

Leading National Construction IT Programs in Taiwan



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Leading National Construction IT Programs in Taiwan



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Brief History of e-Procurement in Taiwan

- Accommodating to the Government Procurement Act in 1998
- Launched by the Public Construction Commission, Executive Yuan in 1999
- Main part of e-Government in Taiwan
- Single portal: Government Procurement Information Center (<http://gpic.pcc.gov.tw>)

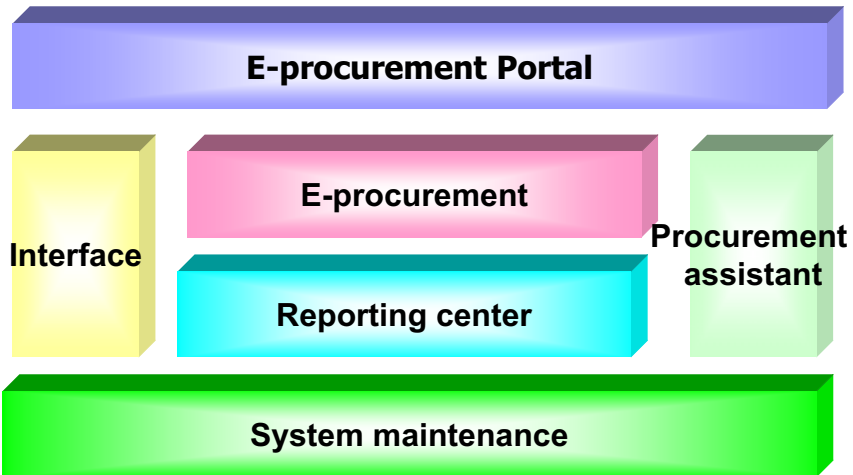
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Main Webpage of e-Procurement in Taiwan

The Public Construction Commission, Executive Yuan (<http://www.pcc.gov.tw/>)

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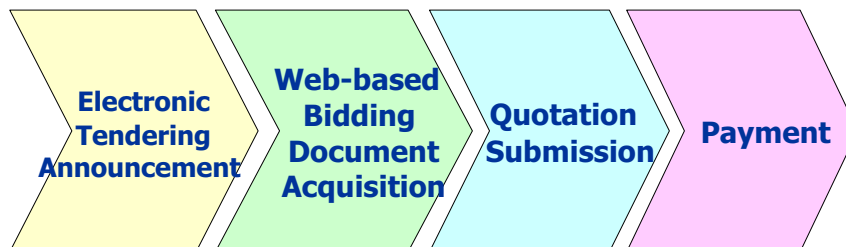
Framework of e-Procurement in Taiwan



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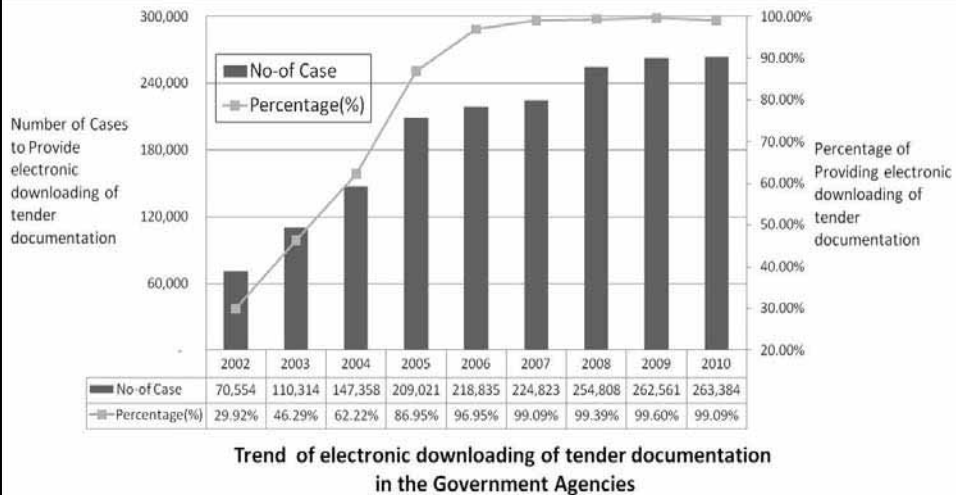
Purpose of e-Procurement in Taiwan

- **Cover overall activities during the tendering process thru internet for public construction**



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Usage of e-Procurement in Taiwan



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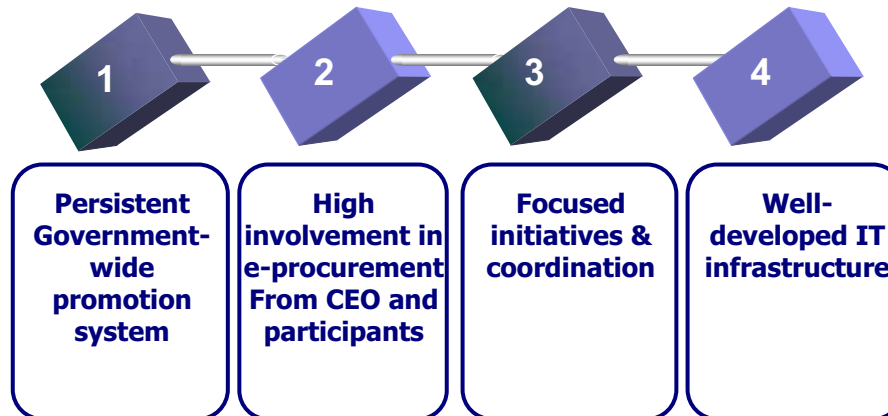
Performance of e-Procurement in Taiwan

- 99.09% Government tendering documents uploaded in e-procurement system (2010)
- 1,095,643 tendering document request from bidders (2010)
- Save 72.24 tons of paper, reduce 3,294 tons of carbon footprint
- Save 1 billion NT dollars of transportation costs
- Other qualitative performances: transparency, efficiency, and fairness

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Lesson Learnt from e-Procurement in Taiwan

Key Success Factors:



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Technology Database of Public Construction in Taiwan

June 29, 2011

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Background

Public construction

Managed by

different project organizers

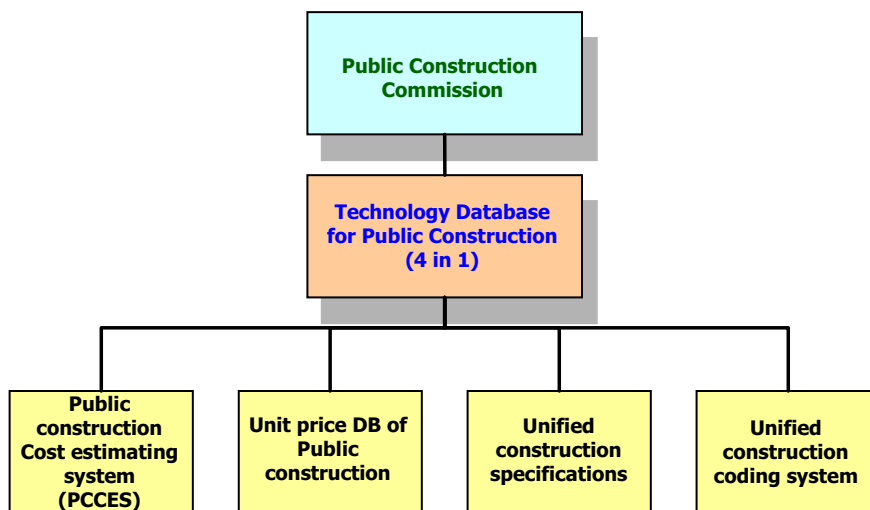
Project management of public construction is separate

1. The same work item with different spec. format, structure and contents
2. Codes keep inconsistent
3. Management gap occurs in different projects

Low efficiency
Difficult quality improvement
Hard budget control

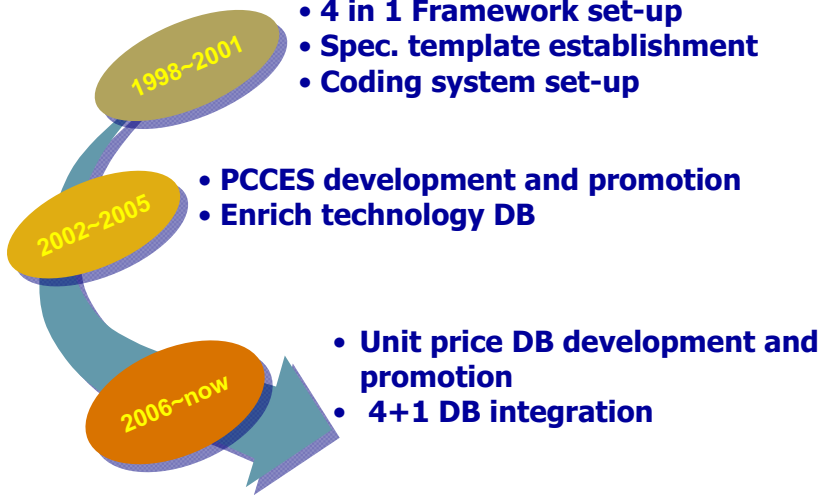
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Framework of Technology DB

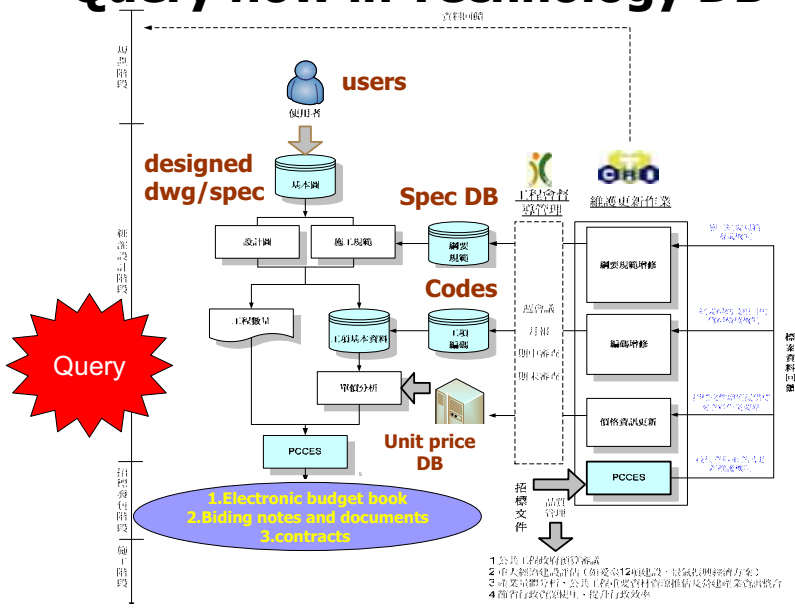


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Milestone of Technology DB

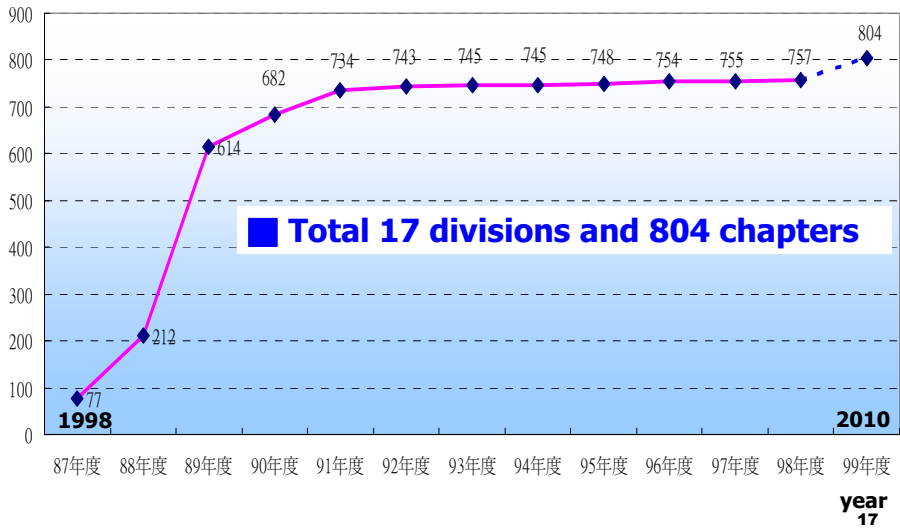


Query flow in Technology DB



Technology DB - Construction Spec.

chapter



Query of Construction Spec.

行政院公共工程委員會
Public Construction Commission, Executive Yuan

公共工程技術資料庫
主網站: <http://pccex.archknowledge.com/casrev>
備用網站: <http://casppccex.archknowledge.com/casrev>

請選擇欲訪問頁面:

請輸入欲搜尋文字:

首頁 | 服務區 | FAQ | 論壇 | 相關聯絡 | 下載專區 | 網站地圖 | 客服中心 | 公共工程委員會

快速連結

- 規範、編碼、基準圖、物價、POCET
- 施工規範規範及編碼公告
- 施工規範規範及編碼說明
- 編碼規範及編碼文件下載**
- 22類施工規範工具書
- 常用問題之問答集
- 編工編管編製管理會議

施工規範規範與工程編碼、編碼規範、編碼一覽表

編碼一覽表

編碼顯示選擇: 13 特殊構造物

章碼	章名	完整版新本	精簡版新本	編目編新本	相關基本圖	相關工項	單價更新	歷程表
1301	廢物收容貯存設施	V2.0						歷程
1302	廢棄物處理	V1.0	V1.0	V1.0			99年7月	歷程
1303	垃圾轉料設施	V2.0		V2.0				歷程
1304	爐渣	V2.0		V2.0				歷程
1305	風質及其應生物物收集輸送設施	V2.0		V2.0				歷程
1306	灰塵收集輸送設施	V2.0		V2.0				歷程

此次下載頁面

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Unification of Construction Codes

Total unified codes: 1801

Call 14 discussion meetings to review codes and spec. chapter by chapter

Target date: June~Sept. 2011

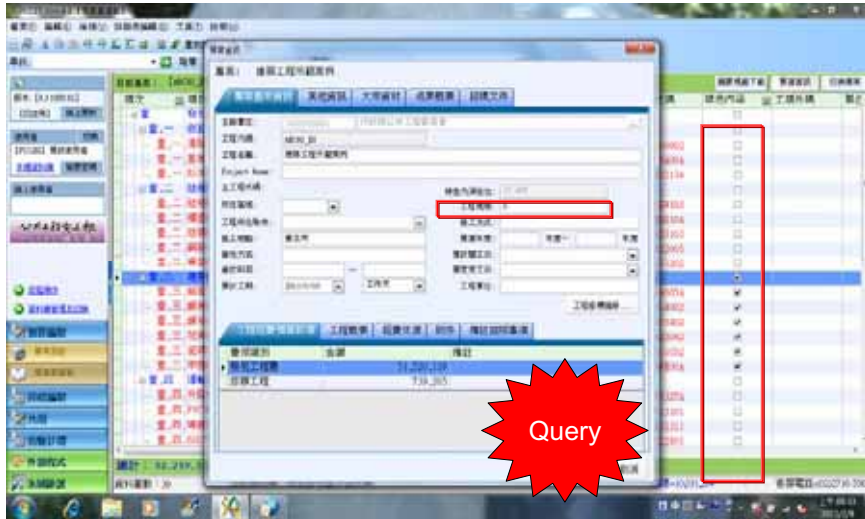
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Query of Unit Price Statistics

The screenshot shows the website interface for 'Public Engineering Electronic News' (公共工程電子報). The main content area features an article titled '營建物價厚你知' (Know More About Building Costs). A specific bar chart is highlighted with a red box and labeled '北部地區鋼筋A36漲跌' (Northern Region Steel A36 Price Changes). The chart displays price fluctuations for steel A36 in the northern region across several time periods. A red starburst with the word 'Query' is positioned next to the chart, indicating the focus of the unit price statistics query.

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Query of Unit Price for Projects



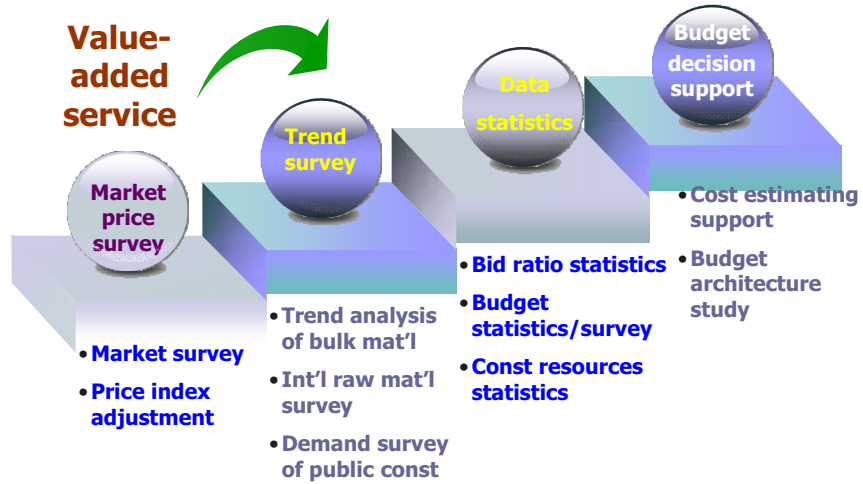
Extension to 4 in 1 DB: new material/technology/methods



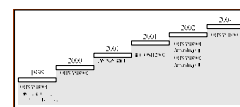
Video



Future Extension



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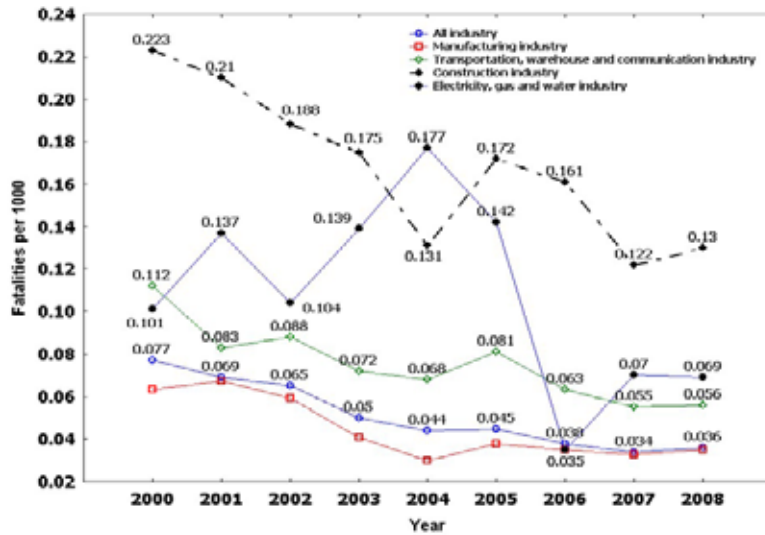


DSS/KM Platform of Construction Safety in Taiwan



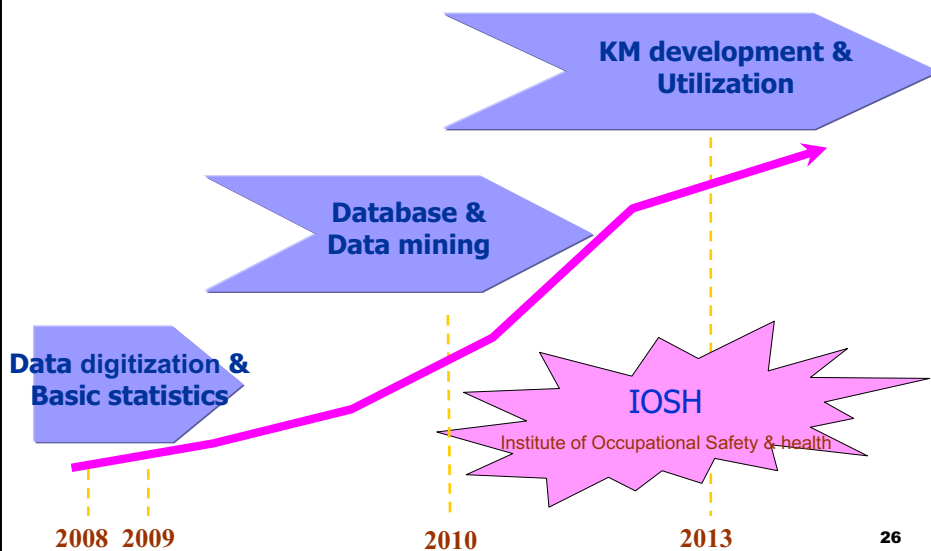
Fatalities per 1000 persons in Taiwan

(Source: Taiwanese Council of Labor Affairs, 2009)



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IT Promotion Plan



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Main Webpage

<http://www.iosh.gov.tw/CIAKP/>

The screenshot shows the main webpage of the IOSH (Institute of Occupational Safety and Health) Construction Industry Accidents Knowledge Platform. The page layout includes a header with the IOSH logo and the platform title. A left sidebar contains a navigation menu with categories like '最新消息' (Latest News) and '研究報告' (Research Reports). The main content area features a '重大職災訊息' (Major Accidents Information) section with a list of recent incidents, including dates and brief descriptions. A right sidebar contains various links and logos, including the IOSH logo and logos of related organizations like the Ministry of Labor and the Occupational Safety and Health Administration.

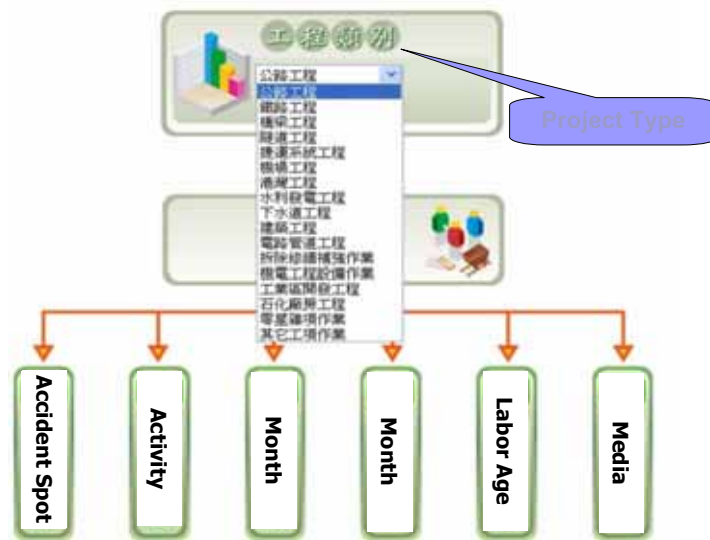
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GIS-based Info. Retrieval

The screenshot shows the GIS-based information retrieval interface on the IOSH website. The page features a map of Taiwan with various regions highlighted in different colors, representing different types of accidents or incidents. The interface includes a search bar, a navigation menu, and a 'Statistic' section with a bar chart. The map is titled '重大職災統計' (Major Accidents Statistics) and includes a legend and a search bar. The interface also includes a navigation menu with options like '一般分析' (General Analysis), '概況分析' (Overview Analysis), '工程別分析' (Analysis by Project), '區域別分析' (Analysis by Region), and '業別分析' (Analysis by Industry).

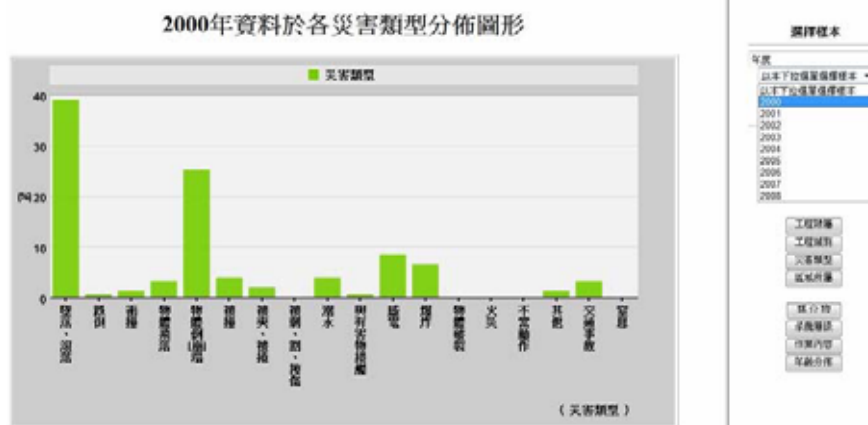
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Info. Retrieval by Classification



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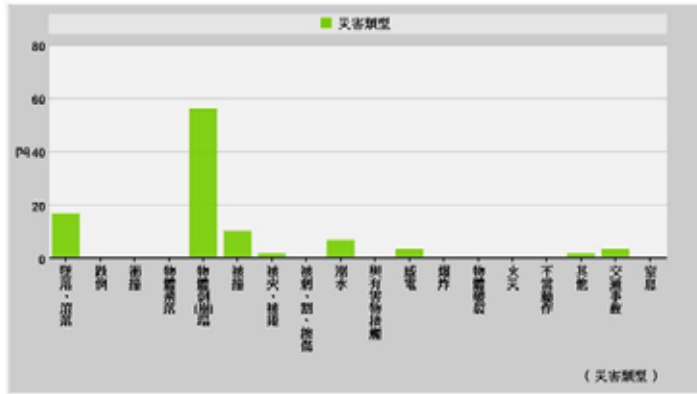
Retrieval Example: accident type distribution



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Retrieval Example: accident type at bridges

橋梁工程資料於各災害類型分佈圖形



選擇樣本

工程類別: 橋梁工程

決定文軸

顯示

列印

編輯

清除

工程計畫

計畫類型

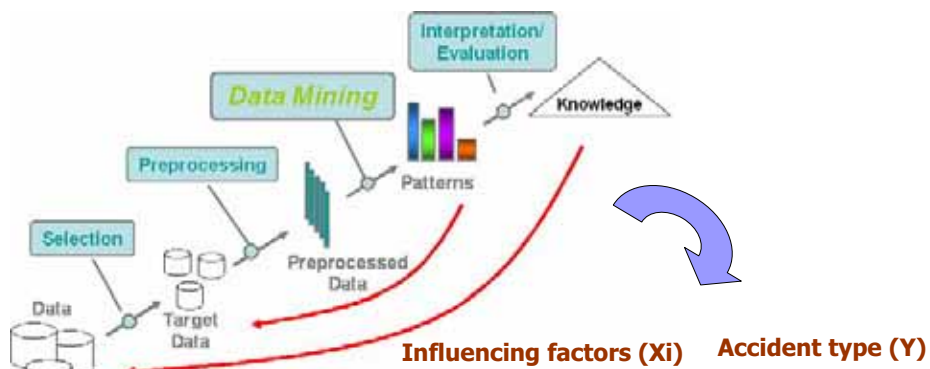
標本物

作業內容

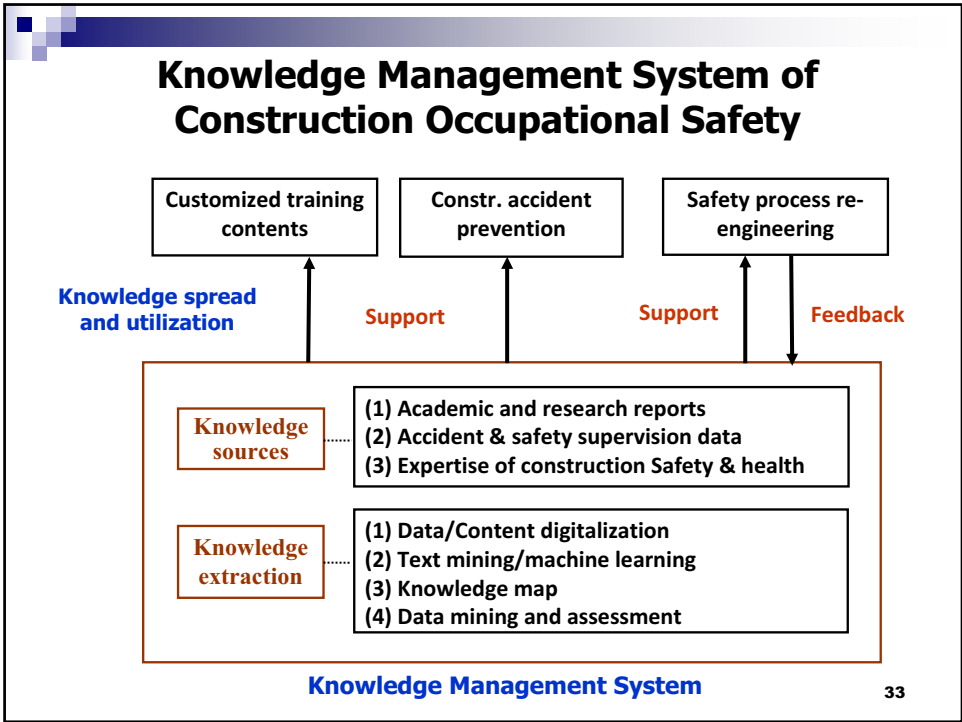
最新計畫

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Data Mining – CART example



不同 Xi 於工程類型(Y)分裂條件式	類別辨識(Y)
1) 接觸媒介物為營建物及施工設備,如:屋頂-屋架-樑,及工作平台-梯板等	墜落、滾落
2) 不安全狀況:高處未設置工作平台與開口防護;梯板開口;未設置護蓋;雇主未使勞工使用 PPE;不當管理與指示;使用危險方法或程序	
1) 不安全狀況:架空高壓電未絕緣防護;未設置自動電擊防止裝置	感電
2) 媒介物:電氣設備;絕緣設備等	



Mortenson's Definition of BIM Technology



- **Digital**
- **Spatial (3D)**
- **Measurable (quantifiable, dimension-able, and query-able)**
- **Comprehensive (complete & accurate communication)**
- **Accessible (to the entire AEC/owner team)**
- **Durable (usable through all phases of a facility' life)**

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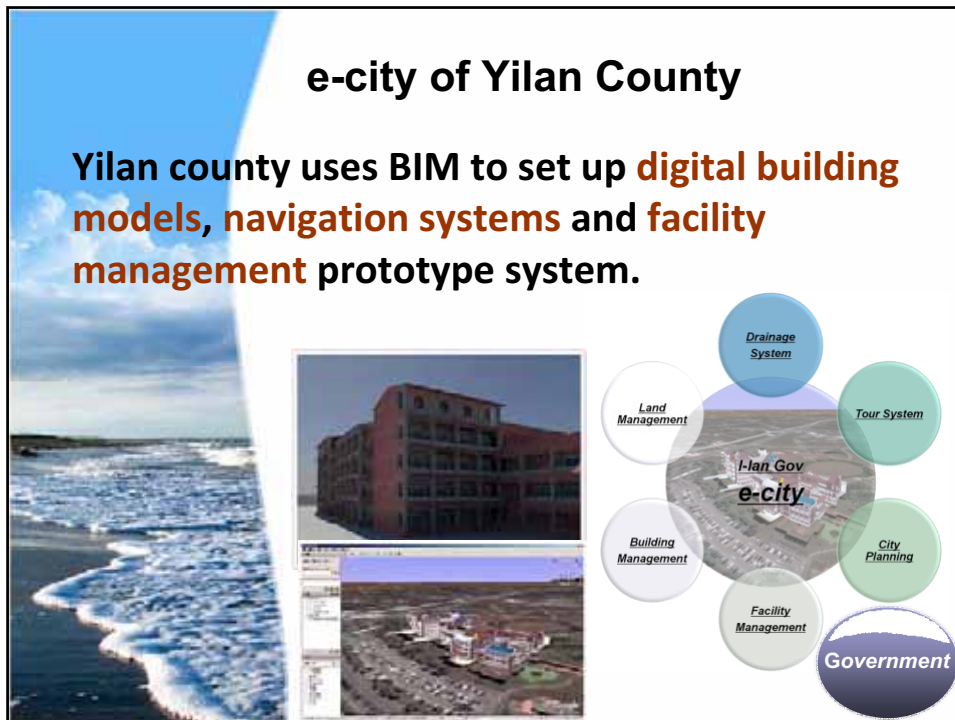
State of art of BIM in Taiwan

- Some **government agencies** are considering the adoption of BIM in public infrastructure projects.
- Major **engineering consulting and construction companies** have already taken or are initiating actions to establish their BIM capability and BIM Integration Center.
- **Increasing BIM awareness and application in industry & government in recent moment!**

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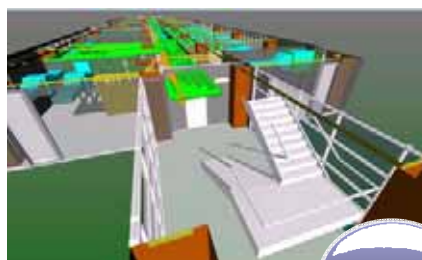
e-city of Yilan County

Yilan county uses BIM to set up **digital building models, navigation systems and facility management** prototype system.



BIM Design Exercise

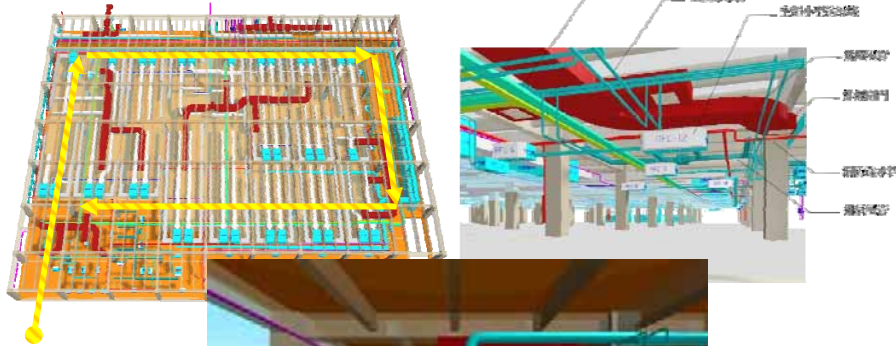
- Requested by Department of Rapid Transit System (**DORTS**), Taipei City Government, for evaluation of possible BIM adoption in future projects



Courtesy of SinoTech

Government

3D High-Tech Building Design



Courtesy of
Ruentex Group



BIM Design Exercise-1



花蓮/太平洋晨曦



花蓮/深海水SPA

Visual Simulation



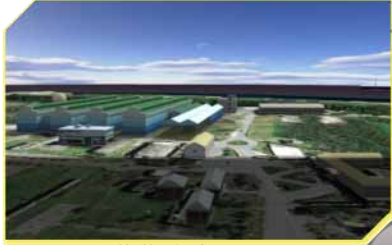
南港R5/鄰樓眺望庭園



南港R5/泳池風光



BIM Design Exercise-2



花蓮/海岸地景



南港R5/從遠高處

Urban View Simulation



南港R5/從高架道路上

視景模擬

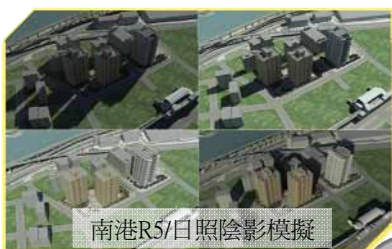


南港R5/從捷運站

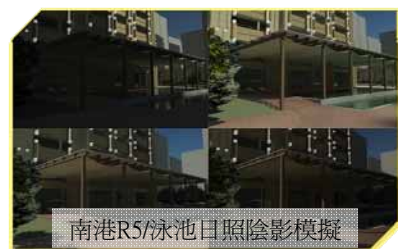
Industry
CECI

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BIM Design Exercise-3

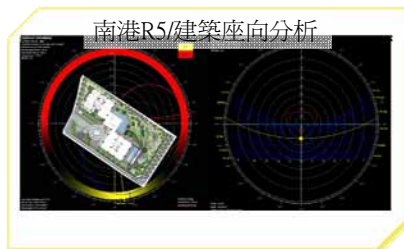


南港R5/日照陰影模擬



南港R5/泳池日照陰影模擬

Sunlight Simulation



南港R5/建築座向分析

Industry
CECI

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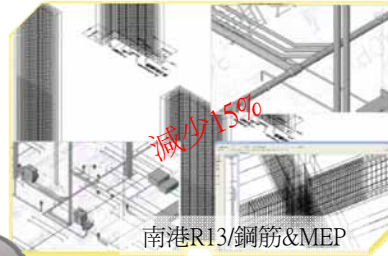
BIM Design Exercise-4

数量检查应用	前期数量清单	后期修正清单	差异	原因备注
5.1 土方工程	2,759,301.00	2,759,301.00	0.00	
5.2 基础工程：地库、楼底工程	1,095,667.00	1,095,667.00	0.00	
5.3 基础埋设工程	4,187,329.00	4,027,345.50	160,000.00	非标准埋设数量不符
5.4 管架工程	3,335,566.00	3,105,162.00	205,954.00	埋设架尺寸数量不符
5.5 结构工程：门架工程	1,625,629.00	1,731,789.00	91,639.00	门架尺寸不符
5.6 结构工程	8,035,459.00	8,035,459.00	0.00	
5.7 结构：梁工程	1,372,133.00	1,382,127.00	99,200.00	梁4.5.5材料修正
5.8 结构：柱工程	2,395,209.00	2,395,209.00	0.00	
5.9 结构：板工程	1,479,340.00	1,379,736.00	99,993.00	梁4.5.5材料修正
5.10 结构：剪力墙工程	595,594.00	595,594.00	0.00	
5.11 结构：其它工程	209,496.00	209,496.00	0.00	
5.12 结构：其它工程	11,855,332.00	10,756,816.00	1,098,465.84	较大材料数量不符
合计(5.1-5.12)	32,266,287.00	31,496,192.50	1,600,000.00	约误差4.3%

第一层门架出挑量误差 20.3%
第二层剪力墙长度误差 7.5%

总误差 > 30.0%
影响总金额达 2000 万

花莲/建筑、MEP、土木及景观



Quantity Survey

南港R5

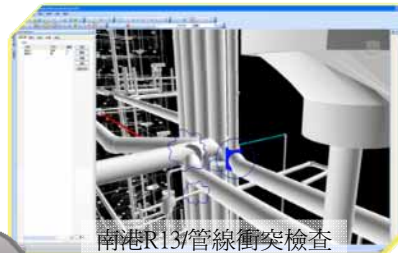
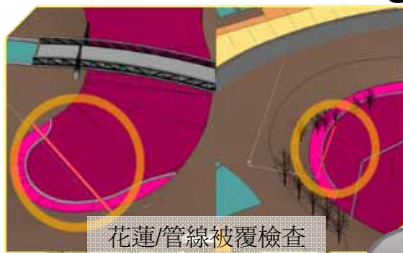
结构工程	材料名称	单位	数量	单位	数量
基础工程	PHC 土管 - Ø800mm	m	102,200	m³	652,200
基础工程	PHC 土管 - Ø600mm	m	895,613	m³	619,263
基础工程	PHC 土管 - Ø400mm	m	140,770	m³	113,400
基础工程	PHC 土管 - Ø200mm	m	1,388,813	m³	111,636
基础工程	PHC 土管 - Ø100mm	m	1,419,100	m³	119,200
基础工程	PHC 土管 - Ø800mm	m	27,773	m³	200,508
基础工程	PHC 土管 - Ø600mm	m	70,772	m³	55,772
基础工程	PHC 土管 - Ø400mm	m	1,605,612	m³	1,361,612
基础工程	PHC 土管 - Ø200mm	m	1,915,200	m³	1,64,812
基础工程	PHC 土管 - Ø100mm	m	1,600,417	m³	1,600,417
基础工程	PHC 土管 - Ø800mm	m	32274,109	m³	32274,109

南港R5集合住宅概念设计数量

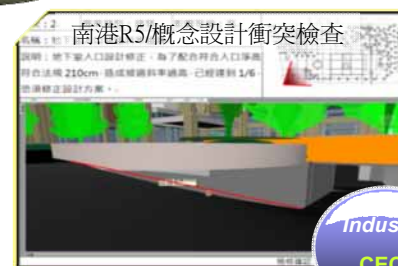
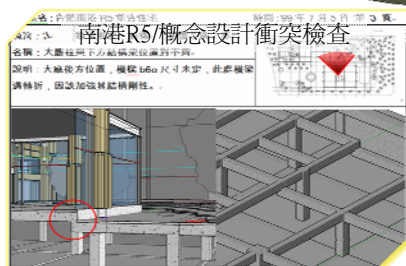


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BIM Design Exercise-5



Conflict Inspection



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THANK YOU
For your attention



Q & A

