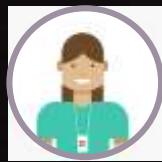


運用對話機器人提供 線上客服服務



Herman Wu
Sr. Technical Evangelist (aka 技術傳教士)
DX



<https://support.microsoft.com/en-us>



Conversation as a Platform

2016

Conversations As A Platform: Microsoft's Vision Of People, Bots And Digital Assistants

by Fritz Nelson March 30, 2016 at 2:15 PM



Our approach



Among the many announcements here at Microsoft's Build developer conference in San Francisco, the company spent a significant amount of time with a concept it called "conversation as platform, which it believes will introduce human language and machine intelligence as the next computing

Microsoft makes bots the cornerstone of its 'conversation as a platform' strategy

Are bots the new apps? Microsoft is seeding developers with new bot-development tools to see whether it can encourage conversation to be the next big platform.

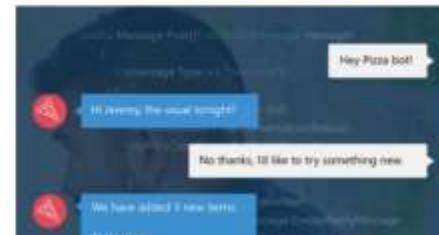


By Mary Jo Foley for All About Microsoft | March 31, 2016 -- 14:08 GMT (22:08 GMT+08:00) | Topic: Artificial Intelligence



Over the past few years, Microsoft was licensing its Bing application programming interfaces to developers so they can incorporate things like search, maps and speech into their full-fledged apps.

Now forward, Microsoft is trying to take the idea of extending apps with Bing's intelligence one step easier. The company is taking some of its Bing intelligence and putting it up to developers in the form of a bot development framework.



RELATED STORIES

Innovation
UTS partners with China for electronics innovation centre

Artificial Intelligence
Need a chatbot fast? Your best bet might be a firm you've never heard of

Innovation
Although smart cities rely on IoT, security confusion still reigns

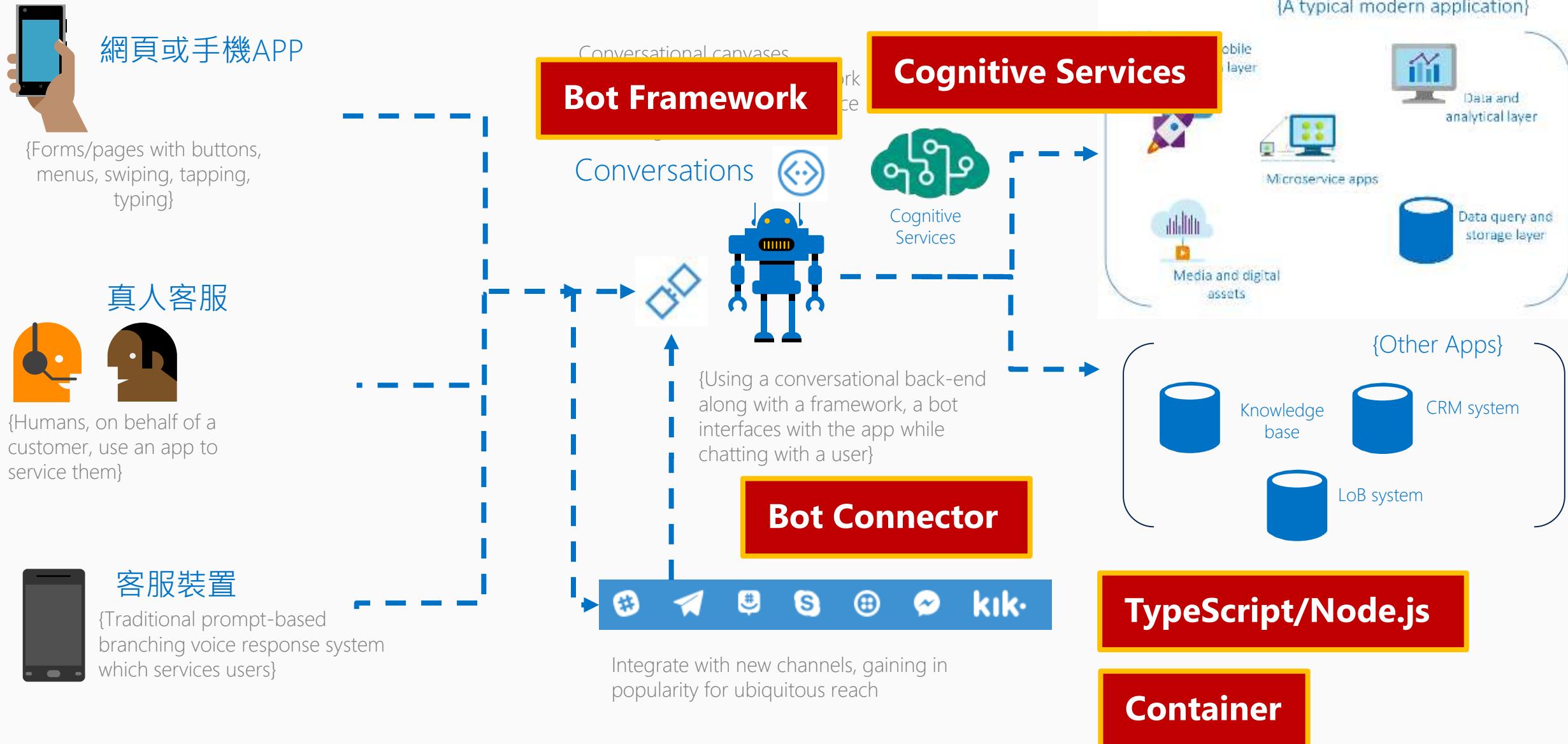
Artificial Intelligence
IBM launches Cognitive Visual Inspection system for manufacturers

NEWSLETTERS

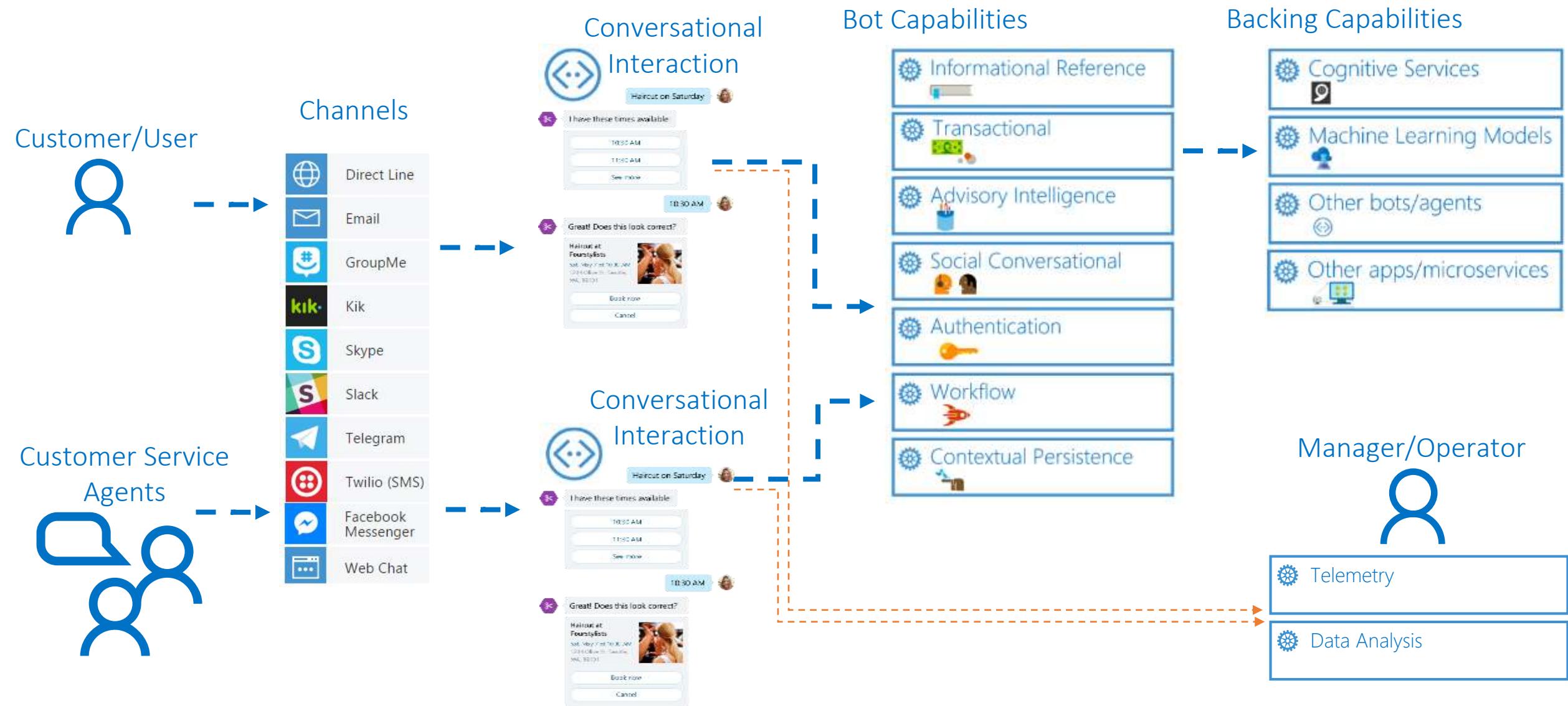
Microsoft News | Tech News | Gadgets | Software | Games | Home | Business | Autos | Travel | Food | Health | Money | Sports | Entertainment | Technology | Science | Space | Environment | Business | Autos | Travel | Food | Health | Money | Sports | Entertainment | Technology | Science | Space | Environment

AI客服服務架構

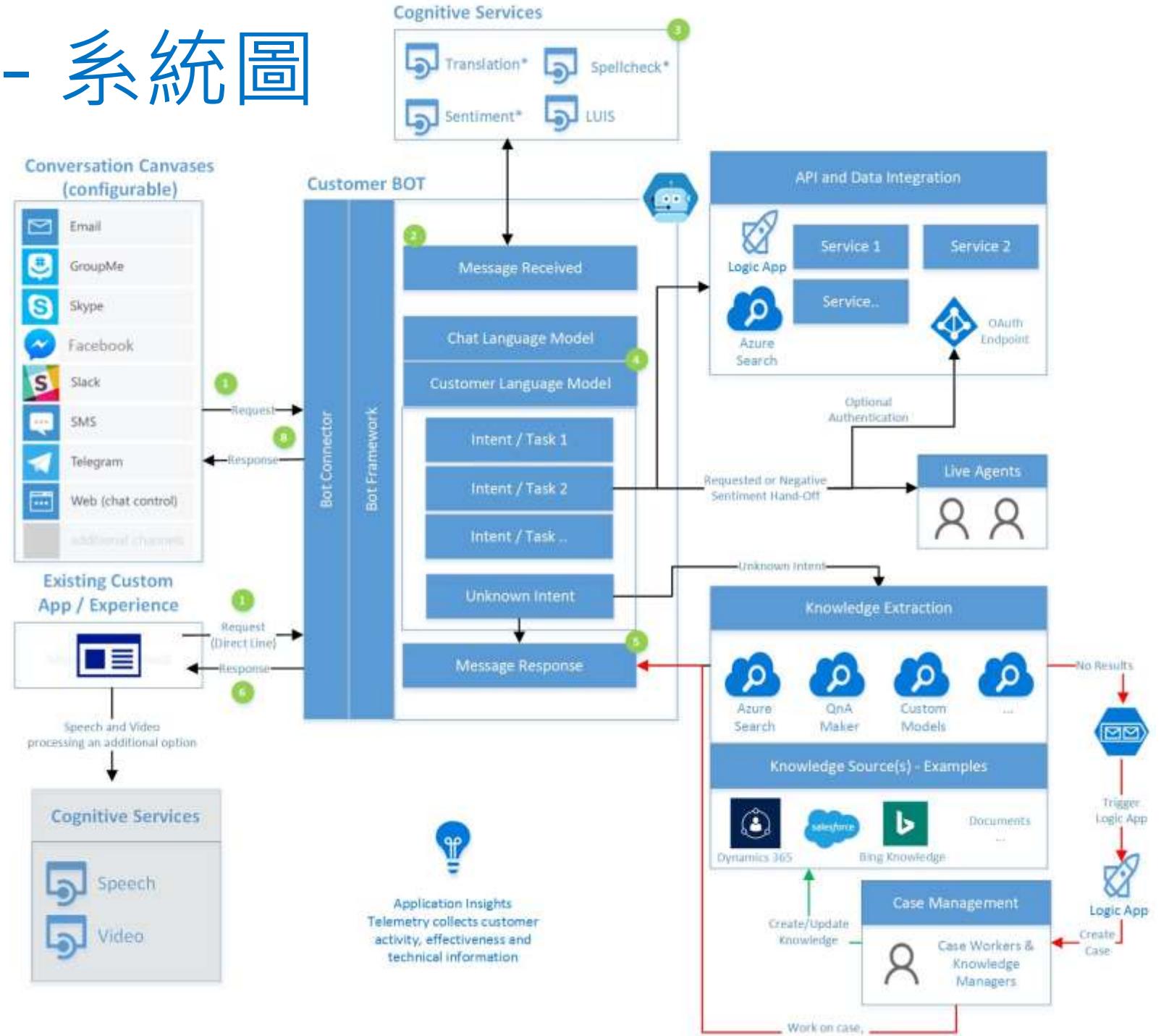
Cognitive Service Toolkit
(CNTK)



AI客服服務架構- 模組圖



AI客服服務架構- 系統圖



從頭開始吧

<https://qnamaker.ai>

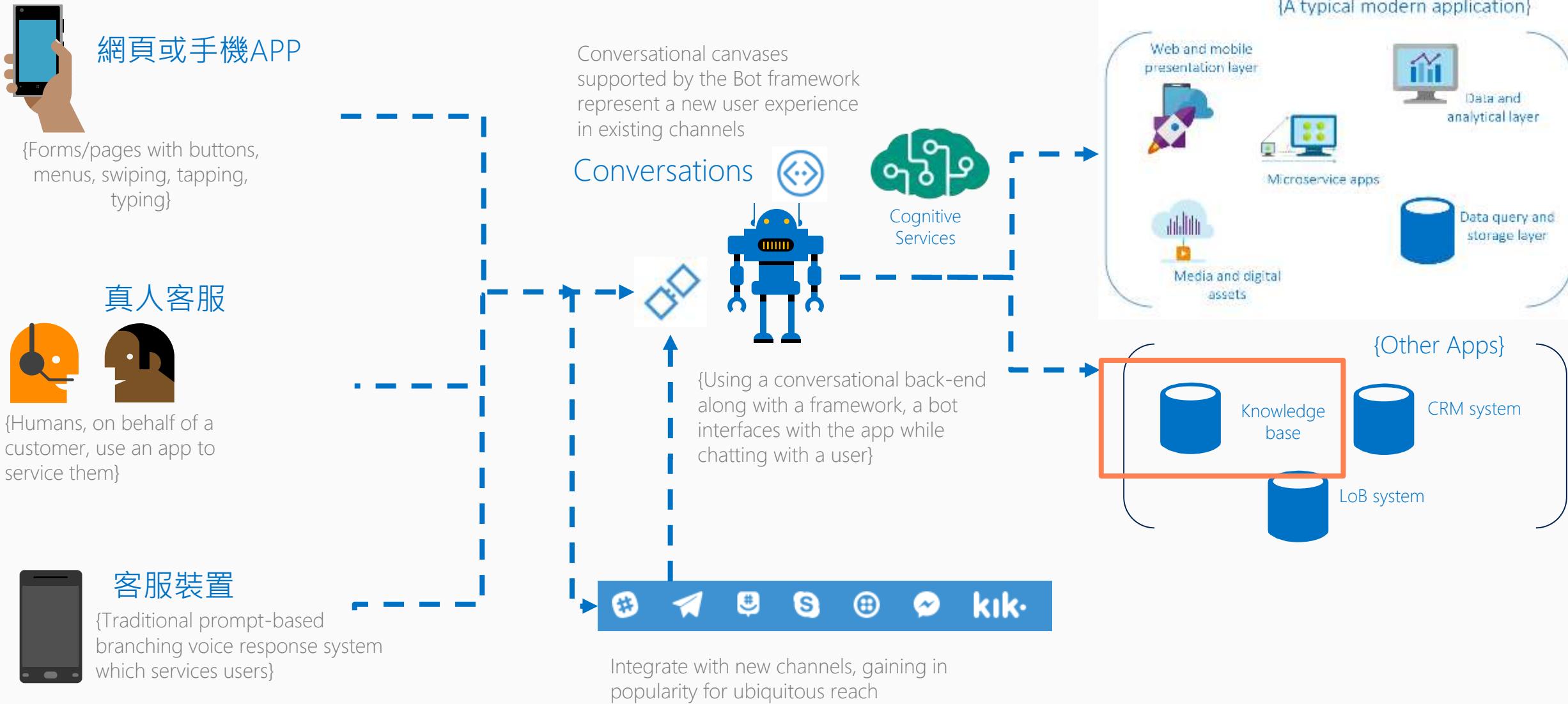
IKEA 最新消息 [捐款「愛心送餐」送餐券及好禮，請跟我們一起幫助孩子健康成長！>>](#)



建立客服知識庫

<https://qnamaker.ai>

AI客服服務架構





搜尋



IKEA分店

登入
購物清單
宜家卡優惠

我的購物袋
線上購物
常見問題

所有商品

新品

線上型錄

再創低價

客廳

臥室

廚房

餐廳

書房

兒童天地

收納

瑞典美食

IDEAS

所有居家空間

常見問題

最常見的5個問題

1. 如果我無法自己運送家具怎麼辦？
2. 我住的地方離IKEA很遠，可以透過傳真訂購IKEA的商品嗎？
3. 如何知道我想購買的商品在IKEA店內有沒有貨？
4. 我購買IKEA家具後，IKEA可以提供組裝服務嗎？
5. 我購買的商品需要退換，該找誰呢？

[產品及服務](#) | [分店資訊](#) | [線上購物](#) | [運送及組裝服務](#) | [室內設計/規劃服務](#)

[認識IKEA](#) | [宜家卡](#) | [IKEA型錄](#) | [IKEA網站](#) | [IKEA Store App](#)

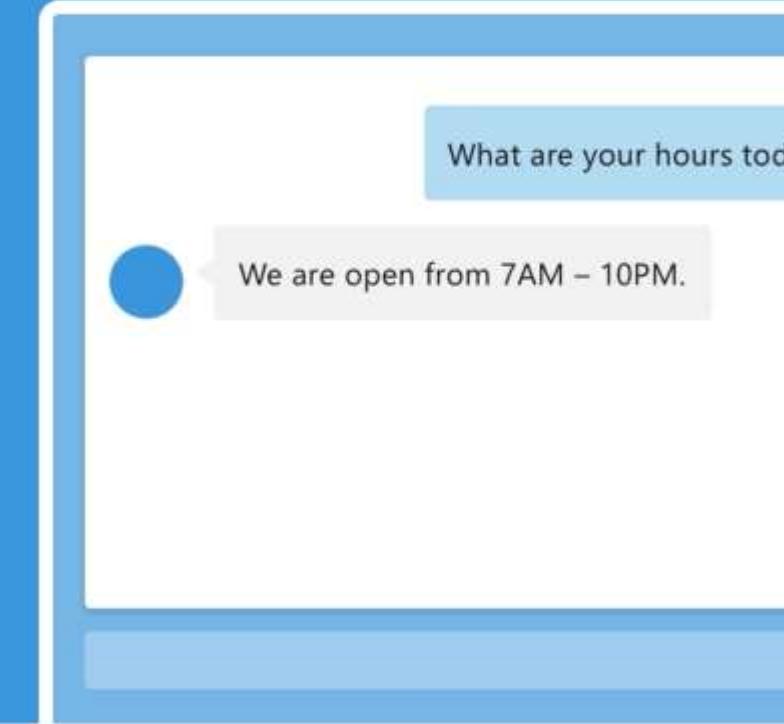
產品及服務

1. 我在IKEA可以買到哪些商品？
2. 如何知道我想購買的商品在IKEA店內有沒有貨？

From FAQ to Bot in minutes.

Build, train and publish a simple question and answer bot based on FAQ URLs, structured documents or editorial content in minutes.

[GET STARTED >](#)



Copy, paste... Bot!

Create bot dialogue as easily as pasting in a URL or filling in a table.

No more complex connectors or imports of the bot.



DEMO

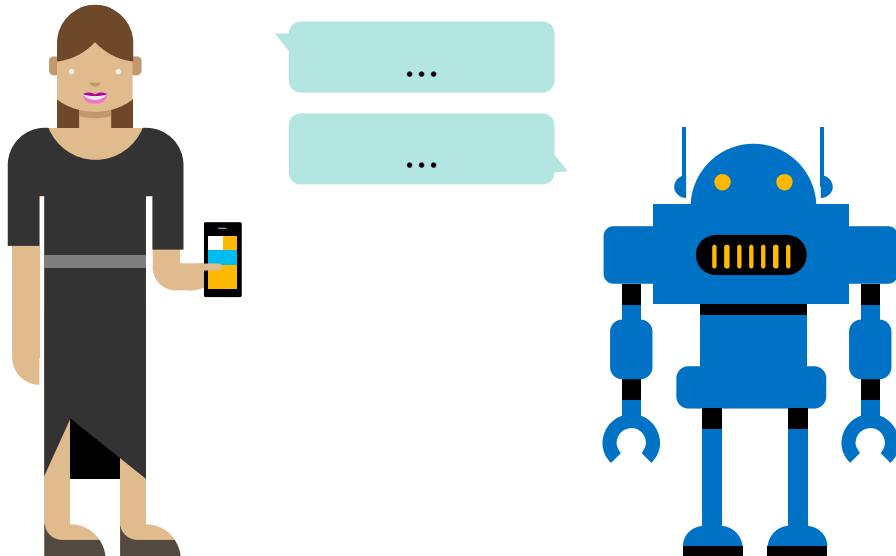


Azure 搜尋服務

Web 和行動應用程式開發的雲端搜尋服務

- ✓ 快速啟動搜尋索引並執行
- ✓ 輕鬆相應增加及減少
- ✓ 透過精確掌控搜尋評等，將搜尋結果連接到營運目標
- ✓ 運用 Microsoft 在自然語言處理方面的豐富知識
- ✓ 使用整合式索引工具自動載入及更新
- ✓ 輕鬆將地理空間搜尋新增至應用程式

發展對話機器人的挑戰



在智慧型的互動模式中，人跟機器可以透過自然人類語言做順暢的溝通

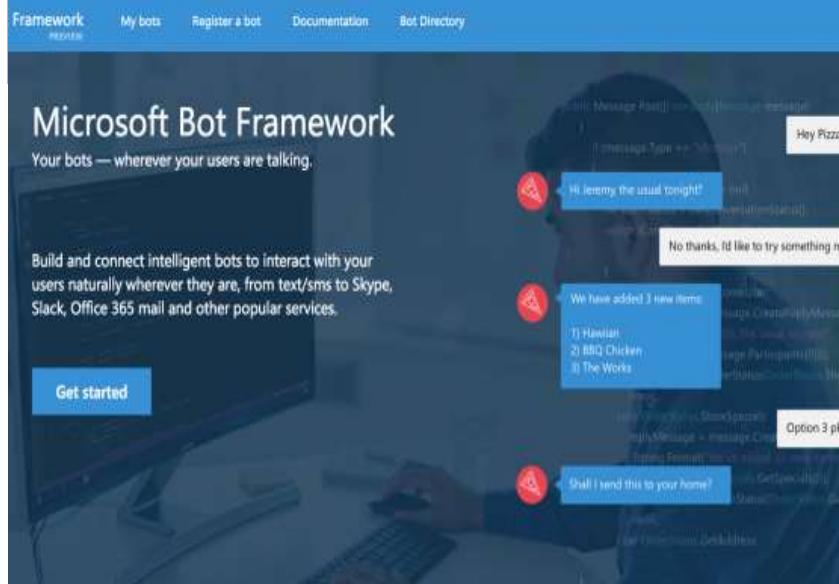
- 能發掘出語言中提到的人事時地物(Contextual awareness)
- 記住跟每個人的聊天歷程
- 推敲出語句背後要表達的用意(Intention)
- 能了解互動當時的人跟情境，並能有敏感度的回應

Microsoft Bot Framework

建造一次, 發佈到多個平台並容易被搜尋使用

對話機器人開發者 SDKs

提供開源(Open Source)的SDK讓開發者更容易建置對話機器人, 數分鐘內就可以建立完成



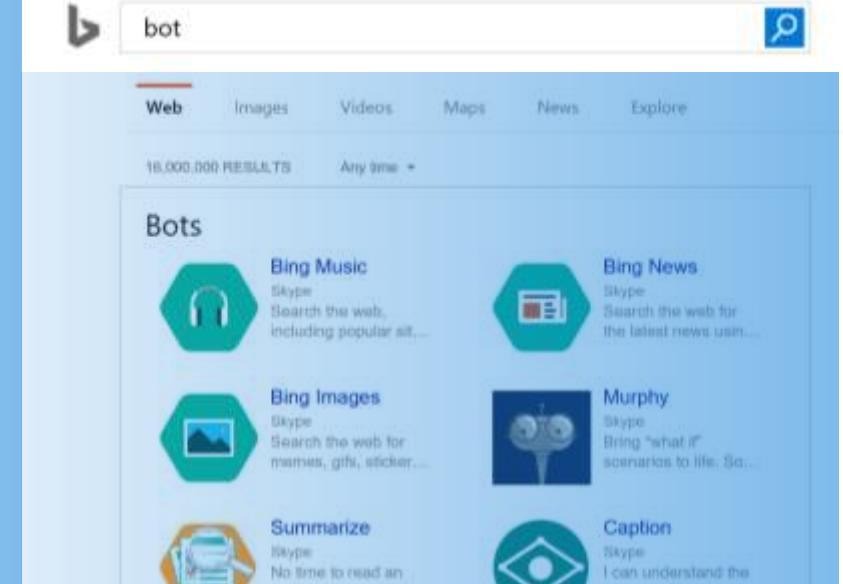
對話機器人連接器

連接對話機器人到所有主流APP社交平台, 可以接觸數十億使用者

Channels		
	Test link	Status
Text/SMS	(206) 555-5555	Running
Facebook Messenger	@LibertySandwichBot	Running
Skype	@LibertySandwichBot	Running
Slack	@LibertySandwichBot	Running
Kik	@LibertySandwichBot	Running
Web chat		Running
Office 365 email		Running
GroupMe		Running
Telegram		Running

對話機器人目錄

讓對話機器人容易被使用者搜尋及找到



Microsoft Bot Framework

Your bots — wherever your users are talking.

Build and connect intelligent bots to interact with your users naturally wherever they are, from text/sms to Skype, Slack, Office 365 mail and other popular services.

Get started

```
public Message Post([FromBody]Message message)
```

```
    if (message.Type == "Message")
```

```
        var convStatus = GetConversationStatus();
```

```
        switch (convStatus) {
```

```
            case ConversationStatus.Closed:
```

```
            case ConversationStatus.Open:
```



Hey Pizza bot!



Hi Jeremy, the usual tonight?



No thanks, I'd like to try something new.



We have added 3 new items:

- 1) Hawiian
- 2) BBQ Chicken
- 3) The Works



Shall I send this to your home?



Option 3 please.

```
        break;
```

```
    case OrderStatus.ShowSpecials:
```

```
        replyMessage = message.CreateReplyMessage()
```

```
(string.Format("We've added {0} new items.{1}"),
```

```
        message.Participants[0]));
```

```
        SetOrderStatus(OrderStatus.ShowSpecials);
```

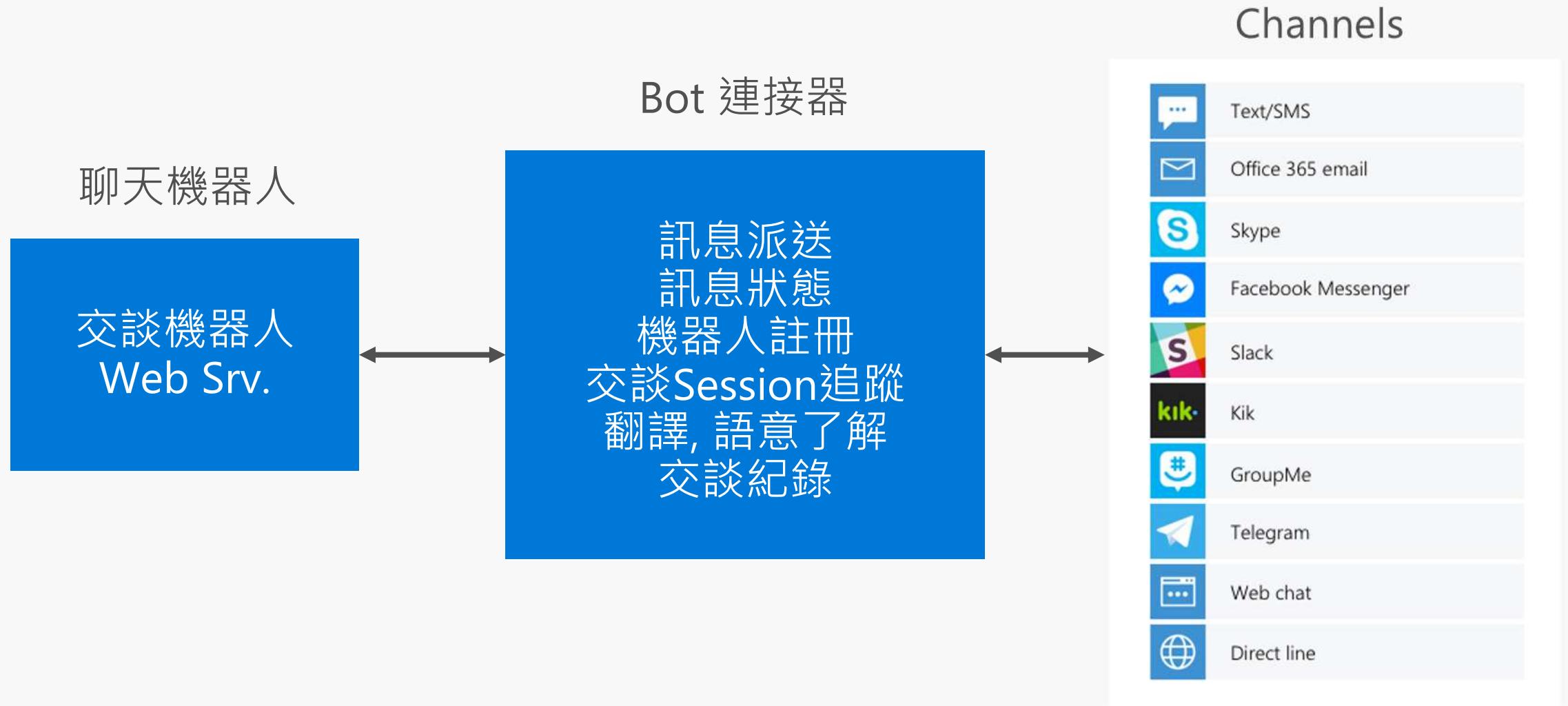
```
    break;
```

```
case OrderStatus.GetAddress:
```



www.botframework.com

支援的管道 (Channels)



Bot Builder SDK

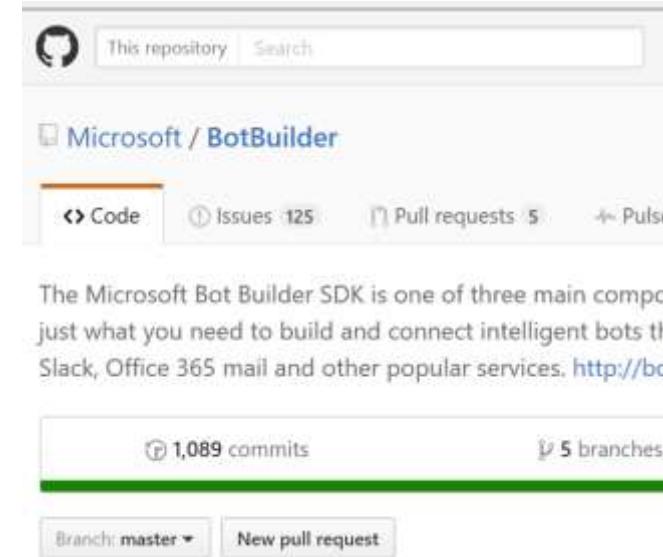
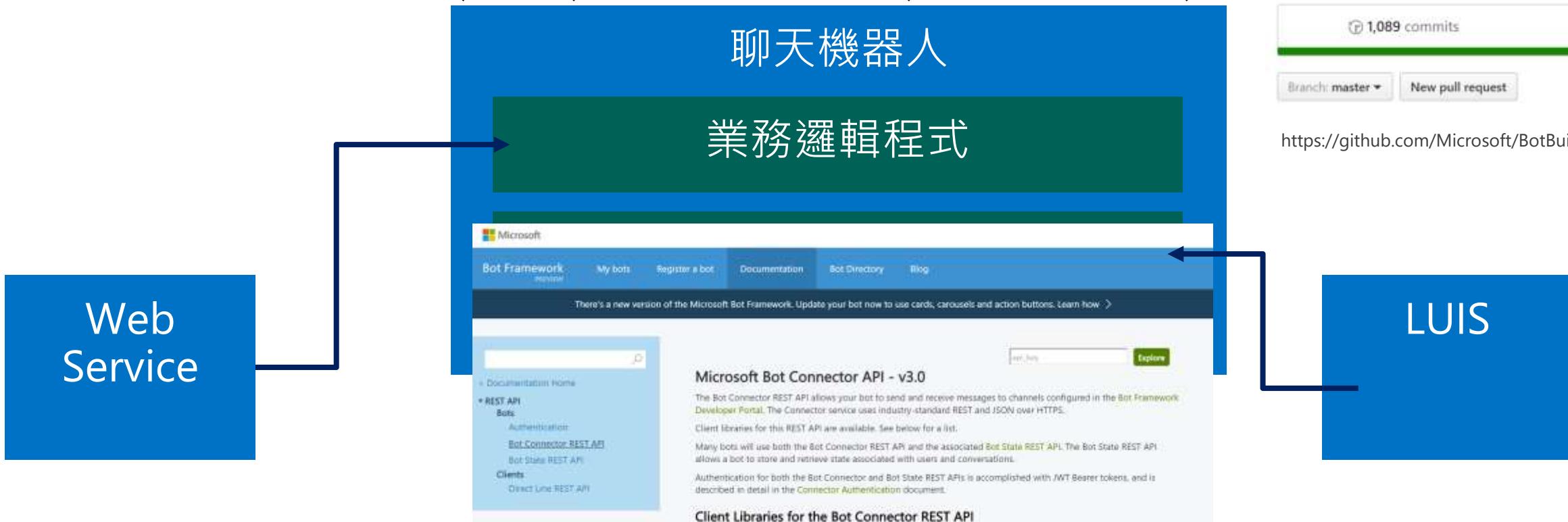
提供 C# 及 Node.js SDK

REST and REST State APIs

管理交談過程中所有的狀態

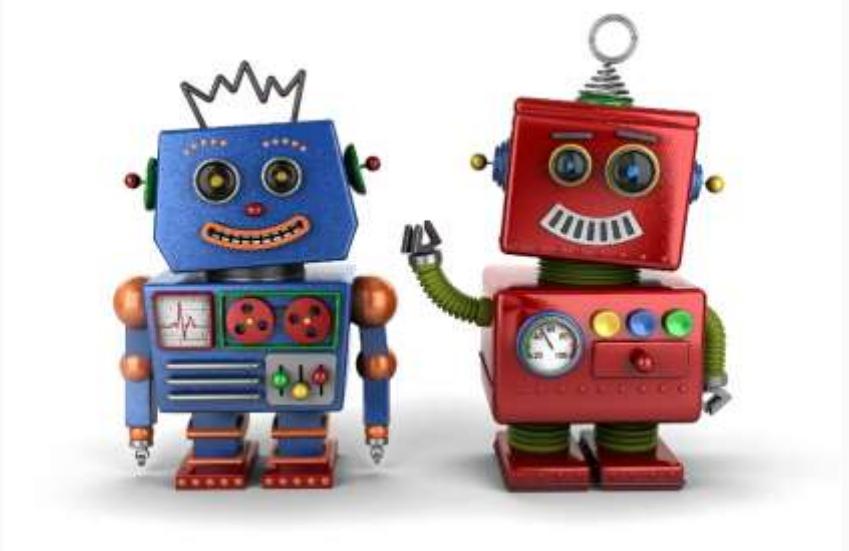
開源(Open Source)於GitHub 上

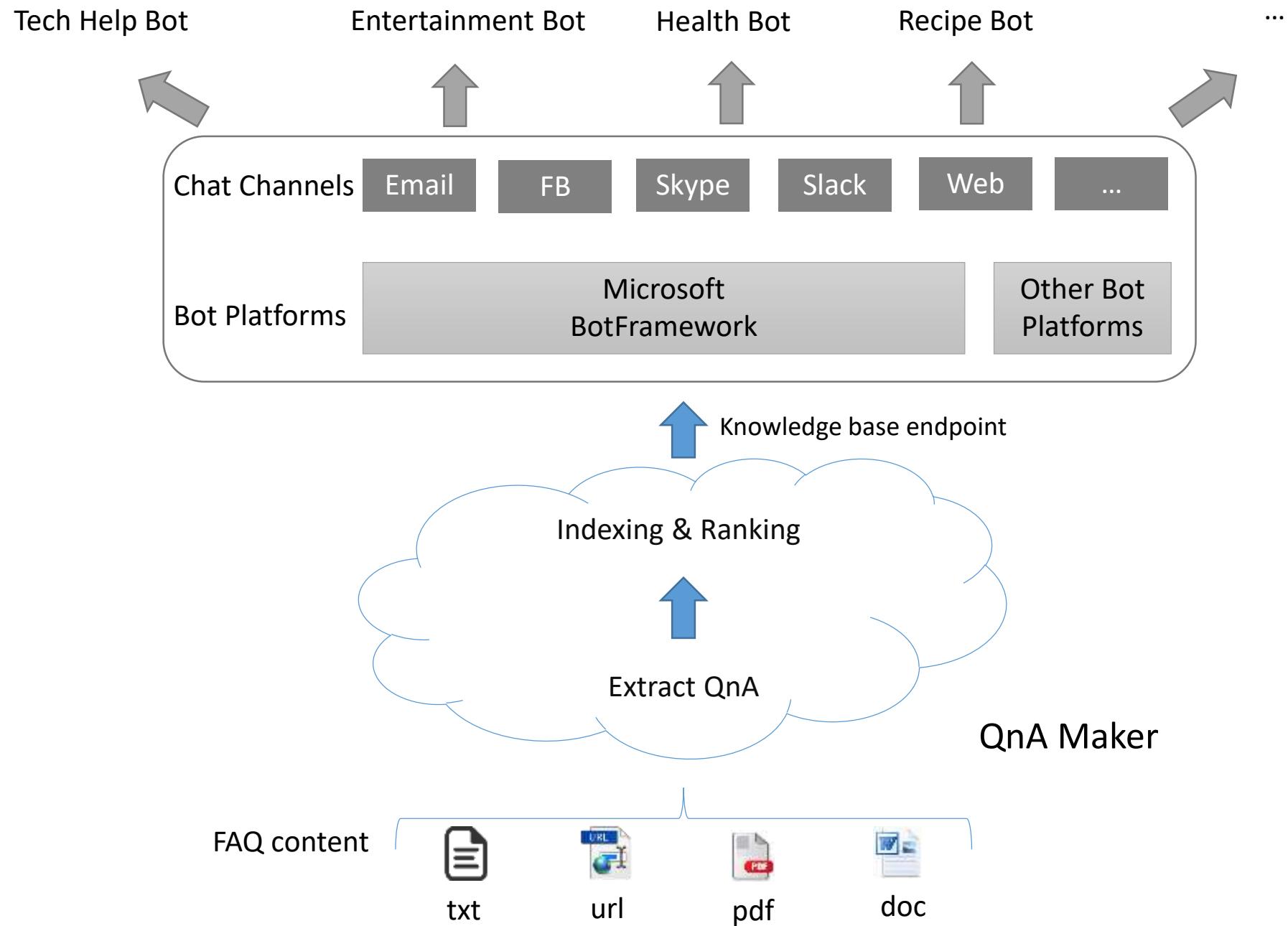
內建支援語意了解服務(LUIS)及語言翻譯服務(Translation)



<https://github.com/Microsoft/BotBuilder>

DEMO

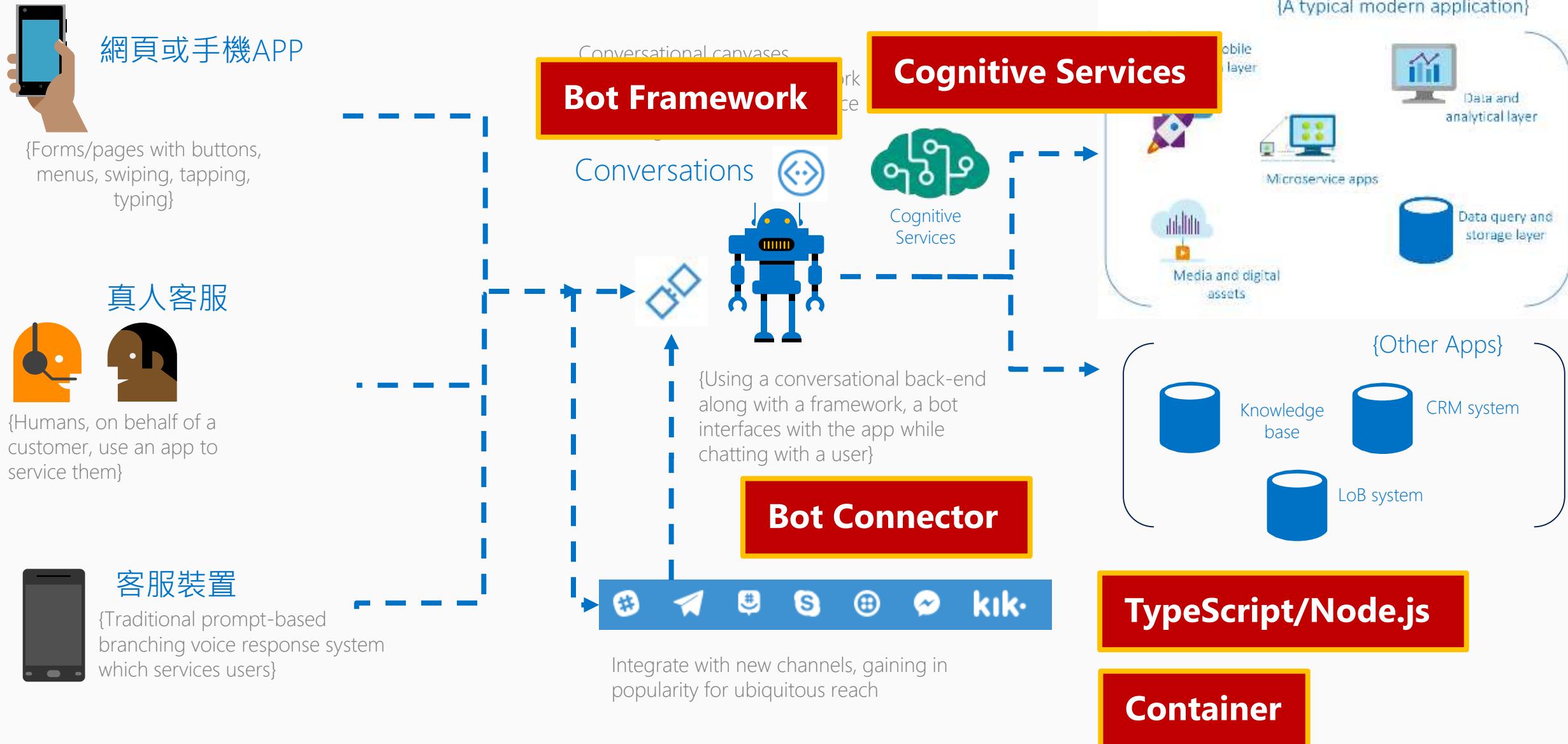




Example	Description
basics-waterfall	Shows how to use a waterfall to prompt the user with a series of questions.
basics-loops	Shows how to use session.replaceDialog() to create loops.
basics-menus	Shows how to create a simple menu system for a bot.
basics-naturalLanguage	Shows how to use a LuisDialog to add natural language support to a bot.
basics-multiTurn	Shows how to implement simple multi-turns using waterfalls.
basics-firstRun	Shows how to create a First Run experience using a piece of middleware.
basics-logging	Shows how to add logging/filtering of incoming messages using a piece of middleware.
basics-localization	Shows how to implement multiple language support for a bot.
basics-customPrompt	Shows how to create a custom prompt of arbitrary complexity.
basics-libraries	Shows how to package up a set of dialogs as a library that can be shared across multiple bots.

AI客服服務架構

Cognitive Service Toolkit
(CNTK)



【臺版Chatbot實例】第一款房仲Chatbot幕後開發秘訣大公開

台灣房屋搶先房仲業第一個推出自家Chatbot地產機器人，不但讓查詢資料變得簡單又即時，更創造出企業與客戶的新溝通管道，開發Chatbot的過程到底有什麼眉角？

文/何維涓 | 2017-04-19 發表

 賽 4 萬 按讚加入iThome粉絲團  賽 461 分享  1



台灣房屋雲端中心技術總監劉秉錦帶著一位工程師，利用LINE Messaging API結合微軟LUIS語意理解技術，自行開發出台灣第一款房仲Chatbot服務地產機器人。

<http://www.ithome.com.tw/news/113436>

Exchange 2007 正
新世代援軍已就位
[2017.04.11 終止支援](#)



iThome Weekly
按讚追蹤 iThome 最新報導
 賽 4 萬

熱門新聞

超過3萬台PC被植
木馬勒索軟體

台灣房屋雲端中心技術總監劉秉錦帶著一位工程師，利用LINE Messaging API結合微軟LUIS語意理解技術，自行開發出台灣第一個房仲Chatbot服務地產機器人。



Cognitive Services

Microsoft 感知服務

為應用系統增添
智慧與人性

Cognitive Services



電腦視覺 (Vision)

讓您的 Apps 了解圖片與影片的內容



語言處理 (Speech)

讓您的 Apps 過濾雜訊可以辨識說話者是誰? 並了解用戶的意圖



語意分析 (Language)

文字語意分析，讓 Apps 了解用戶文字的意涵



知識處理 (Knowledge)

彙整來自互聯網，學術研究與您自己所累積的知識與資料



搜尋 (Search)

透過 Bing API 存取數十億網頁，圖片，影片與新聞

Microsoft Cognitive Services

microsoft.com/cognitive

Vision	Speech	Language	Knowledge	Search
電腦視覺	自訂語音辨識	Bing 拼字檢查	學術論文分析	Bing 網頁搜尋
情緒辨識	以語音辨識發話者	語意分析	英文字關聯分析 Entity Linking	Bing 圖片搜尋
人臉辨識	Bing 語音辨識	理解人類語言 LUIS	互動式搜尋	Bing 影片搜尋
影片辨識	Bing 即時翻譯	文字分析	推薦	Bing 新聞搜尋
		WebLM 網頁英文 文字解析		Bing 自動推薦

Microsoft Cognitive Services 優勢



簡單易用

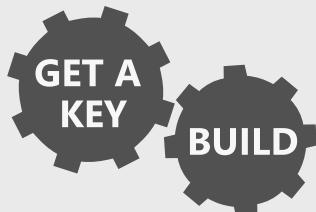
以 HTTP 通訊協定 REST 方式提供 API
僅需幾行程式碼即可呼叫

跨平台跨語言

能夠支援 iOS, Android, Windows
與各種網頁開發技術
支援任何能夠使用 HTTP 之程式語言
與平台

經過市場驗證

以微軟研究院、Bing、Cortana 與 Azure
Machine Learning 團隊的研發成果為基礎
豐富的技術文件、範例程式碼與社群支援



Analyze image



Type of image

Clip-Art Type: 0 Non-clipart
Line Drawing Type: 0 Non-Line Drawing
Black & White Image: False

Content of image

Categories: Adult Content: False, Adult Score: 0.18513869949321747
Faces: [{"age": 27, "gender": "Male", "id": "10000000000000000000000000000000"}]

Image colors

Dominant Color Background: White
Dominant Color Foreground: Grey
Dominant Colors: White
Accent Color:

Face APIs

Detection

```
[{"faceRectangle": {"width": 193, "height": 193, "left": 326, "top": 284}}
```

Feature attributes

```
[{"attributes": {"age": 32, "gender": "Male", "headPose": {"roll": 78.2, "pitch": -737.8, "yaw": 76.8}, "headSurfaces": [{"id": 471, "height": 108, "width": 108}], "faceId": "10000000000000000000000000000000"}, {"age": 32, "gender": "Male", "id": "10000000000000000000000000000000"}]}
```

Grouping



Identification

Jasper Williams

Voice recognition

Short form	Long form
Duration of Audio	< 15 seconds
Final Result	n-best choice
Partial Results	Yes

***** Final N-BEST Results *****

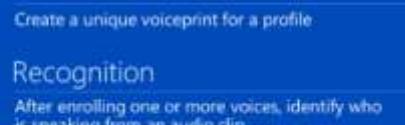
```
[{"text": "450 6th St San Francisco.", "confidence": 1.0}, {"text": "Confidence-Normal", "confidence": 0.99}, {"text": "For 58 six St San Francisco.", "confidence": 0.98}, {"text": "450 6th St San Fransisco.", "confidence": 0.97}, {"text": "Confidence-Normal", "confidence": 0.96}, {"text": "450 six St in San Francisco.", "confidence": 0.95}, {"text": "Confidence-Normal", "confidence": 0.94}, {"text": "450 6th St San Francisco.", "confidence": 0.93} ]
```

Speaker recognition APIs



Enrollment

Create a unique voiceprint for a profile



Recognition

After enrolling one or more voices, identify who is speaking from an audio clip



Verification

Confirm if a voice belongs to a previously enrolled profile

Language understanding models



```
[{"intents": [{"entity": "Flight_Delay", "type": "Topic", "score": 0.9999999999999999}, {"intents": [{"entity": "Flight_News", "score": 0.9999999999999999}, {"entity": "News", "score": 0.01299517}, {"entity": "Headlines", "score": 0.0067232457}, {"entity": "ShareNews", "score": 0.0013299605}], "score": 1.0}], [{"text": "News about flight delays"}]
```

Text analytics

Sentiment analysis

Understand if a record has positive or negative sentiment

Key phrase extraction

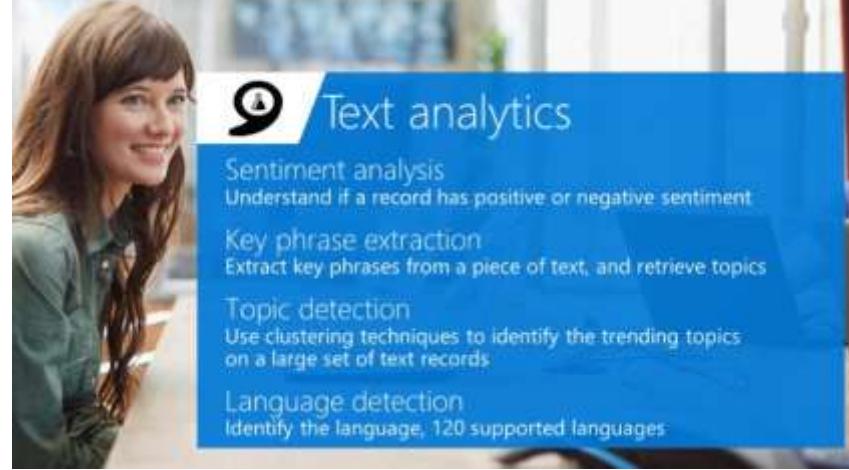
Extract key phrases from a piece of text, and retrieve topics

Topic detection

Use clustering techniques to identify the trending topics on a large set of text records

Language detection

Identify the language, 120 supported languages



Knowledge exploration

Enable interactive search experiences over structured data via natural language inputs

Attribute histograms

To enable rich visualization and interactive faceted experience

Structured query evaluation

To efficiently retrieve detailed information about matching objects

Query auto-completion

To reduce user effort and help with discovery of rich capabilities

Natural language understanding

To interpret natural language queries into structured query expressions



Recommendations



Increase catalog discovery

Help customers easily discover items that they may be interested in

Personalize your experience

Show suggestions that are targeted to each specific user

Increase the bottom line

Increase your conversion rate by offering the right products at the right time

Bing web search

Intelligent search to your apps with the ability to comb billions of webpages, images, videos, and news with a single API call

Retrieve web documents indexed by Bing and narrow the results down with filters such as by answer type and freshness





LUIS

了解對方在講些什麼
使用預設Bing 或 Cortana 模型或是
使用自己的模型



語言理解模型

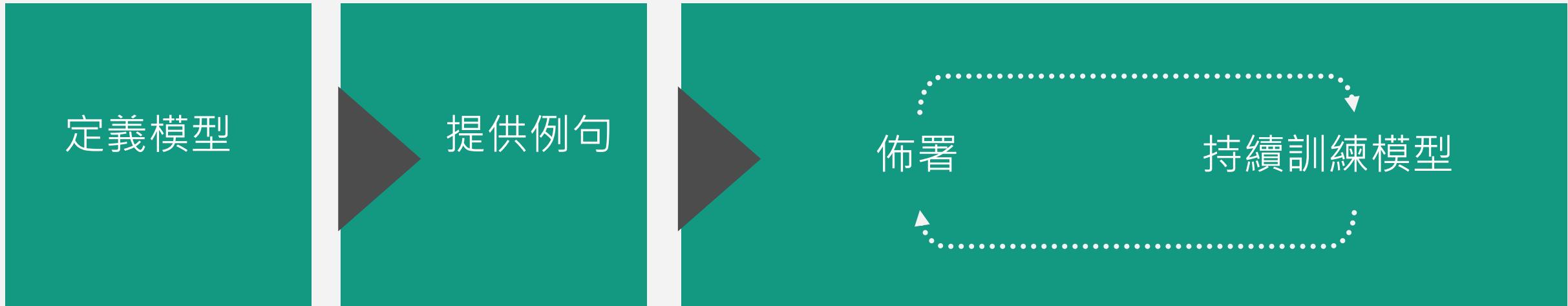
Language Understanding Intelligent Service (LUIS)

理解人類鍵入之文字

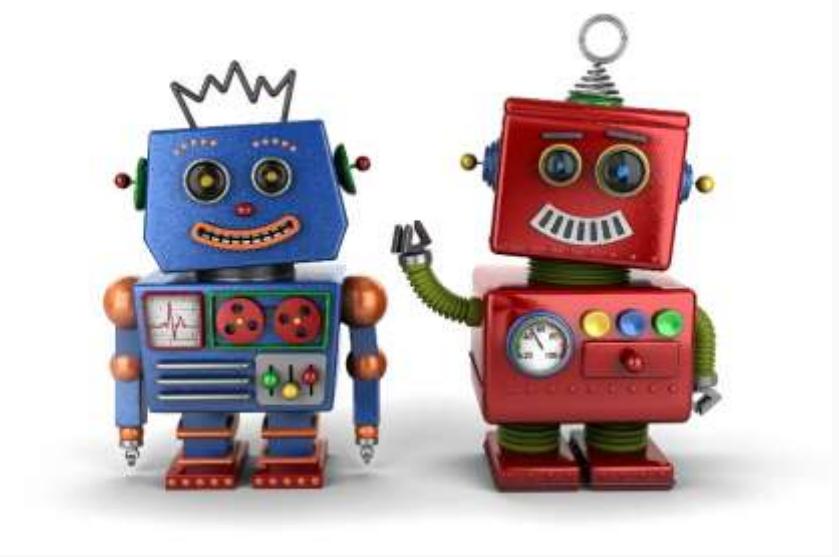
提供互動式模型訓練工具漸少標示關鍵實體成本

呼叫內容自動保存，可日後持續訓練與學習

支援九種語言 (英文, 中文, 義大利文, 法文, 西班牙文, 日文, 韓文, 葡萄牙文, 德文)



DEMO



Here you are in full control of this intent; you can manage its utterances, used entities and suggested utterances ... [Learn more](#)

[Dashboard](#)[Intents](#)[Entities](#)[Features](#)[Train & Test](#)[Publish App](#)[← Back to App list](#)[Utterances \(9\)](#) [Entities in use \(7\)](#) [Suggested utterances](#)

Type a new utterance & press Enter ... X		
<input type="checkbox"/> Save <input type="checkbox"/> Discard <input type="checkbox"/> Delete <input type="checkbox"/> Reassign Intent		Labels view (Ctrl+E): Tokens ▼
		<input type="text"/> Search in utterances ... 🔍 Y
<input type="checkbox"/>	Utterance text	Predicted Intent
<input type="checkbox"/>	我要買 [客廳] 用的 [照明燈]	0.84 建議商品
<input type="checkbox"/>	你們有賣 [廚房] 的 [壁燈] 嗎	0.88 建議商品
<input type="checkbox"/>	有沒有賣 [餐桌]	0.93 建議商品
<input type="checkbox"/>	我想要找 [高櫃]	0.87 建議商品
<input type="checkbox"/>	你們有沒有 [廚房] 的 [壁紙]	0.91 建議商品
<input type="checkbox"/>	有沒有賣 [床墊]	0.71 建議商品
<input type="checkbox"/>	你們有賣 [廚房] 的 [收納工具] 嗎	0.81 建議商品
<input type="checkbox"/>	我要購買 [客廳] 的 [壁燈]	0.89 建議商品
<input type="checkbox"/>	我想要找小孩用的 [書桌]	0.89 建議商品

Here you are in full control of this intent; you can manage its utterances, used entities and suggested utterances ... [Learn more](#)

[Dashboard](#)[Intents](#)[Entities](#)[Features](#)[Train & Test](#)[Publish App](#)[← Back to App list](#)[Utterances \(9\)](#) [Entities in use \(7\)](#) [Suggested utterances](#)

Type a new utterance & press Enter ...		
Save Discard Delete Reassign Intent		Labels view (Ctrl+E): Entities
		Search in utterances ...
<input type="checkbox"/>	Utterance text	Predicted Intent
<input type="checkbox"/>	我要買[\$使用場域::客廳]用的[\$大商品類別::照明]	0.84 建議商品
<input type="checkbox"/>	你們有賣[\$使用場域::廚房]的[\$大商品類別::廚房五金]嗎	0.88 建議商品
<input type="checkbox"/>	有沒有賣[\$商品小類別]	0.93 建議商品
<input type="checkbox"/>	我想要找[\$商品小類別]	0.87 建議商品
<input type="checkbox"/>	你們有沒有[\$使用場域::廚房]的[\$大商品類別::廚房五金]	0.91 建議商品
<input type="checkbox"/>	有沒有賣[\$大商品類別::床組]	0.71 建議商品
<input type="checkbox"/>	你們有賣[\$使用場域::廚房]的[\$大商品類別::櫥櫃]嗎	0.81 建議商品
<input type="checkbox"/>	我要購買[\$使用場域::客廳]的[\$大商品類別::照明]	0.89 建議商品
<input type="checkbox"/>	我想要找小孩用的[\$大商品類別::書桌]	0.89 建議商品

Intents

A listing of intents in the application. Click an intent to view/edit its details, or add a new intent ... [Learn more](#)

[Dashboard](#)[Intents](#)[Entities](#)[Features](#)[Train & Test](#)[Publish App](#)[Add Intent](#)

Intent Name ↓

Utterances

None

0

建議商品

9



查詢優惠活動

4



查詢店鋪位置

3



查詢訂單

2



詢問特定商品

4

[← Back to App list](#)

Entities

Manage a list of entities in your application and track and control their instances within utterances ... [Learn more](#)

[Dashboard](#)[Intents](#)[Entities](#)[Features](#)[Train & Test](#)[Publish App](#)[Entities list](#) [Labeled utterances](#) [Suggested utterances](#)[Add custom entity](#)[Add prebuilt entity](#)

Entity Name ↓	Entity Type	
使用場域 has: [客廳, 書房, 臥室, 廚房, 餐廳]	Hierarchical	
優惠檔期 has: [情人節, 中秋節, 耶誕節, 父親節, 母親節, 萬聖節, 農曆年]	Hierarchical	
商品名稱	Simple	
商品小類別	List	
商品編號	Simple	
大商品類別 has: [櫥櫃, 床組, 衣物收納, 書桌, 照明, 餐桌, 辦公椅, 廚房五金]	Hierarchical	
店鋪位置 has: [新竹, 台北, 台南, 桃園, 台中, 高雄]	Hierarchical	
店鋪名稱	Simple	
系列名稱	List	
訂單編號	Simple	

Cognitive Services

[Language Understanding](#)[My apps](#)[My keys](#)[Docs](#)[Pricing](#)[Support](#)[About](#)

宜家Bot

Features

Use these advanced features to improve performance and avoid mistakes in identifying and interpreting utterances ... [Learn more](#)

[Phrase list features \(2/10\)](#) [Pattern features \(1/10\)](#)

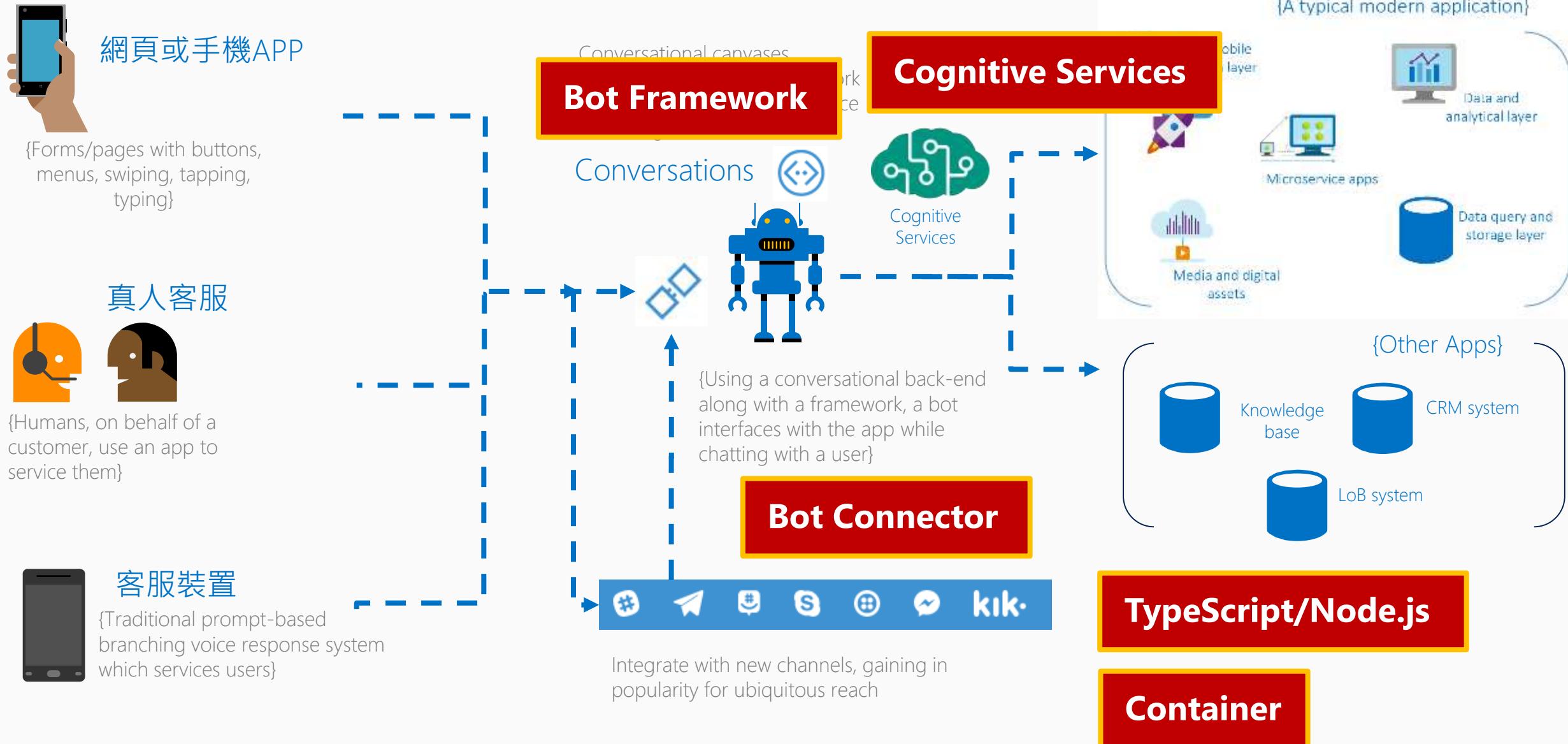
[Add phrase list](#)

Active	Phrase list ↓	Mode	
	IKEA品牌: [IKEA,宜家]	Exchangeable	
	系列名稱Phrase: [MARIUS,FORSTA,INGOLF]	Non-Exchangeable	

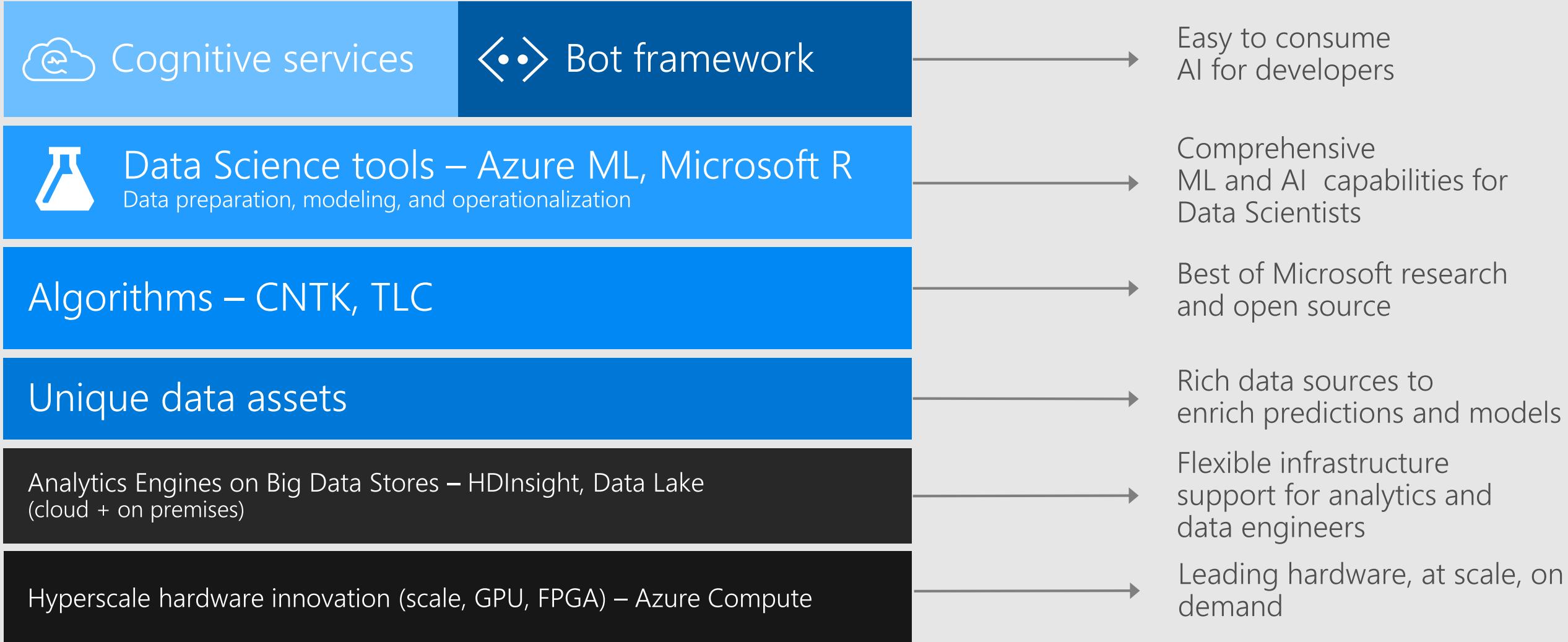
 [Back to App list](#)

AI客服服務架構

Cognitive Service Toolkit (CNTK)



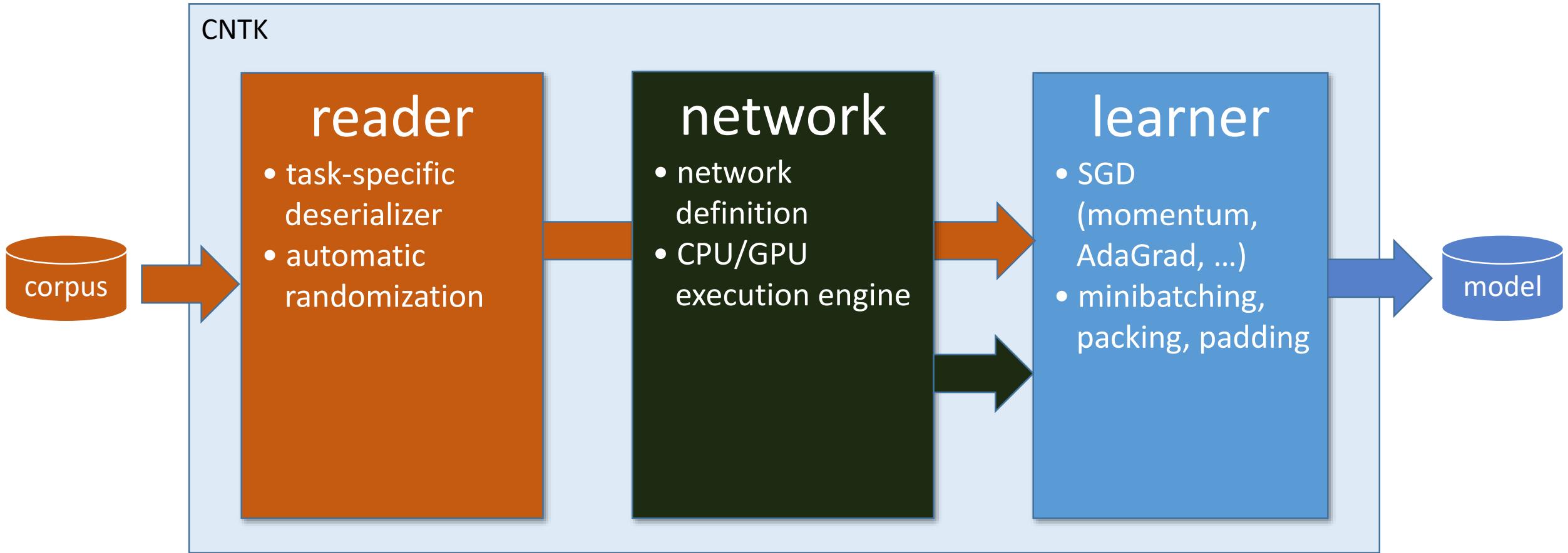
Microsoft AI Infrastructure & Services



CNTK “Computational Network Toolkit”

- CNTK is Microsoft’s **open-source, cross-platform** toolkit for learning and evaluating **deep neural networks**.
- CNTK expresses (nearly) **arbitrary neural networks** by composing simple building blocks into complex **computational networks**, supporting relevant network types and applications.
- CNTK is **production-ready**: State-of-the-art accuracy, efficient, and scales to multi-GPU/multi-server.

CNTK architecture



NVIDIA DGX-1：速度最快的深度學習系統

作者: 帮趣网

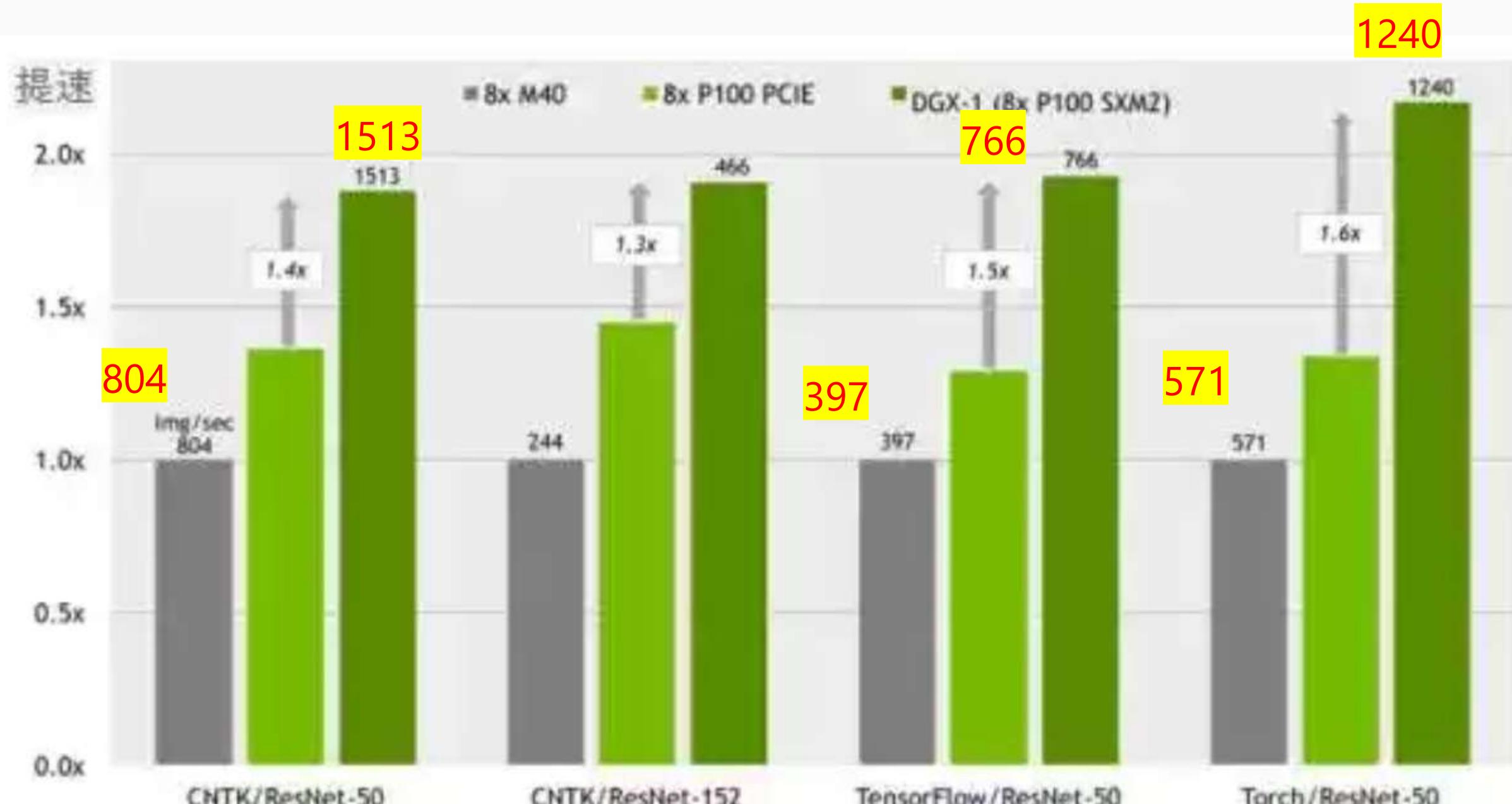
◎ 369 ◎ 2017-04-25 22:36

為慶祝DGX-1問世一周年，NVIDIA發布關於DGX-1系統架構的詳盡新技術白皮書。此白皮書深入探討了將DGX-1締造成深度學習訓練最快平台的各種軟硬件技術。本文將簡要介紹這些技術，但詳情還請閱讀DGX-1白皮書，點擊下方即可查看下載。

[下載](#)

NVIDIA在一年前宣布推出專為深度學習打造的集成系統NVIDIA® DGX-1™。DGX-1（如圖1所示）具有通過NVLink（NVIDIA的一種高性能GPU互聯技術）在混合數據立方體網格網絡中連接8台Tesla P100 GPU加速器的能力。搭配雙插槽Intel Xeon CPU和4個100 Gb InfiniBand網絡接口卡，DGX-1為深度學習訓練帶來了前所未有的非凡性能。此外，DGX-1系統軟件和功能強大管理庫可以適時調整，以用於擴展Tesla P100 GPU網絡中的深度學習，為有關生產和研究的深度學習應用提供靈活且可擴展的平台。





每秒處理圖片數 (越高越好)

深度學習工具效能評測

TABLE 7. COMPARATIVE EXPERIMENT RESULTS (TIME PER MINI-BATCH IN SECOND)

		Desktop CPU (Threads used)				Server CPU (Threads used)					Single GPU			
		1	2	4	8	1	2	4	8	16	G980	G1080	K80	
FCN-S	Caffe	1.324	0.790	0.578	15.444	1.355	0.997	0.745	0.573	0.608	1.130	0.041	0.030	0.071
	CNTK	1.227	0.660	0.435	-	1.340	0.909	0.634	0.488	0.441	1.000	0.045	0.033	0.074
	TF	7.062	4.789	2.648	1.938	9.571	6.569	3.399	1.710	0.946	0.630	0.060	0.048	0.109
	MXNet	4.621	2.607	2.162	1.831	5.824	3.356	2.395	2.040	1.945	2.670	-	0.106	0.216
	Torch	1.329	0.710	0.423	-	1.279	1.131	0.595	0.433	0.382	1.034	0.040	0.031	0.070
AlexNet-S	Caffe	1.606	0.999	0.719	-	1.533	1.045	0.797	0.850	0.903	1.124	0.034	0.021	0.073
	CNTK	3.761	1.974	1.276	-	3.852	2.600	1.567	1.347	1.168	1.579	0.045	0.032	0.091
	TF	6.525	2.936	1.749	1.535	5.741	4.216	2.202	1.160	0.701	0.962	0.059	0.042	0.130
	MXNet	2.977	2.340	2.250	2.163	3.518	3.203	2.926	2.828	2.827	2.887	0.020	0.014	0.042
	Torch	4.645	2.429	1.424	-	4.336	2.468	1.543	1.248	1.090	1.214	0.033	0.023	0.070
RenNet-50	Caffe	11.554	7.671	5.652	-	10.643	8.600	6.723	6.019	6.654	8.220	-	0.254	0.766
	CNTK	-	-	-	-	-	-	-	-	-	-	0.240	0.168	0.638
	TF	23.905	16.435	10.206	7.816	29.960	21.846	11.512	6.294	4.130	4.351	0.327	0.227	0.702
	MXNet	48.000	46.154	44.444	43.243	57.831	57.143	54.545	54.545	53.333	55.172	0.207	0.136	0.449
	Torch	13.178	7.500	4.736	4.948	12.807	8.391	5.471	4.164	3.683	4.422	0.208	0.144	0.523
FCN-R	Caffe	2.476	1.499	1.149	-	2.282	1.748	1.403	1.211	1.127	1.127	0.025	0.017	0.055
	CNTK	1.845	0.970	0.661	0.571	1.592	0.857	0.501	0.323	0.252	0.280	0.025	0.017	0.053
	TF	2.647	1.913	1.157	0.919	3.410	2.541	1.297	0.661	0.361	0.325	0.033	0.020	0.063
	MXNet	1.914	1.072	0.719	0.702	1.609	1.065	0.731	0.534	0.451	0.447	0.029	0.019	0.060
	Torch	1.670	0.926	0.565	0.611	1.379	0.915	0.662	0.440	0.402	0.366	0.025	0.016	0.051
AlexNet-R	Caffe	3.558	2.587	2.157	2.963	4.270	3.514	3.381	3.364	4.139	4.930	0.041	0.027	0.137
	CNTK	9.956	7.263	5.519	6.015	9.381	6.078	4.984	4.765	6.256	6.199	0.045	0.031	0.108
	TF	4.535	3.225	1.911	1.565	6.124	4.229	2.200	1.396	1.036	0.971	0.227	0.317	0.385
	MXNet	13.401	12.305	12.278	11.950	17.994	17.128	16.764	16.471	17.471	17.770	0.060	0.032	0.122
	Torch	5.352	3.866	3.162	3.259	6.554	5.288	4.365	3.940	4.157	4.165	0.069	0.043	0.141
RenNet-56	Caffe	6.741	5.451	4.989	6.691	7.513	6.119	6.232	6.689	7.313	9.302	-	0.116	0.378
	CNTK	-	-	-	-	-	-	-	-	-	-	0.206	0.138	0.562
	TF	-	-	-	-	-	-	-	-	-	-	0.225	0.152	0.523
	MXNet	34.409	31.255	30.069	31.388	44.878	43.775	42.299	42.965	43.854	44.367	0.105	0.074	0.270
	Torch	5.758	3.222	2.368	2.475	8.691	4.965	3.040	2.560	2.575	2.811	0.150	0.101	0.301
LSTM	Caffe	-	-	-	-	-	-	-	-	-	-	-	-	-
	CNTK	0.186	0.120	0.090	0.118	0.211	0.139	0.117	0.114	0.114	0.198	0.018	0.017	0.043
	TF	4.662	3.385	1.935	1.532	6.449	4.351	2.238	1.183	0.702	0.598	0.133	0.065	0.140
	MXNet	-	-	-	-	-	-	-	-	-	-	0.089	0.079	0.149
	Torch	6.921	3.831	2.682	3.127	7.471	4.641	3.580	3.260	5.148	5.851	0.399	0.324	0.560

Note: The mini-batch sizes for FCN-S, AlexNet-S, ResNet-50, FCN-R, AlexNet-R, ResNet-56 and LSTM are 64, 16, 16, 1024, 1024, 128 and 128 respectively.

Shaohuai Shi, Qiang Wang, Pengfei Xu, Xiaowen Chu
 Department of Computer Science, Hong Kong Baptist University
 {csshshi, qiangwang, pengfeixu, chxw}@comp.hkbu.edu.hk

17 Feb 2017

<https://arxiv.org/pdf/1608.07249.pdf>

CNTK's LSTM performance is 5-10x faster than the other toolkits.

The authors were using CNTK 1.7.2, and current CNTK 2.0 beta 10 is over 30% faster than 1.7.2.

For all networks, CNTK's performance was superior to TensorFlow performance.

[cntk](#) > [Libraries](#) > [tutorials](#)

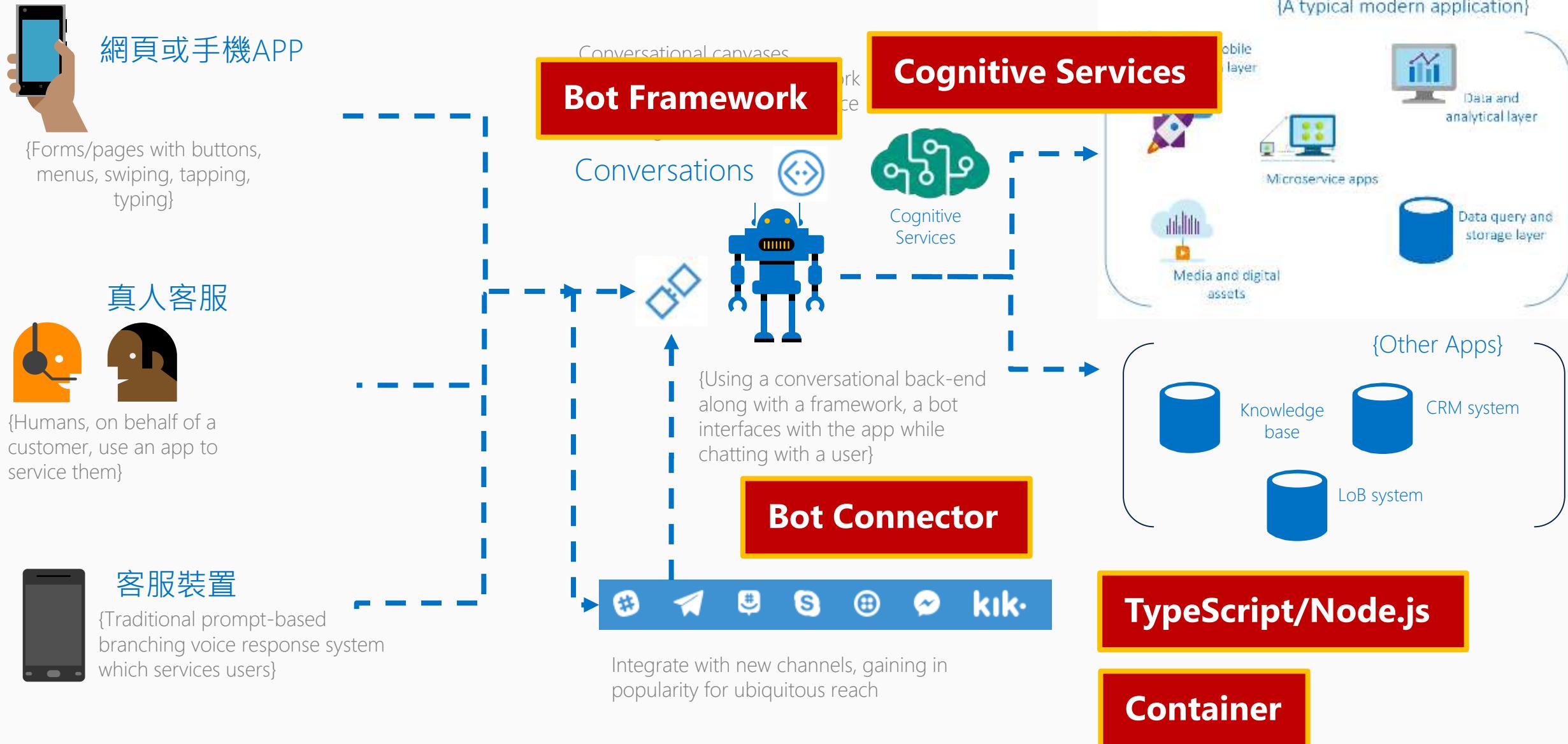
Notebooks to on-board with CNTK

[Share](#) [1672 Clones](#) | [Open in Jupyter](#) [Print](#) [Download](#)

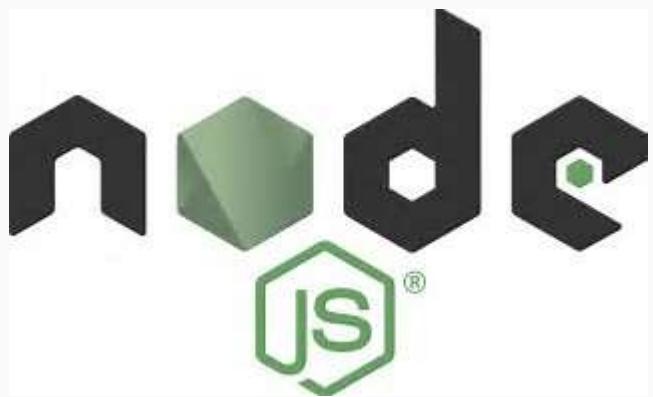
NOTEBOOK NAME ▾	LANGUAGE	MODIFIED	CREATED
CNTK_101_LogisticRegression.ipynb	Python 3.x	Apr 7, 2017	Feb 2, 2017
CNTK_102_FeedForward.ipynb	Python 3.x	Apr 11, 2017	Feb 2, 2017
CNTK_103A_MNIST_DataLoader.ipynb	Python 3.x	Apr 25, 2017	Feb 2, 2017
CNTK_103B_MNIST_FeedForwardNetwork.ipynb	Python 3.x	Apr 25, 2017	Feb 2, 2017
CNTK_104_Finance_Timeseries_Basic_with_Pandas_Numpy.ipynb	Python 3.x	Apr 7, 2017	Feb 2, 2017
CNTK_105_Basic_Autoencoder_for_Dimensionality_Reduction.ipynb	Python 3.x	Apr 7, 2017	Feb 2, 2017
CNTK_106A_LSTM_Timeseries_with_Simulated_Data.ipynb	Python 3.x	Apr 25, 2017	Feb 2, 2017
CNTK_106B_LSTM_Timeseries_with_IOT_Data.ipynb	Python 3.x	Apr 25, 2017	Apr 25, 2017
CNTK_201A_CIFAR-10_DataLoader.ipynb	Python 3.x	Apr 25, 2017	Feb 2, 2017
CNTK_201B_CIFAR-10_ImageHandsOn.ipynb	Python 3.x	Apr 7, 2017	Feb 2, 2017

AI客服服務架構

Cognitive Service Toolkit (CNTK)



全端工程師的好朋友 - JavaScript



後端



前端



行動端

JavaScript的好朋友- TypeScript

Developers should be able to focus on **Creating** amazing things

Large scale JavaScript
development is hard.

TypeScript: A language for large scale
JavaScript development.

TypeScript: A typed superset of JavaScript that compiles to plain JavaScript.

Any browser. Any host. Any OS.

Open Source.

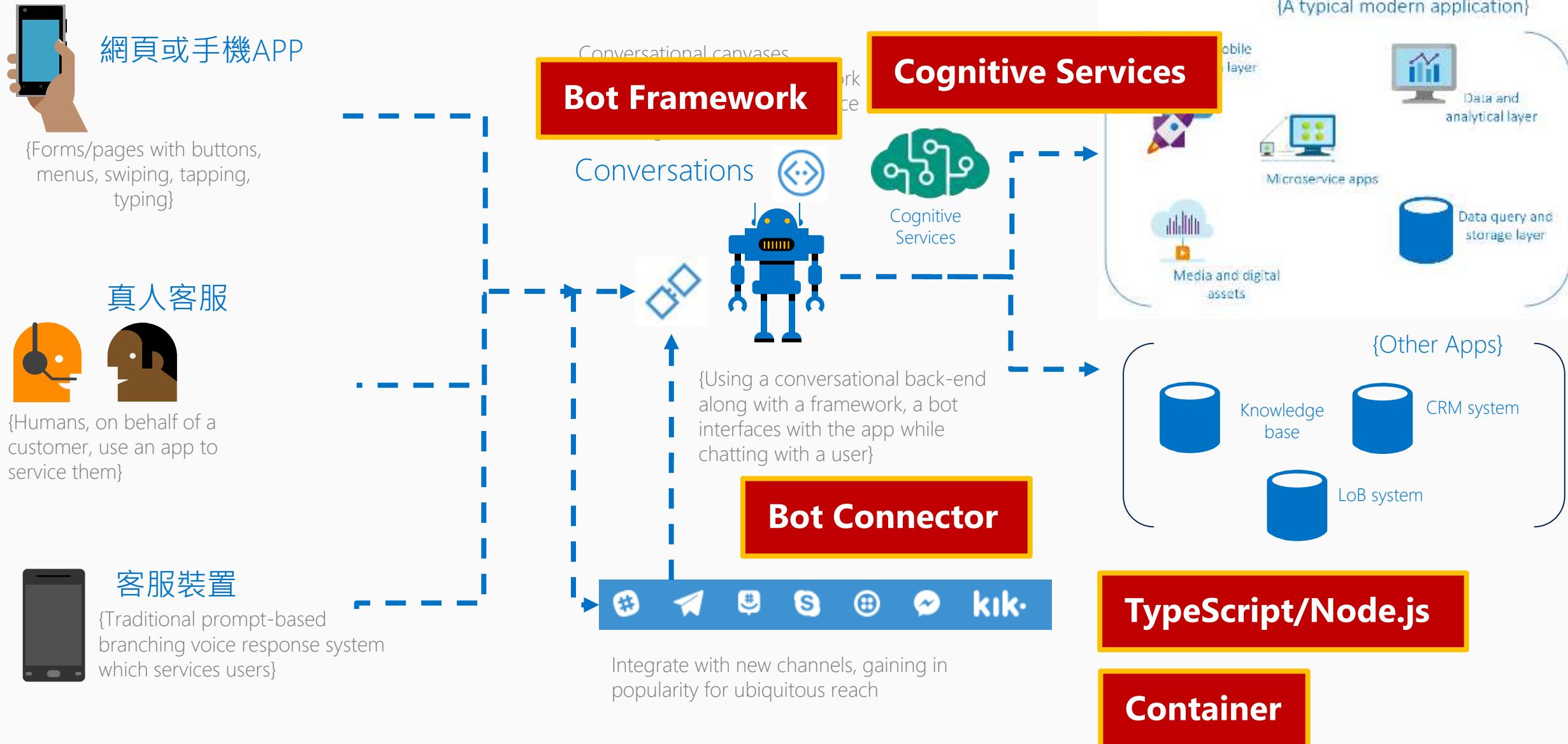
Type System

An accurate *static* representation of JavaScript's *dynamic* run-time type system

- Structural typing and type inference
 - In practice very few type annotations are necessary
- Generics
 - Increases accuracy and expressiveness of type system
- Works with existing JavaScript libraries
 - Declaration files can be written and maintained separately
- Types enable tooling
 - Provide verification and assistance, but not hard guarantees

AI客服服務架構

Cognitive Service Toolkit (CNTK)



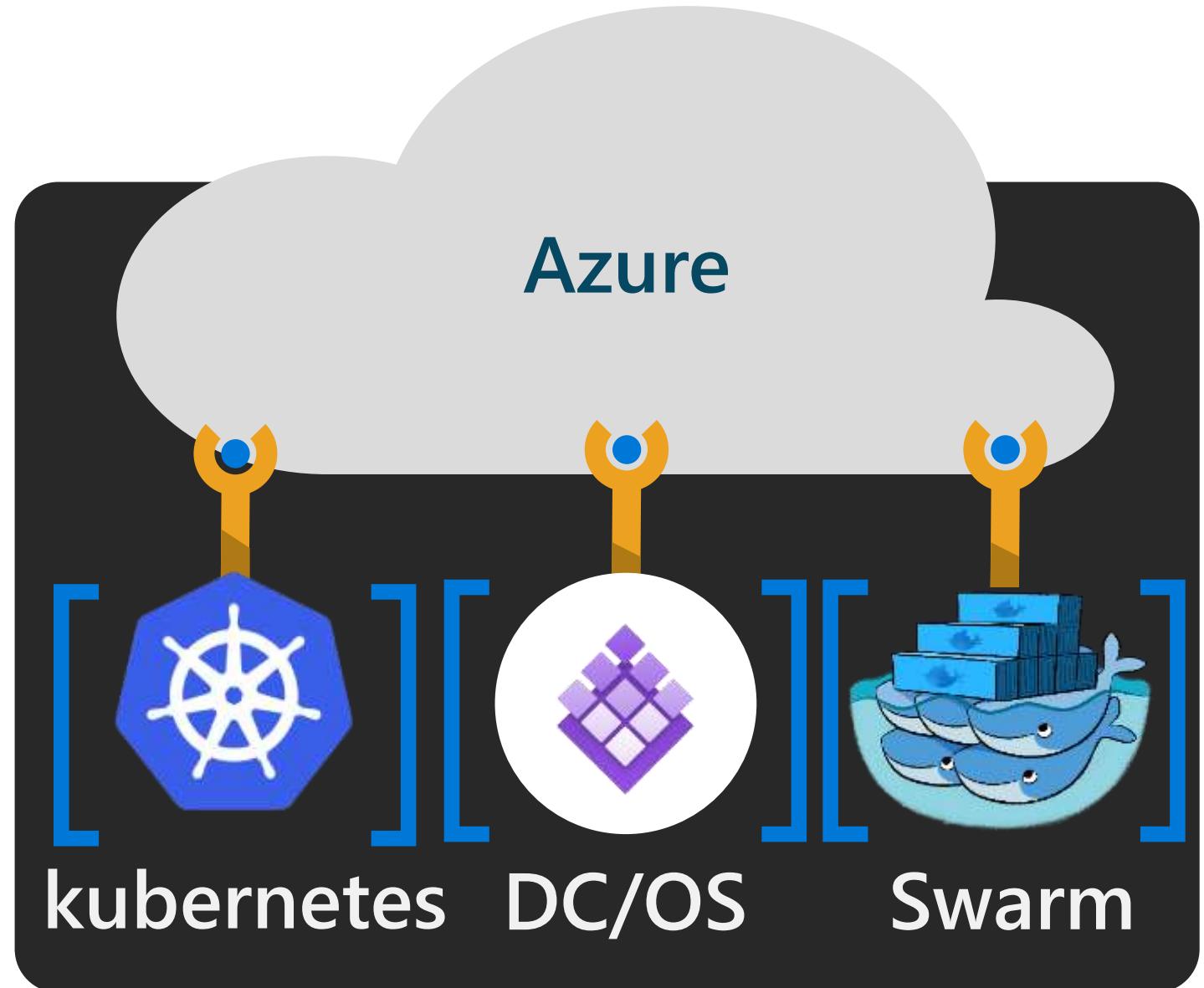
Azure Container Service

Standard Docker tooling and API support

Provisioning of DCOS, Docker Swarm, and K8

Linux and Windows Server containers (Preview)

On Prem and Cloud



設計建議

Tips 1. Chat Bot 不是只會對話



設計建議

Tips 2. 讓使用者可以隨時結束對話



設計建議

Tips 3. 隨時可以引入真人介入



AI 智能服務應用大賽

AI + ChatBot 與 AI + Office 365
兩大主題等你來挑戰！



DevDays **Asia** 2017
@ Taipei

亞太開發人員技術年會
AIOT 智慧物聯新願景

亞太開發人員技術年會 DevDays Asia 2017 @ Taipei 活動日期為 2017 年 5 月 23 日至 5 月 25 日。
活動地點為 華南銀行會議中心

<http://build.microsoft.com/>

Microsoft Build 2017

Washington State Convention Center

Seattle, WA

May 10 – 12

#MSBuild





Cortana Intelligence



Information Management

- Data Factory
- Data Catalog
- Event Hubs

Machine Learning and Analytics

- Machine Learning
- Data Lake Analytics
- HDInsight
(Hadoop and Spark)
- Stream Analytics

Big Data Stores

- Data Lake Store
- SQL Data Warehouse

Intelligence

- Cognitive Services
- Bot Framework
- Cortana

Dashboards & Visualizations

- Power BI

微軟正在建造最全面的工具及服務給對話機器人(Bot)應用

包括開發對話機器人的**SDK**, 讓對話機器人更聰明的**感知服務與機器學習**



1990s: Internet

- Search
- User “visits” websites

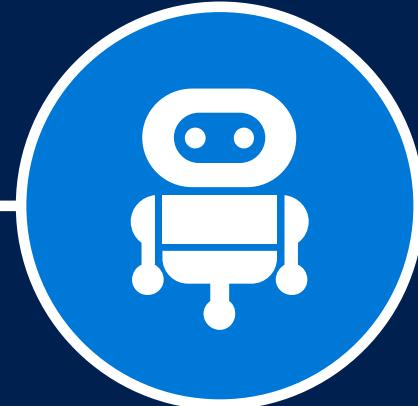
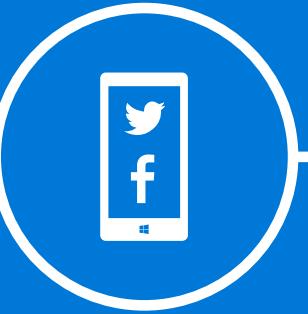


1980s: PC

- Desktop

2000s: Mobile

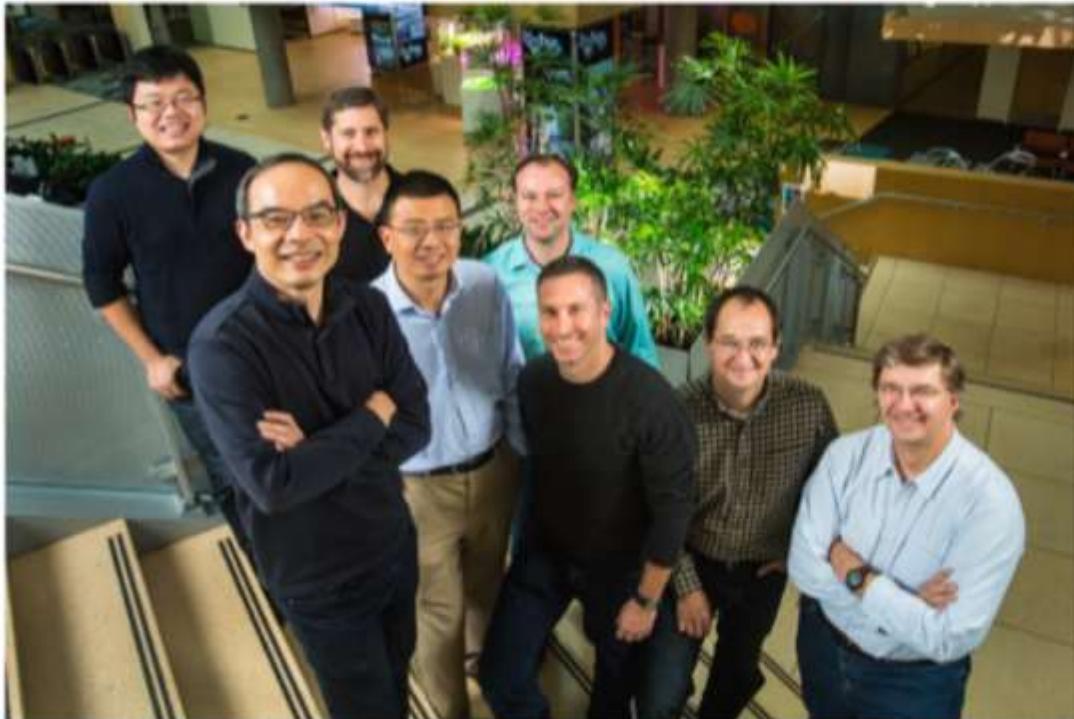
- Social
- User download apps from App Stores



The future: Conversations

- Natural language between people and technology
- Conversational canvas
- Bots and agents

Historic Achievement: Microsoft researchers reach human parity in conversational speech recognition



Microsoft researchers from the Speech & Dialogue research group include, from back left: Wayne Xiong, Geoffrey Zweig, Xuedong Huang, Dong Yu, Frank Seide, Mike Seltzer, Jasha Droppo and Andreas Stolcke. (Photo by Dan DeLong)

Posted October 18, 2016 By Allison Linn



Featured Posts



Microsoft Translator erodes language barrier for in-person conversations



Microsoft researchers earn distinctions from premier computing society



17 for '17: Microsoft researchers on what to expect in 2017 and 2027

Most Popular



Microsoft dataset aims to help researchers create tools to answer questions as well as people

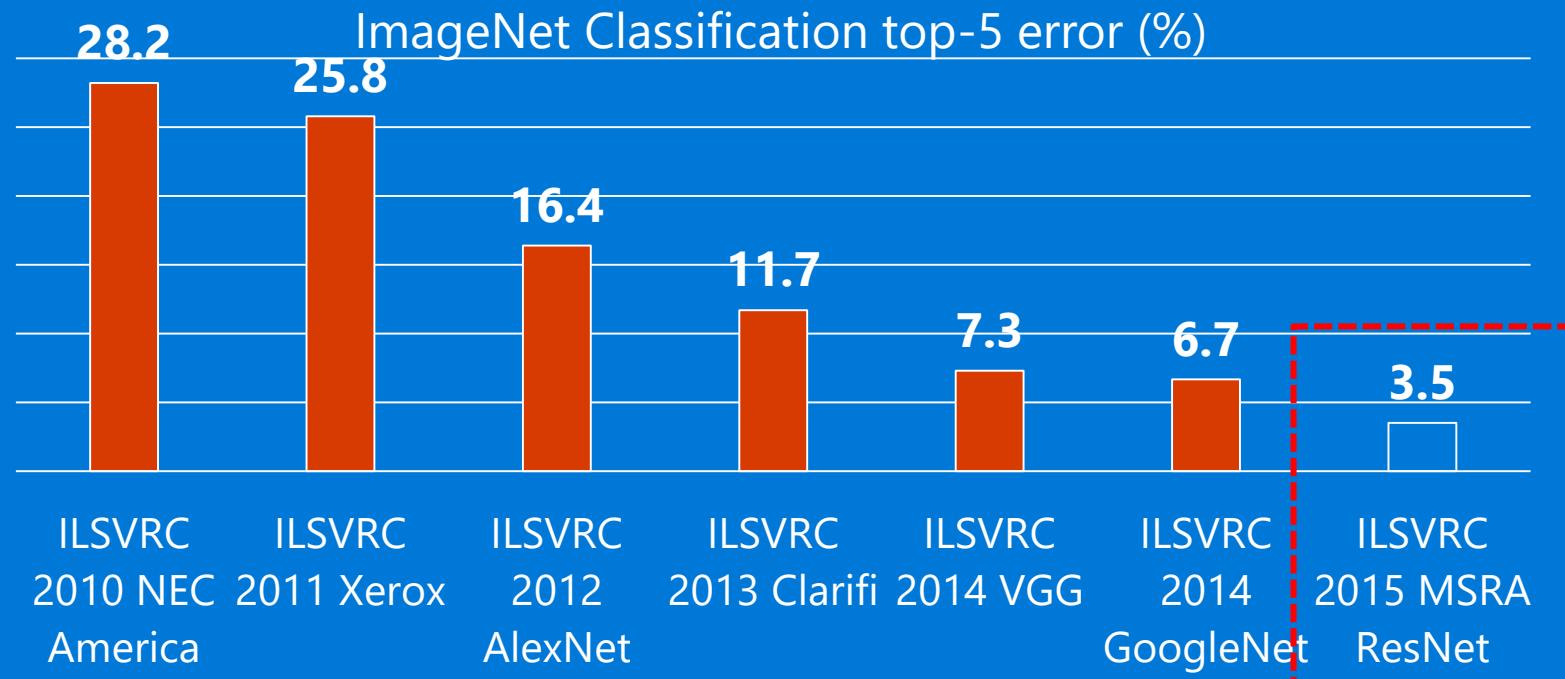


Microsoft Translator erodes language barrier for in-person conversations

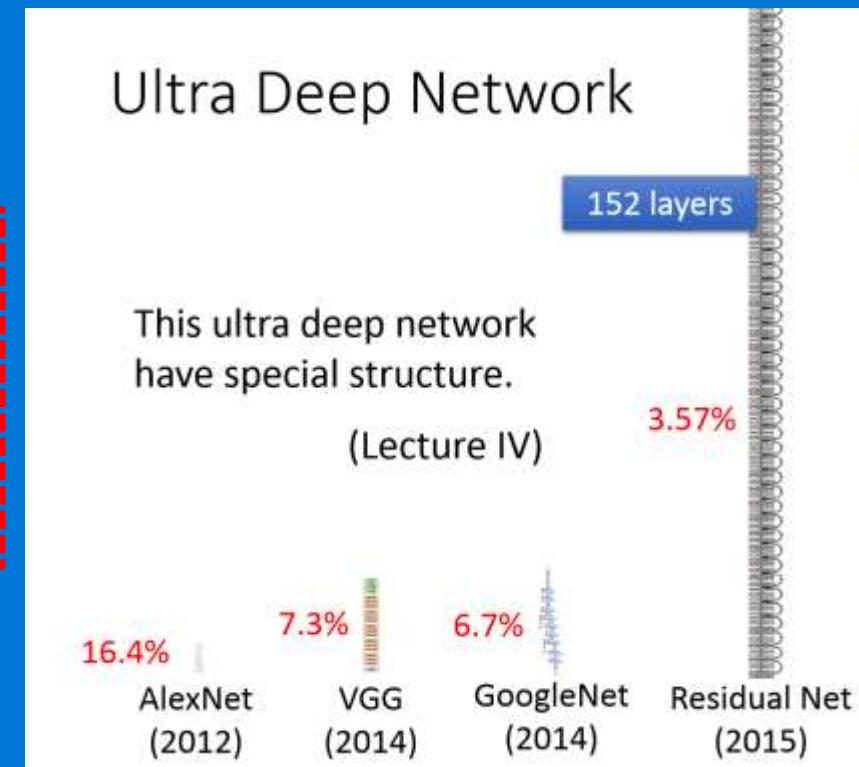


Microsoft researchers earn distinctions from premier computing society

Microsoft 透過深度學習技術贏得 ImageNet 2015所有比賽項目冠軍

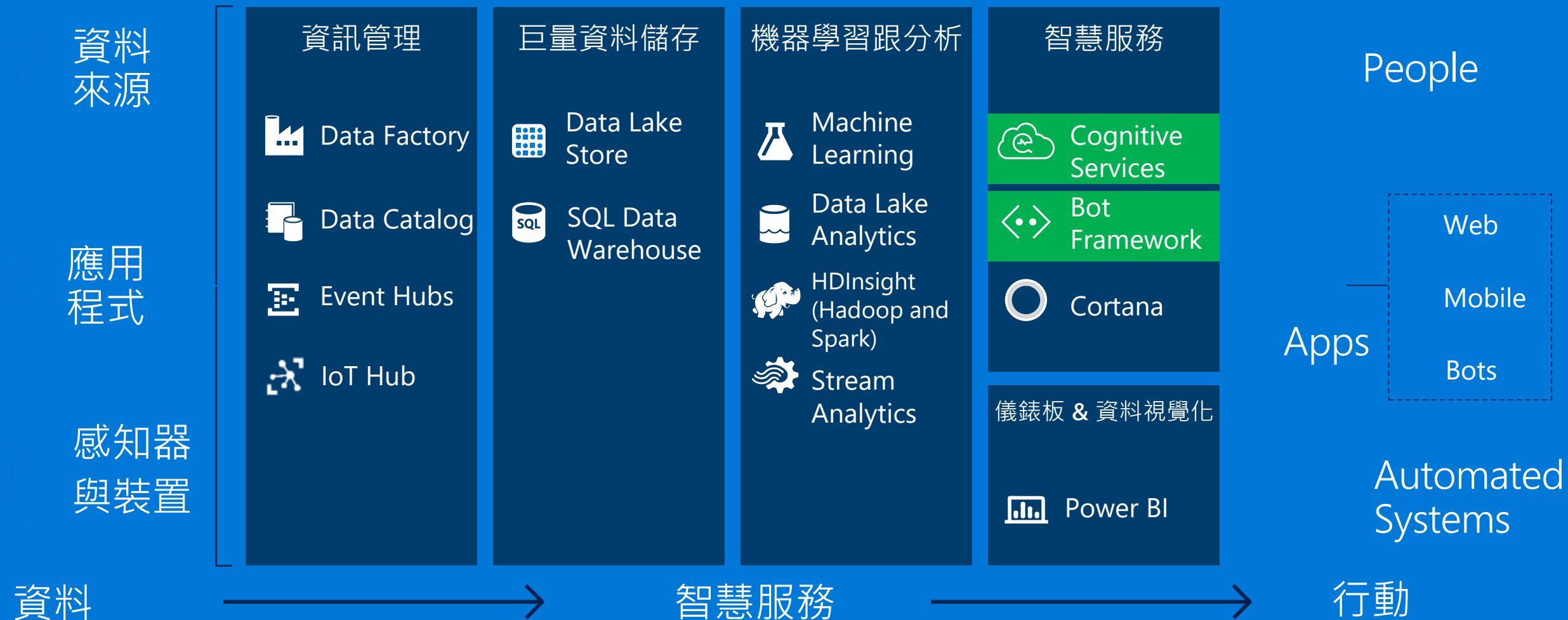


Microsoft had all **5 entries** being the 1-st places this year: **ImageNet classification, ImageNet localization, ImageNet detection, COCO detection, and COCO segmentation**



Residual Net 做出152層深度學習

Cortana Analytics Suite (Cortana分析套件包)



38

Azure regions

More than AWS and
Google combined



Tell me scenarios that make sense for a bot

