

工程產業全球化人才實務培訓班場次5

拓點佈局實務與競標經營
海外工程投標操作實務

王祥騮

民國107年8月16日

簡歷

曾任：

- 上海亞新工程顧問有限公司總經理
- 亞新工程顧問股份有限公司副總經理 (國際及兩岸業務)
- 中華民國道路協會國際及兩岸事務委員會主任委員
- 中華民國工程技術顧問商業同業公會國際及兩岸關係委員會主任委員
- 上海工程諮詢行業協會副會長

現任：

- 台灣營建研究院營建知訊月刊「大陸觀察」專欄主筆
- 中國工程師學會亞太/國際工程師監督委員會委員
- 中國土木水利工程學會兩岸交流委員會副主任委員
- 外貿協會「爭取全球政府採購商機專案計畫」顧問
- 中華工程仲裁協會理事

What What
What What What
What What What
When When
When When

管理者身份

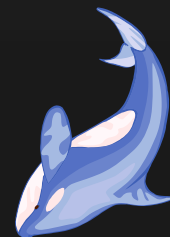
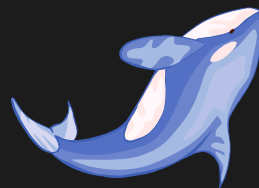
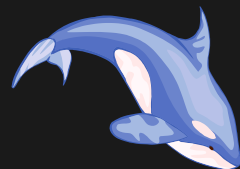
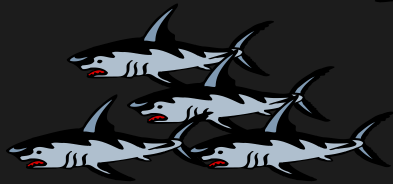
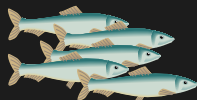
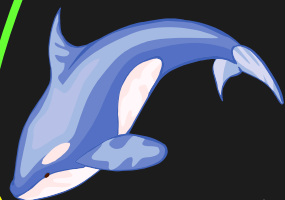
甚麼時候作甚麼事

團隊及資源

本地市場

海外工程市場

本地市場





Top 250 International Contractors

Engineering News Record

Year	Total Revenue (US\$ millions)	
	International	Domestic
2015	501,140	897,330
2014	521,550	909,260
2013	543,970	871,500

International Revenue	
Top 1	32,072
Average	2,000

Market Share	
Top 10	>35% Total
Top 20	>50% Total

Top 250 International Contractors

Engineering News Record

Region	Revenue	%
Asia & Australia	120,840	24.2
Europe	93,419	18.7
Middle East	76,507	15.3
United States	53,377	10.7
Latin America	52,691	10.6
South & Central Africa	39,435	7.9
North Africa	25,080	5.0
Canada	22,946	4.6
Arctic/Antarctic	13,819	2.8
Caribbean Islands	2,029	0.4

Sector	Revenue	%
Transportation	139,564	27.9
Petroleum	114,383	22.9
Buildings	106,840	21.4
Power	54,135	10.8
Other	29,806	6.0
Industrial	20,616	4.1
Water	13,877	2.8
Manufacturing	10,809	2.2
Sewer/Waste	4,956	1.0
Telecom	4,051	0.8
Hazardous Waste	1,211	0.2

US\$ millions

Ranking 2015	Company/Country	Revenue	
		Int'l	Domestic
1	Grupo ACS, Madrid, Spain	32,072	6,503
2	HOCHTIEF, Essen, Germany	24,515	1,083
3	China Communications Constr. Group Ltd., Beijing, China	19,265	49,084
4	Vinci, Rueil-Malmaison, France	17,958	25,491
5	Bechtel, San Francisco, Calif., U.S.A.	16,881	6,491
6	Odebrecht Engenharia E Construção SA, São Paulo, Brazil	14,940	2,168
7	Technip, Paris, France	13,437	112
8	Strabag SE, Vienna, Austria	13,377	2,180
9	Bouygues SA, Paris, France	13,367	14,854
10	Skanska AB, Stockholm, Sweden	12,688	3,345
11	Power Construction Corp. of China, Beijing, China	11,355	27,987
12	Saipem, San Donato Milanese, Italy	10,199	1,425
13	Hyundai Engineering & Constr. Co. Ltd., Seoul, S. Korea	10,031	6,440
14	China State Construction Eng'g Corp. Ltd., Beijing, China	8,728	106,355
15	Fluor Corp., Irving, Texas, U.S.A.	8,045	6,250
16	Ferrovial, Madrid, Spain	7,577	3,094
17	Samsung C&T Corp., Seoul, S. Korea	7,017	6,072
18	JGC Corp., Yokohama, Kanagawa, Japan	6,184	469
19	Petrofac Ltd., Jersey, Channel Islands, U.K.	6,146	0
20	China Railway Group Ltd., Beijing, China	6,037	106,633

Ranking 2016	Company/Country	Revenue	
		Int'l	Domestic
81	TAV Construction, Istanbul, Turkey	1,262	146
82	AECOM, Los Angeles, Calif., U.S.A.	1,230	5,782
83	FCC Construction SA, Madrid, Spain	1,199	1,014
84	China Petroleum Eng. & Construction Corp., Beijing, China	1,184	915
85	Hanwha Engineering & Construction, Seoul, S. Korea	1,105	1,526
86	ANT YAPI Industry & Trade JSC, Istanbul, Turkey	1,090	156
87	MAIRE TECNIMONT Group, Milan, Italy	1,062	289
88	Harbin Electric Int'l Co. Ltd., Harbin, Heilongjiang, China	1,018	0
89	ED. ZÜBLIN AG, Stuttgart, Germany	1,008	2,710
90	Arabian Construction Co. LLC, Beirut, Lebanon	972	119
91	The ARAB Contractors Co., Cairo, Egypt	907	1,634
92	China General Technology (Group), Beijing, China	906	2,947
93	YAPI MERKEZI INSAAT VE SANAYI AS, Istanbul, Turkey	885	81
94	SOCIETÀ ITALIANA, Rome, Italy	844	647
95	China Jiangsu Int'l Group, Nanjing, China	817	1,305
96	ANDRADE GUTIERREZ SA, Rio de Janeiro, Brazil	801	1,077
97	CGCOC Group Co. Ltd., Beijing, China	794	14
98	NATA Construction, Ankara, Turkey	790	466
99	BONATTI SPA, Parma, Italy	766	113
100	CTCI Corp., Taipei, Taiwan	735	1,014

Country	Firms	Revenue	%
U.S.A	39	47,319	9.7
Canada	1	3,172	0.7
Europe	52	212,263	43.6
• U.K.	2	7,825	1.6
• German	4	29,113	6.0
• France	5	34,556	7.1
• Italy	15	25,621	5.3
• Netherlands	3	9,750	2.0
• Spain	11	59,797	12.3
• Others	12	45,602	9.4
Australia	3	9,931	2.0
Japan	14	25,168	5.2
China	65	93,675	19.3
S. Korea	12	40,580	8.3
Turkey	39	22,592	4.6
Brazil	2	15,741	3.2
All Others	23	15,883	3.3
Total	250	486,324	100.0

US\$ millions

Region	Revenue & Market Share					
	Japan		S. Korea		China	
Asia & Australia	14,054	11.6	15,547	12.9	30,210	25.0
Europe	2,685	2.9	1,049	1.1	3,369	3.6
Middle East	1,276	1.7	16,209	21.2	13,121	17.2
United States	5,827	10.9	356	0.7	3,906	7.3
Latin America/Caribbean Islands	412	0.8	3,801	6.9	7,514	13.7
Africa	302	0.5	3,225	5.0	35,375	54.9
Canada	612	2.7	393	1.7	178	0.8

US\$ millions

國際化的練兵場

本地市場

海外工程市場





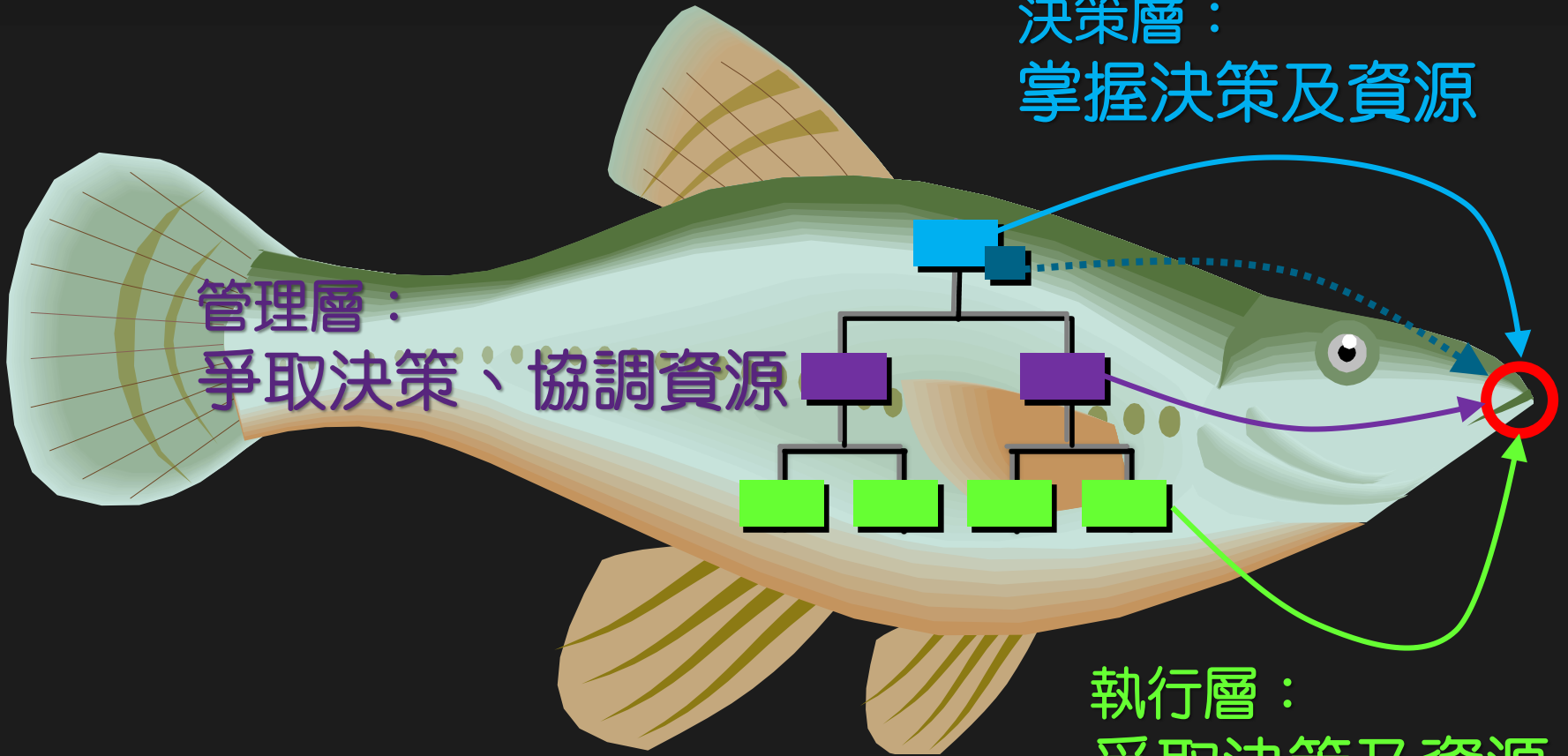
你的
戰鬥位置



決策層：
掌握決策及資源

管理層：
爭取決策、協調資源

執行層：
爭取決策及資源



投標決策

標案來源與投標決策

- ❖ 在掌握中的標案
- ❖ 在已知的市場中，突然得知的標案
- ❖ 在未知的市場中，突然得知的標案
- ❖ 透過代理人或仲介得知的標案
- ❖ 非職業仲介者提供的標案

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實幹+實力

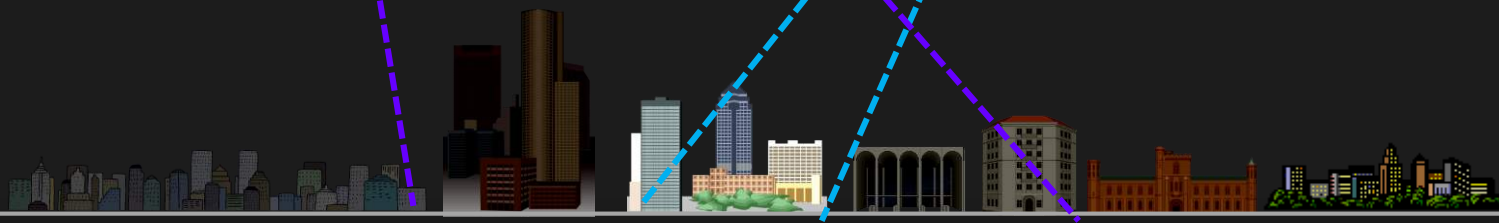
範圍及資源



標準及規範



不利的環境



地下不可預知的情況

範圍及資源

施工範圍

設計範圍

專案管理

契約行政

分包廠商

當地資源

規範及標準

設計規範

審核程序

設備及材料標準

驗收程序及標準

專業簽證

環保及產業驗證

暫時不談錢

現勘與澄清

- ❖ 發掘關鍵課題

- ❖ 促進公司內部動員

- ❖ 促使技術部門進入角色

- ❖ 創造與業主的對話機會

但須防止投標策略外洩

- ❖ 加重業主的印象

備 標

兩份履歷表

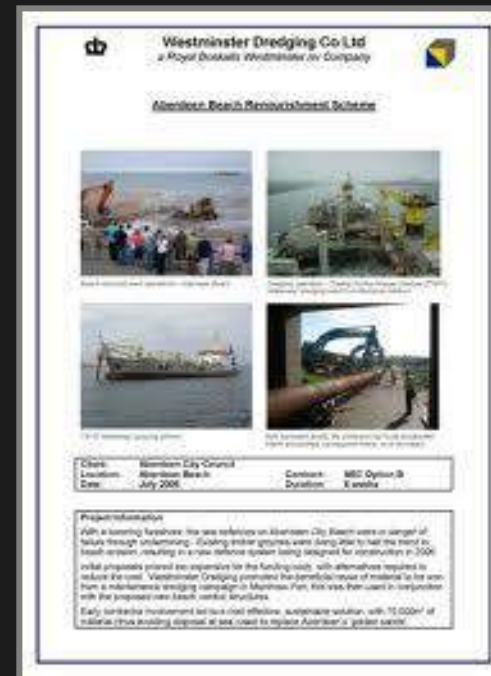
主要人員履歷表

- ◆ 姓名
- ◆ 現職
- ◆ 國籍
- ◆ 年齡
- ◆ 學歷
- ◆
- ◆
- ◆ 經歷概述



公司相關業績表

- ◆ 計畫名稱
- ◆ 工程地點
- ◆ 業主名稱
- ◆ 合約金額
- ◆ 工程期間
- ◆
- ◆
- ◆ 工程概述



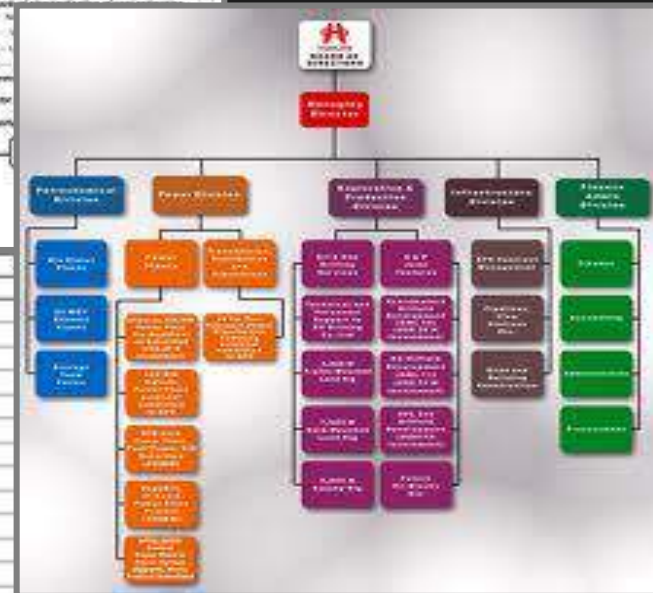
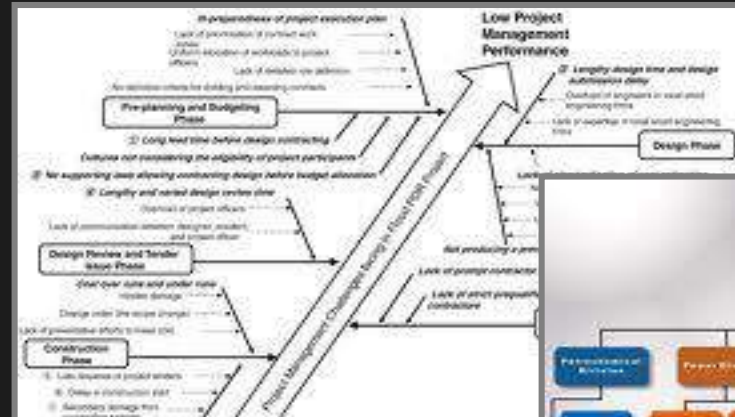
不用打仗的常備軍

工作執行計畫

技術服務

人力

方法



ID	Resource Name	September	October	November	December
		Sep	Oct	Nov	Dec
1	Project Manager	176h	176h	152h	176h
2	Programmer/Analyst 1	64h	127.75h	162.25h	
3	Programmer/Analyst 2	64h	23.75h	162.25h	
4	Programmer/Analyst 3	8h	175.75h	144.25h	
5	Programmer/Analyst 4	8h	15.75h	144.25h	
6	Test Planner	88h	224h	56h	103.75h
7	Test Planner 2	88h	208h	56h	103.75h
8	Technical Writer	8h			
9	Implementation Planner	8h	96h	72h	
10	Tester1	8h	8h	7.75h	32.25h
11	Tester2	8h			
12	Senior Analyst 1	183.75h	222.25h	23.75h	176h
13	Senior Analyst 2	32h	156h		
14	System Tester 1	8h			
15	System Tester 2	8h			
16	System Tester 3	8h			
17	Programmer Analyst 5	8h	15.75h	64.25h	
18	Programmer Analyst 6	8h	15.75h	64.25h	

時間

高度整合：自己下手

技術服務

方法

ID	Resource Name	September	October	November	December
		Sep	Oct	Nov	Dec
1	Project Manager	176h	176h	176h	176h
2	Programmer/Analyst 1	84h	127.75h	127.75h	127.75h
3	Programmer/Analyst 2	84h	23.75h	23.75h	23.75h
4	Programmer/Analyst 3	8h	75.75h	144.25h	144.25h
5	Programmer/Analyst 4	8h	75.75h	144.25h	144.25h
6	Test Planner 1	8h	8h	56h	103.75h
7	Test Planner 2	8h	8h	56h	103.75h
8	Technical Writer	8h	8h	8h	8h
9	Implementation Planner	8h	8h	72h	72h
10	Tester1	8h	8h	7.75h	32.25h
11	Tester2	8h	8h	8h	8h
12	Senior Analyst 1	183.75h	222.25h	23.75h	176h
13	Senior Analyst 2	32h	156h	156h	156h
14	System Tester 1	8h	8h	8h	8h
15	System Tester 2	8h	8h	8h	8h
16	System Tester 3	8h	8h	8h	8h
17	Programmer Analyst 5	8h	15.75h	64.25h	64.25h
18	Programmer Analyst 6	8h	15.75h	64.25h	64.25h

時間

高度整合：自己下手

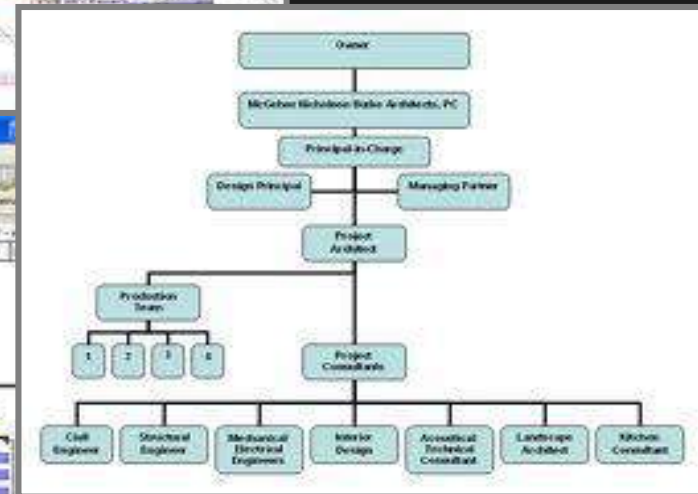
工作執行計畫

施工或統包

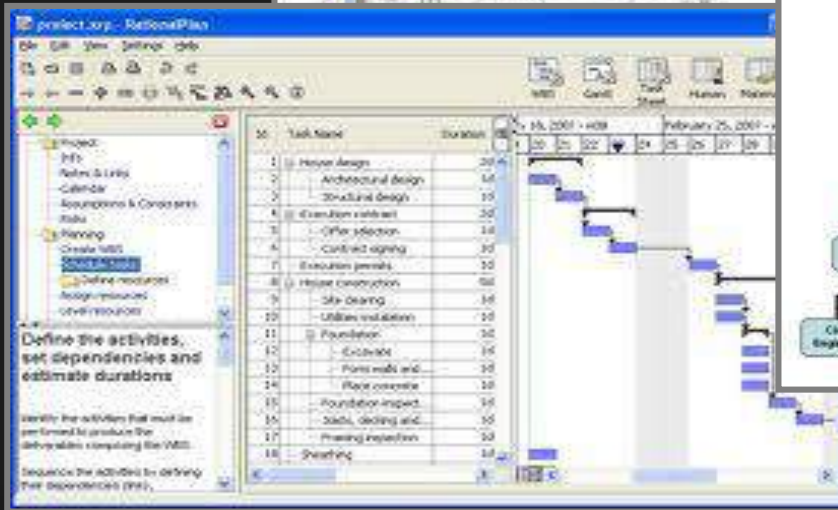
空間



資源



時間



高度整合：自己下手

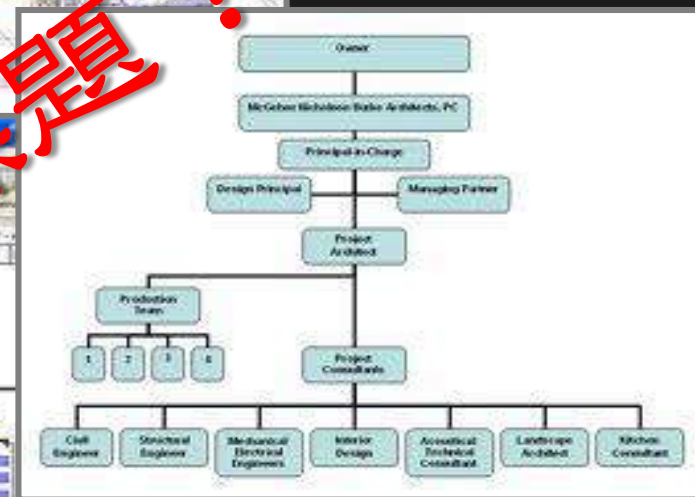
工作執行計畫

施工或統包

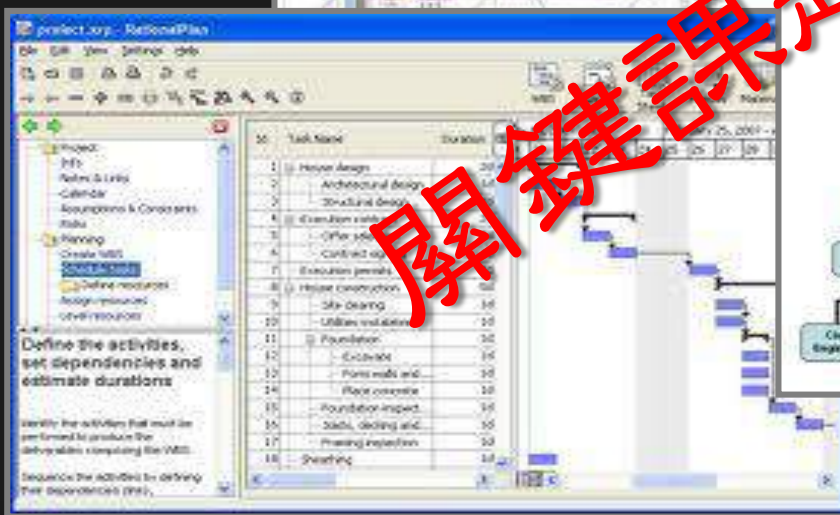
空間



資源



時間



高度整合：自己下手

決戰點-價格標

報價書

條件說明

分析表

付款

 GOVERNMENT OF INDIA Ministry of Mines Indian Bureau of Mines		REGISTRATION LETTER	
NO. 473-01-42/2010-2011/50		Office Memorandum No. 1164, Section 400-102 File No.: 0113/2009/00 Phone No. 011-2604673 E-Mail: ibm@ibm.gov.in Website: ibm.gov.in Dated: 24.01.2011.	
To: _____ _____ _____			
Subj: Tender Enquiry in TPO BID systems for supply and installation of SDB/SAFE SENSORS systems of 600-gms weight with BUY-BACK- DISCOUNT Offer for ONI Existing SPARS System of SDB NO. JACGPUR			
(Dear Sir),			
The Controller, Mining, on behalf of the President of India, is to be apprised for the State of the following items:			
Sl. No.	Description of Items	Approximate Qty./Tonnage/Value	Remarks
1	Purchase NEW Digital SPARS systems Under Buy back scheme	Total 10000 units	Total 10000 pages/17
*Note:			
a) Tender invitation, tender and drawings are given in enclosed Annex.			
b) Sealed tender in quotation under buy back systems is to be received before Commissioned.			
c) The above buy back enquiry has also been placed on IBS website: www.ibm.gov.in			
(Sd/-) Chandrabh Joint, Mines Officer For Controller General			

Company Details		FINANCIAL BALANCE SHEET									
		Percentage: Ending / Beginning									
ID	ITEM DESCRIPTION	UNIT	QTY	Beginning		Ending		Difference		Percentage	
				QTY	Value	QTY	Value	QTY	Value	QTY	Value
1	Inventory			100%	100%	100%	100%	0%	0%	0%	0%
2	Raw Materials			100%	100%	100%	100%	0%	0%	0%	0%
3	Work in Progress			100%	100%	100%	100%	0%	0%	0%	0%
4	Finished Goods			100%	100%	100%	100%	0%	0%	0%	0%
5	Fixed Assets			100%	100%	100%	100%	0%	0%	0%	0%
6	Current Assets			100%	100%	100%	100%	0%	0%	0%	0%
7	Current Liabilities			100%	100%	100%	100%	0%	0%	0%	0%
8	Long Term Assets			100%	100%	100%	100%	0%	0%	0%	0%
9	Long Term Liabilities			100%	100%	100%	100%	0%	0%	0%	0%
10	Equity			100%	100%	100%	100%	0%	0%	0%	0%
11	Current Assets			100%	100%	100%	100%	0%	0%	0%	0%
12	Current Liabilities			100%	100%	100%	100%	0%	0%	0%	0%
13	Long Term Assets			100%	100%	100%	100%	0%	0%	0%	0%
14	Long Term Liabilities			100%	100%	100%	100%	0%	0%	0%	0%
15	Equity			100%	100%	100%	100%	0%	0%	0%	0%
16	Current Assets			100%	100%	100%	100%	0%	0%	0%	0%
17	Current Liabilities			100%	100%	100%	100%	0%	0%	0%	0%
18	Long Term Assets			100%	100%	100%	100%	0%	0%	0%	0%
19	Long Term Liabilities			100%	100%	100%	100%	0%	0%	0%	0%
20	Equity			100%	100%	100%	100%	0%	0%	0%	0%

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內外課題總集結

議約及動員

議約=動員

業務負責人

專案負責人

專案
工作人員

主契約議約

協力契約議約

現場勘察

作業移交

稅務安排

人員入境

機具材料進口

證照及備案

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辦公室設立

專案執行計畫

工地交付

本地人員或小包

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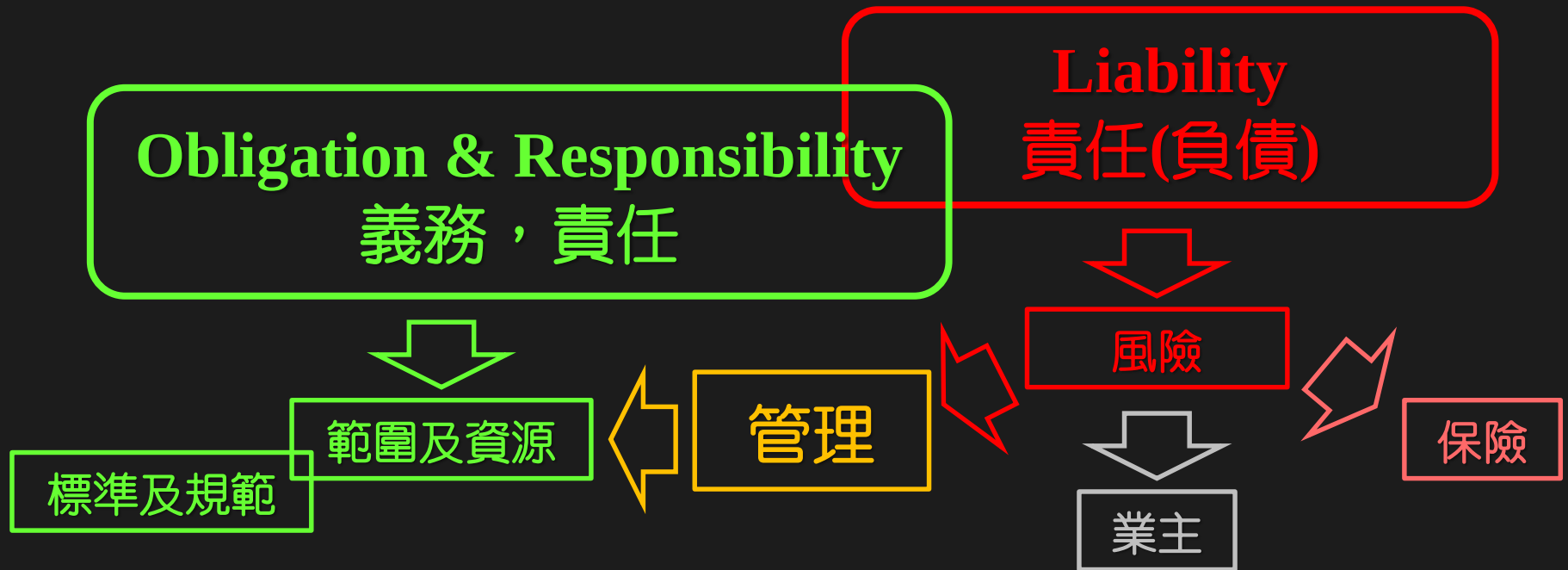
履約追蹤

商機的延續

- ❖ 確保投標與履約的順利銜接
層級、部門間的權責轉移
- ❖ 維持與業主的第二對話管道
- ❖ 付款的追蹤
- ❖ 投標原意的傳達
- ❖ 投標成效的追蹤及檢討
- ❖ 後續商機的發掘

契約

契約的通用架構



特定條款
(只有指南)

一般條款

Standard Form of Contracts

International Federation of Consulting Engineers FIDIC

- **Client/Consultant Model Services Agreement (White Book)**
- **Construction Contract (Red Book)**
- **Construction Contract MDB Harmonized Edition (2010)**
- **Plant and Design-Build Contract (Yellow Book)**
- **Design-Build and Turnkey Contract (Orange Book)**
- **EPC/Turnkey Contract (Silver Book)**
- **Short Form of Contract (Green Book)**
- **Design, Build and Operate Contract (Gold Book)**
- **Dredgers Contract (Blue-Green Book)**
- **Model Joint Venture (Consortium) Agreement (2017)**
- **Sub-Consultancy Agreement (2017)**
- **Construction Subcontract (2011)**
- **Model Representative Agreement (2013)**

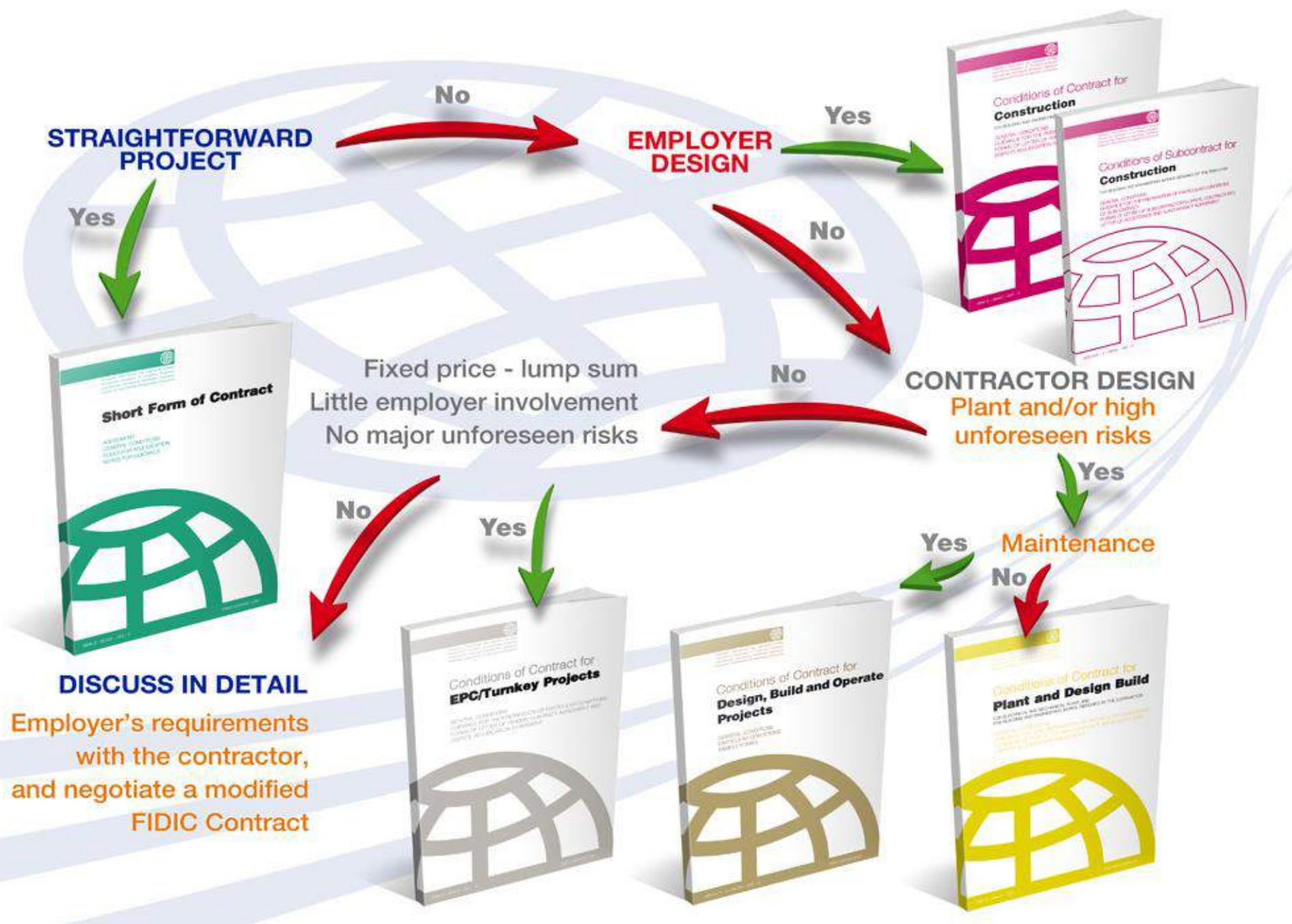
Since 1957

Multilateral Development Banks

International Federation of Consulting Engineers FIDIC

- The World Bank (WB)
 - African Development Bank (AfDB)
 - Asian Development Bank (AsDB)
 - Black Sea Trade and Development Bank (BSDB)
 - Caribbean Development Bank (CDB)
 - Council of Europe Development Bank (CEB)
 - European Bank for Reconstruction and Development (EBRD)
 - Inter-American Development Bank (IADB)
-

向歐系及美系推廣

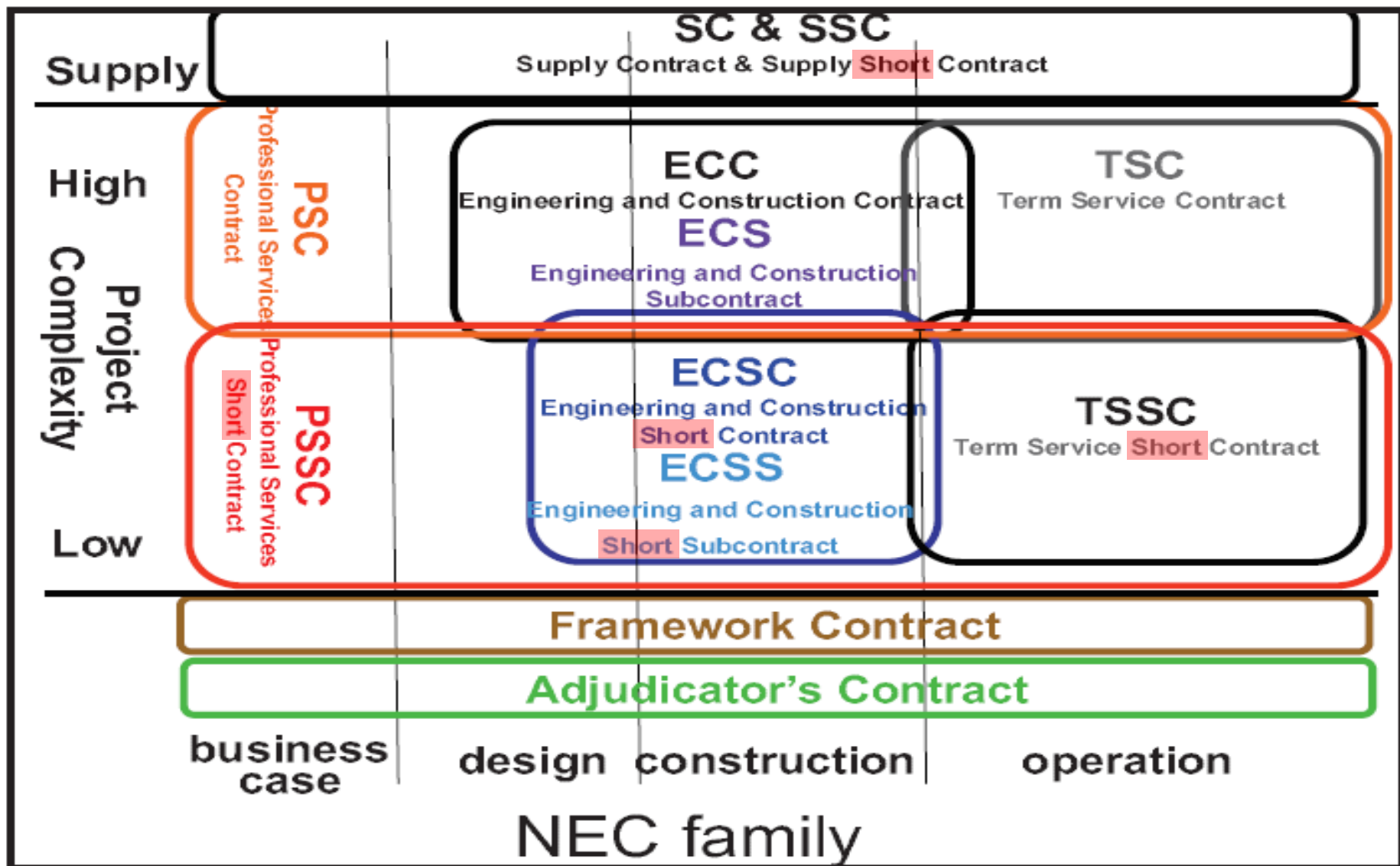


New Engineering Contracts: NEC3 2005

Institution of Civil Engineers ICE

- **Engineering and Construction Contract (ECC)**
 - ECC Option A: Priced contract with activity schedule
 - ECC Option B: Priced contract with bill of quantities
 - ECC Option C: Target contract with activity schedule
 - ECC Option D: Target contract with bill of quantities
 - ECC Option E: Cost reimbursable contract
 - ECC Option F: Management contract
- **Engineering and Construction Short Contract (ECSC)**
- **Engineering and Construction Subcontract (ECS)**
- **Engineering and Construction Short Subcontract (ECSS)**
- **Professional Services Contract (PSC)**
- **Professional Services Short Contract (PSSC)**
- **Term Service Contract (TSC)**
- **Term Service Short Contract (TSSC)**
- **Supply Contract (SC)**
- **Supply Short Contract (SSC)**
- **Framework Contract (FC)**
- **Adjudicator's Contract (AC)**

Since 1993



March 30, 2017

New Engineering Contracts: NEC4 2017

Institution of Civil Engineers ICE

NEC3

+

- **Dispute Resolution Service Contract (DRSC)**
(previously NEC3 Adjudicator's Contract)
- **Design Build Operate Contract (DBO)**
- **Alliance Contract (ALC)**

New Engineering Contracts: NEC3

彈性

- ◆ 涵蓋土木、建築、機電等所有行業
- ◆ 容許承包商負擔不同程度的設計責任
- ◆ 涵蓋各種契約計價及風險分擔方式
- ◆ 可以在英國及其他國家適用

向大英國協推廣

New Engineering Contracts: NEC3

簡單明瞭

- ◆ 儘可能使用普通的文字撰寫
保險、爭議及終止契約仍維持法律用語
- ◆ 條款及內容儘可能精簡
- ◆ 核心條款與備選條款儘可能「模組化」
- ◆ 基本精神在減少爭議的發生
fair, reasonable, opinion等字眼儘可能少用

貼近工程界

New Engineering Contracts: NEC3

激發良好的管理

過去20年工程產業的發展

專案管理技術的發展快於契約形式的演進

NEC3的基本信念

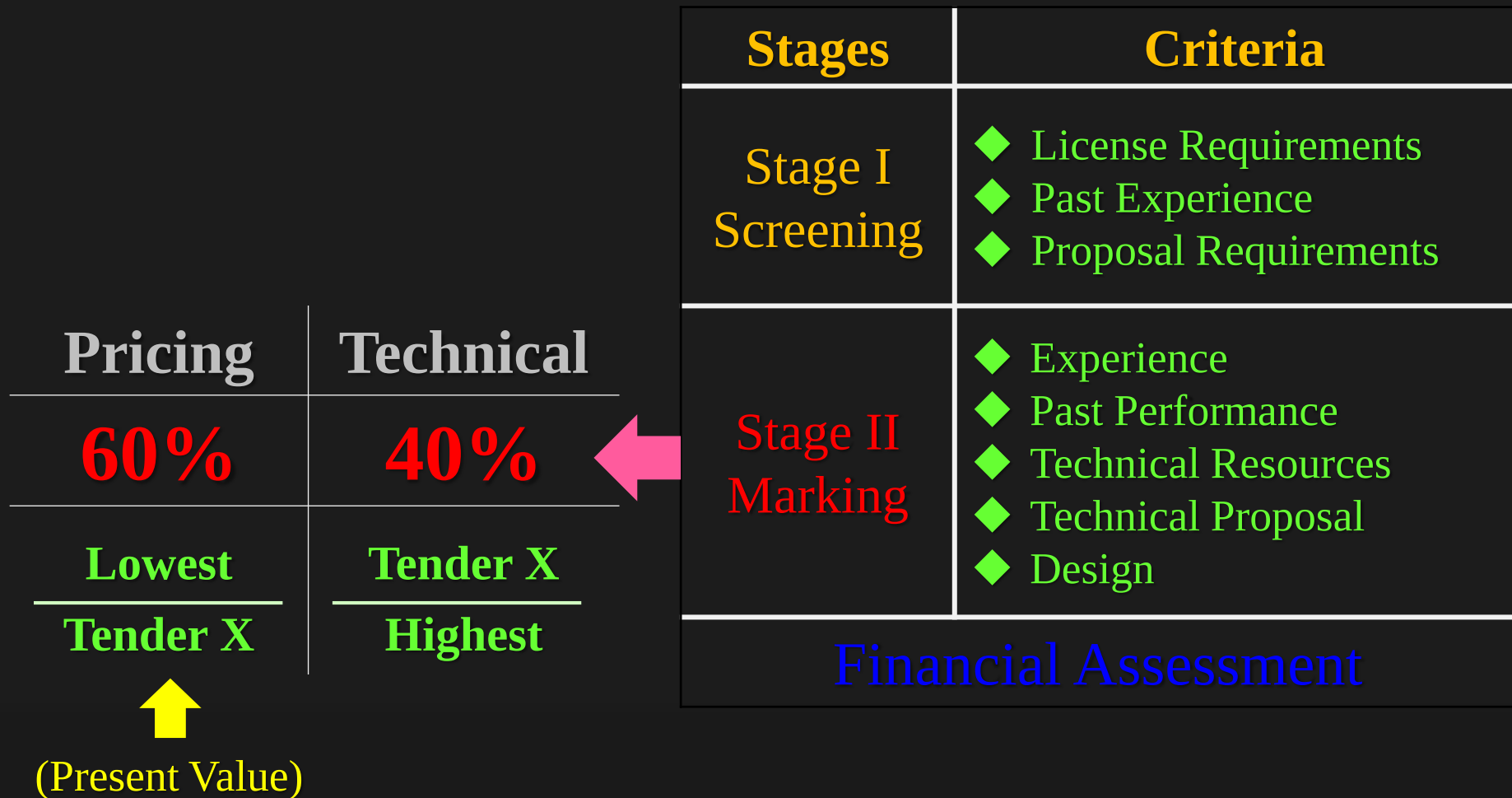
基於合作及遠慮的管理作為可以降低風險

- ◆ 清楚劃分功能及責任以使各方謹守其分
- ◆ 由謹守其分激發合作及遠慮的動機
- ◆ 動機促進管理效能的提升

投標案例

- 統包標
- 施工標允許替代方案
- 其他

Tender Evaluation Practice in HK



心理建設

甘

苦

得標

鬥智

鬥志

外部

內部

實力

政策

溝通

決策

本地關係

溝通

風險

本位主義

甘

苦

得標

鬥智

鬥志

熱情

外部

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風險

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勤奮

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勤奮

耐心

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本地關係

風險

勤奮

內部

政策

決策

溝通

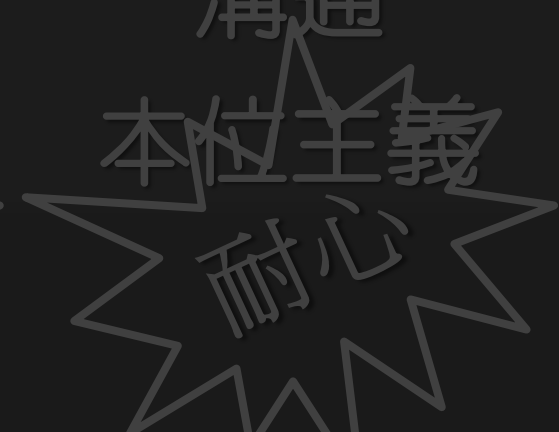
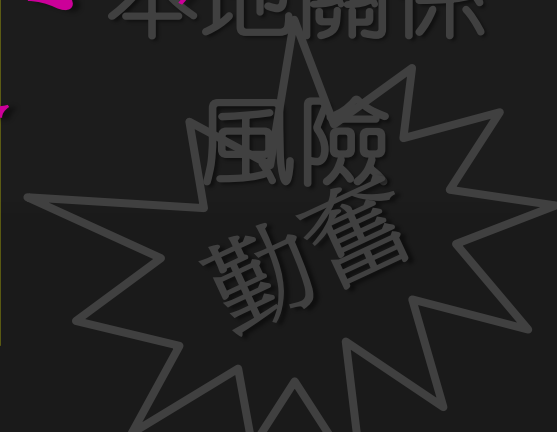
本位主義

耐心

成長

累積

磨練



謝 謝

接著是.....

王祥騶

民國106年8月16日

工程產業全球化人才實務培訓班場次5

Q & A

王祥騮

Steve.hlwang@gmail.com