

Python으로 IoT(Internet of Things), Cognitive, Machine Learning 3종 셋트 활용하기

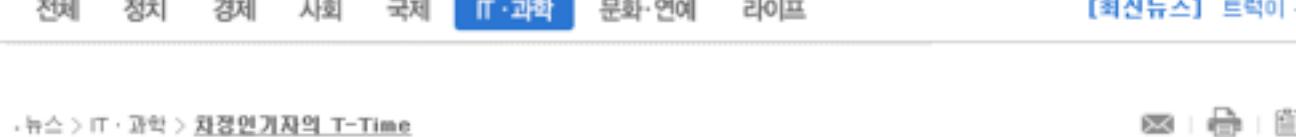
김영욱 Evangelist
Microsoft / DX / 부장
youngwook@outlook.com

```
public class TcpClientSample
{
    public static void Main()
    {
        byte[] data = new byte[1024];
        TcpClient server;
        try{
            server = new TcpClient();
            catch (SocketException)
            Console.WriteLine("Unable to connect to the server");
            return;
        }
        NetworkStream ns = server.GetStream();
        int recv = ns.Read(data, 0, data.Length);
        stringData = Encoding.ASCII.GetString(data, 0, recv);
        Console.WriteLine(stringData);
        while(true){
            input = Console.ReadLine();
            if (input == "newchannel")
                ("Audiobus"))
        }
    }
}
```

[직장人] 김영욱 부장 “꽃보다 밀덕”

f 좋아요 31 t 트윗 6 g+1 0 미투

김영욱 한국마이크로소프트 개발자플랫폼사업부 부장의 별명은 '밀덕'이다. 밀덕은 '밀 줄임말이다. 보통 군사나 총기 정보에 대해 관심이 많고 지식이 풍부한 마니아를 가리킨다.



GET IT GEAR

본방송

밀리터리 속
구직과 상식

KTM HD



시제기는 12척의 전함이 있습니다



00:00:00 / 00:26:06

지금 본방인증하면 남자들을 위한 놀잇감들이 내 손안에 HD ebook.com/GOMTV

War of IT



YES 24.COM

국내도서 | KBS 역사 버라이어티 역사저널 그날 빨간! 5,000

분야찾기 | 베스트셀러 | 신상품 | e벤트세상 | YES캘린더 | 만월이하도서 | 정기인하도서 | 추천도서 | 기획코너 | 회원리뷰 | 미리보기 | 문화행사초대

🔍 그레이의 50가지 그림자 | 한비야 | 한병철 | 부의 시대 | < >

황석영 작가와 소설기행! 2015 YES24 소설학교 개강!

OPEN! 신규 서비스 4 welcome > 국내도서 > IT 모바일 > IT 전문서 > IT 비즈니스

노서 [예약판매] War of IT: 전쟁사를 통해서 본 IT 기업의 패권 다툼 [2015/03/03 이후 배송가능] 예약판매

영국 저 | 지앤선(志&擇)

The thumbnail shows the front cover of the book "War of IT".

정가 15,000원

판매가 13,500원(10% 할인)

YES포인트 ? 150원(1% 적립)

카드혜택 더보기 > 8,100원 - 예스24하나카드(40% 할인, 월 1만원한도)
8,100원 - 예스24신한카드(40% 할인, 1만원 이상 결제 시, 월 1만원한도)

* 5만원 이상 구매시 2,000원 추가적립 ?

2,500 하루 3번, 모바일에서는 2,500원 상품권이 쏟아진다!

• 출간일 2015년 02월 28일 • 328쪽 | 130*190*30mm
• ISBN-13 9788993827910 • ISBN-10 8993827915

<https://github.com/KoreaEva/Python.git>



Mobile-first,
cloud-first



Microsoft
LOVE ❤

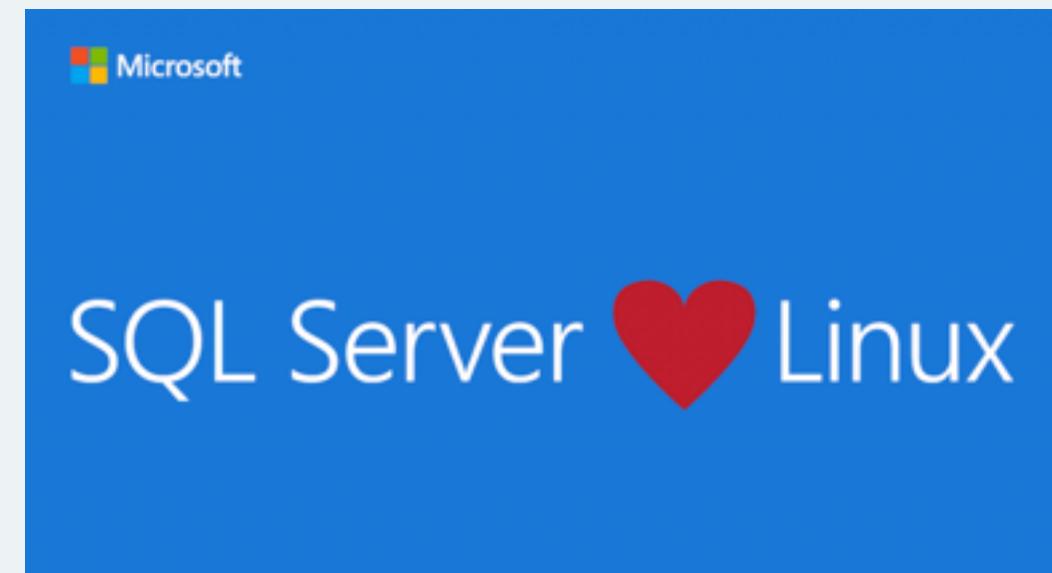
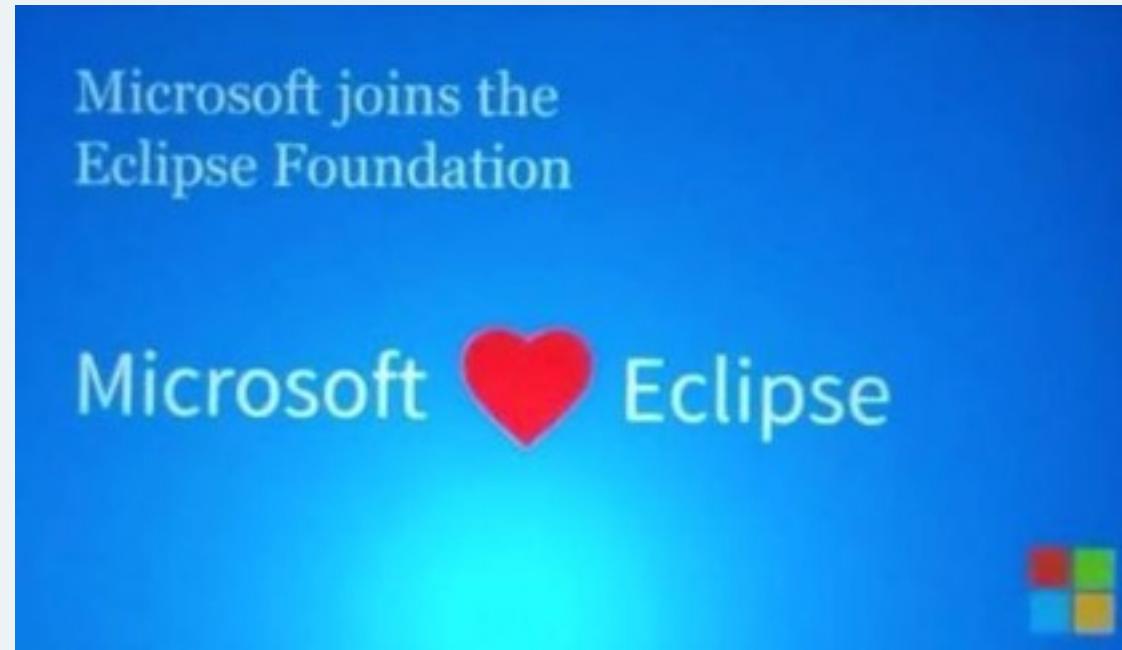




Microsoft Azure

Welcome Red Hat.

Learn more about our new partnership →



Microsoft ❤️ Open Source



PHP Tools for Visual Studio



PTVS(Python Tools for Visual Studio)

NTVS(Node.js Tools for Visual Studio)
RTVS(R Tools for Visual Studio)



Ubuntu

Visual C++ for Linux



Microsoft Azure

Microsoft **is** Open Source

The Roslyn project

.NET Core

Windows Store
App Model

Meta-programming

Language
Object Model

Source
File



Read-Eval-Pr

DSL Embed

TypeScript

JavaScript that scales.

Visual Studio Code

Docs

Updates

Blog

Extensions

FAQ

Star 13,412

Announcing Version 1.0! Read about the journey in our bl

Code editing.
Redefined.

Free. Open source. Runs everywhere.

Download for Windows

Available on other platforms

By using VS Code, you agree to its license and privacy
statement.

```
gulpfile.js · node-express-javascript · Visual Studio Code
File Edit View Goto Help
REPO ext install
WORKING FOLDER
NODE-EXPRESS
> .vscode
> bin
> node_modules
> public
> routes
> styles
> tests
> typings
> views
> .gitignore
> app.js
15 * gulp.task('watc
16   });
17   });
18   });
19   /**
20    * compile less
21    * into css file
22   */
23   multiTask('css');
24   multiTask('js');
```

Microsoft

Open source, from Microsoft with love

Redmond, WA

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

oss@microsoft.com

Any OS. Open source.

Microsoft

Open source, from Microsoft with love

Redmond, WA <http://www.microsoft.com/> oss@microsoft.com

Any OS. Open source.

Code editing. Redefined.

Free. Open source. Runs everywhere.

Download for Windows

Available on other platforms

By using VS Code, you agree to its license and privacy statement.

Announcing Version 1.0! Read about the journey in our blog post: [https://code.visualstudio.com/1.0/](#)

ext install

Repositories People 12,718

Filters Find a repository...

vscode-docs

Public documentation for Visual Studio Code

Updated a minute ago

MIEngine

The Visual Studio MI Debug Engine ("MIEngine") provides an open-source Visual Studio Debugger extension that works with MI-enabled debuggers such as gdb, llDB, and cldbg.

Updated 4 minutes ago

Mobius

Fastணக்கை ஹாட்டிங் and எண்டனேஸ் தொழில் நிறுவனம்

Announcing Version 1.0! Read about the journey in our [blog](#).

Overview

EDITOR

CUSTOMIZATION

LANGUAGES

RUNTIMES

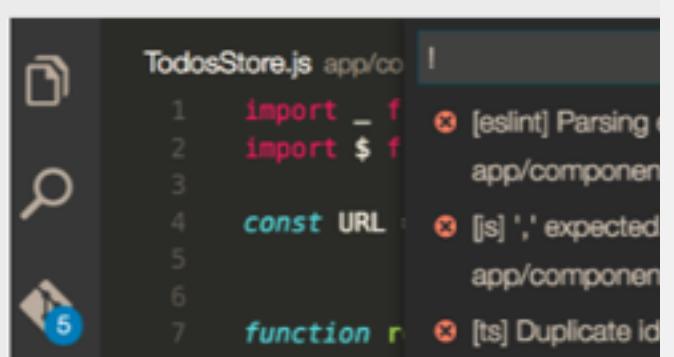
EXTENSIONS

EXTENSIBILITY
REFERENCE

TOOLS

Getting Started

Visual Studio Code is a lightweight but powerful source code editor available for Windows, OS X and Linux. It comes with built-in support for CSS, JavaScript, Node.js and has a rich ecosystem of extensions for other languages.



```

TodosStore.js app/cool
1 import _ from 'lodash';
2 import $ from 'jquery';
3
4 const URL = 'http://localhost:3001/todos';
5
6 function render() {
7   ...
  
```

The screenshot shows a dark-themed code editor window with a sidebar containing icons for file, search, and refresh. The main area displays a file named `TodosStore.js`. Several lines of code are underlined with red, indicating ESLint parsing errors. The first error is for `[eslint] Parsing error: Unexpected character 'l' (1:1)`. The second error is for `[ts] 'const' expected (4:1)`. The third error is for `[ts] Duplicate identifier 'URL' (4:1)`. The fourth error is for `[ts] Identifier 'URL' is shadowed by a local declaration (4:1)`. The fifth error is for `[ts] Identifier 'URL' is shadowed by a local declaration (4:1)`. The sixth error is for `[ts] Identifier 'URL' is shadowed by a local declaration (4:1)`. The seventh error is for `[ts] Identifier 'URL' is shadowed by a local declaration (4:1)`.



Technical
Steering
Group

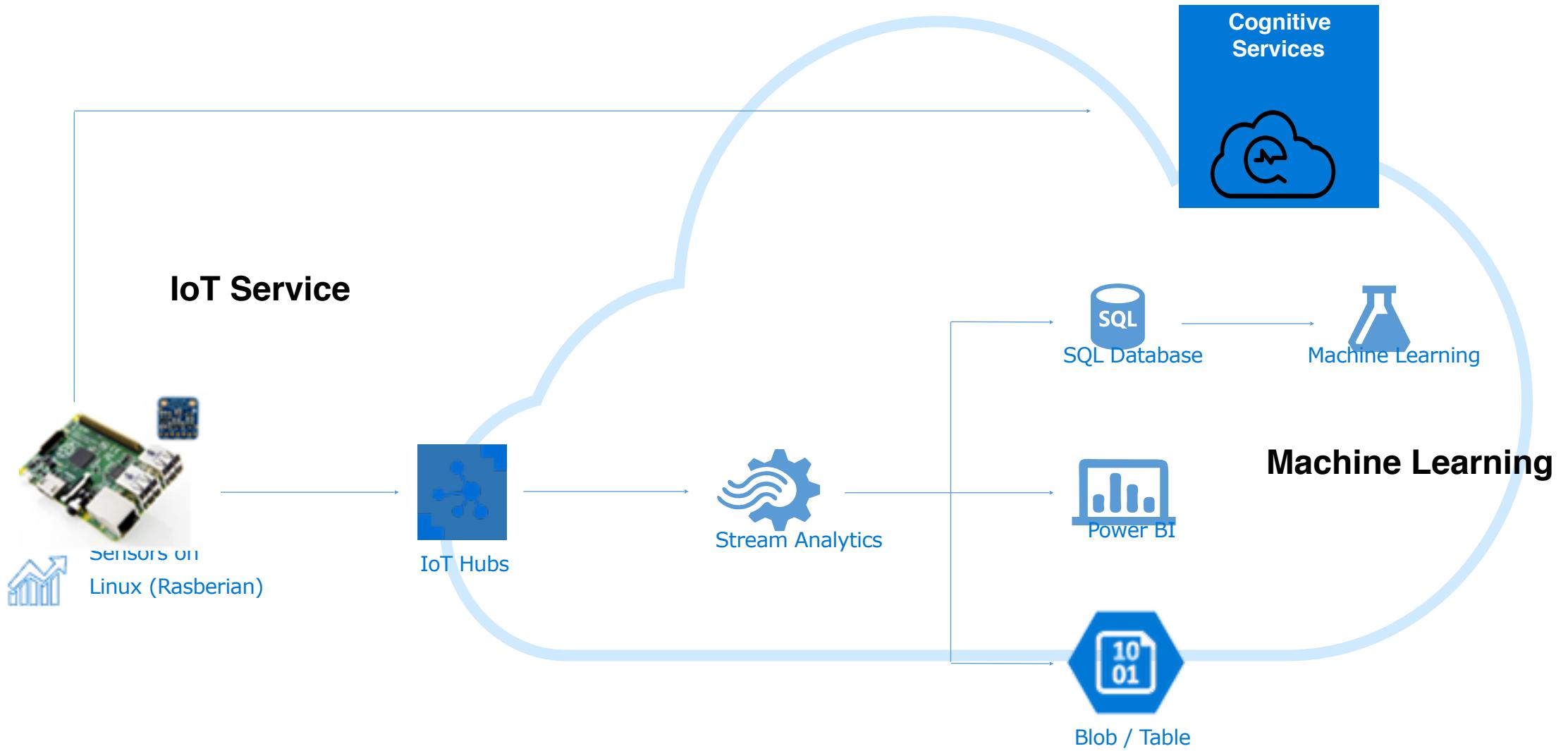
The following companies are working with Microsoft to help drive the



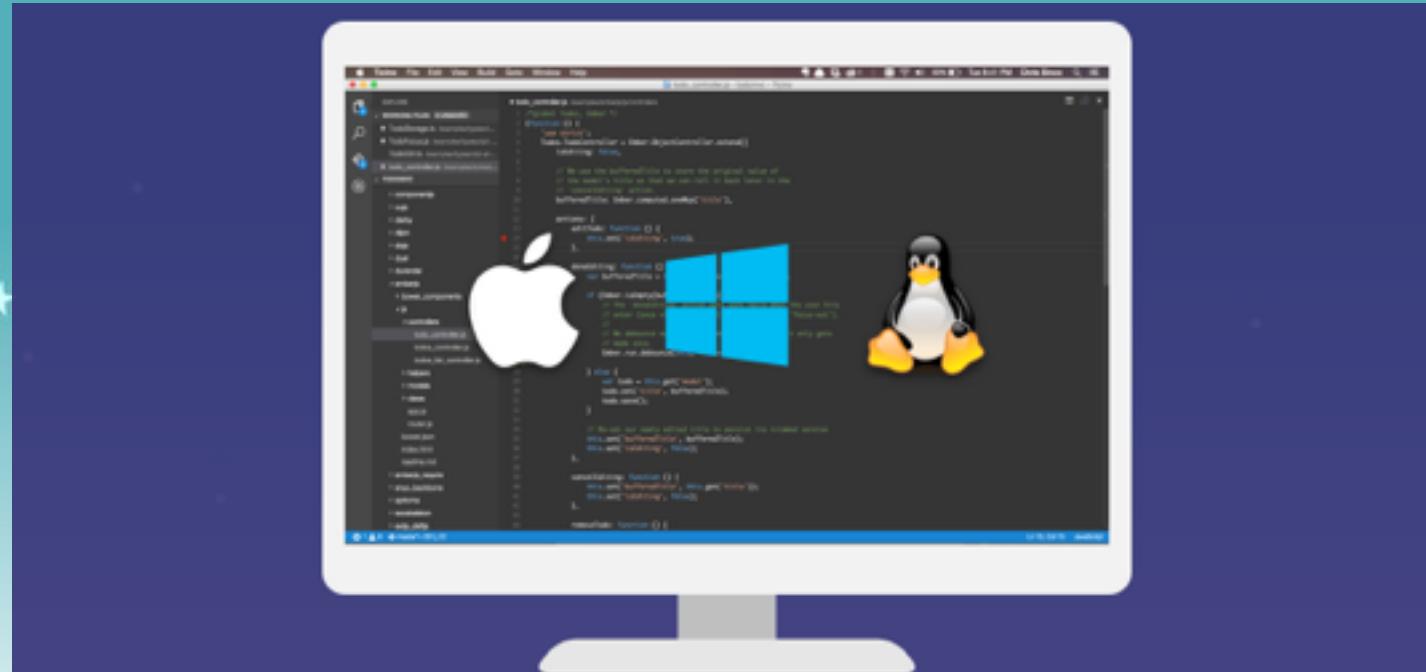
 Python Don Jayamanne ▲ 71.3K Linter, Debugging (multi-threaded, remote), Intellisense,...	 Go lukehoban ▲ 54.9K Rich Go language support for Visual Studio Code	 PowerShell Microsoft ▲ 42.2K Develop PowerShell scripts in Visual Studio Code!	 C/C++ Microsoft ▲ 25.9K Complete C/C++ language support including code-editing...	 C++ austin ▲ 19.7K C/C++ Intellisense with the help of GNU Global tags	 beautify HoekyQR ▲ 18.9K Beautify code in place for VS Code
 TSLint egamma ▲ 18.3K TSLint for Visual Studio Code	 HTMLHint Mike Kaufman ▲ 17.3K VS Code integration for HTMLHint - A Static Code Analysis Tool for...	 XML Tools Josh Johnson ▲ 13.9K XML, Formatting, XQuery, and XPath Tools for Visual Studio...	 MagicPython MagicStack Inc. ▲ 12.5K Syntax highlighter for cutting edge Python.	 Ionide-fsharp Ionide ▲ 11.3K F# Language Support	 jsx TwentyChung ▲ 10.8K React JSX Support for Visual Studio Code
 HTML CSS Class Compiler Zignd ▲ 8K Provides CSS class completion for the HTML class attribute.	 JS Standard Code Style Sam Chen ▲ 7.4K Converts your code into Standard JavaScript Format	 Python for VSCode Thomas Haasen ▲ 7.2K Python language extension for vscode	 C/C++ Clang Yasuaki MITANI ▲ 7K Completion and Diagnostic for C/C++/Objective-C...	 Ruby Peng Lv ▲ 6.6K Provides Ruby language and debugging support for...	 Rusty Code saviorisdead ▲ 6.3K Rust language integration for VSCode
 phpcs Ioannis Kappa ▲ 6.2K PHP CodeSniffer for Visual Studio Code	 CMake twink ▲ 4.6K CMake language support for Visual Studio Code	 LaTeX Language Support Microsoft ▲ 4.4K LaTeX - colorizer, grammar and snippets.	 Dockerfile and Docker PeterJausovec ▲ 4.3K Adds syntax highlighting, snippets and description on...	 XML Formatter Fabian Lauer ▲ 4.3K A simple XML formatter for VS Code.	 JS-CSS-HTML Formatter lonely ▲ 4.2K Format, prettyify and beautify JS, CSS, HTML code by using...
 Sass Linter	 Document This	 phpmd	 JSX converter	 Swift Language	 Arduino

Microsoft ❤ Python

Microsoft Cognitive Services



Visual Studio Code



http://visualstudio.com

BETA

Visual Studio Code Docs Updates Blog Extensions FAQ ⚡ Star 11,568

The VS Code [February Release](#) is now available along with hundreds of cool [extensions and themes!](#)

Overview

EDITOR

CUSTOMIZATION

LANGUAGES

RUNTIMES

EXTENSIONS

EXTENSIBILITY

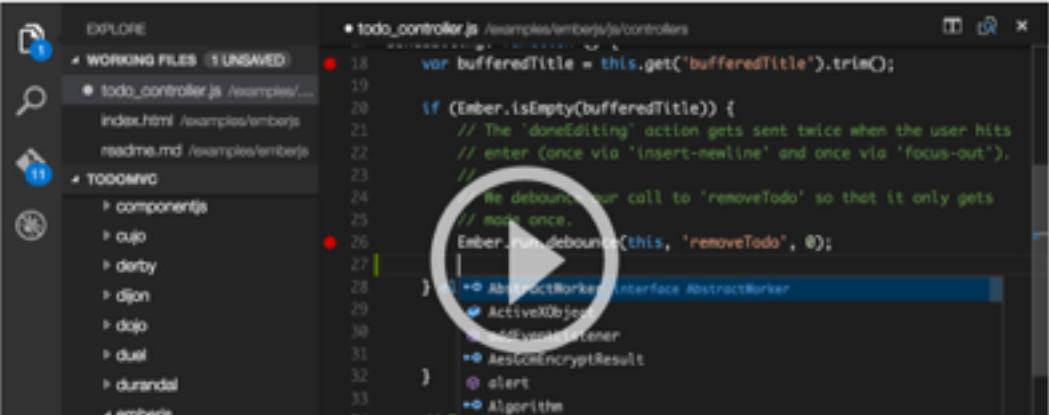
REFERENCE

TOOLS

Thanks for downloading VS Code for OSX!

Download not starting? Try this [direct download link](#).

Below is some info to help you get started...



A screenshot of the Visual Studio Code interface. On the left, there's a sidebar with links like Overview, EDITOR, CUSTOMIZATION, LANGUAGES, RUNTIMES, EXTENSIONS, EXTENSIBILITY, REFERENCE, and TOOLS. The main area shows an editor window with the following code:

```
todo_controller.js /examples/emberjs/controllers
18 var bufferedTitle = this.get('bufferedTitle').trim();
19
20 if (Ember.isEmpty(bufferedTitle)) {
21   // The "doneEditing" action gets sent twice when the user hits
22   // enter (once via "insert-newline" and once via "focus-out").
23   //
24   // We debounce our call to "removeTodo" so that it only gets
25   // triggered once.
26 Ember.inject(this, 'removeTodo', 0);
27
28
29
30
31
32
33 }
```

Below the code, there's a list of files and components from the file explorer:

- WORKING FILES (UNSAVED)
 - todo_controller.js /examples/emberjs/controllers
 - index.html /examples/emberjs
 - readme.md /examples/emberjs
- TODOVIEW
 - componentjs
 - cugo
 - dijit
 - dojo
 - dust
 - durandal
 - emberjs

On the right side of the interface, there's a decorative graphic of interconnected hexagonal nodes, each containing a small icon representing different technologies or tools.

<http://www.Microsoft.com/cognitive>

Cognitive Service



Microsoft Cognitive Services

Give your apps
a human side

Cognitive Services



Vision

From faces to feelings, allow your apps to understand images and video



Speech

Hear and speak to your users by filtering noise, identifying speakers, and understanding intent



Language

Process text and learn how to recognize what users want



Knowledge

Tap into rich knowledge amassed from the web, academia, or your own data



Search

Access billions of web pages, images, videos, and news with the power of Bing APIs

Apps Powered by MS Cognitive Services

I think it's a person sitting in front of a computer and he seems ☺. I am 99% sure that's **Bill Gates**



CaptionBot.ai



Celebslike.me



ProjectMurphy.net

Why Microsoft Cognitive Services ?



Easy

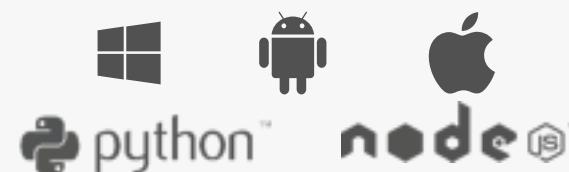
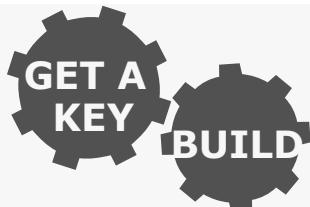
Roll your own with REST APIs
Simple to add: just a few lines
of code required

Flexible

Make the same API code call on
iOS, Android, and Windows
Integrate into the language
and platform of your choice

Tested

Built by experts in their field from
Microsoft Research, Bing, and Azure
Machine Learning
Quality documentation, sample
code, and community support



Cognitive Services

microsoft.com/cognitive

Vision	Speech	Language	Knowledge	Search
Computer Vision	Custom Recognition	Bing Spell Check	Academic Knowledge	Bing Web Search
Emotion	Speaker Recognition	Linguistic Analysis	Entity Linking	Bing Image Search
Face	Speech	Language Understanding	Knowledge Exploration	Bing Video Search
Video	Translator	Text Analytics	Recommendations	Bing News Search
		WebLM		Bing Autosuggest

Cognitive Services

microsoft.com/cognitive

Vision	Speech	Language	Knowledge	Search
Computer Vision	Custom Recognition	Bing Spell Check	Academic Knowledge	Bing Web Search
Emotion	Speaker Recognition	Linguistic Analysis	Entity Linking	Bing Image Search
Face	Speech	Language Understanding	Knowledge Exploration	Bing Video Search
Video	Translator	Text Analytics	Recommendations	Bing News Search
		WebLM		Bing Autosuggest

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Cognitive Services

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Product	Description	Keys	State	Created	Quota
Academic - Preview	10,000 transactions per month, 3	Key 1: XXXXXXXXXXXXXXXXXXXXXXXXXXXX Regenerate Show Copy	active	2016. 3. 3. 오전 7:58:24	Show Quota

JSON

- <http://www.json.org/json-ko.html>

<XML>
{JSON}



```
{  
  hey: "guy",  
  anumber: 243,  
  - anobject: {  
      whoa: "nuts",  
      - anarray: [  
          1,  
          2,  
          "thr<h1>ee"  
      ],  
      more: "stuff"  
    },  
  awesome: true,  
  bogus: false,  
  meaning: null,  
  japanese: "明日がある。",  
  link: http://jsonview.com,  
  notLink: "http://jsonview.com is great"  
}
```

Vision API
Computer Vision
Emotion
Face



Cognitive Services

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Computer Vision API

Extract rich information from images to categorize and process visual data—and protect your users from unwanted content.

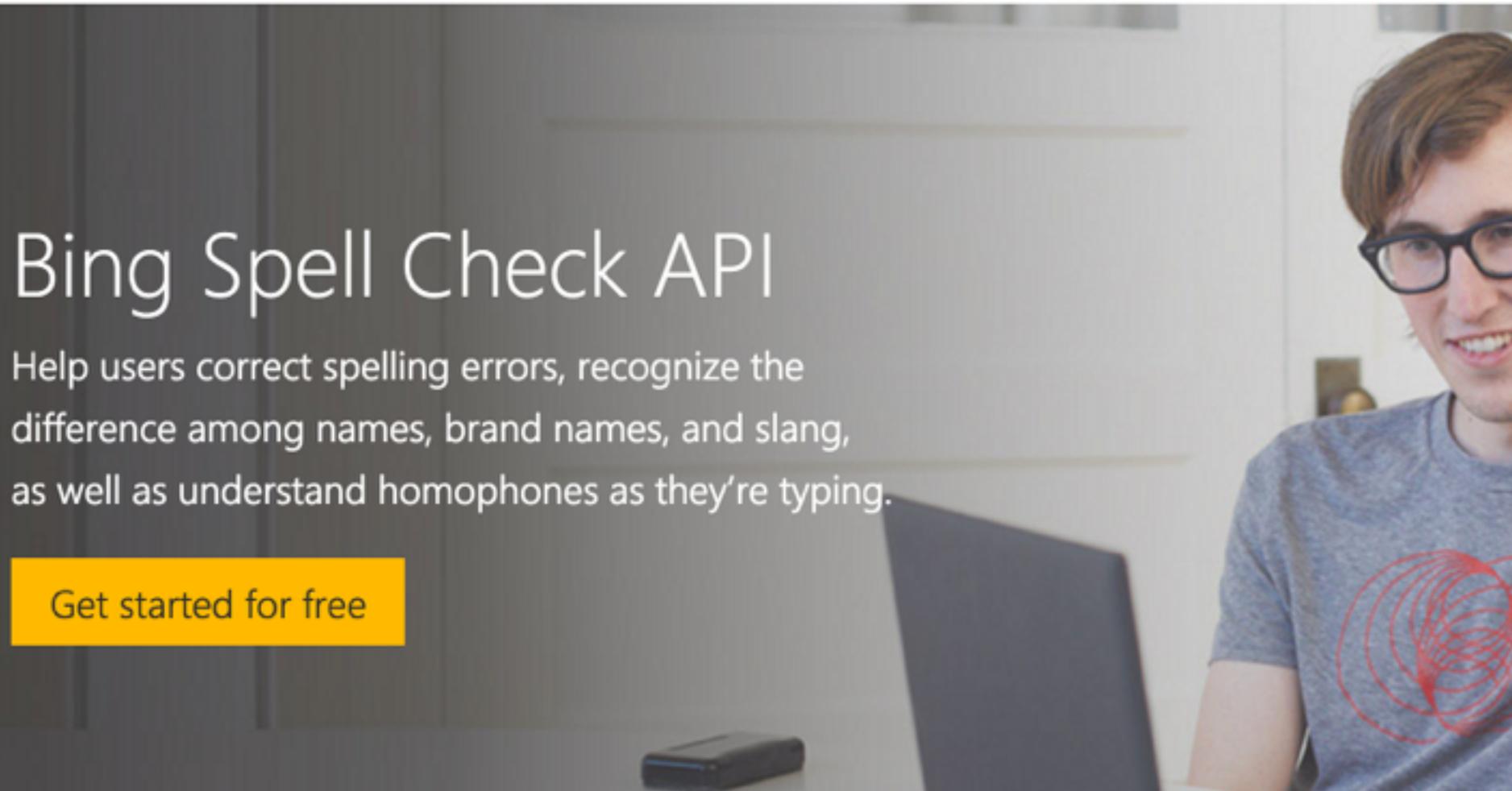
[Get started for free](#)

Demo

Language
Bing Spell check
Language Understanding
Linguistic Analysis
Text Analytics
WebLM



Cognitive Services

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Bing Spell Check API

Help users correct spelling errors, recognize the difference among names, brand names, and slang, as well as understand homophones as they're typing.

[Get started for free](#)

Demo

Bing

Bing Web Search

Bing Image Search

Bing Video Search

Bing News Search

Bing Autosuggest

Bing beyond search in bing.com

Smarter, more

engaging
experiences



Bing



Cortana



skype



Windows 10



XBOX ONE



Office

Trusted by industry-leading experiences



Apple

YAHOO!

Aol.

amazon



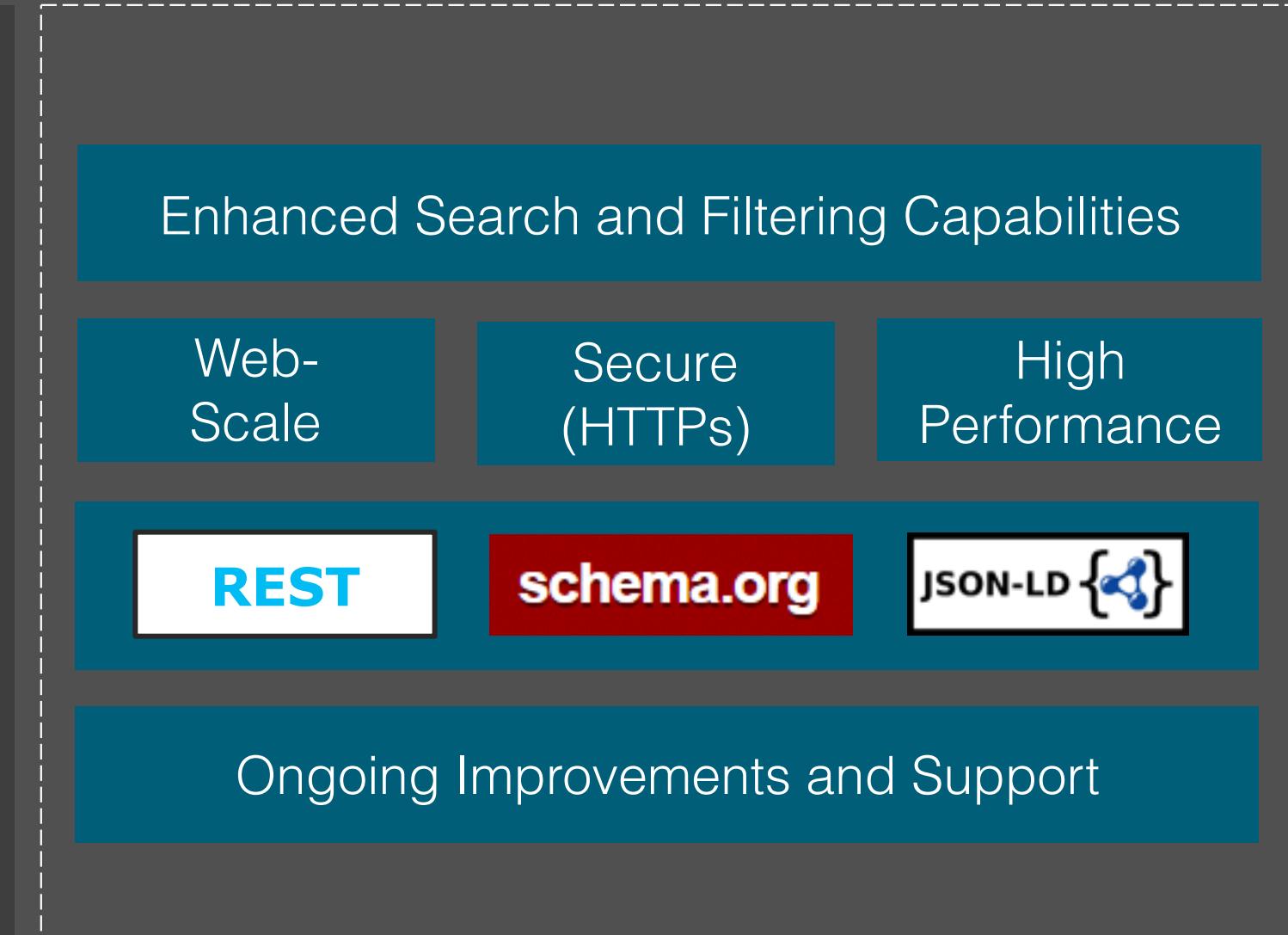
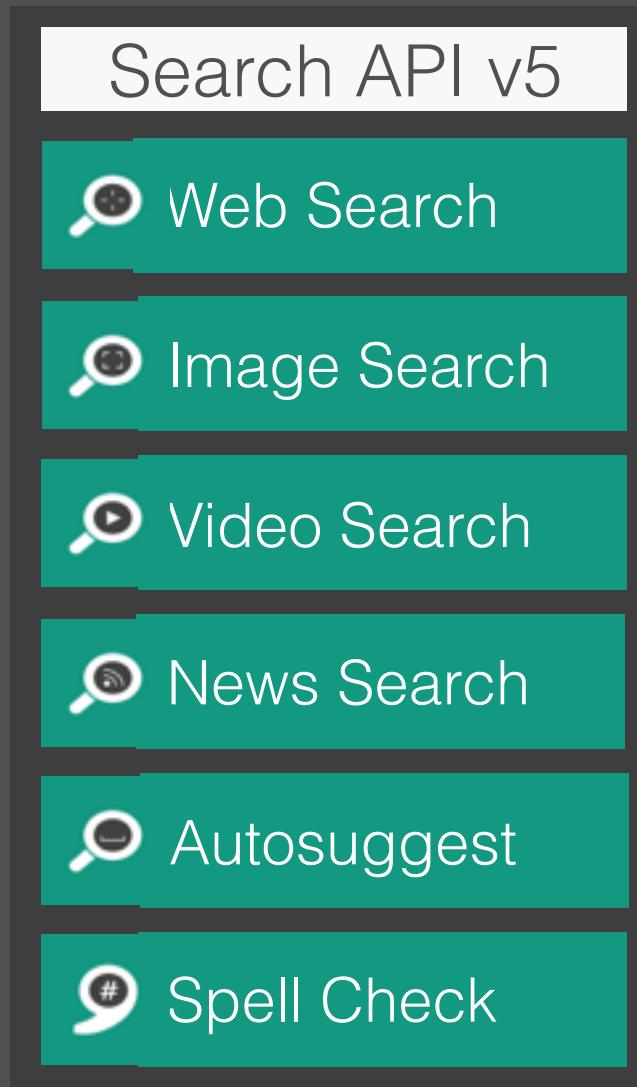
infoSpace

WSJ



CBS Interactive

Introducing Bing Search API v5



Web Search API

Get relevant web and answer results and metadata with one API call

[https://bingapis.azure-api.net/v5/search?
q=nasa](https://bingapis.azure-api.net/v5/search?q=nasa)

Web
Results

Deep
Links
(1st Algo)

News
Results

Image
Results

Video
Results

Related
Searches

The screenshot shows the Bing search results for the query "nasa". It includes links to NASA TV, JPL, Spot The Station, View Image Gallery, Solar System, NASA Missions, News about NASA, Images of nasa, Videos of nasa, and Related searches for nasa.

The diagram illustrates the structure of a Search Response. It features a central teal box labeled "Search Response" containing a JSON object:

```
{  
  "_type": "SearchResponse",  
  "queryContent": "...",  
  "webPages": "...",  
  "news": "...",  
  "images": "...",  
  "videos": "...",  
  "relatedSearches": "...",  
  "rankingResponse": "..."  
}
```

A large white arrow points from the bottom right of the "Search Response" box towards the "Ranking Response" box.

The diagram illustrates the structure of a Ranking Response. It features a teal box labeled "Ranking Response" containing a JSON object:

```
{  
  "answerType": "WebPages",  
  "resultIndex": 0,...  
},  
{  

```

Vertical Search APIs

Get more results, features and metadata tailored to each search vertical



Image Search API



source: nasa.gov



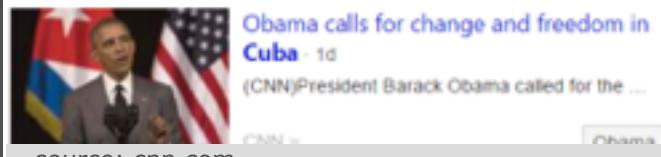
Video Search API



source: youtube.com



News Search API



source: cnn.com

<https://bingapis.azure-api.net/v5/images/search?q=shuttle+launch>

- Enhanced metadata and filters (size, license, style, freshness, color)
- Image insights (entity recognition, visually similar)

<https://bingapis.azure-api.net/v5/videos/search?q=viral+videos>

- Enhanced metadata and filters (price, resolution, length, freshness)
- Motion thumbnails (video preview)

<https://bingapis.azure-api.net/v5/news/search?q=cuba>

- News by category/market, and trending news
- Rich article metadata (featured entities)

Demo

Developer Call to Action

- Sign up and get started today for free at

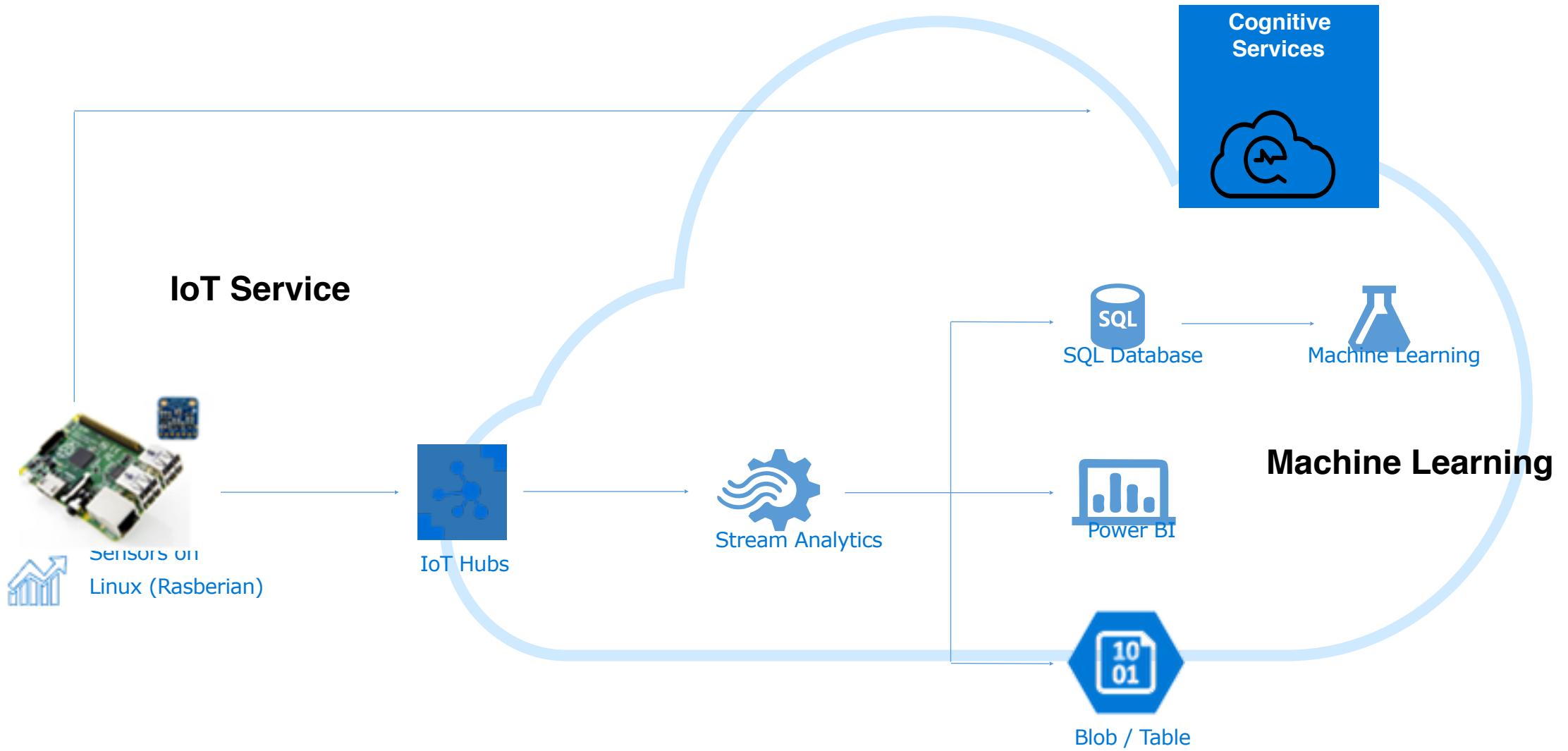
www.microsoft.com/cognitive

<http://www.microsoft.com/iot>

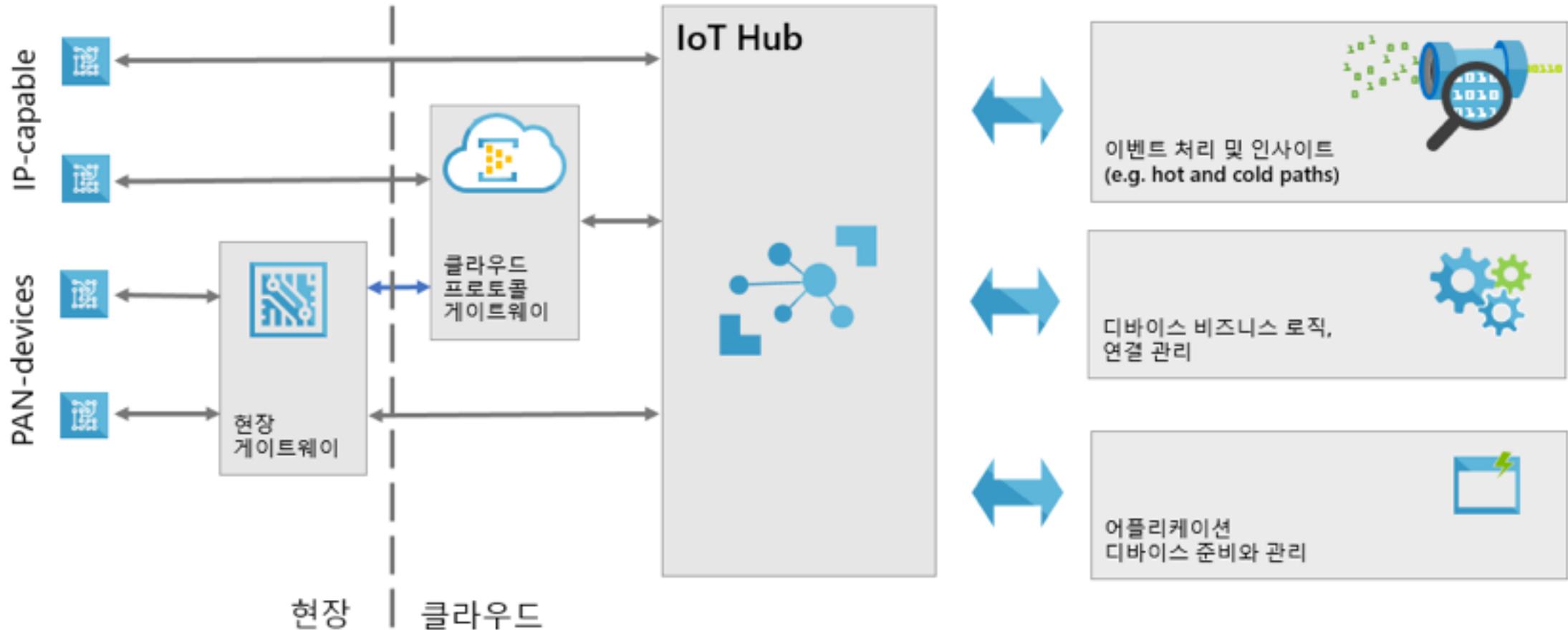
Internet of Things



Microsoft Cognitive Services

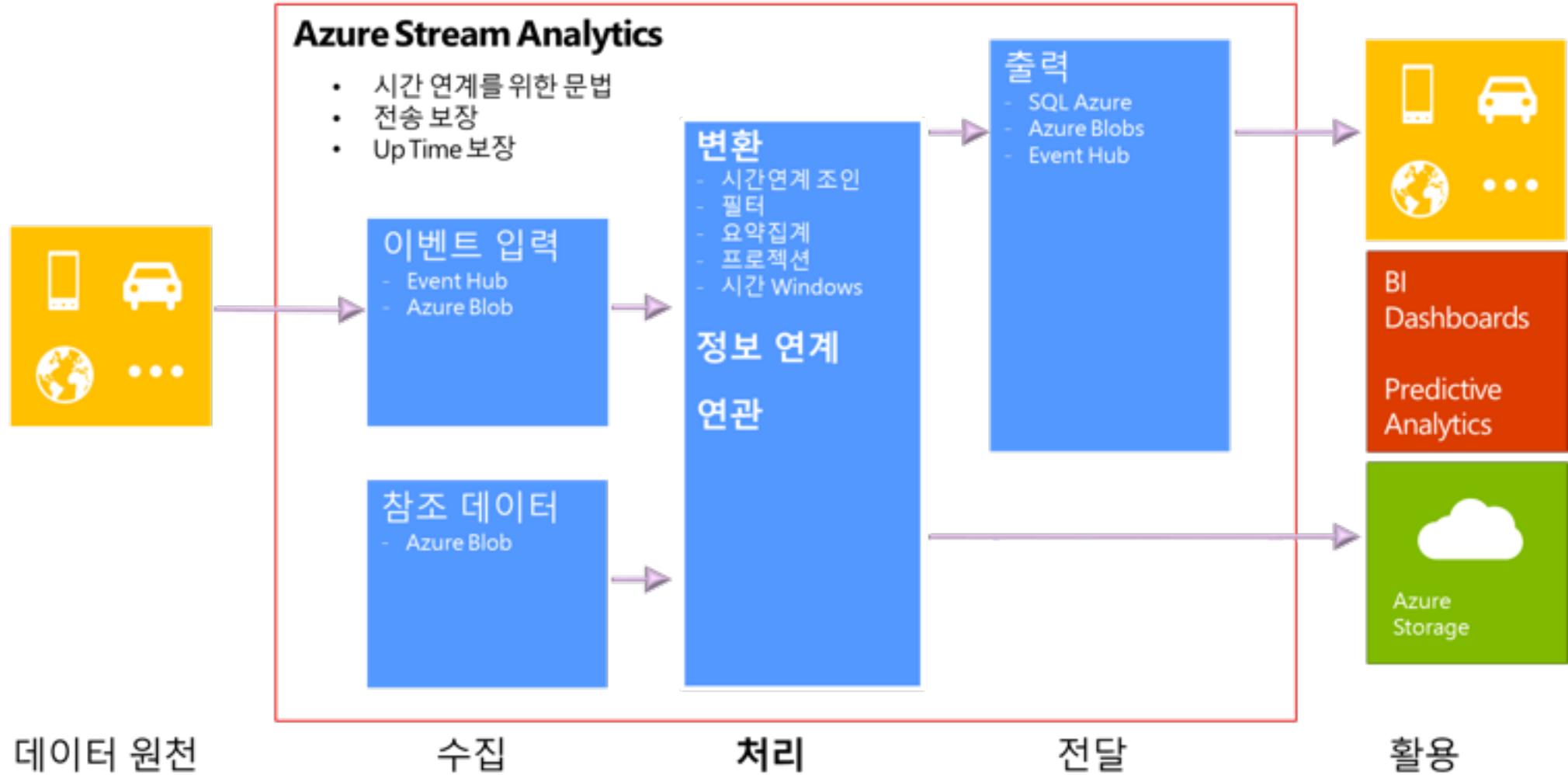


IoT Hub

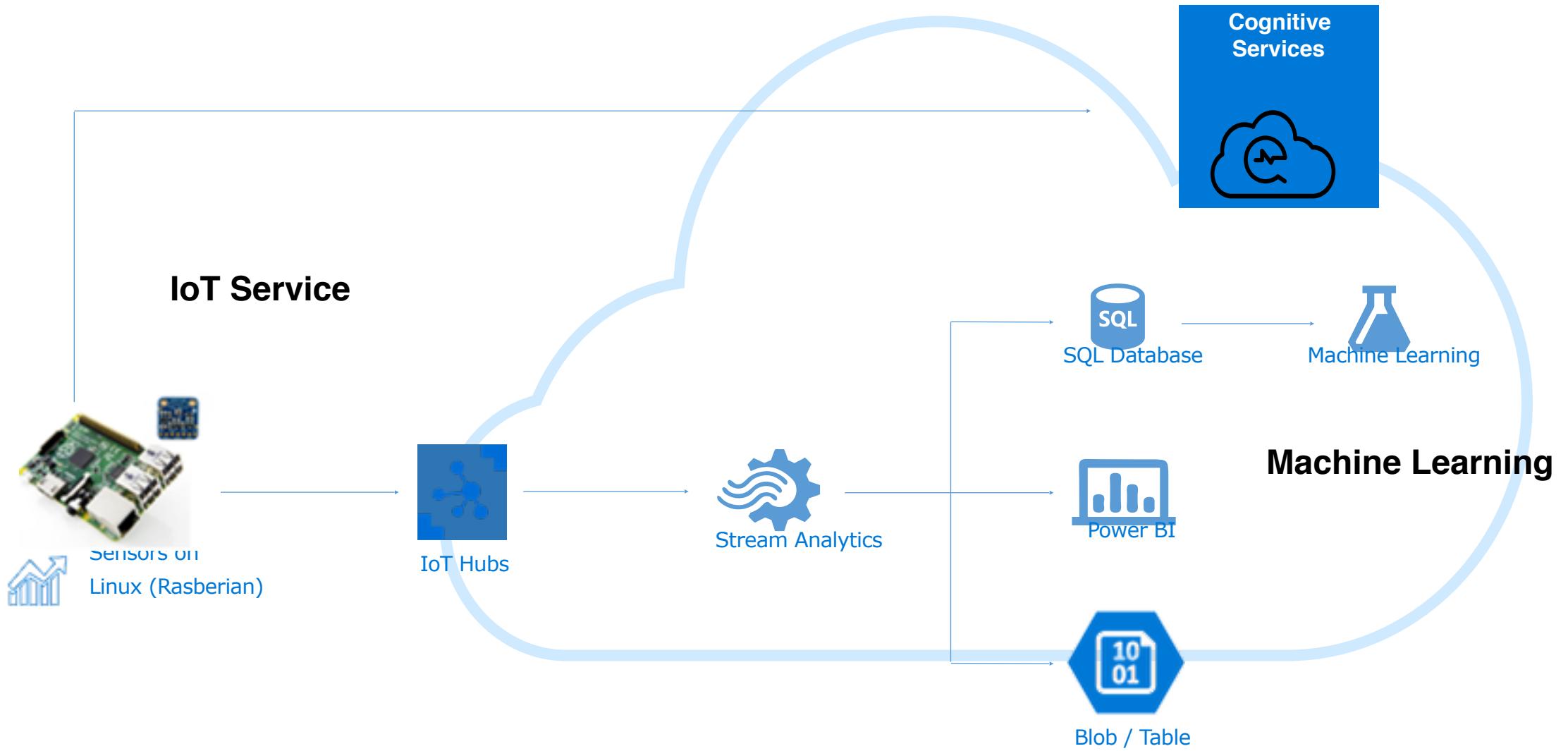


- 지원되는 프로토콜은 HTTP1.1, MQTT, AMQP 1.0 (16년 4월 OPC 공식지원 발표)
- LWM2M, CoAP 등의 지원은 계획 중이나 시기 미정

Stream Analysis



Microsoft Cognitive Services



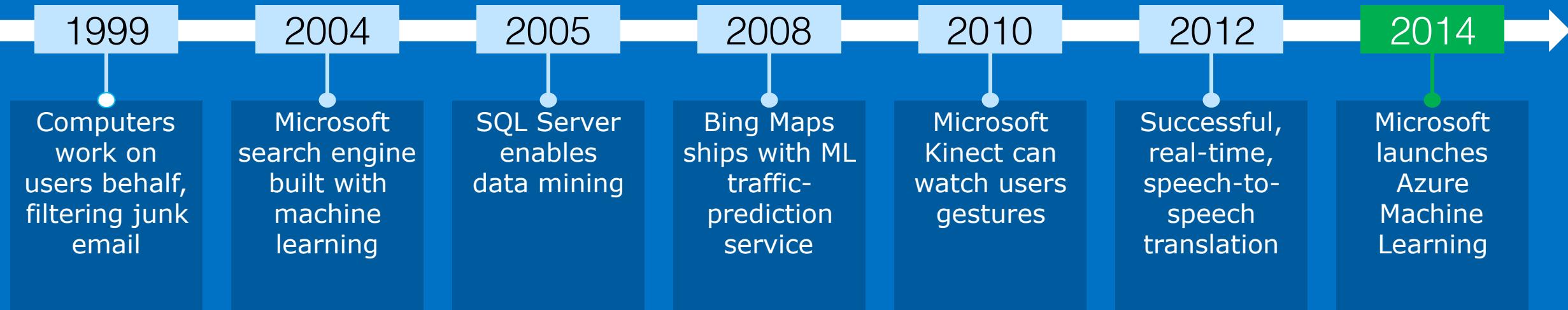
<http://www.microsoft.com/iot>

Machine Learning



Microsoft & Machine Learning

15 years of realizing innovation



John Platt,
distinguished scientist at
Microsoft Research

“Machine learning is pervasive throughout Microsoft products.”

One solution for Machine Learning - from data to results



Web Apps



Mobile Apps



PowerBI/
Dashboards

ML API service

Developer

Azure Portal &
ML API service

Azure Ops
Team

ML Studio

Data Scientist



HDInsight



Azure Storage



Desktop Data

Machine Learning

감사합니다
Thank you!