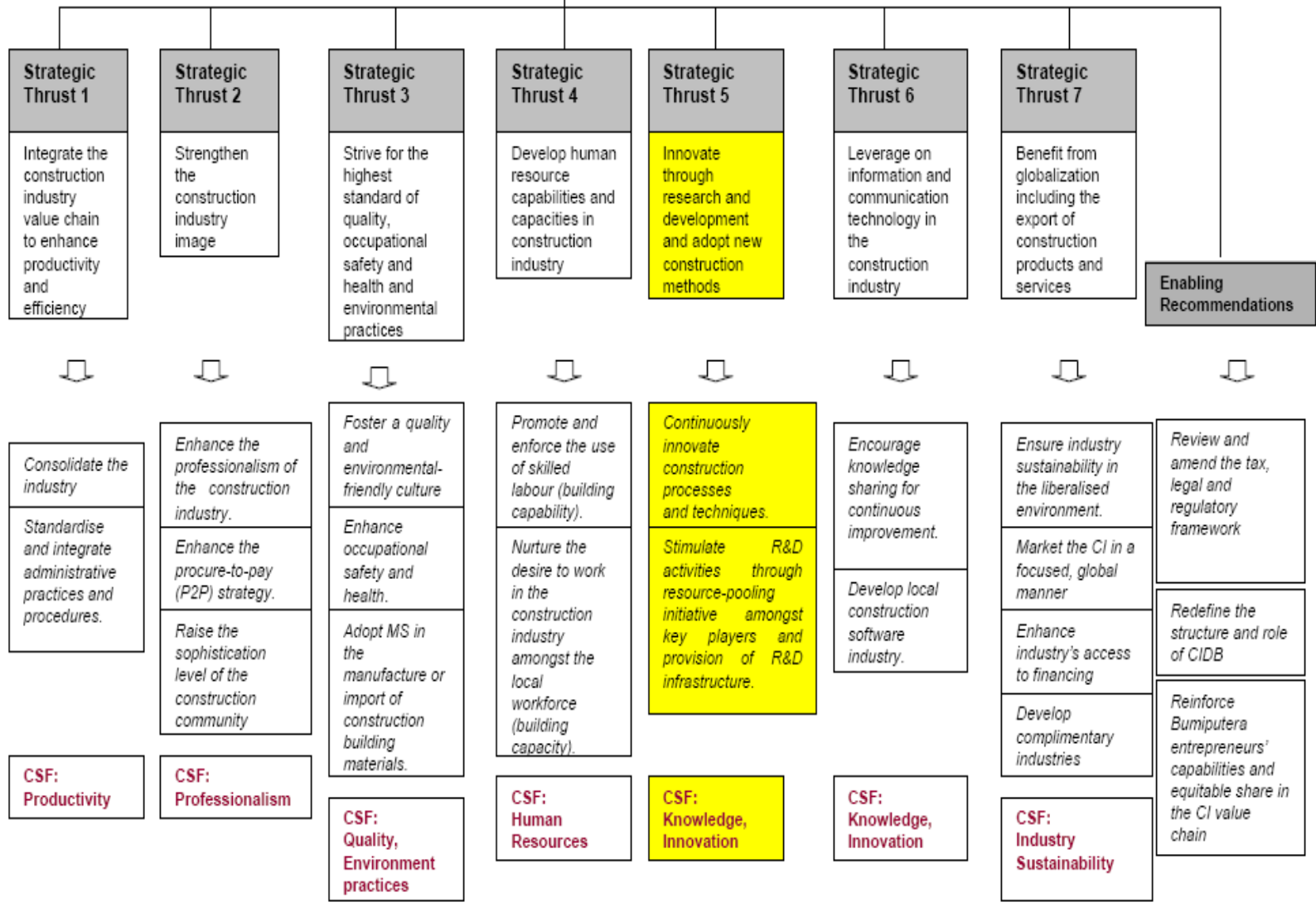
- c) to promote, stimulate and undertake research into any matter relating to the construction industry
- g) to encourage the standardisation and improvement of construction techniques and materials
- h) to initiate and maintain a construction industry information system

## CONSTRUCTION INDUSTRY MASTER PLAN 2006-2015

<b>Vision</b>	<b>Mission</b>	<b>Critical Success Factors</b>
The Malaysian construction industry shall be a world class, innovative, and knowledgeable global solution provider	To be a dynamic, productive and resilient enabling sector, supporting sustainable wealth creation and value creation, driven by a technologically-pervasive, creative and cohesive construction community	<ol style="list-style-type: none"><li>1. Productivity</li><li>2. Quality</li><li>3. Human Resources</li><li>4. Knowledge</li><li>5. Innovation</li><li>6. Environment practices</li><li>7. Industry sustainability</li><li>8. Professionalism</li></ol>



# CONSTRUCTION INDUSTRY MASTERPLAN 2006-2015





## **STRATEGIC RESEARCH DIRECTION.....**

### **R&D in Construction Industry Master Plan (CIMP)**

To improve and strategise the Malaysian construction industry as stated in Strategic Thrust 5: Innovate through research and development and adopt new construction methods.

**Recommendation 11: Continuously innovate construction processes and techniques**

**Recommendation 12: Stimulate R&D activities through resource-pooling initiative amongst key players and provision of R&D infrastructure**



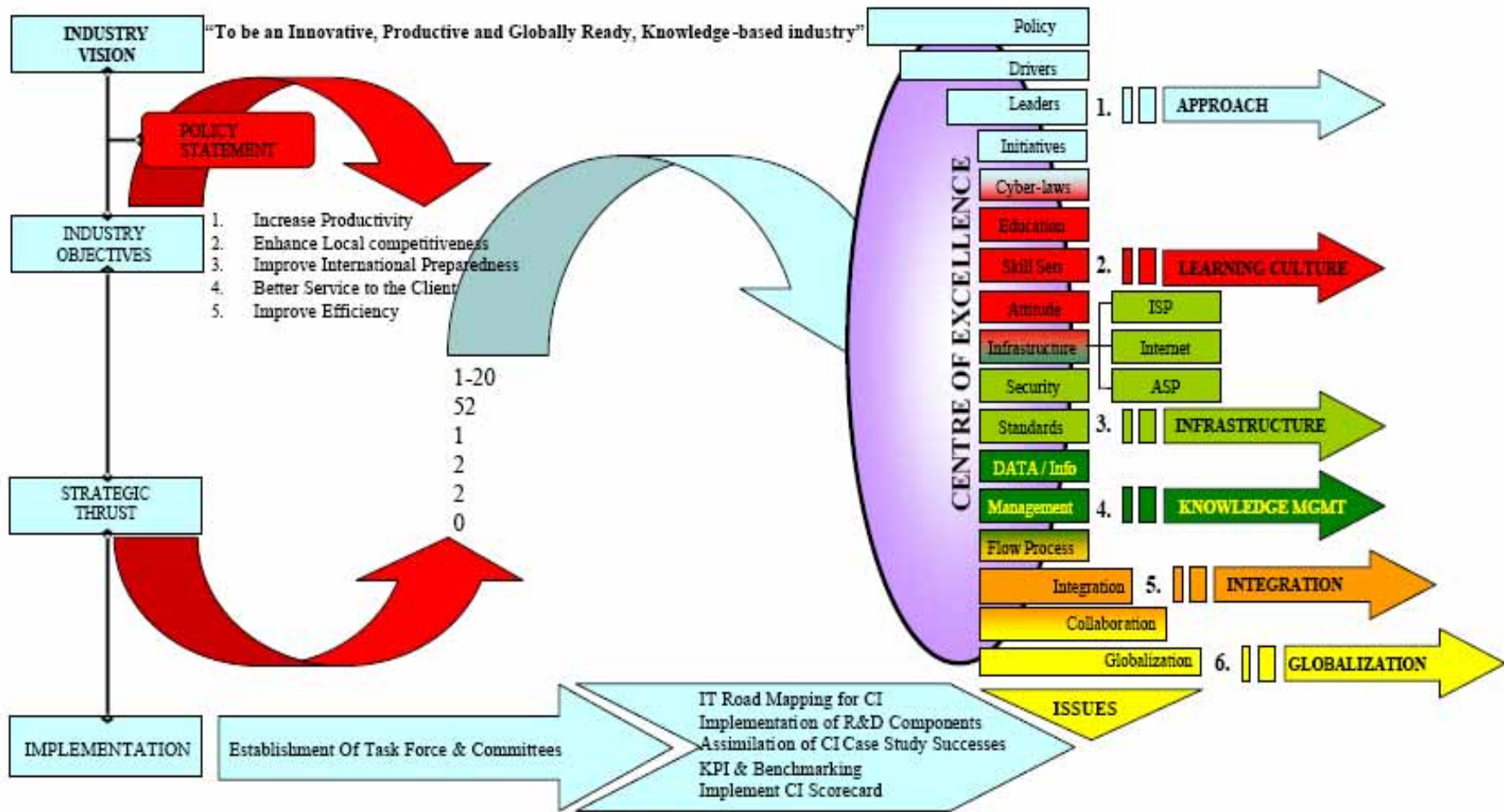
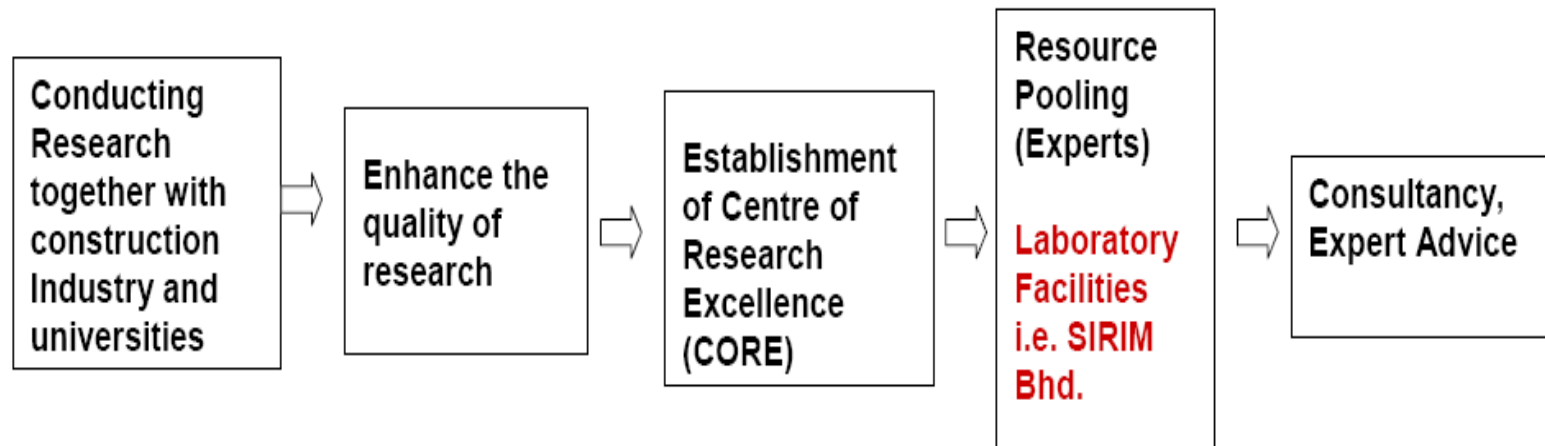


Figure 1: IT Strategy Plan



## Recommendation 12:

Stimulate R&D activities through resource-pooling initiative amongst key players and provision of R&D infrastructure



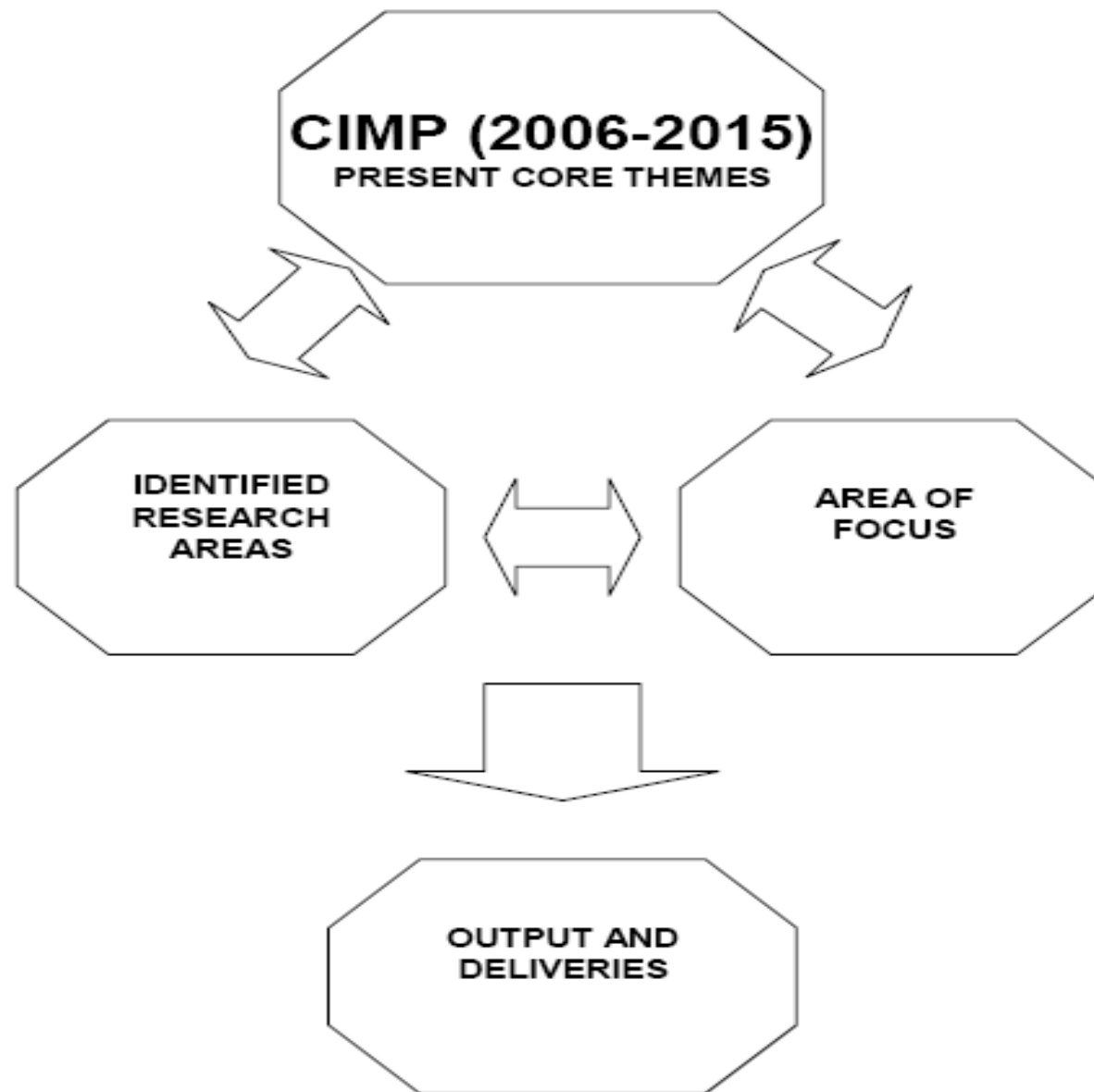
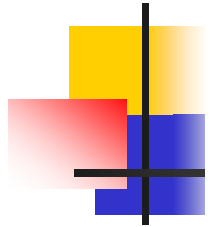


## IBS Roadmaps 2003-2010 Activities

Manpower	Materials/ Components/ Machines	Management/ Process/ Method	Monetary (Economic/ Finance	Marketing/ Promotion
<p><b>Activities:</b></p> <ul style="list-style-type: none"> <li>• Training and certification for workers,</li> <li>• New National Occupational Skill Standards (NOSS)</li> <li>• Training and certification for site supervisors</li> <li>• New Professionals</li> <li>• Labour Policy</li> </ul> <p><b>Note:</b> <i>Activities in Italic have potential to be include for CREAM R&amp;D projects</i></p>	<p><b>Activities:</b></p> <ul style="list-style-type: none"> <li>• <i>Engineering and architectural aspects,</i></li> <li>• Standardisation</li> <li>• <i>Research and development</i></li> <li>• Assessment and certification</li> </ul>	<p><b>Activities:</b></p> <ul style="list-style-type: none"> <li>• Project management</li> <li>• Contractors (Assemblers Training programmes)</li> <li>• Quality programmes</li> <li>• <i>IT in Construction Programmes</i></li> </ul>	<p><b>Activities:</b></p> <ul style="list-style-type: none"> <li>• <i>Studies</i></li> <li>• Incentives</li> <li>• Procurement Policy</li> <li>• Bumiputera Entrepreneur Development</li> </ul>	<p><b>Activities:</b></p> <ul style="list-style-type: none"> <li>• Awareness and Promotion</li> <li>• Seminars and Workshops</li> <li>• Annual IBS Award</li> <li>• <i>Expert Input/Technology Transfer</i></li> <li>• <i>Industry coordination</i></li> </ul>

## R&D in Construction under RMK-9

RMK-9	R&D Title by CREAM
<p>Pengoptimaan penggunaan sumber asli melalui pengurusan mapan- <b>BAB 19</b></p>	<p>1. Waste Minimization and Recycling Potential of Non-renewable Construction Materials</p>
<p>Menggalakan penstandardan dan pengurusan kualiti untuk meningkatkan daya saing dan kesejahteraan pengguna- <b>Teras STI BAB 12</b></p>	<p>1. Achieving Sustainability of the Construction Industry via International Environmental Management Systems Standard, ISO 14001</p>
<p>Keutamaan yang lebih tinggi diberikan kepada R&amp;D yang berorientasikan pasaran yang meningkatkan kadar pengkomersilan – <b>Teras STI BAB 12</b></p>	<p>1. Seismic Hazard Analysis of Peninsular Malaysia for Structural Design Purposes                  2. Blended Cement for Waterproofing Applications                  3. Utilization of waste materials for the production of concrete pedestrian block (CPB)</p>
<p>Menggalakan eksport perkhidmatan kepakaran dalam produk pembinaan dan pengurusan projek – <b>BAB 18</b></p>	<p>1. Development Of Performance Forecasting Index and Computer Modelling System For Contractor In Government's Projects.</p>
<p>Menggalakan pemilikan rumah – <b>BAB 19</b></p>	<p>1. National Research Programme on Affordable Quality Housing (AQH)                  2. Durability and Engineering Properties of Slag Cement Based Aerated Lightweight Concrete Blocks for Housing</p>



## **Some Issues related to IBS/MC**

1. Interfaces with downstream companies,
2. Joints
3. Lightweight components
4. Precast pile caps
5. Insufficient Guidelines and Standard?
6. Financing Pre-seeding Commercialization grant: MOSTE, SMIDEC, CREAM, i.e. Venture Capital – Commercialization
7. Precast component, Volumetric, towards open system, layers, parts, integrating the system.
8. Demand,
9. Downstream production to meet demand
10. Alternative material besides steel and concrete
11. Environment friendly material
12. Sustainable material – carbon fibre + timber
13. Loadbearing versus Frame infill (Column-Beam-Connection as oppose to load bearing wall)
14. Overcome IBS weaknesses (i.e. leaking, problem in renovation work)
15. Disassociate precast and IBS
16. Build and sell concept
17. Dirty, dangerous and difficult
18. Design and manufacture (the process)
19. Showcase best practices projects using IBS concept

## **Construction Research Institute of Malaysia (CREAM) a subsidiary company of CIDB**

- CREAM was incorporated on 26th. March, 2004 and started to operate under company status with effect from January, 2006
- Construction Research Institute of Malaysia (CREAM) focuses on the development of the construction industry through enhancing its productivity and competitiveness through research



## **Key Objectives of CREAM**

- To obtain funding for research purposes,
- To build research capacities and capabilities,
- To finance research activities,
- To achieve excellence in construction related research,
- To be responsive to industry needs,
- To disseminate research results widely,
- To exploit research outputs,
- To establish research cooperation with international research collaborators.
- To patent and commercialise research findings.



# Conclusions

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The Key Issues that have been discovered through the Pilot Survey, the research carried out on international CI issues and concerns as well as the interviews with the various CI Players within Malaysia provide a better understanding of the issues that the industry must contend with, locally. The issues are not very different from the international front and thus much of the international research and findings are extremely useful for the purpose of determining an appropriate IT Strategy for the CI within Malaysia.



# Conclusions

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The area that does differ from the international CI is the approach to solving the problems encountered. Internationally, the issues and concerns encountered by the CI have been addressed by coming together and organizing tactical and/or study teams. These teams tackle specific issues and their findings are shared with other players in order to create case studies for further development and improvement of processes, applications or the tools they are verifying. Generally, the Malaysian approach would be based upon the local traditional corporate culture. The manner of addressing the issues discovered in Malaysia by the local corporate culture is to protect itself from further concerns, carrying out studies internally but keeping the findings within the organization and not sharing. This approach is self-defeating in that the potential findings may be flawed or may have already been proven as faulty and will not be discovered until after the fact and potentially after having spent money and time that could have been used more constructively.





# Conclusions

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What the research has provided is a validation of the concerns previously thought of as valid through the identification of the gaps within the CI. What is clear and extremely important is the recognition that the issues and gaps that are common to the industry internationally are also common in Malaysia. The essential differences are cultural aspects, although human characteristics still prevail no matter what border is crossed. Within Table 7.1 and 7.2 a more in-depth analysis of gaps in the industry is illustrated.



# Conclusions

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Finally how the CI approaches the required changes to the industry in order to reduce those gaps to improve operations, processes or management will determine the outcome of the entire industry. The industry needs to take quite seriously the recommendations and the proposed action as indicated in Section 8 of this report.