失語症復健評量系統
之
IT科技企畫書

由灣蝶資訊評估與草擬

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歐格瑪專案

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歐格瑪專案是一個以雲端系統開發的失語症復健評量系統

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歐格瑪專案要達成以下目標：

- 將語言評估測試方式數位化與自動化
- 利用雲端計算來提供更為標準化與客觀化的評量結果
- 能夠即時提供病患與醫療團隊相關資料

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語言能力評量測試

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語言能力評量測試以往都是由施測者面對面給病患來施作

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我們的目標是能夠建立起一套高度自動化的系統，能有效減少在進行測試時醫療團隊所需投入的資源與時間。

並且透過歐格瑪的雲端計算功能能夠增進報告計算的精準度與降低相關成本花費。

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自動化評估系統

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以現有機制而言，每次評量的結果計算大約得花上一個訓練有素的診療師**十至十五分鐘**

歐格瑪系統透過雲端計算能夠將評估報告的時間大幅減少，並將資料能夠及時回傳給醫療團隊，減少診療師與患者的無謂等待

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資料管理與分享

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歐格瑪專案能夠破除現有醫療團隊各自保有患者資料，卻不能將之有效分享與整合，讓相關研究單位能夠依此進一步探討更為有效的醫療措施的窘境；我們將資料**集中管理**與合理的**開放索取**

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患者的資料將會被嚴厲地保護；只有可以直接接觸到的醫師與診療師可以看到對應的病患資料。任何其他團體(如健保局、醫療保險公司、學術研究單位等)則只能看到**已經匿名化**的資料。

在系統之間的資料傳遞(雲端主機的備份、寄送報告給患者與醫師等)均會加上業者最有效且嚴謹的**加密措施**。

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系統規格初估

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初期營運（暫約開始營運一年之內）預估

（以台灣為例）每月病患檢驗案例有一萬件

- 有五十位醫生活躍使用
- 每位醫生平均每月二十天看診
- 平均每日可做十次檢驗

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對此預估，IT設備的規格暫估如下：

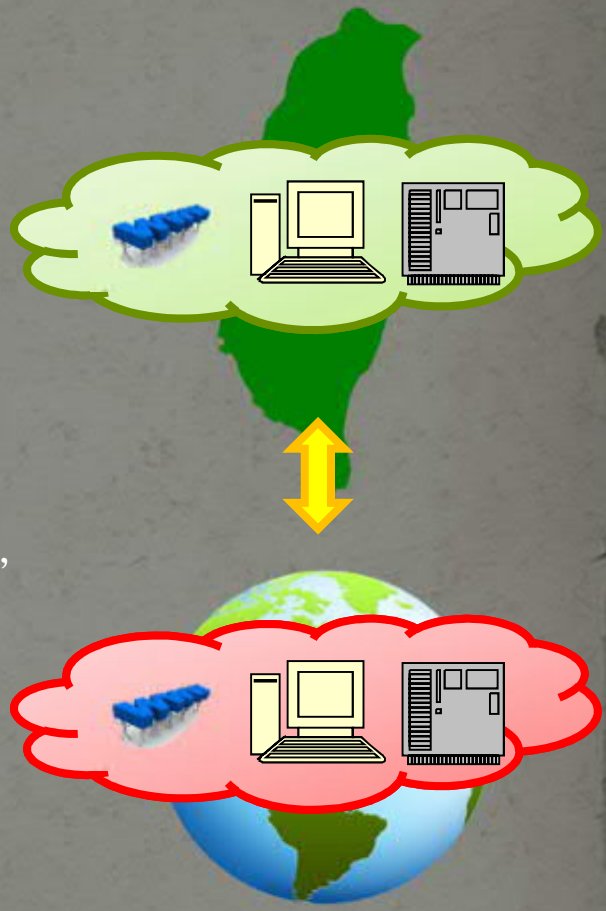
當地雲端 (Localized Cloud)：為系統對外營業之主體

每一組當地雲端基本上是一台網站主機 + 一台資料庫 + 1TB/月 的對外流量

總部雲端 (Central Cloud)：主要是當作備用系統、新版架構與功能測設、以及跟醫院診所單位費用管理

總部雲端基本上是兩台網站主機 + 一台資料庫 + 一台費用業務主機 + 5TB/月 的對外流量

現行規劃(2015 SEP)：台灣當地雲端為Google Cloud Engine，而總部雲端為Amazon Web Service



設備規格標準參考：

- 網站主機 : 2 VCPU (around 1*2.6GHz in sum), 4GB RAM, 20GB SSD HDD
- 資料庫主機 : 2GB RAM, 10G HDD
- 雲端儲存：每月新增25GB

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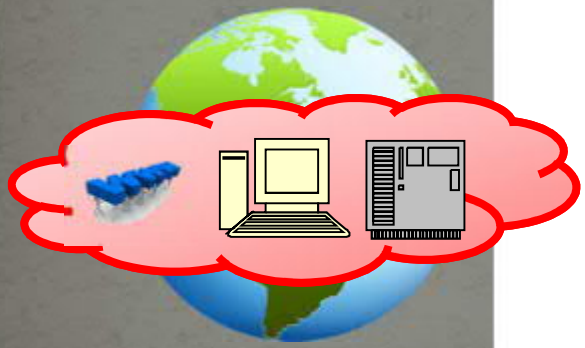
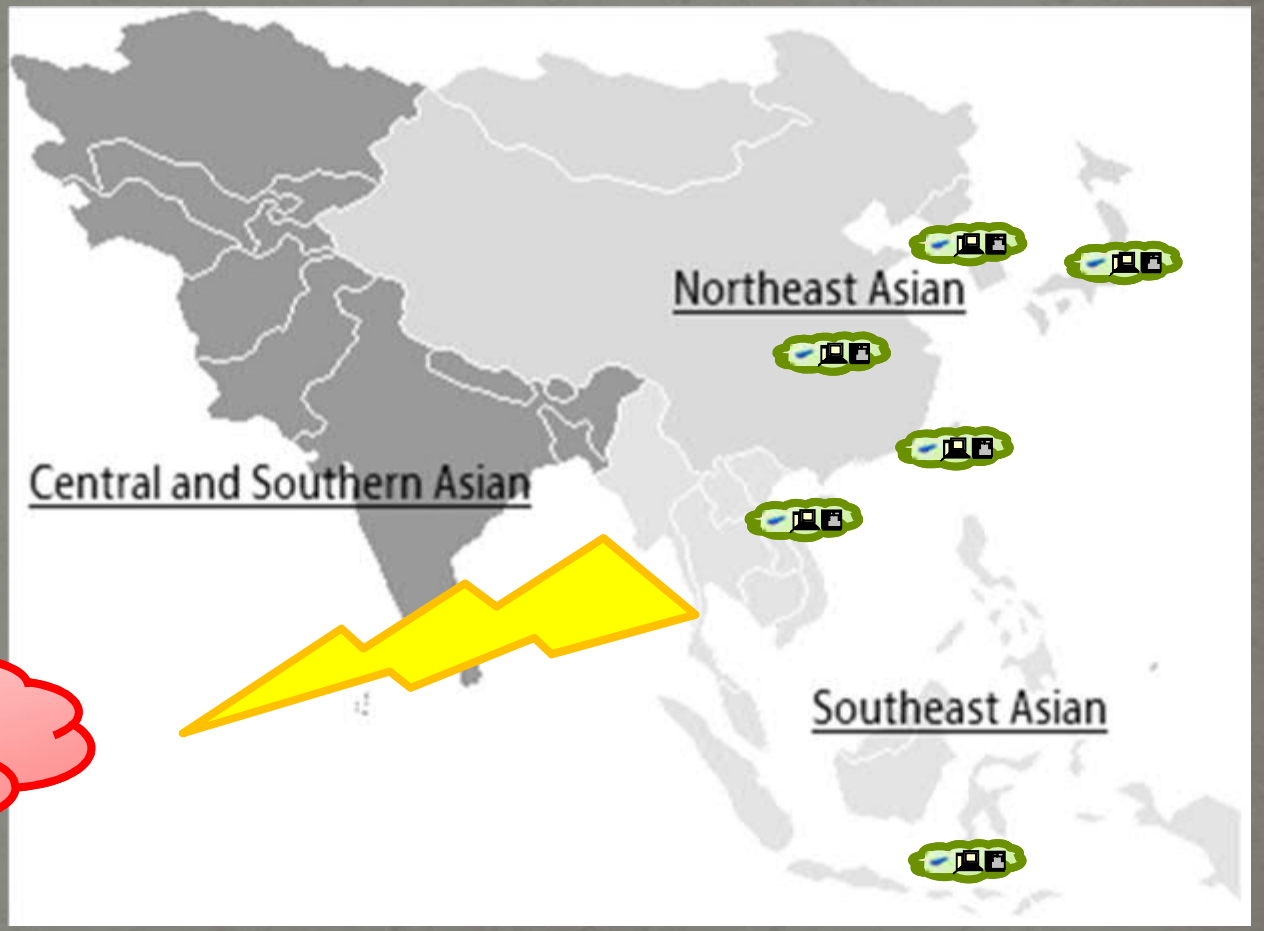
後續十年之內，在其他國家與總部系統的連接示意圖如下:





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每組系統的成本估計(以2015年9月的資訊)

Location		Currency		VCPU	RAM	Highest Cost Per Hour	Highest Cost Per Month	HDD	HDD Cost	Network	Network Cost	Online Storage Cost Per GB	DB	RAM	DB Size	Cost Per Day	Cost Per Month	Sub Total	SUM
AWS	Singapore	USD	t2-medium	2 VCPU	4G	0.08	60	20GB	4		122.88	0.03	t2.small	2GB	10G	1.248	39.92	**226.8**	**7484.4**
GCE	Taiwan	USD	n1-standard-1	1 VCPU	3.75G	0.055	41.25	20GB	4.36	1TB	122.88	0.026	D2	1GB	10G	2.93	90.3	**258.79**	**8540.07**
HiCloud	Taiwan	NTD	M	2 VCPU	4G	3.84	2880	30G	4500		3072	0.75	S	1GB	100G	76	2280	**12732**	**12732**
IBM SoftLayer		USD		1 VCPU	4G	0.083	55	25G	0		153.6	0.15		2GB	25G		159	**367.6**	**12130.8**

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歐格瑪
的
未來總體規劃

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系統研發規劃

- 系統設置與功能加強

區域推廣規劃

- 國家區域業務推廣

語言應用規劃

- 語言資料庫擴增

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系統研發規劃

第一階段 系統建立

設立網站系統並確認系統使用步驟流程

將資料統一中央儲存

檢測判斷交由施設者做自行人為判定

第二階段 標準制定

需確認多語言系統的可能性

檢測判斷可由施測者決定是否由中央語言能力判定專員來做評分判斷

第三階段 治療建議

可將患者在不同國家的病歷資料整合

依據診斷結果提供療程建議

系統流程的重新規劃，以確認有效性及效率

第四階段 電腦智能

找出聲波判定(需能大幅降低地方口音的影響)的演算法與分類機制，依此建立電腦智慧判斷系統，以此做出客觀的評判

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系統研發規劃
之
公司規模推估

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第一階段　系統建立

- 設立網站系統並確認系統使用步驟流程
- 將資料統一中央儲存
- 檢測判斷交由施設者做自行人為判定

第二階段　標準制定

- 需確認多語言系統的可能性
- 檢測判斷可由施測者決定是否由中央語言能力判定專員來做評分判斷

第三階段　治療建議

- 可將患者在不同國家的病歷資料整合
- 依據診斷結果提供療程建議
- 系統流程的重新規劃，以確認有效性及效率

第四階段　電腦智能

- 找出聲波判定(需能大幅降低地方口音的影響)的演算法與分類機制，依此建立電腦智慧判斷系統，以此做出客觀的評判

1	2	3	4
起始員工： 4人	起始員工：10人	起始員工：10人	起始員工：15人
年支出：350萬	年支出：1000萬	年支出：1000萬	年支出：1500萬
風險報酬：30%	風險報酬：20%	風險報酬：10%	風險報酬：20%

註：以上預估未將區域業務及語言資料擴展需求列入

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區域推廣規劃

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東亞（香港、澳門、新加坡、馬來西亞、中國大陸、日本、韓國）

歐美（美國、加拿大、英國）

澳紐（澳洲、紐西蘭）

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語言應用規劃


台灣
繁體中文
台(灣閩南)語
客家話
中文
閩南語
香港澳門廣東話
普通話
東亞
日文
韓文
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Aphasia System Road Map

Proposed by TWOUDIA

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Project Omga

Project Ogma is a **cloud** based application designed to provide support for the treatment of **Aphasia**.

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The major aims of Project Ogma are:

- Digitalize and automate the speech assessment test.
- Evaluate speech assessment test results using cloud computing.
- Data cloud to provide seamless data sharing between Doctors, Therapists and Peers.

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The Speech Assessment Test

The Speech Assessment Test conventionally conducted manually, assesses the patient's aphasia.

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Our goal is to conducted the test automatically with minimal Therapist intervention, thereby, freeing up time and resources.

Results are sent straight to Project Ogma's cloud server for evaluation.

Automated Evaluation

Traditionally, it requires a therapist

10 to 15 minutes to evaluate the results from the assessment test.

Project Ogma's **cloud computing** can instantly evaluate the results and send straight back to therapist.

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Data Sharing

With Projects Ogma's Data sharing system, patient and treatment information and progress can be easily shared amongst parties of interest.

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Patient confidentiality mechanisms are implemented. E.g. only direct treating doctors and therapist will have access patient's private data. Other accessing groups to Project Ogma can only see **anonymous** data.

Security is ensured with **data encryption** in cloud server, end user and during data transfer.

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IT System SPEC

Assumption for Project Ogma for the initial period for the first running year in local business (Taiwan, for example) is there are **ten thousands** cases **monthly**

- 50 active doctors attended
- Average Open Days of Clinic is 20 per month
- Everyday a doctor would do ten tests for patients

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Responding IT System SPEC：

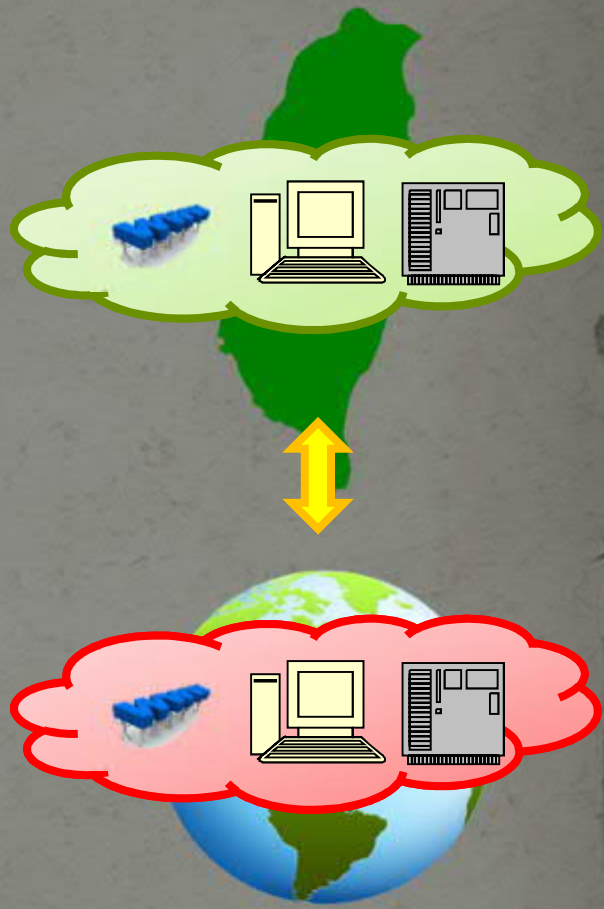
Localized Cloud System：typical working system for local business

Each localized cloud system is basically set up with one website server + one database server + 1TB/month outside link bandwidth

Central Cloud System：works as backup system, testing system for RD with new functions, and work with hospital systems for payment management

Central cloud system is basically set up with two website servers + one database server + one server focus on payment management + 5TB/month outside link bandwidth

Planning nowadays （2015 SEP）：using Google Cloud Engine as Localized Cloud System in Taiwan, and choosing Amazon Web Service as Central Cloud System



Server SPEC：

- Website Server : 2 VCPU (around 1*2.6GHz in sum), 4GB RAM, 20GB SSD HDD
- Database Server : 2GB RAM, 10G HDD
- Online Storage：25GB increment per month

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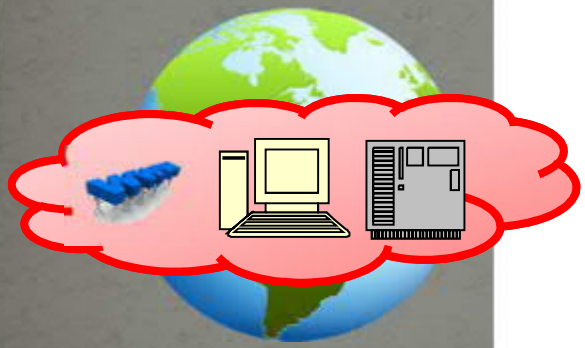
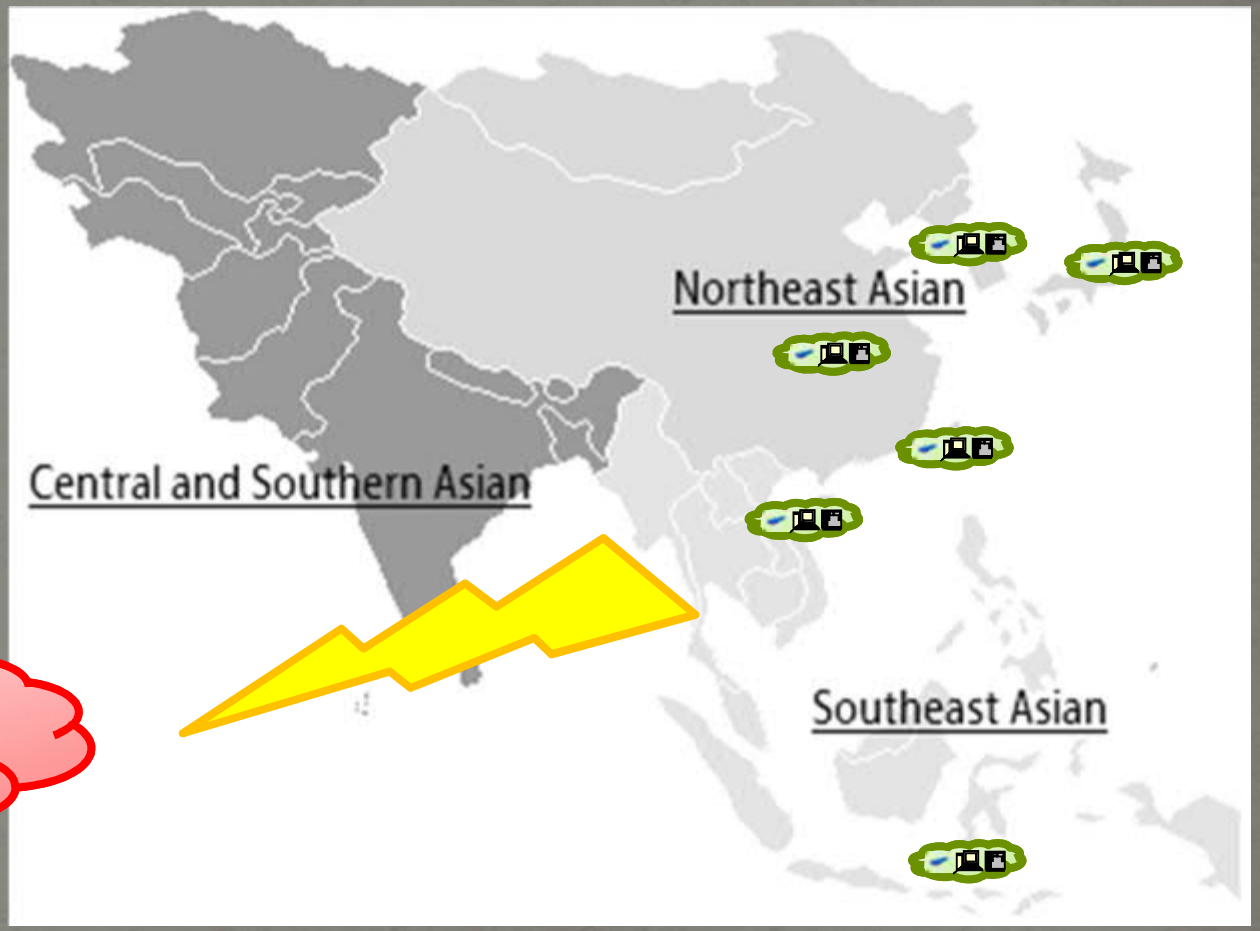
Concept of data communications among branches in multiple countries in the following decade:





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Cost for each set of IT system (based on the price in 2015 September)

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Roadmap of Omga in Future

System Research and Develop

- System Setup and Functions enhanced

Area Business Applications

- Business promotion in areas/countries

Variety of Languages

- Enlarge of language databases

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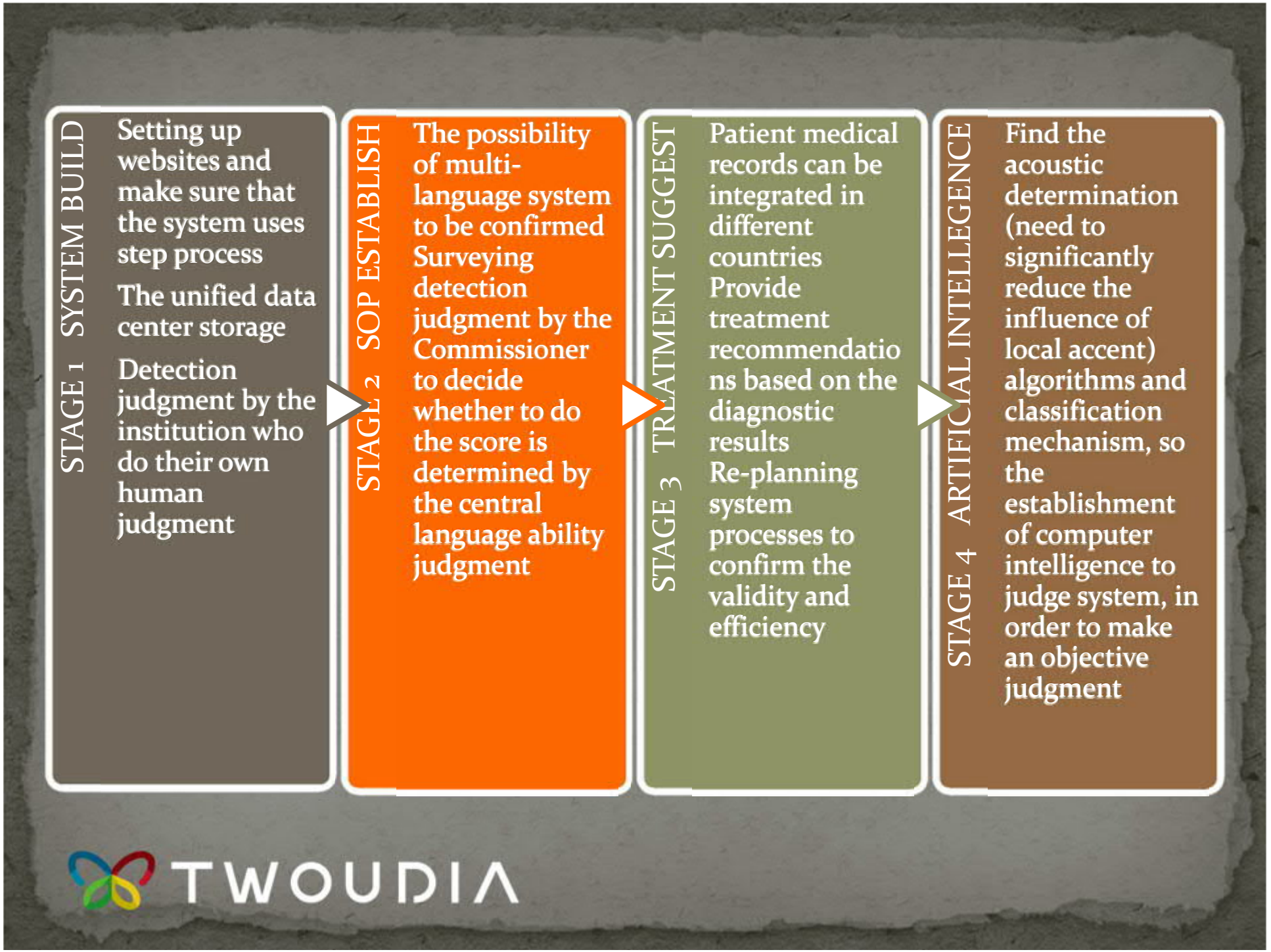
System Research and Develop


STAGE 1 SYSTEM BUILD
Setting up websites and make sure that the system uses step process
The unified data center storage
Detection judgment by the institution who do their own human judgment
STAGE 2 SOP ESTABLISH
The possibility of multi-language system to be confirmed Surveying detection judgment by the Commissioner to decide whether to do the score is determined by the central language ability judgment
STAGE 3 TREATMENT SUGGEST
Patient medical records can be integrated in different countries Provide treatment recommendations based on the diagnostic results Re-planning system processes to confirm the validity and efficiency
STAGE 4 ARTIFICIAL INTELLEGENCE
Find the acoustic determination (need to significantly reduce the influence of local accent) algorithms and classification mechanism, so the establishment of computer intelligence to judge system, in order to make an objective judgment
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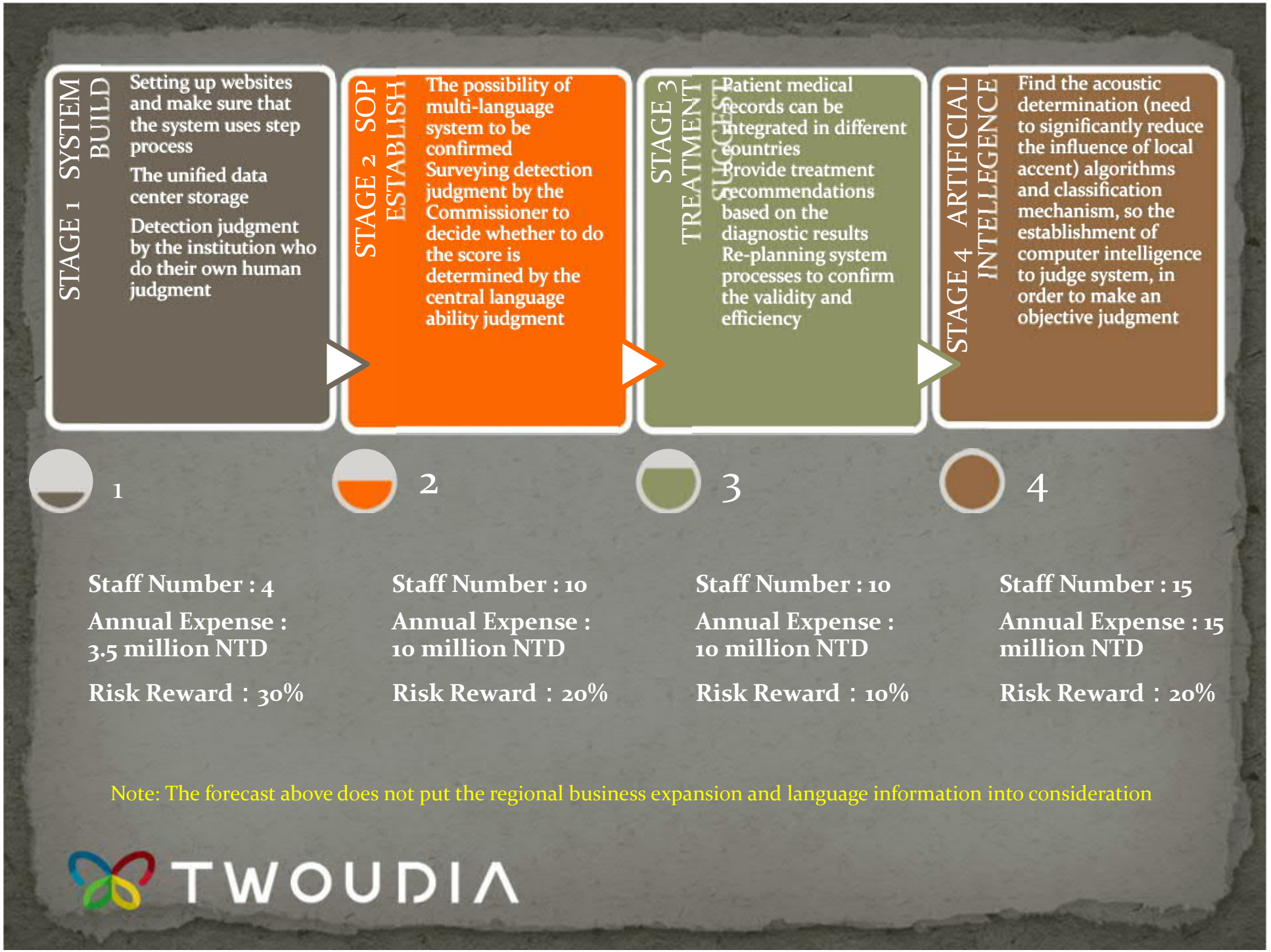
Scale Prediction for System Research and Develop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Find the acoustic determination (need to significantly reduce the influence of local accent) algorithms and classification mechanism, so the establishment of computer intelligence to judge system, in order to make an objective judgment
1
2
3
4
Staff Number : 4
Annual Expense : 3.5 million NTD
Risk Reward : 30%
Staff Number : 10
Annual Expense : 10 million NTD
Risk Reward : 20%
Staff Number : 10
Annual Expense : 10 million NTD
Risk Reward : 10%
Staff Number : 15
Annual Expense : 15 million NTD
Risk Reward : 20%
Note: The forecast above does not put the regional business expansion and language information into consideration
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Area Business Applications

East Asia (Hong Kong, Macau, Singapore, Malaysia, China, Japan, Korea)

Europe and America (the United States, Canada, United Kingdom)

Oceania (Australia, New Zealand)

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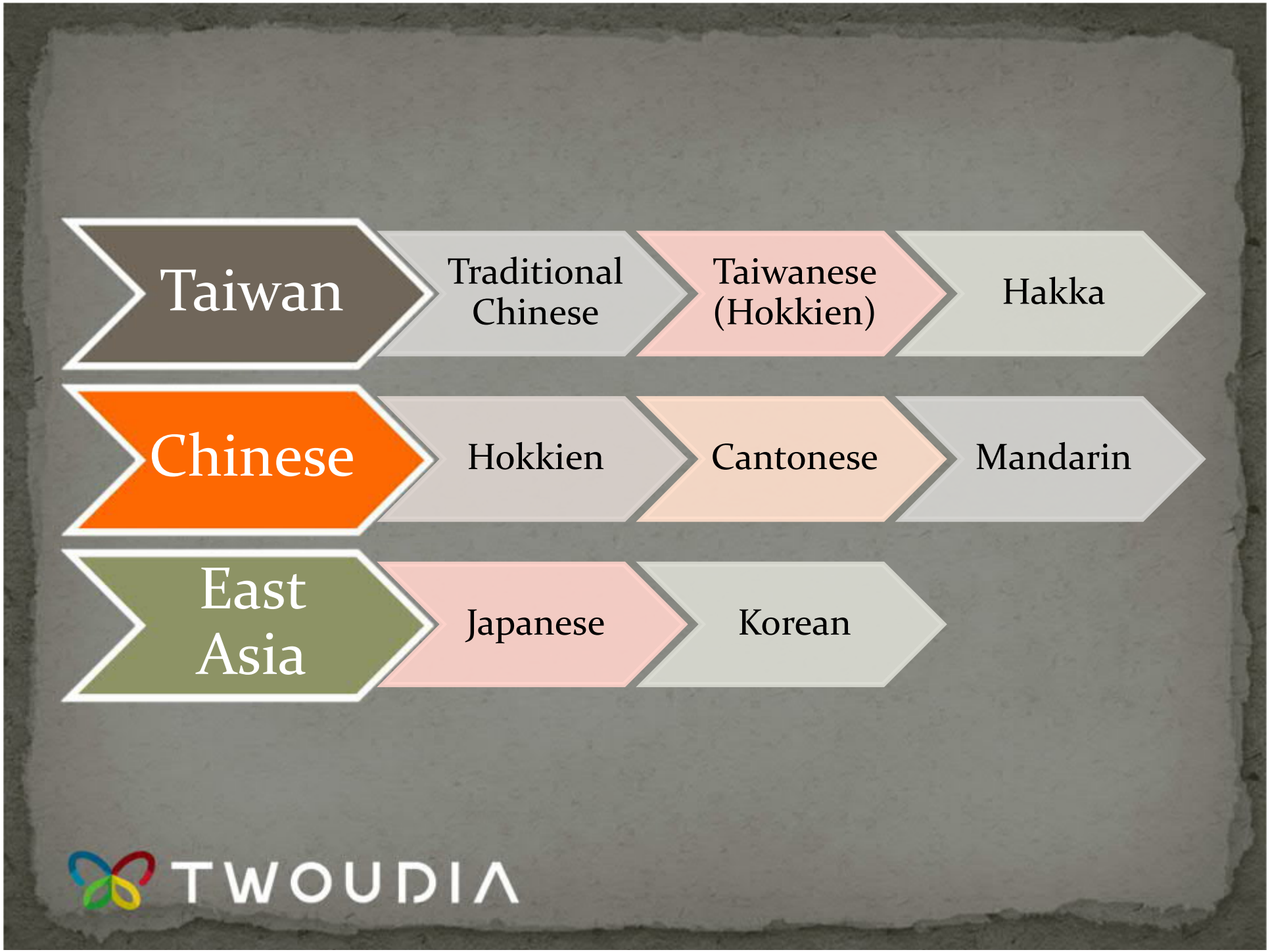
Variety of Languages


Taiwan
Traditional Chinese
Taiwanese (Hokkien)
Hakka
Chinese
Hokkien
Cantonese
Mandarin
East Asia
Japanese
Korean
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