

110 年度工程產業全球化人才實務培訓

海外工程投標實務經驗分享

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中華台北亞太暨國際工程師監督委員會
執行長

海外工程投標實務經驗分享

1. 課程邏輯
2. 海外投標的基本概念
3. 基礎建設：公部門 Design & Build
4. 設備輸出：私部門 Semi-Turnkey
5. 海外投標的內部溝通

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課程邏輯

- 技術本位
- 專業分工
- 個人色彩
- 成本操作空間有限

調查
分析研究
規劃
設計
施工圖
BIM
監造
環境監測
專案管理
.....

施工
設計+施工
設計+採購+施工
施工+替代方案
施工含部分統包
設備+土木工程
設備+總顧問
.....

公部門

- 公平本位
- 規則複雜
- 程序剛性

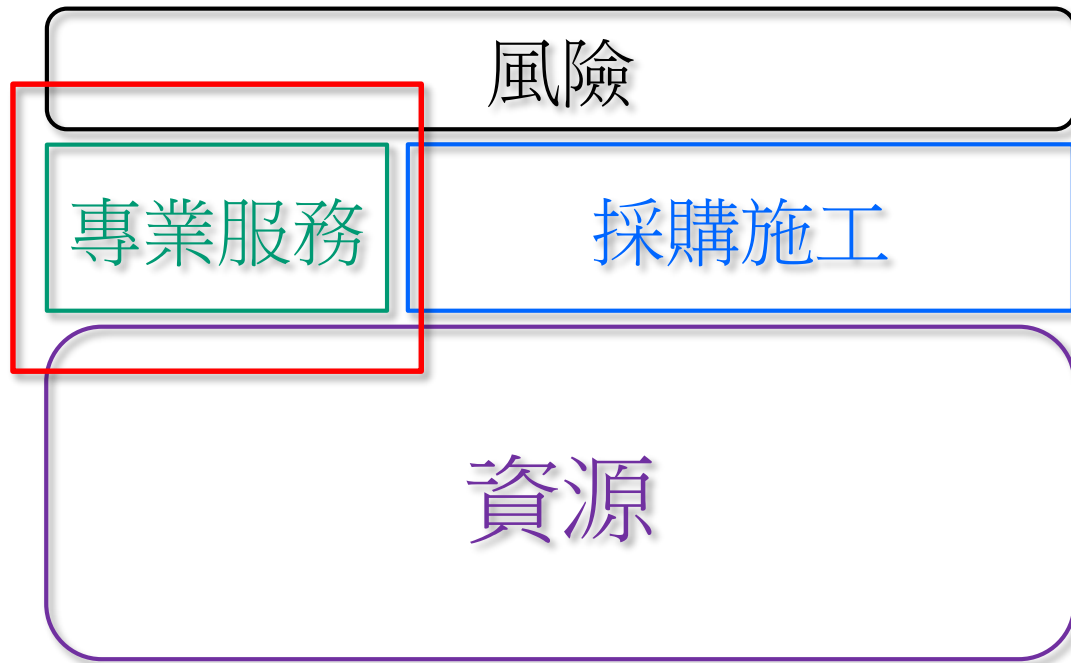
- 資源本位
- 設計創造價值
- 管理善用資源
- 模式選擇多
- 成本操作空間大

私部門

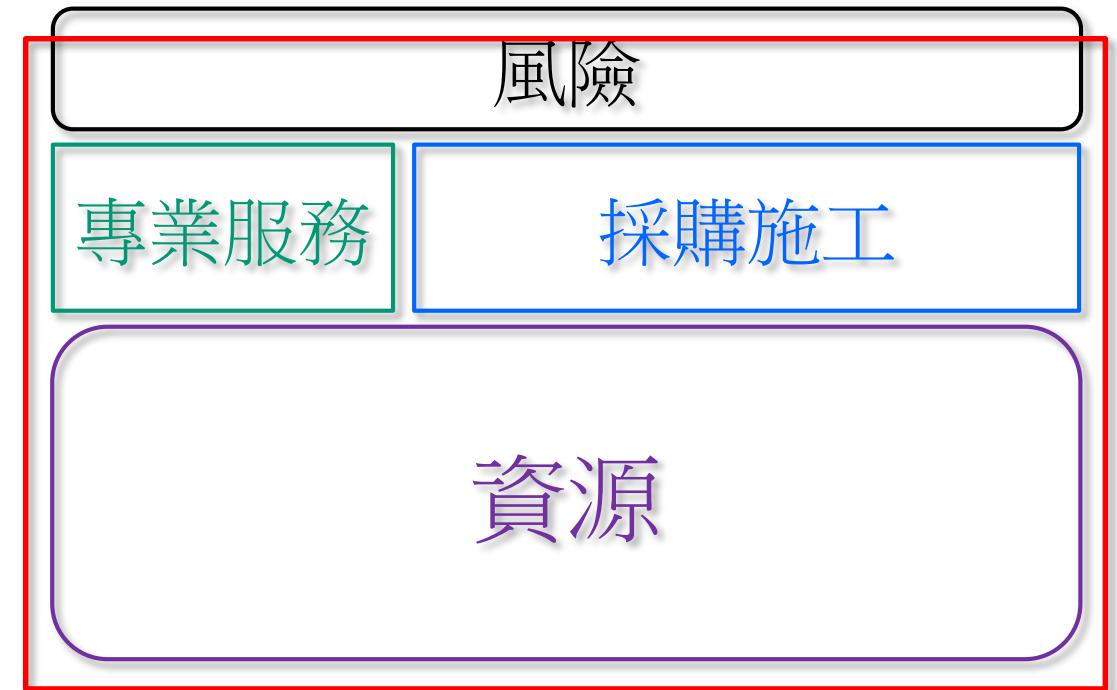
- 利益本位
- 目標導向
- 程序彈性

課程邏輯

專業服務



專業服務+採購施工



課程邏輯

- ❑ 專業服務契約
Professional Service Contract
 - ❑ 設計和施工契約
Design and Construction Contract
-
- ❑ 定期服務契約
Term Service Contract
 - ❑ 設計施工和操作維護契約
Design Build and Operate Contract
 - ❑ 供應契約
Supply Contract
 - ❑



課程邏輯

- 附工作項目表的總價契約
Priced Contract with Activity Schedule
- 附工作量清單的總價契約
Priced Contract with Bill of Quantity
- 附工作項目表的目標價契約
Target Contract with Activity Schedule
- 附工作量清單的目標價契約
Target Contract with Bill of Quantity
- 按成本給付的契約
Cost-Reimbursable Contract
- 管理契約
Management Contract

- 履約保證金條款
Performance Bond
- 物價調整條款
Price Adjustment for Inflation
- 預付款和保留款條款
Advanced Payment and Retention
- 貨幣(包括多重貨幣)條款
Currency (Including Multiple Currencies)
- 法令變更條款
Cost-Reimbursable Contract
- 分區完工
Sectional Completion
- 損害賠償上限
Limitation of Liability
-



英國土木工程師學會
NEC工程契約範本

海外工程投標實務經驗分享

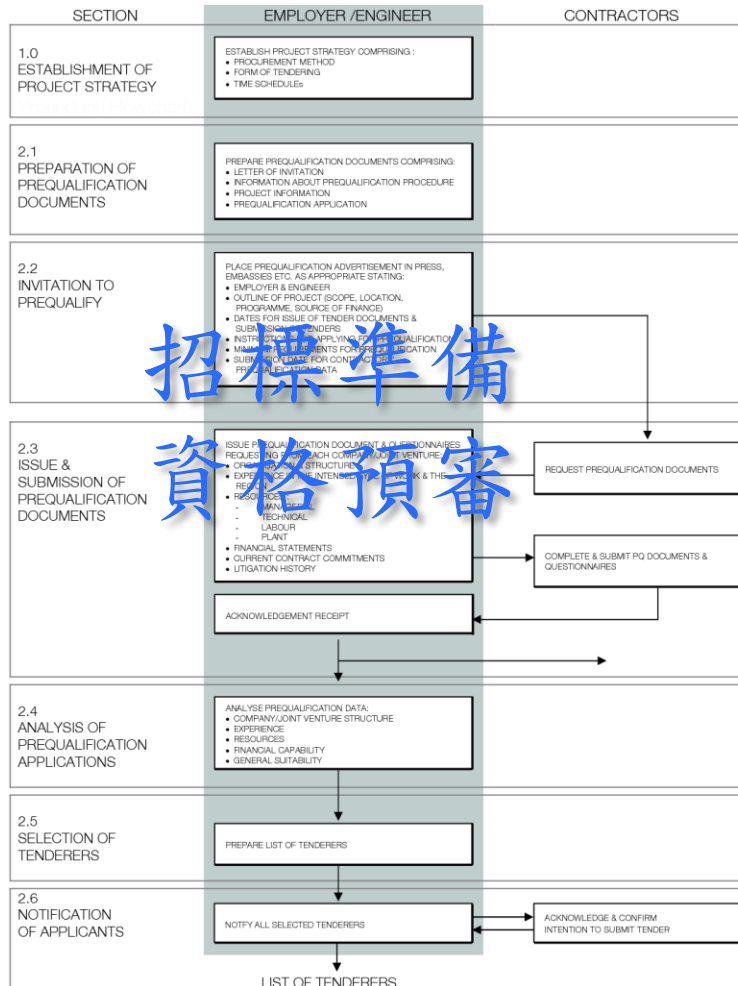
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工程投標程序

PROCEDURAL FLOWCHARTS

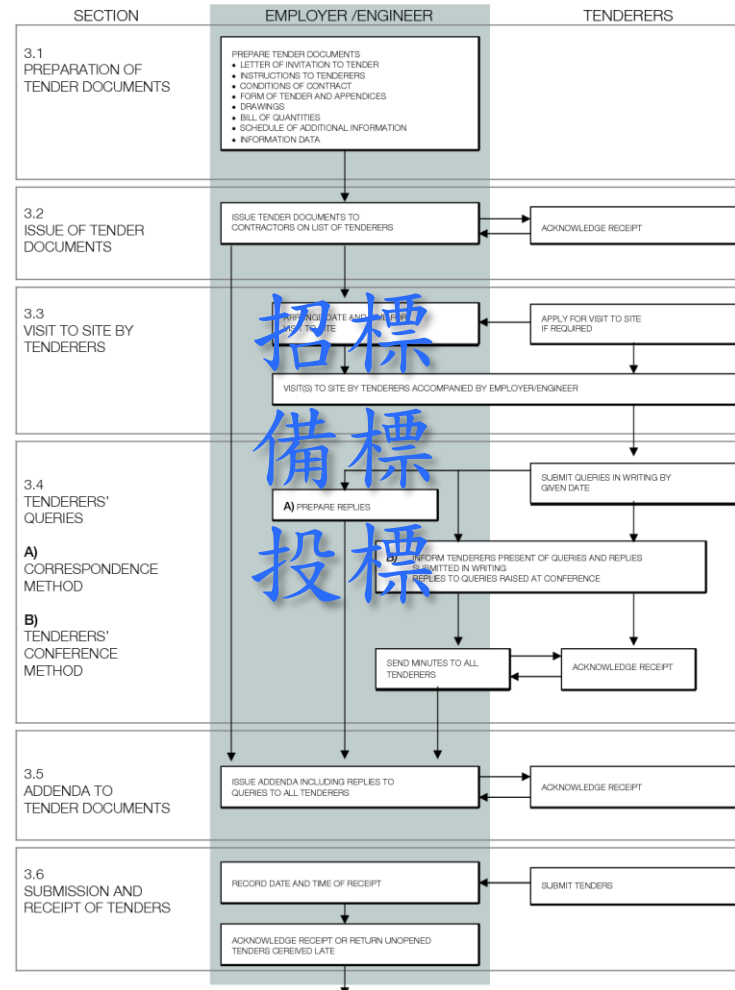
I of III

RECOMMENDED PROCEDURE FOR THE PREQUALIFICATION OF TENDERERS



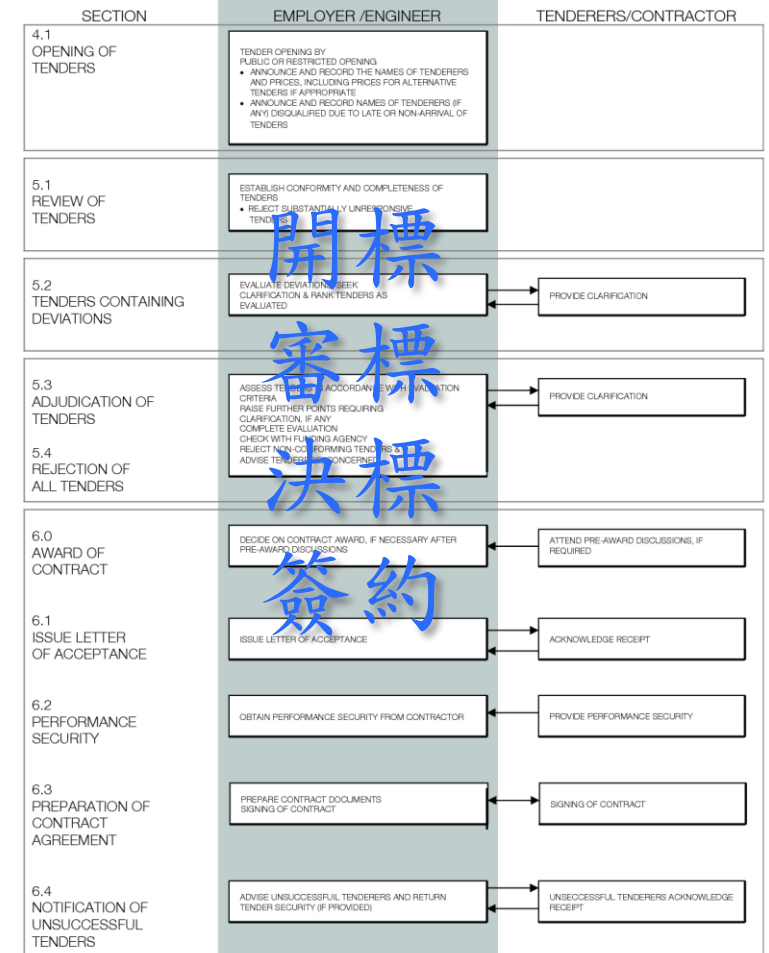
II of III

RECOMMENDED PROCEDURE FOR OBTAINING TENDERS

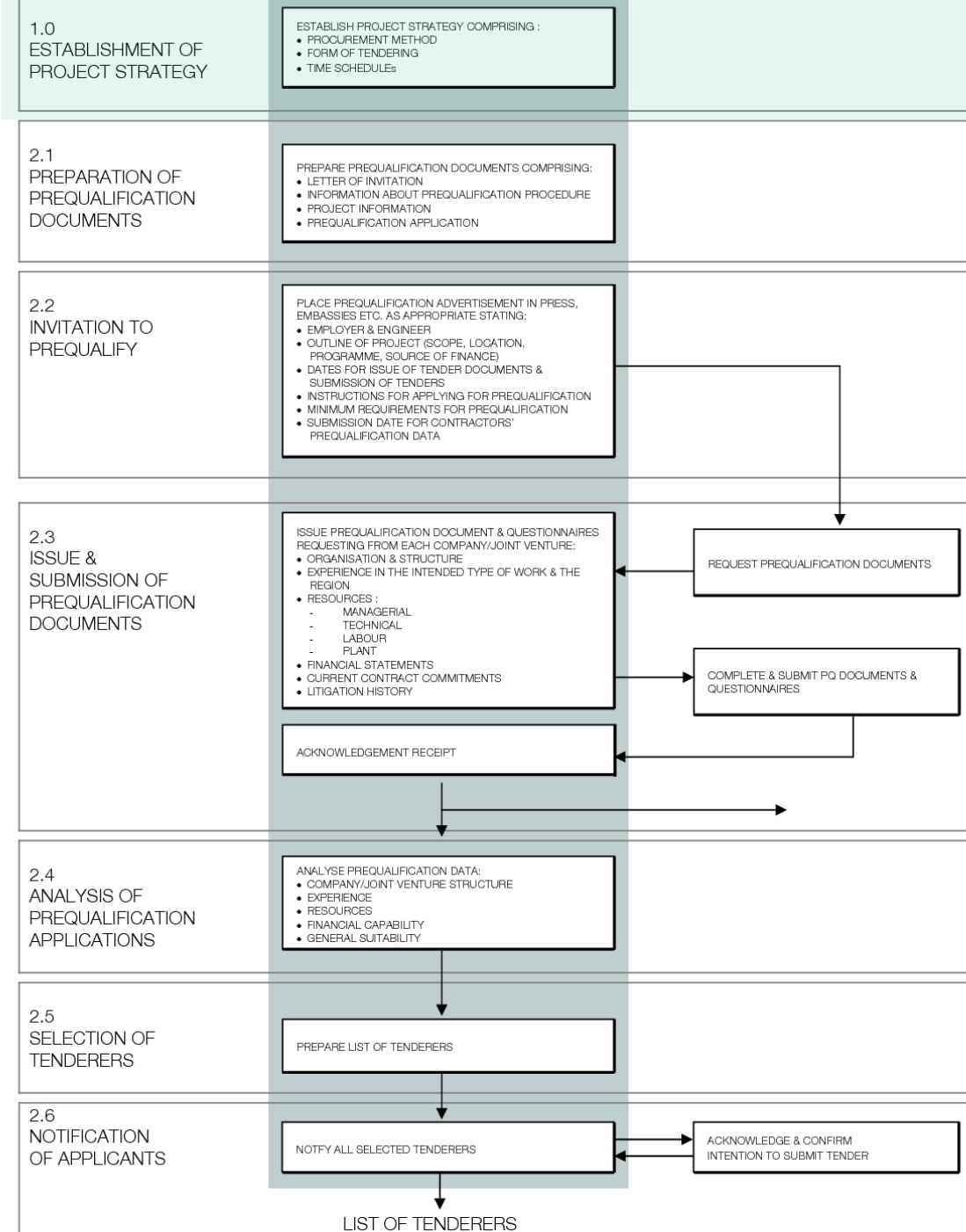


III of III

RECOMMENDED PROCEDURE FOR THE OPENING AND EVALUATION OF TENDERS

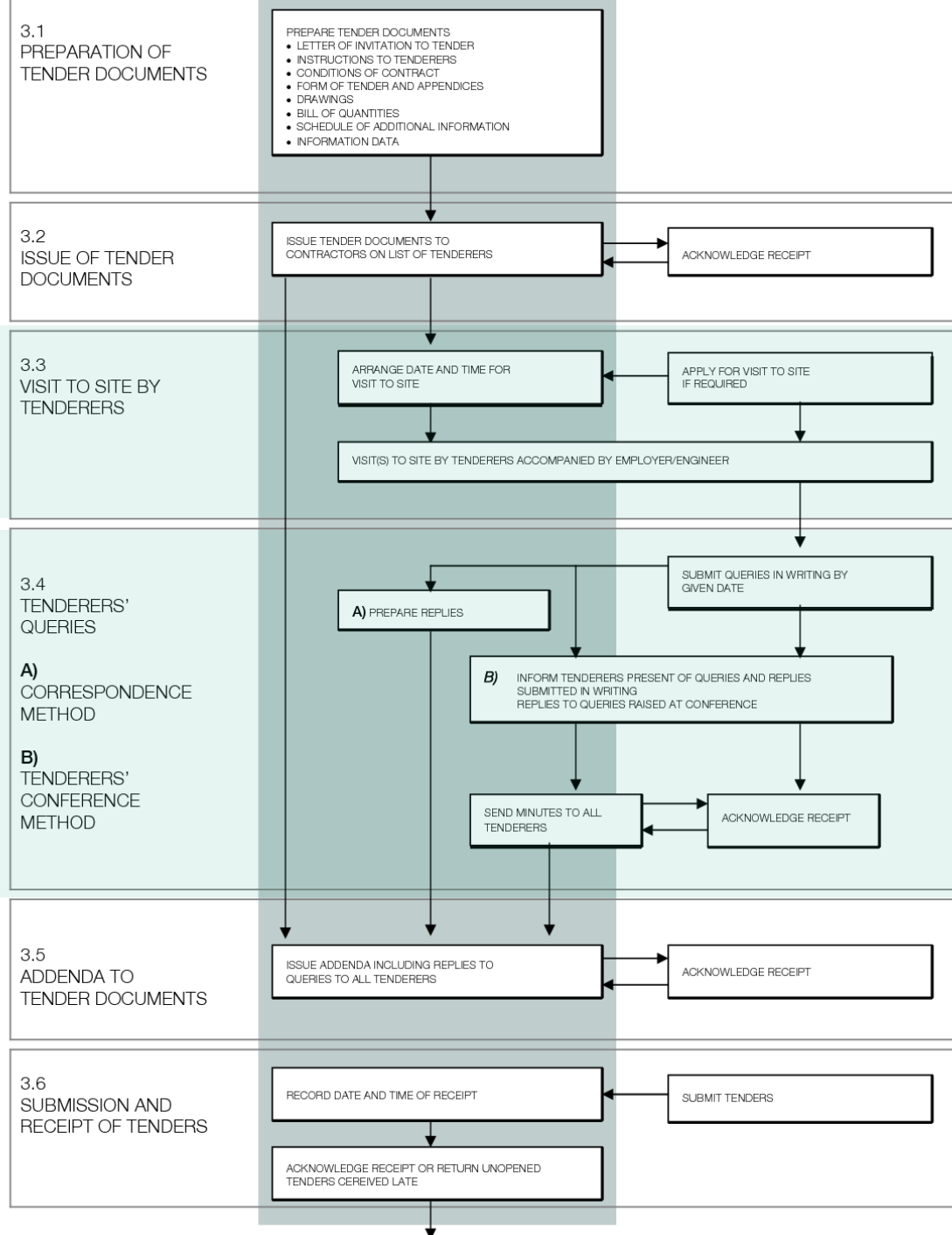


招標準備 資格預審



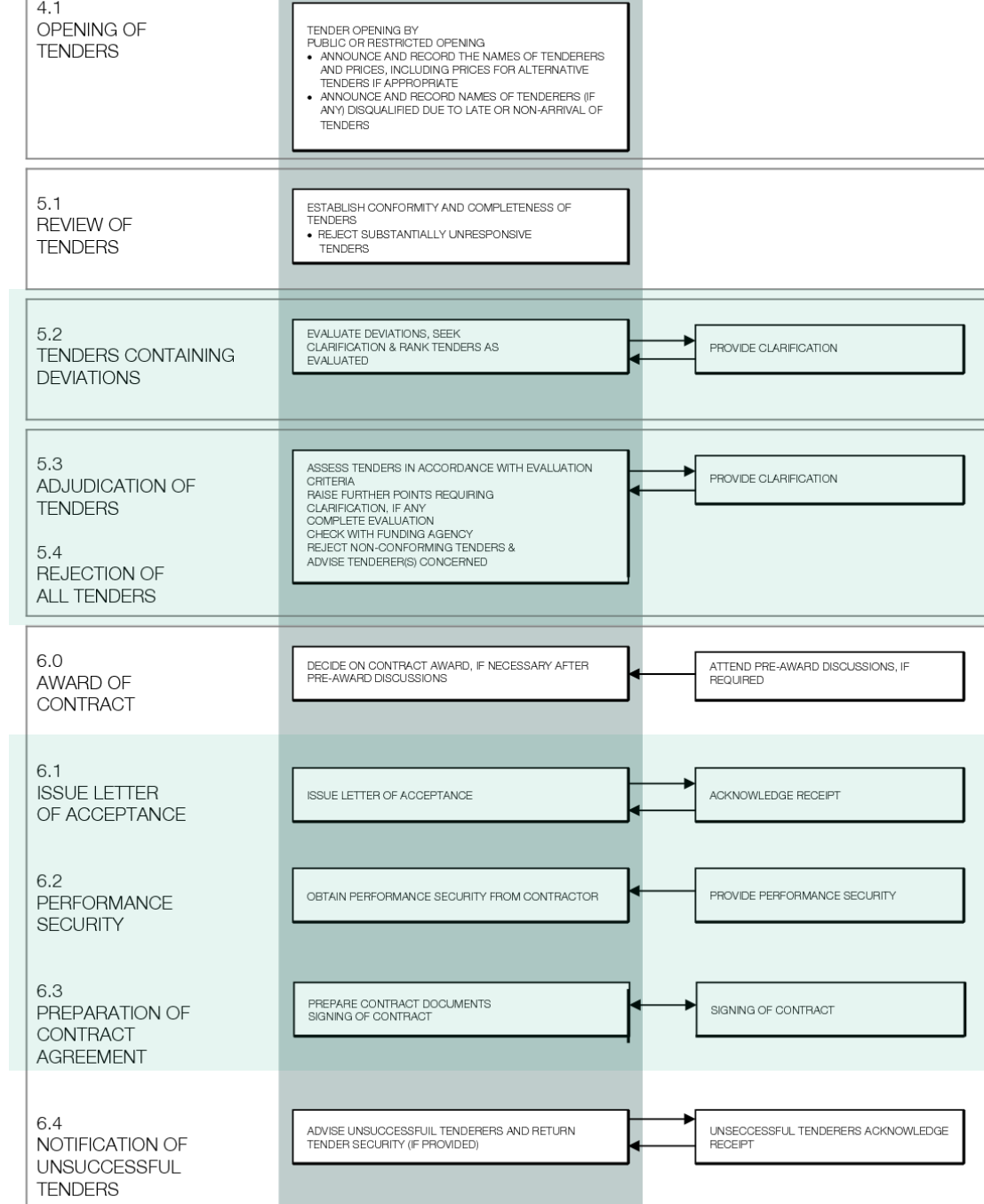
國際顧問工程師聯合會
建議招標流程

招標 備標 投標



國際顧問工程師聯合會
建議招標流程

開標 審標 決標 簽約



國際顧問工程師聯合會
建議招標流程

投標決策因素

- 在建工程的類別和量體
- 新標案的量體
- 新標案需要的人力和資源
- 新標案的時程和起訖日期
- 新標案的契約型態、條款和特殊要求
預付款、保證金、付款條件…….
- 備標時間和投標日期
- 風險

標案來源與風險

- 在已知的市場中，已經掌握的標案
- 透過代理人或職業仲介得知的標案
- 在已知的市場中，突然得知的標案
- 非職業仲介提供的標案
- 在無知的市場中，突然得知的標案

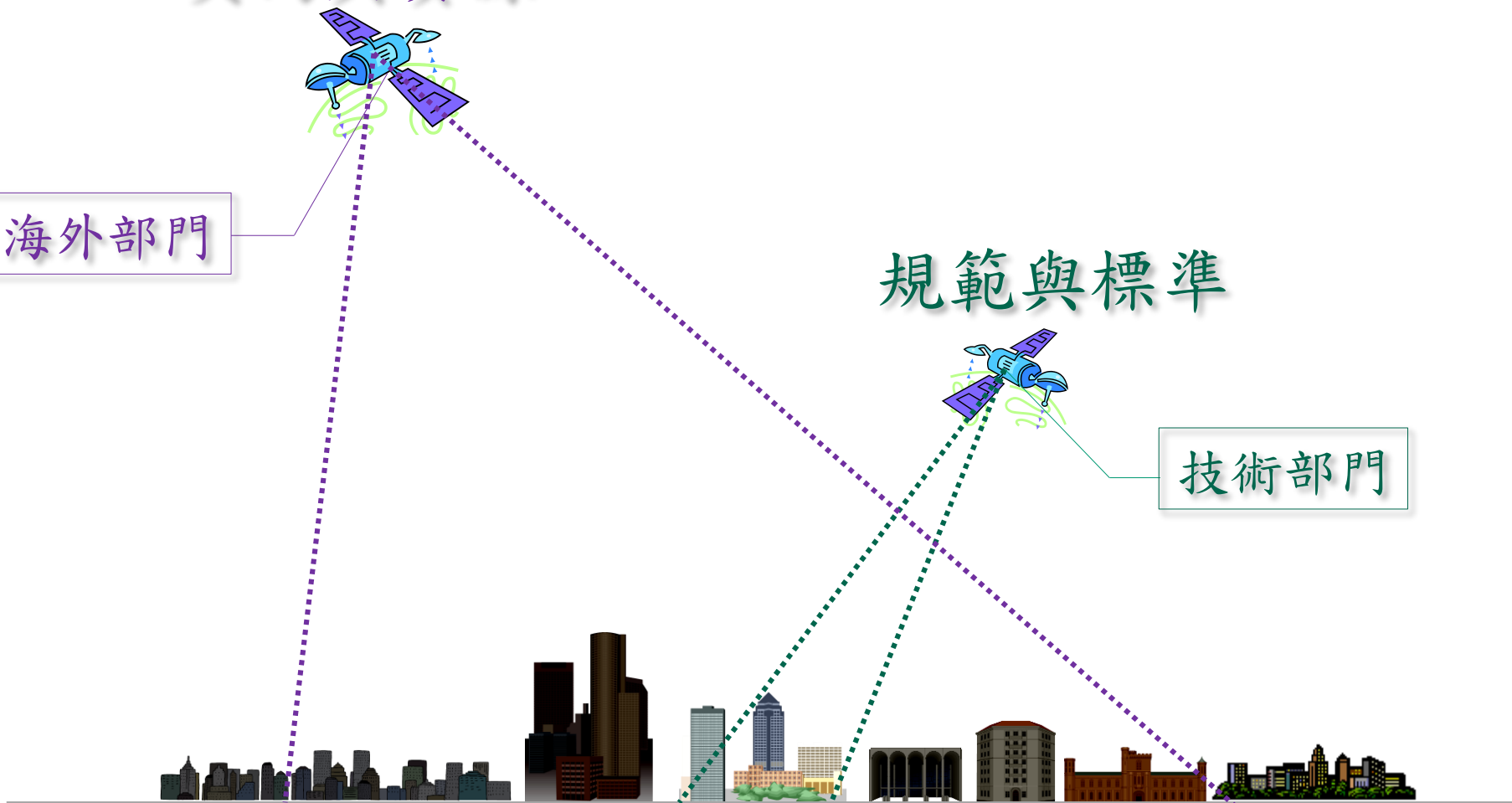
範圍與需求

契約與資源

海外部門

規範與標準

技術部門



範圍與需求

契約與資源

- 契約工作範圍
 - 契約服務範圍
 - 專案管理
 - 責任與罰則
-
- 當地供應商
 - 其他當地資源

規範與標準

- 設計規範
 - 審查與核准程序
 - 材料與設備標準
 - 監造與驗收程序
-
- 規範與標準的取得
 - 專業責任劃分

現勘與澄清

- 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
- 促進公司內部動員
- 促使技術部門進入角色
- 發掘關鍵課題

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招標文件

範本

General
Specification

Particular
Specification

- Civil Work
- Building

Drawings

Form of
Tender

General
Conditions
of Tender

Special
Conditions
of Tender

Bill of
Quantity

Schedule
of Rate

Alternative
Tender Design

範本

Special
Conditions
of Contract

General
Conditions
of Contract

首版



GC	PS	GCT	SCT	SCC	GCC
	DWG	BOQ	SOR		

第1次増補



PS	GCT	SCT	SCC
DWG	BOQ	SOR	

第2次増補



PS	GCT	SCT	SCC
DWG	BOQ	SOR	

第3次増補



PS	GCT	SCT	SCC
DWG	BOQ	SOR	



第5次増補



PS	GCT	SCT	SCC
DWG	BOQ	SOR	

FORM OF TENDER

Form of Tender

NOTES:

- (1) The Appendix forms part of the Contract.
- (2) If the tenderer is a sole proprietorship or a partnership, the name(s) and residential address(es) of the sole proprietor or all the partners shall be given in the spaces provided below.
- (3) In all cases, the tenderer must give the number and the expiry date of the business registration certificate here:

Number: _____

Expiry Date : _____

To : The Chairman,
Central Tender Board,
Ground Floor, East Wing
Central Government Offices
2 Tim Mei Avenue
Tamar, Hong Kong.

1. Having inspected the Site, examined the Drawings, General Conditions of Contract and Special Conditions of Contract (hereinafter referred to as "the said Conditions"), Specification and Bills of Quantities for the execution of the Works as defined in the Contract, I/we offer to construct, complete and maintain the whole of the said Works in conformity with the said Conditions, Drawings, Specification and Bills of Quantities for the sum of Dollars

(\$.....) or such sum as may be ascertained in accordance with the said Conditions, Drawings, Specification and Bills of Quantities.

FORM OF TENDER – P.2

2. I/We agree to abide by this Tender for the period of 270 days from the date of expiry fixed for receiving the same and it shall remain binding upon me/us and may be accepted at any time before the expiration of that period.
3. Unless and until the Articles of Agreement is prepared and executed this Tender together with the written acceptance thereof by the Employer subject to the provisions of clause 2 hereof shall constitute a binding Contract between us.
4. I/We understand that the Employer reserves the right to negotiate with any tenderer about the term of the offer and is not bound to accept any tender irrespective of whether the tender is the lowest offer or, where the assessment of the tenders is based on a marking scheme or formula approach, the tender is with the highest overall mark.

PART A: GENERAL CONDITIONS OF TENDER

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General Conditions of Tender

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Special Conditions of Tender

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B. GENERAL DESCRIPTION OF THE WORKS

The Works

The Works to be executed under this Contract include, but not exclusively, the following items:

- (i) construction of an approximately 4.6km long dual two-lane Connecting Road (with about 0.6km of at-grade roads, 3.3km of viaducts and 0.7km of tunnel) connecting the BCP with the proposed Sha Tau Kok Interchange and the associated tunnel ventilation buildings;
- (ii) provision of a 1.8 kilometres (km) perimeter road at the proposed Boundary Control Point (BCP);
- (iii) provision of sewage collection, treatment and disposal facilities for the BCP and the resite of Chuk Yuen Village;
- (iv) construction of a pedestrian subway linking the BCP to Lin Ma Hang Road;
- (v) reprovisioning of the affected Wo Keng Shan Road garden and Wo Keng Shan public toilet;
- (vi) construction of associated footpath, slopes, retaining structures, drainage, sewerage, waterworks, landscaping works and other ancillary works;
- (vii) associated environmental mitigation measures, and Environmental Monitoring and Audit (EM&A) programme for the works; and
- (viii) other works which are shown on the Drawings or specified in the Specification or which may be ordered in accordance with the Conditions of Contract.

工程範圍

- 4.6km雙向四線聯絡道路
地面段0.6km
高架段3.3km
隧道段0.7km
- 1.8km環場道路
- 污水處理廠



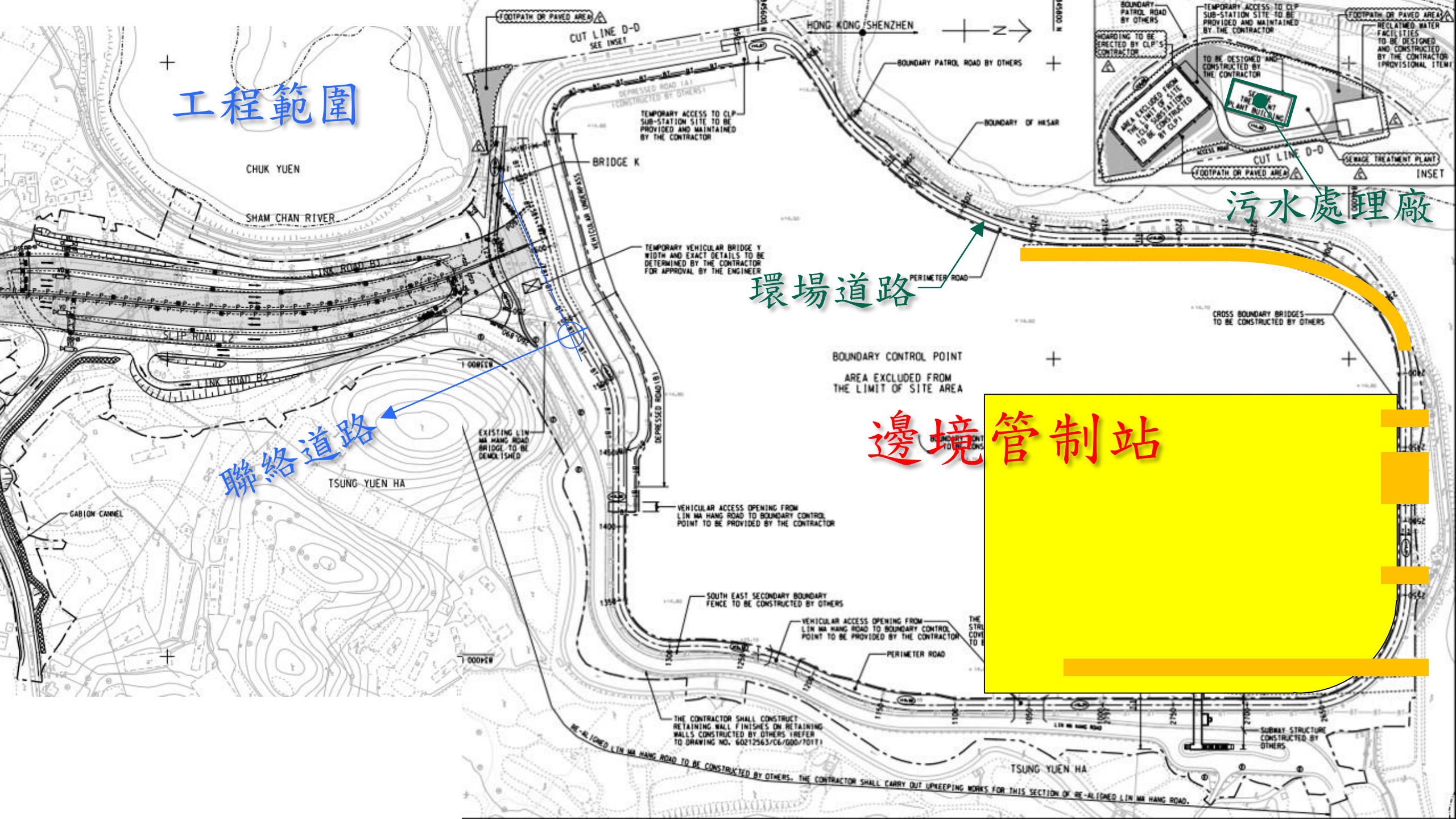
工程範圍

污水處理廠

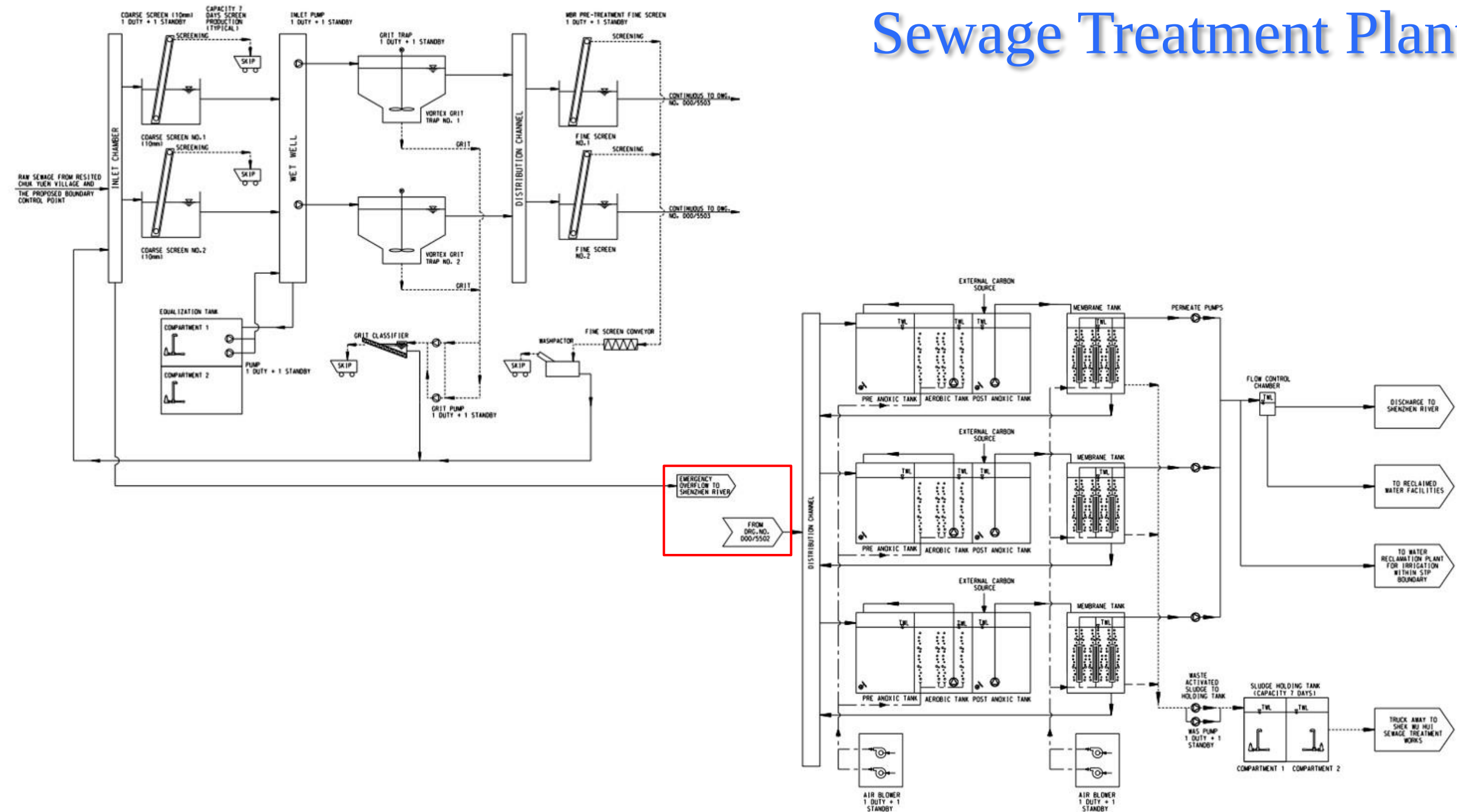
環場道路

聯絡道路

邊境管制站



Sewage Treatment Plant



Sewage Treatment Plant

4.3 Process Flow Schematics

4.3.1.1 The Engineer's envisaged process flow schematic for STP is given in Drawing No. 60212563/C6/D00/5502 and 60212563/C6/D00/5503.

4.3.1.2 The Contractor shall note that the Engineer's envisaged process flow schematic is prepared for the Contractor's reference only. Nothing shown or implied on the Engineer's envisaged process flow schematic shall limit the Contractor's responsibilities under the Contract. In particular, but without limitation, no warranty is given that the information shown or implied on the Engineer's envisaged process flow schematic are sufficient to meet the requirements specified in the Contract. The Contractor shall develop the design of the STP to meet the Contract requirements. Neither the Employer nor the Engineer accept any responsibility whatsoever for the accuracy or sufficiency of the Engineer's envisaged process flow schematic. No claim for extension of time or for additional payment will be entertained in connection to this Engineer's envisaged process flow schematic.

4.3a Emergency Bypass System

4.3a.1.1 The STP shall be provided with an emergency bypass system at the inlet works to avoid flooding of the STP during emergency situations, bypassing at any other location(s) or point(s) within the STP shall not be permitted, unless otherwise consented by the Engineer. The emergency bypass system shall be designed to achieve the following requirements when inlet chamber flood level is detected:

- (a) Closing of the STP inlet chamber inlet penstock to stop all incoming sewage flow to the STP; and
- (b) Bypass/ divert all the sewage flow to the foul sewer manhole no. FMH511.

4.3a.1.2 The emergency bypass system shall be designed with features, such as but not limited to the following:

- (a) Level sensing device, for detection, visual and audible alarm annunciation when inlet chamber flood level alarm is reached;
- (b) The inlet penstock shall be fitted with a failsafe operation mechanism complete with uninterrupted power supply to ensure operation in case of a complete CLPP mains failure. Any compressed gas or compressed nitrogen type fail safe device shall not be accepted;
- (c) Operation of the inlet penstock shall be manual initiated and be made available, at the penstock, at the SCADA System and at any other location as required by the Engineer; and
- (d) Any other features as required by the Employer or the Engineer.

4.3a.1.2 The abovementioned inlet chamber flood level alarm shall be carefully designed by the Contractor such that:

- (a) The storage capacity of the Equalization Tank as specified in this PS Appendix is fully utilized prior to any bypassing of sewage; and
- (b) Overflow/ flood within the STP, e.g. the Coarse Screens, shall be avoided.

4.3a.1.3 Notwithstanding of the above, the STP shall be designed in such a way that sewage bypass/ overflow shall be prohibited except during an emergency (e.g. prolonged power failure) in order to avoid danger to life or property. All practicable measures including but not limited to those required in this PS Appendix shall be carefully considered and incorporated to the STP for avoidance of sewage bypass. The details of the Emergency Bypass System, including the monitoring and control mechanism shall be submitted to the Engineer for consent under the Design Checking Procedures as mentioned in this PS Appendix.

替代標

基本標 Compliant Tender

必須且具有約束力(方案統包)

基本標 Compliant Tender

可以選擇不投(施工標或設計統包)

替代標 Alternative Tender

證明具有效益



- 不同或創新的設計
- 不同的施工方法
- 不同的廠牌或來源
- 不同的製造程序



- 可以降低標價
- 可以縮短工期
- 可以降低施工風險：提升安全性
- 可以降低維修成本

PART B : SPECIAL CONDITIONS OF TENDER

Alternative Tender

SCT 1 NOT USED

SCT 2A ALTERNATIVE DESIGN INVITED FOR PART OF THE WORKS COVERED BY THE ENGINEER'S DESIGN

- (1) The tenderer may elect to submit a tender conforming with the Engineer's design of the Works priced in accordance with the tender documents and/or in accordance with the provisions of this Special Condition of Tender an alternative tender incorporating the tenderer's alternative design for (i) piling, end supports and abutments, intermediate supports (pile caps, portals and piers), and superstructures of Bridges A, B, C and D; and/or (ii) Cheung Shan Tunnel including cross passages; and/or (iii) bored piles, pile caps and footings of Cheung Shan South Ventilation Building and North Ventilation Building; and/or (iv) portal site formation and associated geotechnical, drainage and landscape works of Cheung Shan South and North Portals. Where the tenderer elects to submit an alternative tender, with or without a conforming tender with the Engineer's design, he shall submit not more than one such alternative tender. Where more than one alternative tender has been submitted, all such alternative tenders submitted by the tenderer shall be rendered null and void and none of such alternative tenders shall be considered further.
- (2) Tenderer's alternative design must comply with the minimum conditions specified in Particular Specification Clauses 1.94C, 1.108 and 24.02. A tender incorporating a design which does not comply with the minimum conditions or which design requires substantial amendments in order to conform to the Specification shall be considered as a non-conforming tender.

Alternative Tender

(3) The conditions of contract, which will only apply in the event that a tender for an alternative design is accepted, are included as Special Conditions of Contract SCC 15(A) to 15(F) and 41 inclusive.

(4) An alternative design shall:

- (a) be presented as an integral part of a separate tender for the Works,
- (b) be priced as a lump sum item and supported by a fully priced and detailed Schedule of Rates, and
- (c) be sufficiently documented to enable the Employer's decision on its acceptability.

For the purposes of (b), the tender shall provide separately the approximate quantities showing the build up of the lump sum. The said Schedule of Rates shall form the basis of interim payments and valuation of variations.

(5) The tenderer shall submit such further clarifications pertaining to the alternative design as may be requested by the Engineer designate to enable a proper assessment of the tender to be made. Failure to do so by the tenderer may render his tender invalid. General Conditions of Tender Clause 16 will apply to such clarifications to the alternative design.

(6) Any alternative design will be treated in confidence up to the date of acceptance of the tender. The contents of unsuccessful tenders will not be divulged.

(7) If the tenderer submits a tender for incorporating an alternative design, he shall identify in the tender the arrangements made and the time allowed for the design and independent checking of the alternative design. He shall also submit the name and particulars of the firm or company he proposes to employ as "Independent Checking Engineer".

兩份履歷表

主要人員

公司相關業績

- 姓名
- 現職
- 國籍
- 年齡
- 學歷
-
-
- 經歷概述

THERESA GOVACHI

222 Broadway • Newport News, Virginia 23601 • 757-265-5211 • agovach@comcast.net

PROFILE

- Diligent, detail-oriented self-motivated individual knowledgeable in all office functions, with a solid background in the healthcare field.
- Excellent verbal and written communication skills, computer proficiency in MS Word, Excel, Outlook, and PowerPoint.

EXPERIENCE

VIRGINIA HEALTHCARE, Newport News, VA, 2000 - Present
Physical Therapist Assistant (2000 - Present)

- Care for geriatric patients and other age groups diagnosed with musculoskeletal, neurological, vascular, and cardiac conditions under physical therapist supervision.
- Document patient data in computer system.
- Increased productivity through superior patient interaction and professional appearance, allowing staff to evaluate more patients.

Office Automation Clerk, Rehabilitation Department (1998-2000)

- Provided administrative support to the Associate Chief and Program Specialist of the Rehabilitation Services, the Rehabilitation Clinical Office, and Physical Therapy.
- Created and awarded numerous prizes using Excel and PowerPoint and Powerpoint to help develop small vascular phone clinics.
- Facilitated communication between clinical staff and POC & RS by initiating conferences and providing hard copies of patient status.
- Scheduled and granted patients, answered telephone, purchased supplies, and performed data entry, billing, and coding.
- Organized training (face to face) assisted managers in training students.
- Participated in POC & RS to ensure services and quality improvement programs.
- Maintained new referral tracking system that improved patient care, identified and resolved problem of delays in patient treatment.

EDUCATION

VIRGINIA HEALTH SCIENCE COLLEGE, Newport News, VA
Bachelor of Arts in Behavioral Science, Expected 2003

VIRGINIA STATE COMMUNITY COLLEGE, Newport News, VA
Associate of Applied Science, Physical Therapist Assistant, 2001

CLINICAL AFFILIATIONS

MAJOR WIDENING HOME, Newport News, VA
Clinical Affiliation III - Subacute/Inpatient (Chiropractic/Physical Therapy) 2001

CITY HOSPITAL, Newport News, VA
Clinical Affiliation II - Acute Inpatient / Chiropractic/Physical Therapy 2000

VIRGINIA STATE PHYSICAL THERAPY, Newport News, VA
Clinical Affiliation I - Private Orthopedic Clinic (4 weeks), 1999

Westminster Dredging Co Ltd
a Royal Dockyard Westminster plc Company

Aberdeen Beach Revival Scheme





Client:	Aberdeen City Council	Contact:	NBC Option B
Location:	Aberdeen Beach	Duration:	11 weeks
Date:	July 2006		

Project Information

With a looming deadline, the sea defences at Aberdeen City Beach were in danger of failure through undermining. Existing defence groynes were damaged by the threat of beach erosion, resulting in a major defence system being designed for construction in 2006.

Initial proposals proved too expensive for the funding body, with alternatives required to reduce the cost. Westminster Dredging presented the remediation of material to be used from a maintenance dredging campaign in Marine Park, this was then used in conjunction with the proposed beach defence structures.

Early technical involvement led to a cost effective, sustainable solution, with 10,000m³ of material (thus avoiding disposal at sea) used to replace Aberdeen's 'golden sands'.

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

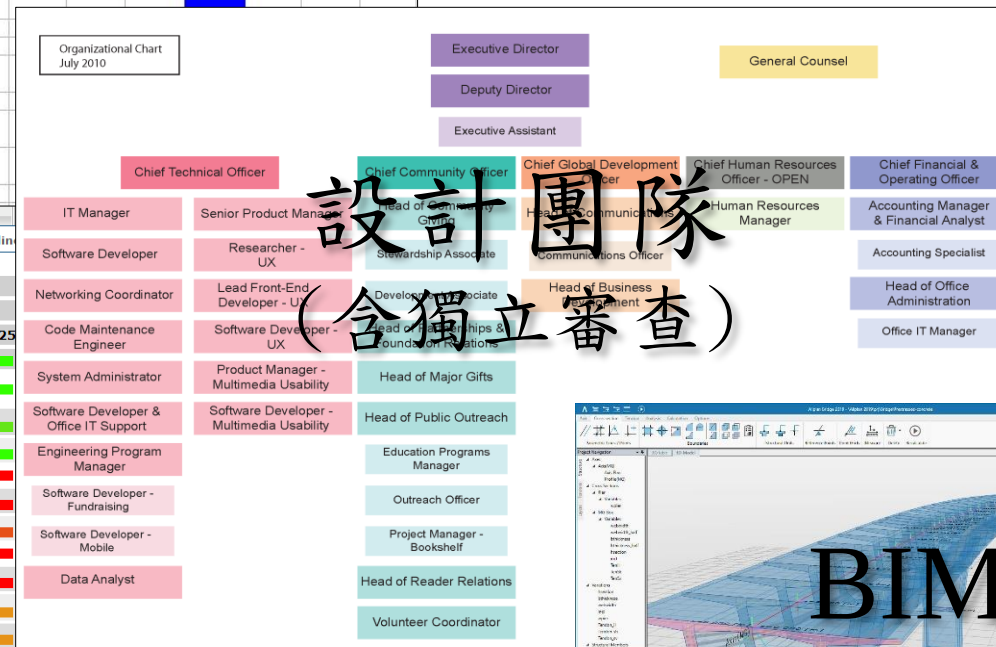
工作計畫 設計

設計流程

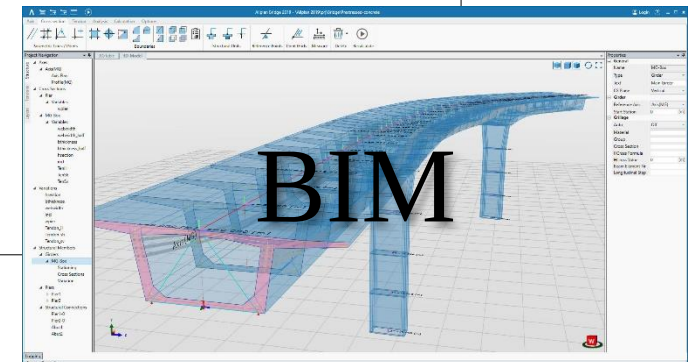
Tasks/Date	September				October				November			
	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4
Project Exploration												
Define Problem												
Analyze current chair												
Research biomechanics of back and relation to bad posture												
Research IR monitoring systems												
Research current posture monitoring solutions												
Develop initial design ideas												
Research options and decide on a design												
Mechanical: Use CAD to create blueprints for orthogonal wires												
Electrical Component: Purchase wires, circuit boards, and processors												
Electrical Component: Construct processing system												
Testing: Define testing criteria												
Testing: Establish systems to measure accuracy												
Mechanical: Print the sensor modules												
Integration: Put components together												
Integration: Perform preliminary tests without subject												
Testing: Test system with single subject												
Analysis: Determine necessary design modifications												
Analysis: Compare accuracy with current solutions												
Make modifications as necessary												

Welcome System Administrator 1 user online	
Year 2011	
Month 10	
Day	01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Total	
Department: Administration	
Anke Heines	
System Administrator	
Department: GL	
KONS	
Marion Schmitt	
Department: VERT	
Gerald Sommer	
Helga Beimer	
Sabine Schuster	
Department: VERW	
Christian Schulz	
Cordual Gross	
Gert Ullrich	
Linda Kaufmann	
Marc Schwarz	

人力安排



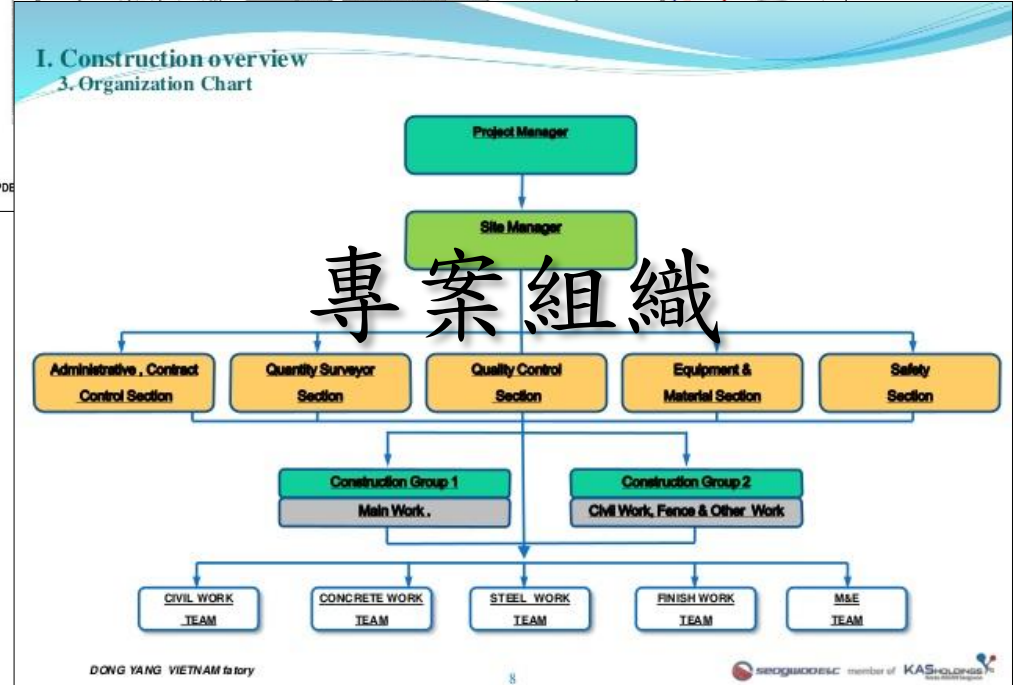
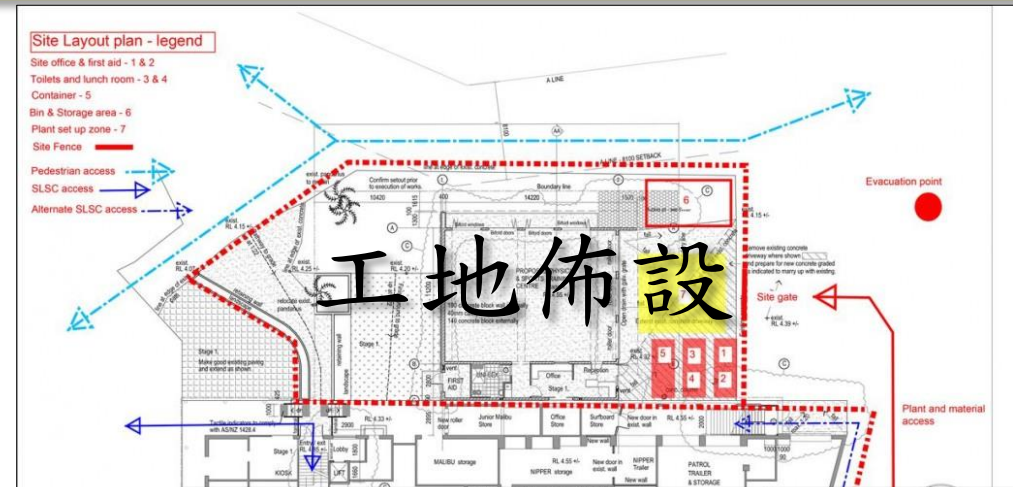
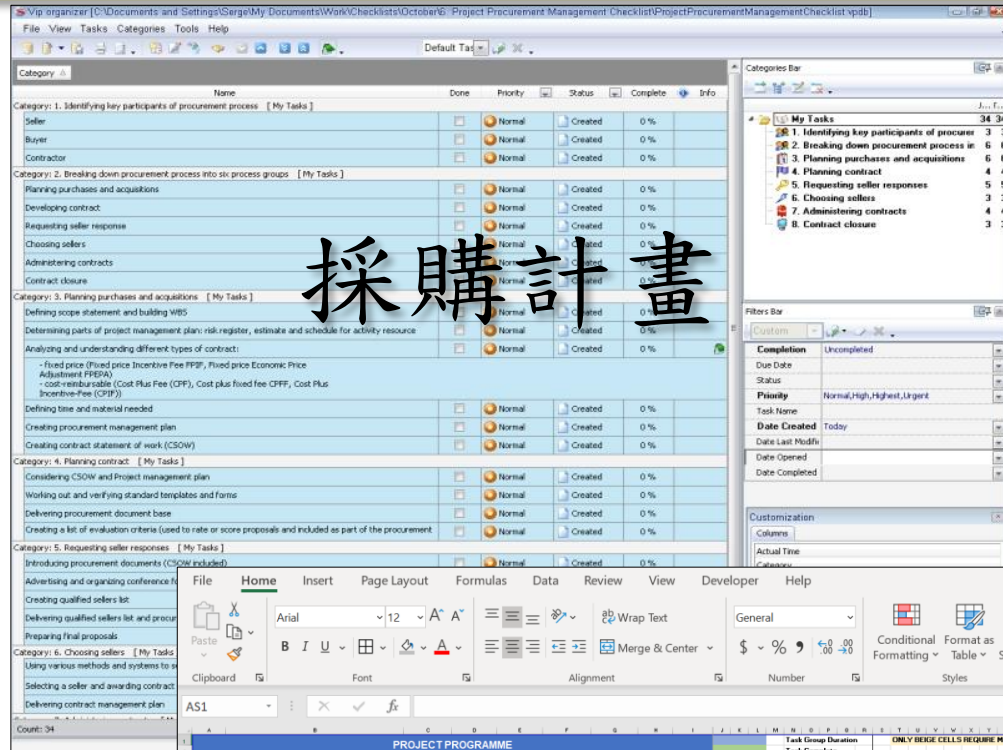
設計團隊 (含獨立審查)



工作計劃

採購施工

採購計畫



投標

FORM OF TENDER

TO: _____ [Name of Employer] _____ [Date]

_____ [Name of Contract]

Dear Sir,

1. In accordance with the Conditions of Contract, Specifications, Drawings and Bills of Quantities/Schedule of Rates for the execution of the above named Works, we, the undersigned offer to construct, install and complete such Works and remedy any defects therein for the sum of Kshs. _____ [Amount in figures] Kenya Shillings

_____ [Amount in words]

2. We understand, if our tender is accepted, to commence the Works as

soon as is reasonably possible after the receipt of the Employer's Representative's notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Appendix to Conditions of Contract.

3. We agree to abide by this tender until _____ [Insert date], and it shall remain binding upon us and may be accepted at any time before that date.

4. Unless and until a formal Agreement is prepared and executed this written acceptance thereof, shall constitute a binding Contract between

5. We understand that you are not bound to accept the lowest or any

Dated this _____ day of _____ 20 _____

Signature _____ in the capacity of _____

duly authorized to sign tenders for and on behalf of

_____ [Name of Tenderer] of

_____ [Address of Tenderer]

Witness; Name _____

Address _____

Signature _____

Date _____

(Amend accordingly if provided by Insurance Company)

Analisis Harga Satuan Pekerjaan (AHSP) PEKERJAAN KONSTRUKSI BAJA

1 titik Chemical Anchor M16 (at Floor) ex. "Ramset" (MOQ ≥ 20 titik)

KODE & SPESIFIKASI	VOLUME (Koef / Satuan)	HARGA SATUAN (Rp.)	BIAYA			JUMLAH (Rp.)
			BAHAN (Rp.)	ALAT (Rp.)	UPAH (Rp.)	
2	3	4	5	6	7	8
n	1.0000 pcs	19,200	19,200	-	-	-
	0.0909 tube	225,000	20,455	-	-	-
	0.2000 pcs	21,000	-	4,200	-	-
	0.0100 unit	316,000	-	3,160	-	-
	0.0002 unit	150,000	-	30	-	-
	0.0002 pcs	75,000	-	15	-	-
	0.0002 pcs	250,000	-	10	-	-
	0.0002 set	100,000	-	100	-	-
	0.0020 pcs	800,000	-	1,600	-	-
	0.0002 unit	17,500,000	-	3,500	-	-
n	0.0100 o/h	100,000	-	-	1,000	-
	0.0000 o/h	90,000	-	-	-	-
	0.0600 o/h	80,000	-	-	4,800	-
	0.0200 o/h	70,000	-	-	1,400	-
	SUB TOTAL		39,655	12,615	7,200	-
	Overhead + Profit 30%	11,896	3,785	2,160	-	-
	TOTAL		51,551	16,400	9,360	-
	PEMBULATAN		51,550	16,390	9,360	-
	1 titik Chemical Anchor M16 (at Floor) ex. "Ramset" (MOQ ≥ 20 titik)					77,300
	jeffry.prasetyo@outlook.com					

Code	Description	Unit	Rate
0297	Stone Aggregate (single size) : 10 mm nominal size	cum	1,050.00
0298	Stone Aggregate (single size) : 06 mm nominal size	cum	1,100.00
0302	Salesta ballies 125 mm diameter	metre	37.00
0304	Bagi	cum	900.00
0305	Bamboo 25 mm dia 2.5 metre long	score	300.00
0306	Bhusa	quintal	375.00
0309	Paving bolumen of grade VS-10 of approved quality	tonne	37,000.00
0310	Blumen emulsiol	tonne	28,500.00
0312	Blumen grade PMB- 40	tonne	41,400.00
0313	Blumen type petroleum bolumen of penetration 85/25 of approved quality	tonne	37,000.00
0314	Blumen hot seal (cold bit) of approved quality	tonne	26.00
0316	Blumen solution of approved quality	tonne	40.00
0317	premanufactured joint	square	300.00
0318	Blumen for filling base (type of approved quality) : Type 2 (20 mm)	square	85.00
0322	Blumen for filling base (type of approved quality) : Type 2 (20 mm)	square	50.00
0324	Coal Tar	litre	25.00
0325	Blasting powder	kilogram	35.00
0326	Blasting fuse (fuse wire)	each	15.00
0328	White face insulating board : 12 mm thick	square	300.00
0332	Natural colour insulating board : 12 mm thick	square	270.00
0336	Flame retardant face insulating board : 12 mm thick	square	315.00
0339	Flame retardant face insulating, impregnated fibre board 12 mm thick	square	350.00
0341	Flat pressed 3 layer particle board (medium density) Grade 1, 12 mm thick	square	325.00
0346	Extra for veneered particle board with : Teak veneering on one side and commercial veneering on other side	square	255.00
0347	Extra for veneered particle board with : Commercial veneering on both sides	square	155.00
0348	Extra for veneered particle board with : Teak veneering both sides	square	455.00
0362	Brick bats	cum	325.00
0364	Wire brush	each	20.00
0365	Soft brush	each	18.00
0367	Portland Cement	tonne	5,000.00
0368	White cement	tonne	12,000.00

Alternative Design Brief for Teaching Interaction Design: Finding New Applications for Existing Technologies

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CT
fers a critique of the design brief as it is currently
ching interaction design and proposes an
ay of developing it. The paper presents a case
uch a novel type of design brief has been offered
s taking part in a collaborative design project
s how it supported divergent thinking and
well as how it enhanced the team's thinking
s and Subject Description
sters (4 Educ.) - Computer Science, Interaction
tion - computer science education, curriculum

Terms
mentation, Human Factors.

sign, design brief, collaborative design

INTRODUCTION

A design brief on the entire design cycle cannot be
ign brief can support creative thinking which in
es to better design outcomes. The presented case
sed on a collaborative design project (CDP)
ferred to Master students enrolled in a HCI-
ramme.

arts by outlining the challenges of teaching
sign followed by an introduction of design brief
the main limitations of the current format used
design education. From these limitations, an
ay of preparing a design brief is proposed. The
introduces the case study together with an in
on on the benefits of this type of design brief.

- 1 -
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Conference '04, Month 1-2, 2004, City, State, Country.
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2. TEACHING INTERACTION DESIGN

It has been acknowledged that in addition to academic
training, interaction design requires skills acquired through
practical experience from attending design practitioners [5],
[6], [7], [11], [12]. The increasing need to bridge the gap
between theory and practice or academia and industry explains
the amount of efforts made to unfold the craftsmanship
dimension of design and better address the practitioners'
requirements. It is believed that such codes would
facilitate the acquisition of practical skills in industrial
design education. Recently, through forming an integral
part of the academic training. In this way, the efforts deployed
for improving teaching design can reap the benefits of
bringing the craft of design practice closer to professional
standards.

The major difficulty in teaching interaction design is related
to our limited understanding of how design, which is
primarily a creative process, really occurs. Thus, the challenges
of teaching design can be seen throughout the design process,
from problem specification, continuing with the
problem formulation, until the students have to receive, and not at
least relating to the assessment of design-related activities and
outcomes [9].

Problem specification in the context of interaction design
usually strives a fine balance between clarity and ambiguity.
While the educators try to provide just enough details to let
room for the exploration of the design space, students would
prefer a more articulated and structured problem definition
[10]. This tension is generated by students' limited ability to
handle less structured tasks. However, the skill to formulate
problem settings precedes and is at least as important as the
one of finding solutions. Unfortunately, the acquisition of
problem formulation skills has received insufficient attention
in higher education and students, even post-graduates, are
often less prepared for this challenge; it is a skill to be
learned. Setting the problem is needed not only during the
initial stage of the design but the iterative nature of this
process requires continuous reformulation and restructuring
of the problem [12].

Another challenge relates to the relevant aspect of feedback
that the students need from their educators [7], since
ultimately the process of learning design is as good as the
feedback received by the students during this exercise.
Without qualified feedback, the experience of being involved
in the design project has less to offer. In order to provide

評標

兩階段評標

- 第一階段：門檻
- 第二階段：評分

STAGE I – SCREENING

	Criteria	Yes/No
1.	The tenderer, or the major shareholder / lead participant in case of a joint venture tenderer, is on the List of Approved Contractors for Public Works confirmed in Group C under the Roads and Drainage Category.	
2.	The tenderer, or any one of the shareholders / participants in case of a joint venture tenderer, has completed within the past 15 years in or outside Hong Kong at least – (a) one contract for the construction of roads and associated drainage works with an awarded contract sum of not less than HK\$500 million; or (b) one civil engineering works contract which included roads and associated drainage works with awarded value of the roads and associated drainage works of not less than HK\$500 million. (Form A1 in Appendix C to Special Conditions of Tender)	

Attributes	Max. Mark of Section / Sub-Section	Passing Mark
<u>Section (1) - Tenderer's Experience</u>	15	0
Relevant construction contracts completed in the past 15 years to demonstrate that the tenderer has relevant management and technical experience in the following types of contract:		

兩階段評標

- 第一階段：門檻
- 第二階段：評分

types of contract:	<u>Section (2) – Tenderer’s Past Performance</u>		35	17.5	
	(a) Roads and a	(a) Workmanship	5	-	
	(b) Contract inv	(b) Progress	5	-	
	tunnel (or ar				
	proposed				
	continuous				
	0.5km				
	(c) Contract fo	<u>Section (3) - Tenderer’s Technical Resources</u>		15	7.5
	viaducts wor	(a) Proposed Managerial & Technical Staff			
	method prop	(i) Construction Manager	2	-	
		(ii) Site Agent	<u>Section (4) - Tenderer’s Technical Proposals</u>		
		(iii) Constructio			
	(iv) Constructio				
	(v) Overall Pro				
	(b) Proposed Essent	Overall Construction Aspects		35	17.5
		(a) Proposal for Overall Construction Approach. Including measures to improve the Relationship with Villagers. If an alternative design is submitted, the Technical Proposal shall also include all relevant information including full details addressing its impact on the overall construction approach which interface with		5	-

(b) Probationary contractors in Group B

A probationary contractor is eligible to tender or for award of:

兩階段評標

- 第一階段：門檻
- 第二階段：評分

- (i) any number of Group A contracts in the same category; and
- (ii) any number of Group B contracts in the same category, provided the total value of works in the Group B contracts that he already holds and the Group B contract being procured under the same category does not exceed \$400 million.

	<u>Category</u>	<u>Managing Department</u>
Group A - contracts of value up to \$150 million.	Buildings	Architectural Services Department
	Port Works	Civil Engineering and Development Department
Group B - contracts of value up to \$400 million.	Roads and Drainage	Highways Department
	Site Formation	Civil Engineering and Development Department
Group C - contracts of any values exceeding \$400 million.	Waterworks	Water Supplies Department

議約 = 動員

業務經理
(海外部門)

專案經理
(工程部門)

專案工作
人員

總包契約議約
分包與供應契約議約
現場勘查
任務移交

- 證照與許可
- 關稅事務
- 人員入境
- 進口物料
-

- 專案辦公室
- 專案執行計畫
- 工地接收
- 當地雇員
-



海外工程投標實務經驗分享

1. 課程邏輯
2. 海外投標的基本概念
3. 基礎建設：公部門 Design & Build
4. 設備輸出：私部門 Semi-Turnkey
5. 海外投標的內部溝通

商業模式

□ 整廠整案承包：技術導向

- 整廠整案工程業者
- 貿易商+設備製造商+專業顧問公司

□ 生產事業延伸：商業導向

- 投資新設備、建新廠房
- 投資舊設備、租用廠房
- 合資以設備作價入股
- 投資新設備，廠房以租轉購
- 合作.....

長期
利益

控制關鍵原料

控制銷售管道

控制操作技術：軟體更新

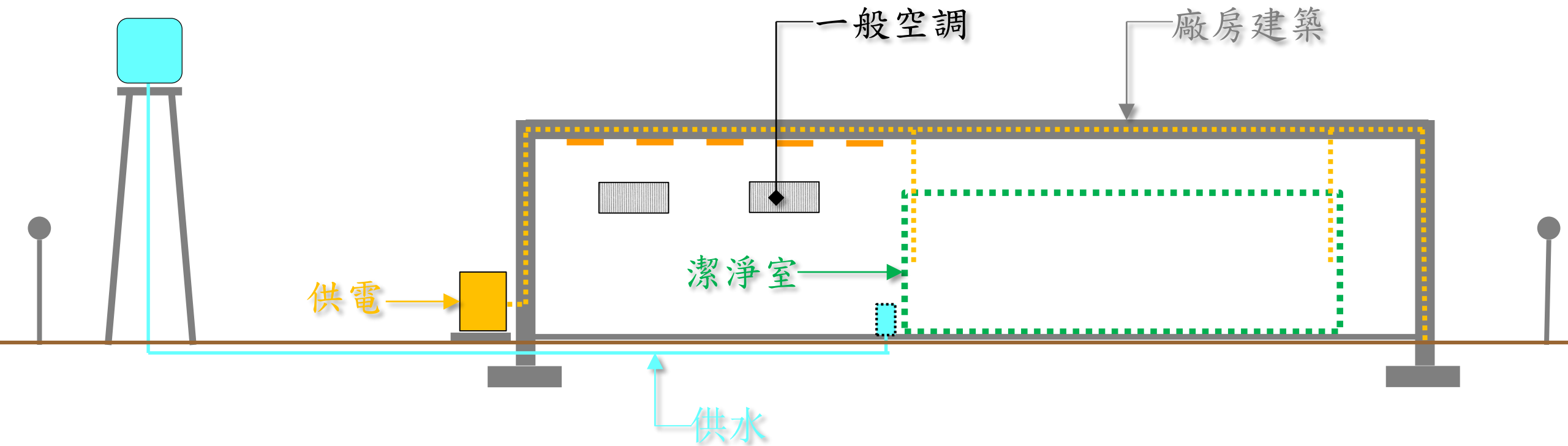
掌握研發技術：設備換代

案例



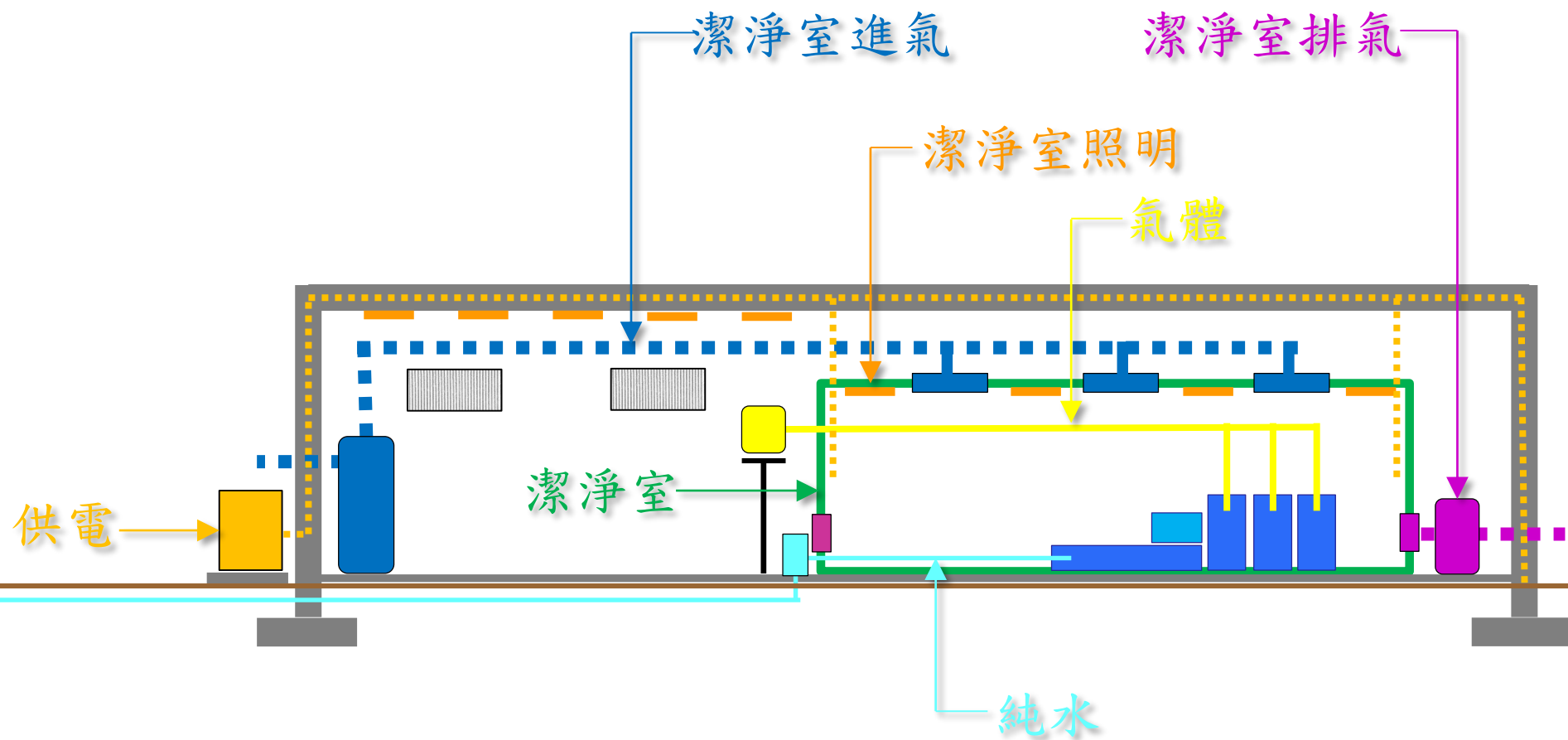
- 業主 民營製藥公司(非洲)
- 生產線 空膠囊及口服製劑
GMP準則：WHO規範
- 潔淨室 ISO 14644-1 Class 7
(FS 209 Class 10,000)
- 供應商 醫藥設備貿易商(香港)
- 設計整合 醫藥設計院(上海)
- 建築規範 當地規範(英國)

工程範圍 廠房



工程範圍

設備和廠房



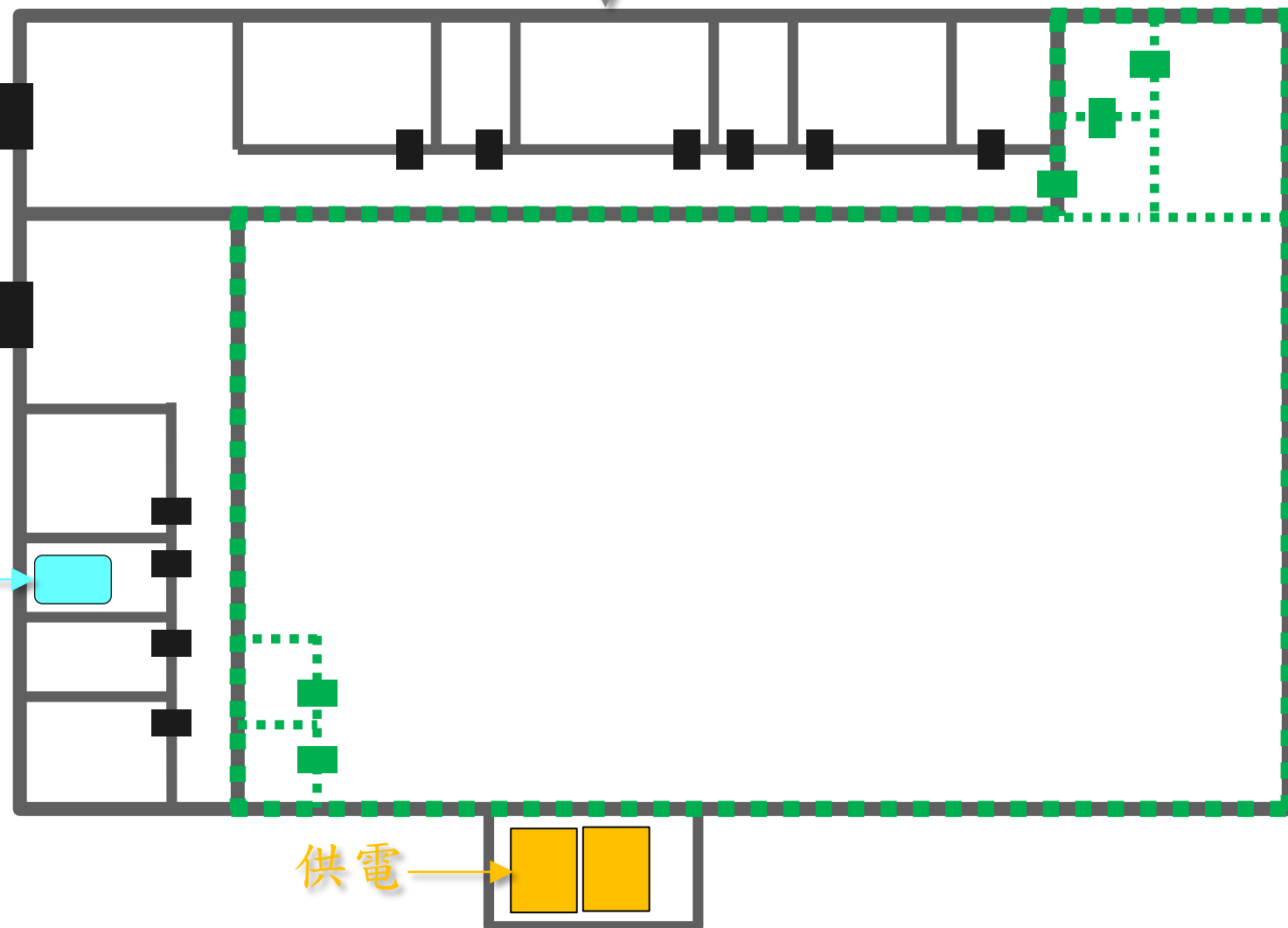
工程範圍 廠房

廠房建築

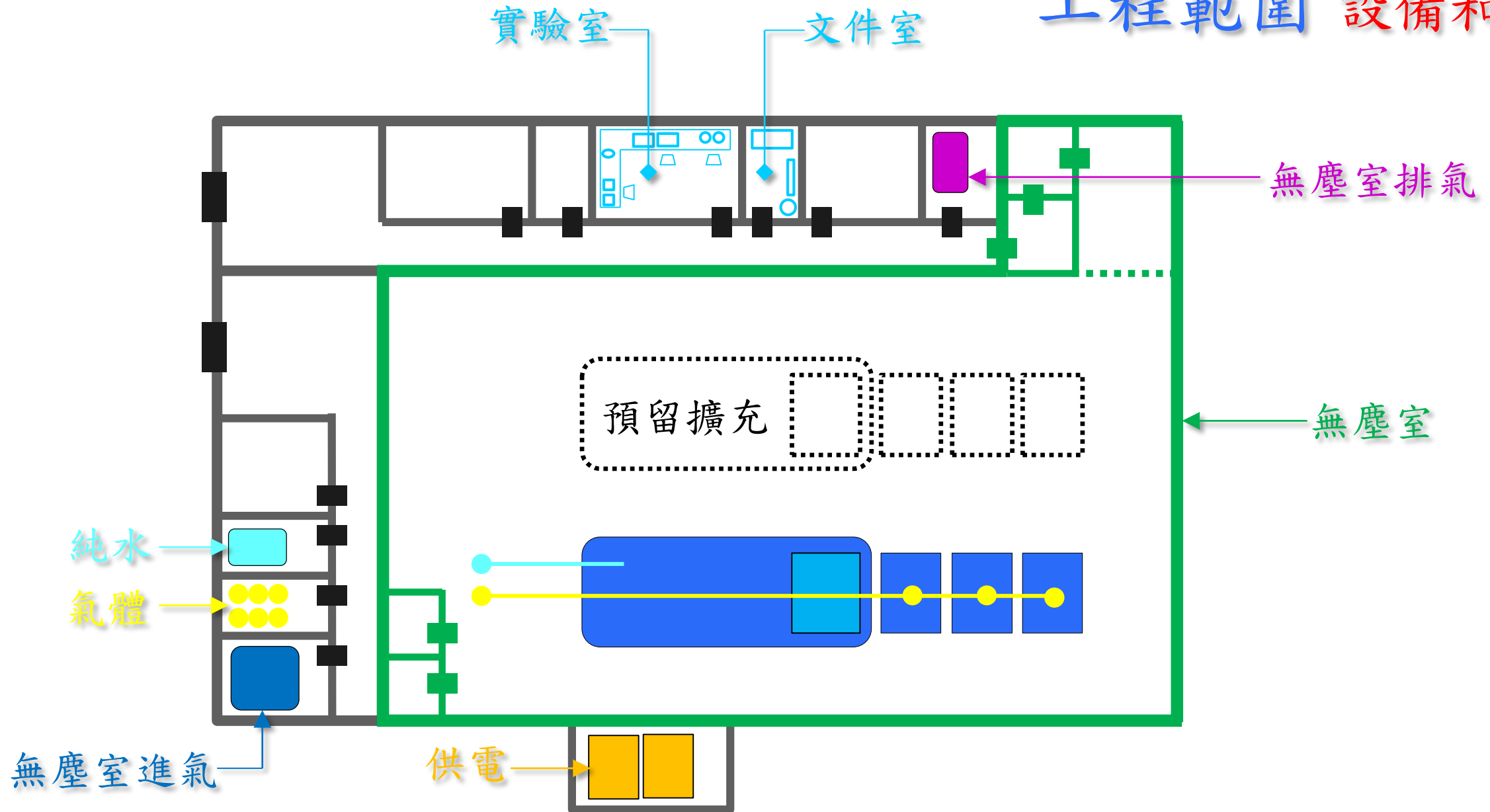
供水

無塵室

供電



工程範圍 設備和廠房



設備供應範圍

製藥設備

- 標準生產設備
- 非標準生產設備
- 自動控制系統
- 實驗設備及器具
- 實驗室傢俱
- 測試設備

公用設備

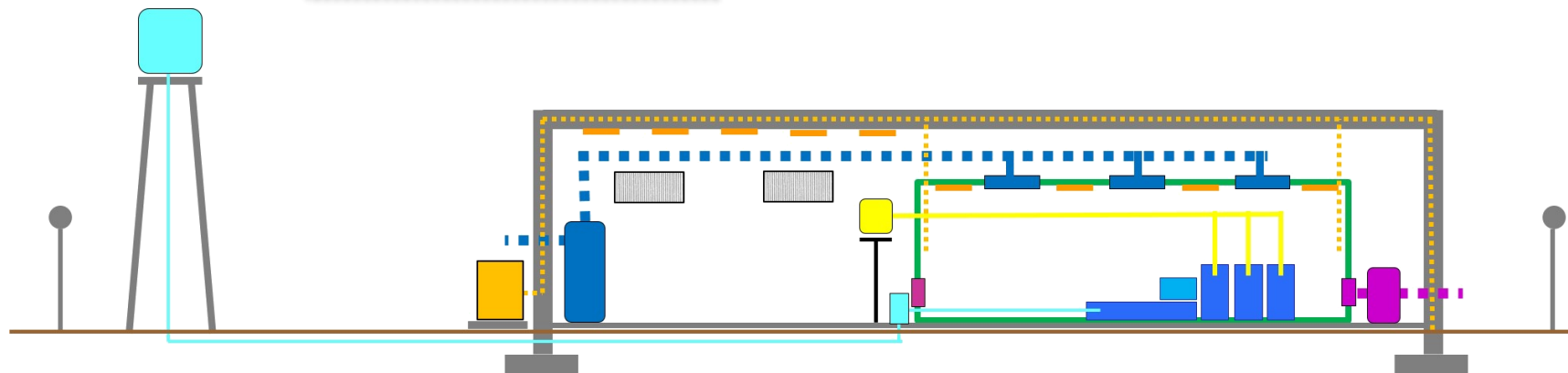
- 純水設備
- 氣體儲存設備
- 建築機電設備
- 防災系統
- 配管及配線
- 開關、插座等

無塵室

- 板材及配件
- 門及窗
- 地坪材料
- 空調系統

其他

- 試生產材料
- 備品



承包模式



Turnkey



Semi Turnkey

- 對業主：合約範圍及責任單純
- 合約總成本較高
- 廠房建造風險較高
- 現場管理成本升高
- 安裝配合問題可能較少

- 對廠商：合約範圍及責任單純
- 以初步設計作為資訊交換的媒介
- 須另外提供介面規範或詳圖
- 安裝配合問題可能較多

初步需求

產品、產量、標準、構想佈局

參考報價

參考佈局、設備清單、標準規格

初步 協商

總體概念規劃

廠房建築計畫、公用設備方案

現場勘察

現場勘察

初步報價

廠房概估價、設備目標價

初步 議約

委託設計

廠房初步設計

無塵室/設備需求

廠房施工圖和施工
預埋螺栓、預留孔洞

設備詢價及報價

標準/非標準設備、備品

議定 設備價

採購、製造、運輸

工藝流程圖、設備製造圖

安裝、試生產、移交

操作維護手冊、備品

操作維護代理/諮詢

訓練

承包模式
Semi Turnkey

初步需求

產品、產量、標準、構想佈局

參考報價

參考佈局、主要設備、標準規格

初步
協商

總體概念規劃

廠房建築計畫、公用設備方案

現場勘察

現場勘察

初步報價

廠房固定價、設備目標價

正式
議約

廠房初步設計

無塵室/設備需求

廠房施工圖和施工

預埋螺栓、預留孔洞

設備詢價及報價

標準/非標準設備、備品

議定
設備價

採購、製造、運輸

工藝流程圖、設備製造圖

安裝、試生產、移交

操作維護手冊、備品

操作維護代理/諮詢

訓練

承包模式
Turnkey

廠房設計、請照與施工

設備輸出方

- 參考佈局(初步協商)
 - 總體概念規劃(報價前)
-
- 初步設計(包括水電等需求)
 - 建築物及基礎的特殊荷重
 - 生產設備佈局
 - 主要設備清單
-
- 介面規範或詳圖
 - 施工臨時開口
 - 施工臨時荷重
 - 施工臨時水電

當地作業

- 都市計畫、建築法規
 - 氣候及水文資料
-
- 測量及工程調查
 - 都市設計、環境影響評估
 - 開發許可(建築執照)
 - 水電等需求備案
-
- 施工圖(專業技師簽認)
 - 施工許可
 - 施工及安裝
 - 測試、驗收及配合設備安裝

標準及規範

產品與生產

- 功能
- 產量
- 速率
- 可用度
- 可維護度
- 可靠度
-

- 產業標準
如GMP
- 品質標準
如ISO

- 環境保護
對環境的影響
- 職業健康
對健康的影響
- 生產安全
對安全的影響

客戶需求

標準及規範

設施與環境

- 逃生路徑與距離
- 防火區劃與消防設施
- 消防通道
- 防爆空間與防爆措施
- 一般倉儲及特殊倉儲

- 空氣污染防治
- 水污染防治
- 噪音防治
- 廢棄物處理

-
- 運輸與貨物裝卸

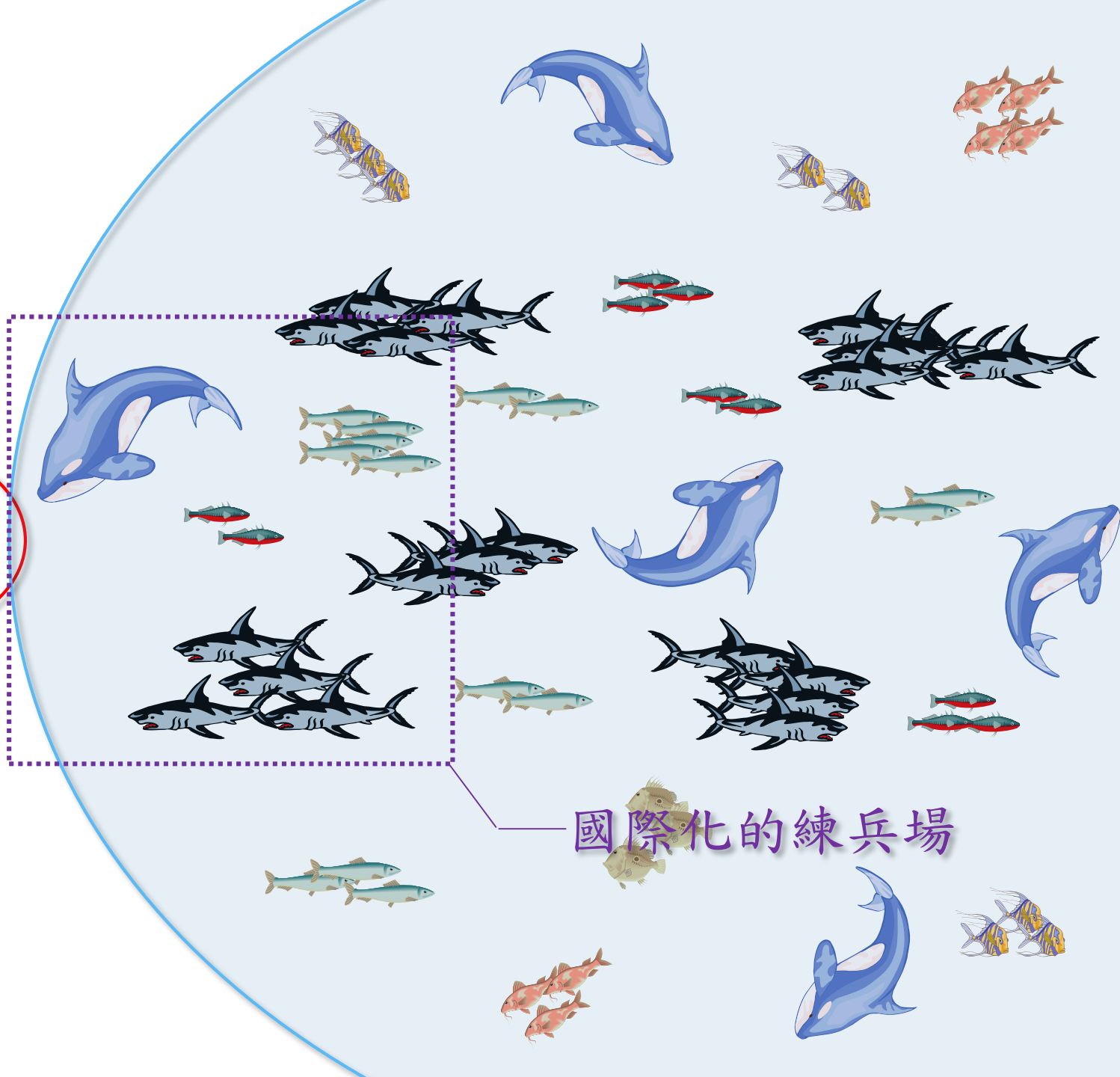
海外工程投標實務經驗分享

1. 課程邏輯
2. 海外投標的基本概念
3. 基礎建設：公部門 Design & Build
4. 設備輸出：私部門 Semi-Turnkey
5. 海外投標的內部溝通

本地市場

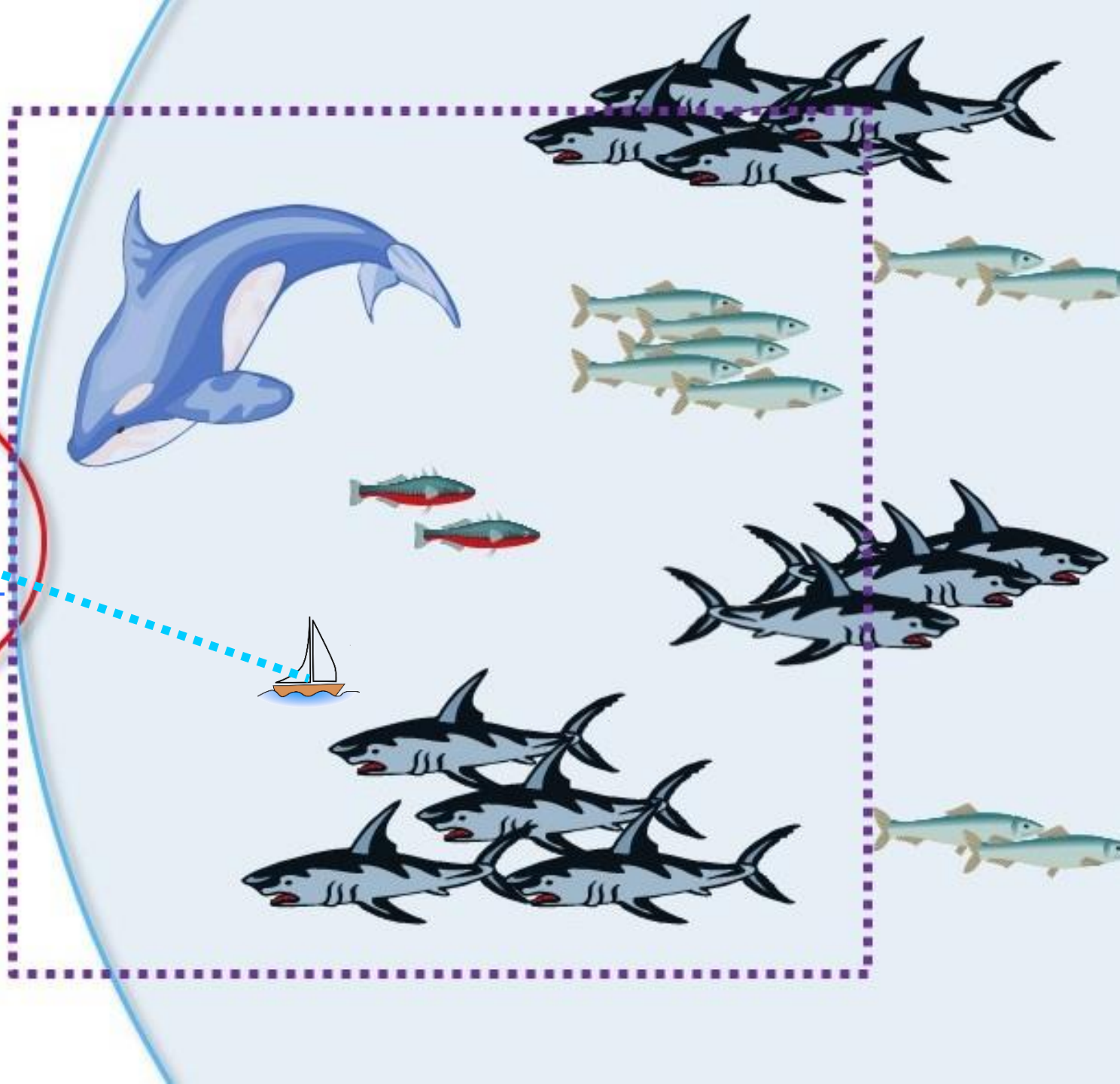
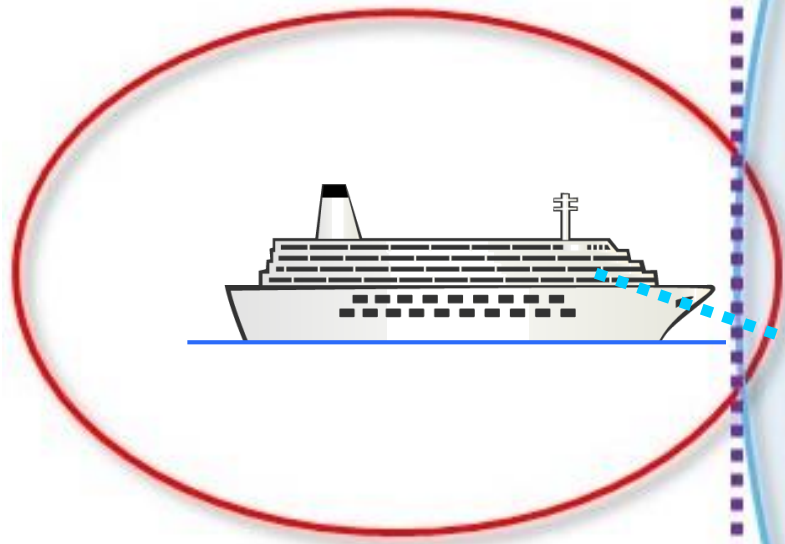
國際化的練兵場

全球市場
國際市場



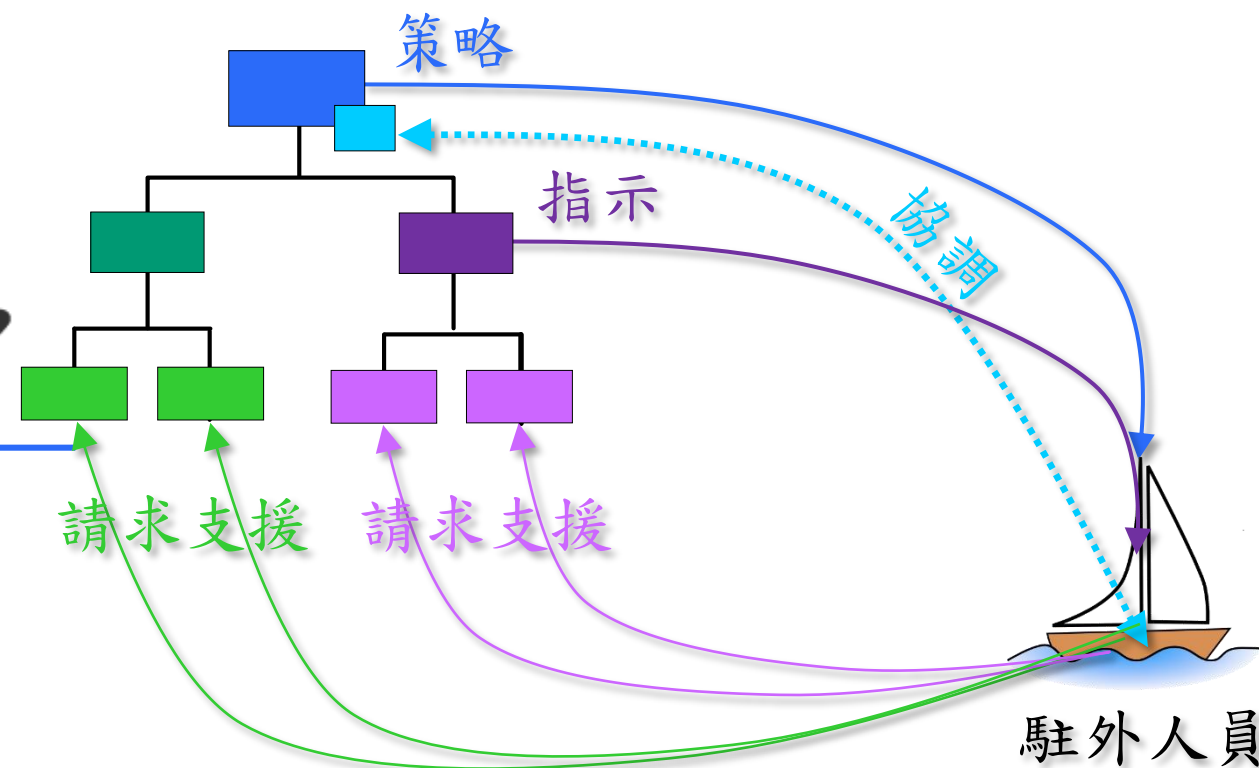
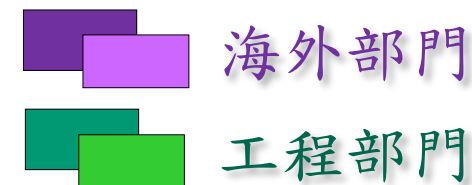
海外業務

- 業務環境不同
- 技術標準不同
- 距離的隔閡



海外業務

- 指揮系統
- 支援系統
- 協調機制



COVID-19引起的改變

- 線上溝通模式普及
- 人際關係回歸本質
- 供應鏈結構重塑
- 安全意識提升
-

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

熱情

勤奮

耐心

Q & A

110 年度工程產業全球化人才實務培訓

謝 謝

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執行長