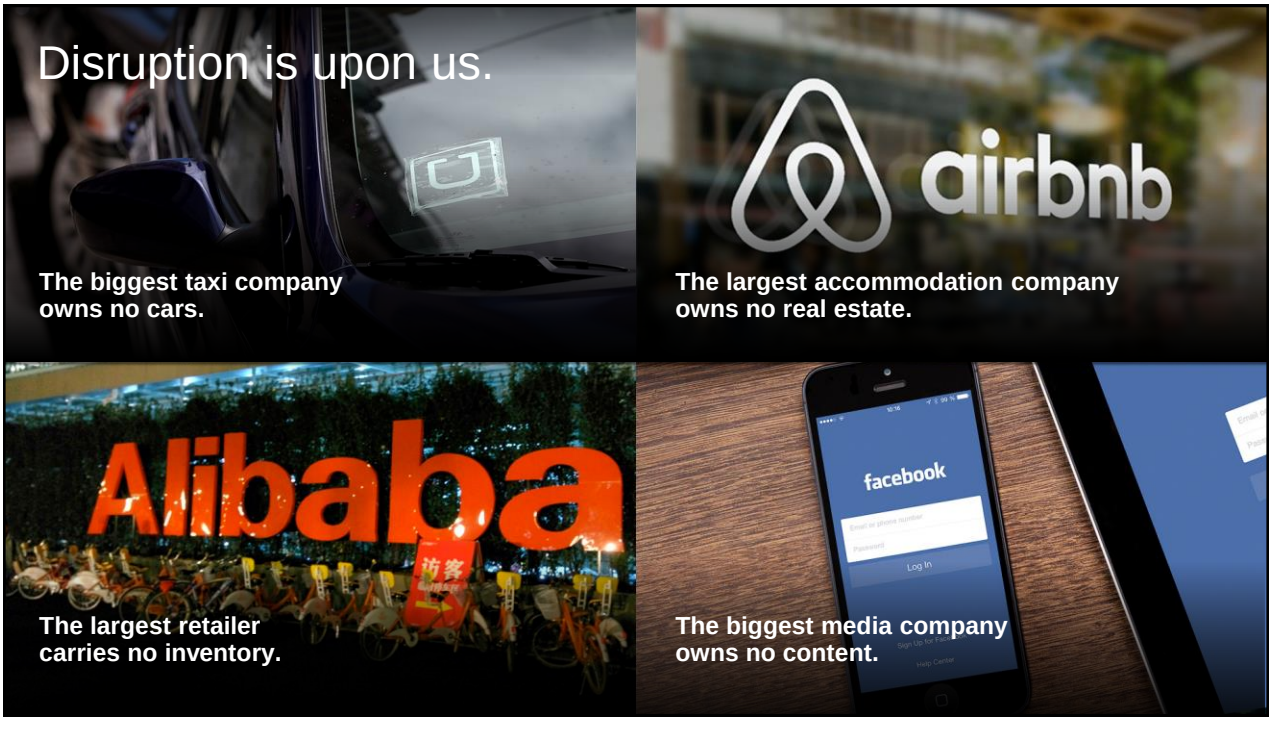
Watson and IBM i : Building a cognitive business

Jesse R. Gorzinski
jgorzins@us.ibm.com



This disruption is fueled by three forces.

The proliferation of different types of data.

The ability to build business in code with the API economy.

The powerful capabilities and outcomes brought on by cognitive computing.

IBM

More devices are creating more information.

1,200,000

lines of code in a smartphone

80,000

lines of code in a pacemaker

100,000,000

lines of code in a new car

5,000,000

lines of code in smart appliance

IBM

Three capabilities differentiate cognitive systems from traditional programmed computing systems…

Understanding

Cognitive systems understand like humans do.

Reasoning

They reason. They understand underlying ideas and concepts. They form hypothesis. They infer and extract concepts.

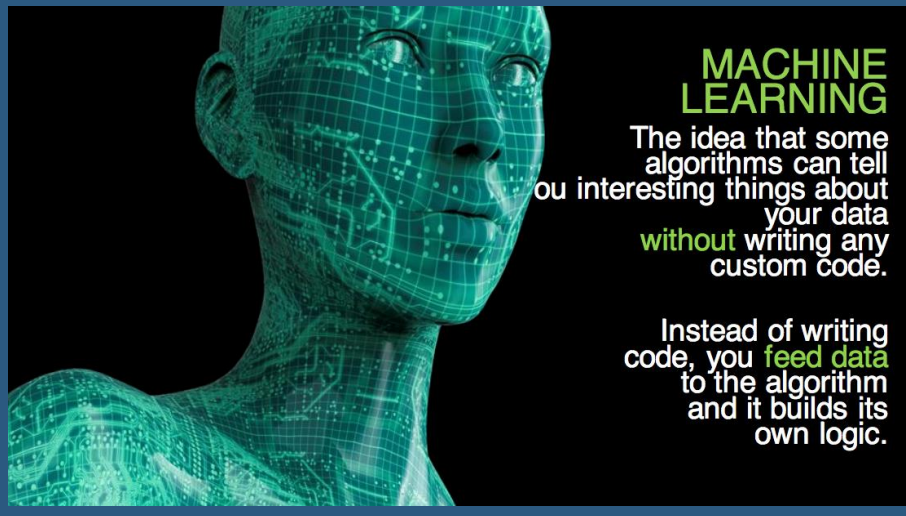
Learning

They never stop learning getting more valuable with time. Advancing with each new piece of information, interaction, and outcome. They develop “expertise”.

…. allowing them to interact with humans.

Cognitive Systems

MACHINE LEARNING / DEEP LEARNING



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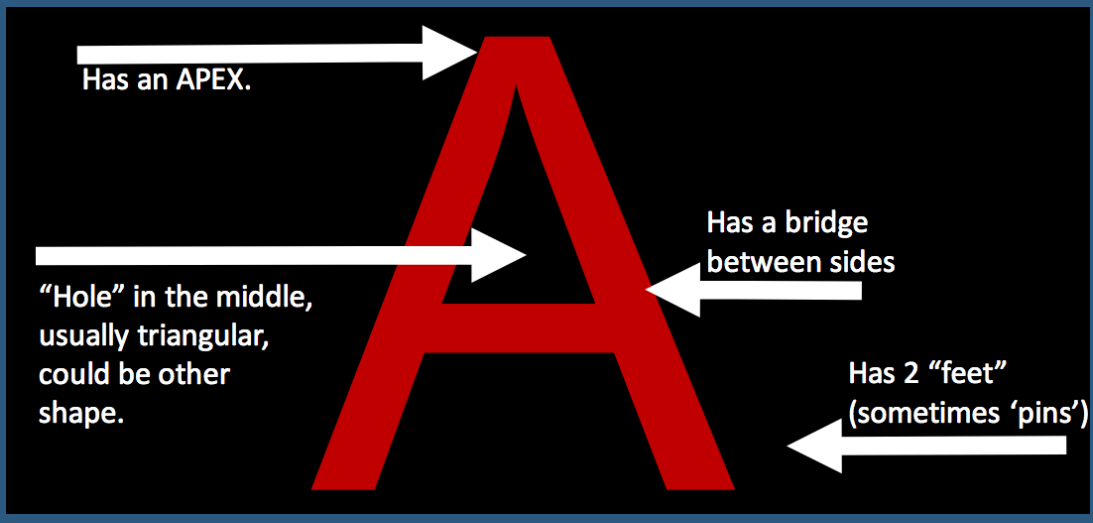
MACHINE LEARNING – SIMPLE EXAMPLE



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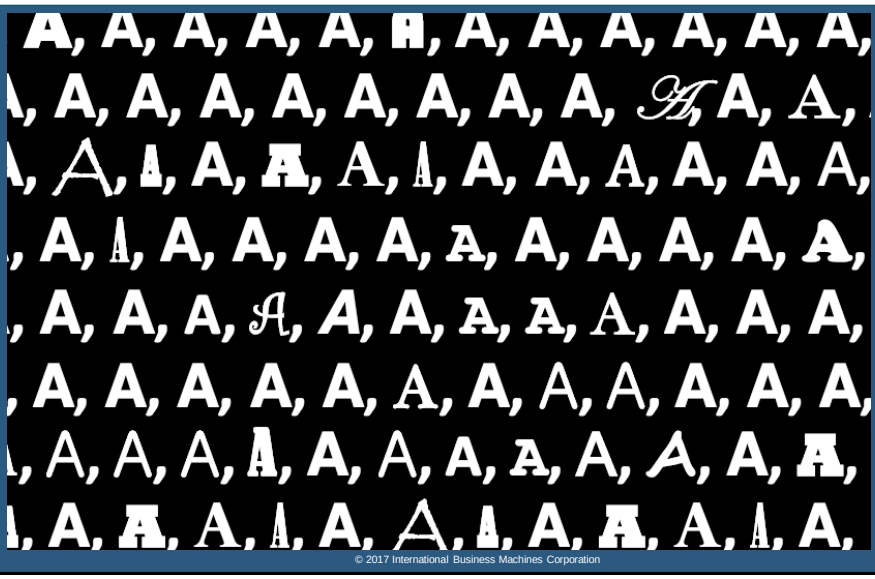
MACHINE LEARNING – SIMPLE EXAMPLE



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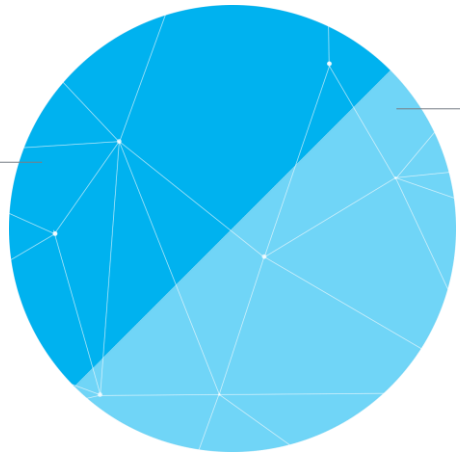
Cognitive systems forge a new partnership between man and machine.

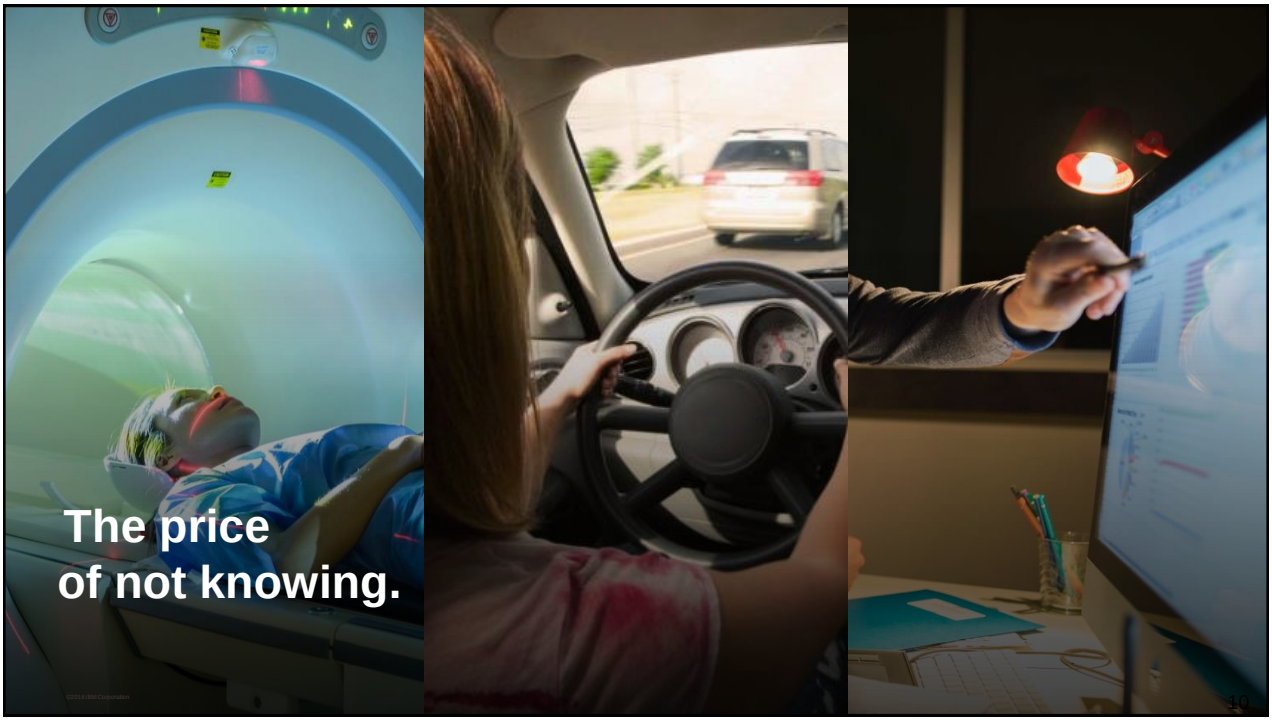
Humans excel at:

Common Sense
Morals
Imagination
Compassion
Abstraction
Dilemmas
Dreaming
Generalization



Cognitive Systems excel at:

Locating Knowledge
Pattern Identification
Natural Language
Machine Learning
Eliminate Bias
Endless Capacity



Cognitive systems rely on collections of data and information:

Data, information, and expertise create the foundation.

Examples include:

Analyst reports	Newspapers
tweets	Blogs
Wire tap transcripts	Wiki
Battlefield docs	Court rulings
E-mails	International crime database
Texts	Stolen vehicle data
Forensic reports	Missing persons data

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…and then leverage Watson APIs to apply cognitive capabilities.

50 underlying technologies

Entity Extraction	Natural Language Classifier
Sentiment Analysis	Personality insights
Emotion Analysis (Beta)	Relationship Extraction
Keyword Extraction	Retrieve and Rank
Concept Tagging	Tone Analyzer
Taxonomy Classification	Emotive Speech to Text
Author Extraction	Text to Speech
Language Detection	Face Detection
Text Extraction	Image Link Extraction
Microformats Parsing	Image Tagging
Feed Detection	Text Detection
Linked Data Support	Visual Insights
Concept Expansion	Visual Recognition
Concept Insights	AlchemyData News
Dialog	Tradeoff Analytics
Document Conversion	
Language Translation	

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The market is validating the benefits of cognitive.

"IBM Crafts a Role for Artificial Intelligence in Medicine."

THE WALL STREET JOURNAL.

"[Watson] is specifically designed to support the development of a broad range of enterprise solutions."

Deloitte.

"No doubt, Watson has the means to radically change the industry. "

IDC: IBM's Go-to-Market Transformation – Deeper, Wider, Newer (#AP25752Z, April 2015, Chris Zhang, Sabharinath Balasubramanian, Mayur Sahni)

IDC

"IBM Watson represents a bold technological and visionary step"

FROST & SULLIVAN

"What is distinctive about IBM is the breadth of its effort to create Watson tools … for a wide range of developers."

The New York Times

"…it's not just AI algorithms themselves that have improved, but the ability to deliver them"

WIRED

"The worldwide cognitive software platforms market will grow to $30 billion by 2018, at a CAGR"

IDC: Worldwide Cognitive Software Platforms Forecast, 2015-2019: The Emergence of a New Market (#258781, September 2015, David Schubmehl)

IDC

"IBM's [Watson] can help banks with complex financial operations and attack important health care problems."

FAST COMPANY

'You can't do this without Watson. -Former Sun CEO Scott McNealy. His startup, Wayin, uses Watson to trawl and drag photos.

CIO

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Medtronic

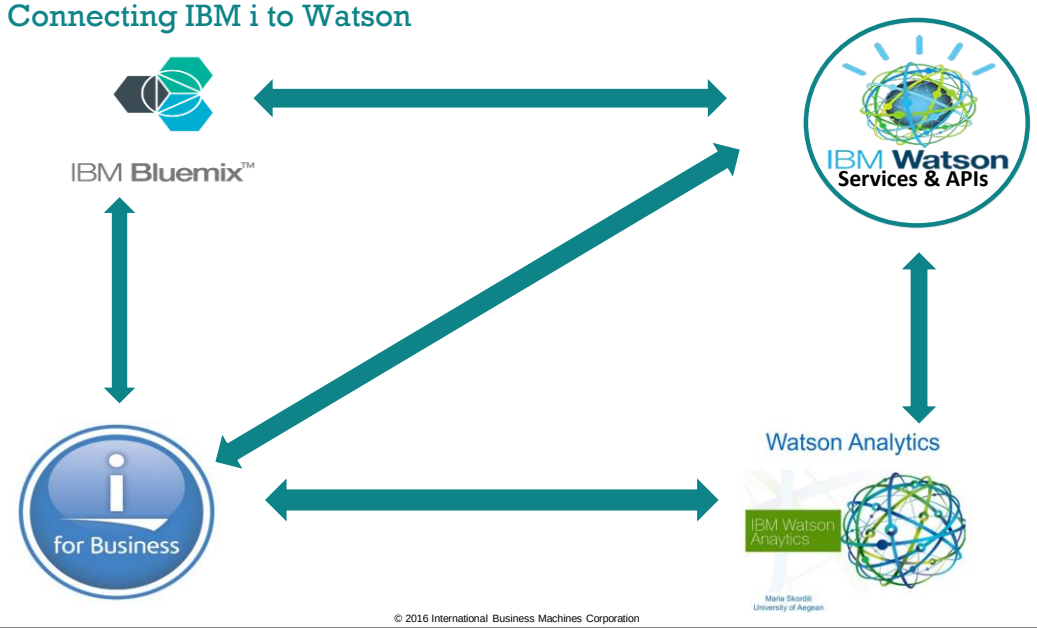
woodside
IBM

Watson and IBM i

Power Systems

IBM

Connecting IBM i to Watson



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IBM i and Watson

- Data Connect for IBM i
  - DB2 Web Query for i
- Asking questions using SQL
- Connecting from open source languages, RPG, etc.
- Node.JS and Python toolkits for Bluemix
- Integrated Web Services (IWS)

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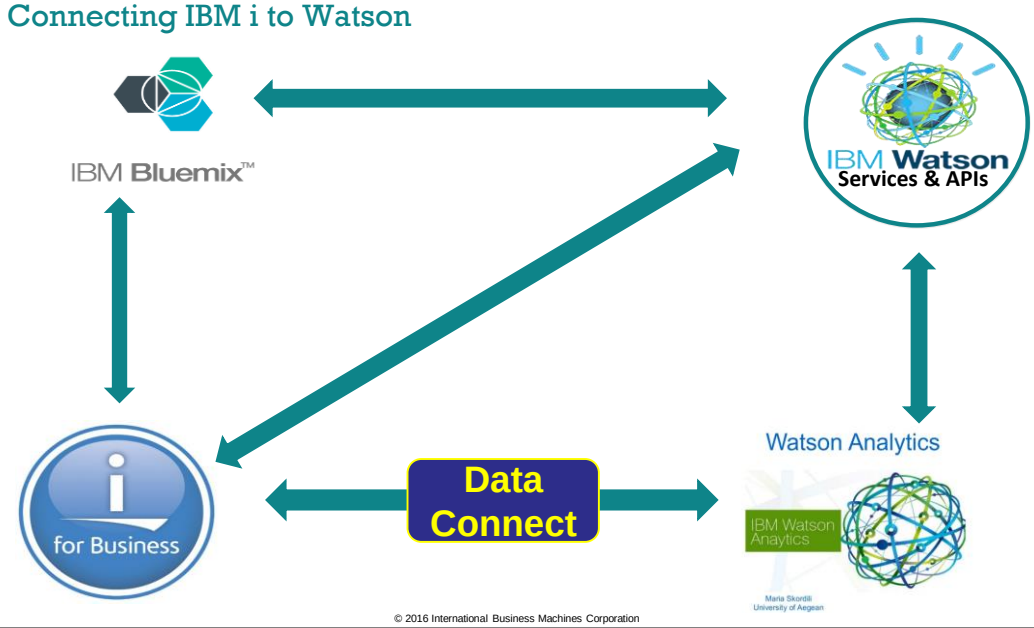
Connecting IBM i to Watson



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Bluemix's Data Connect

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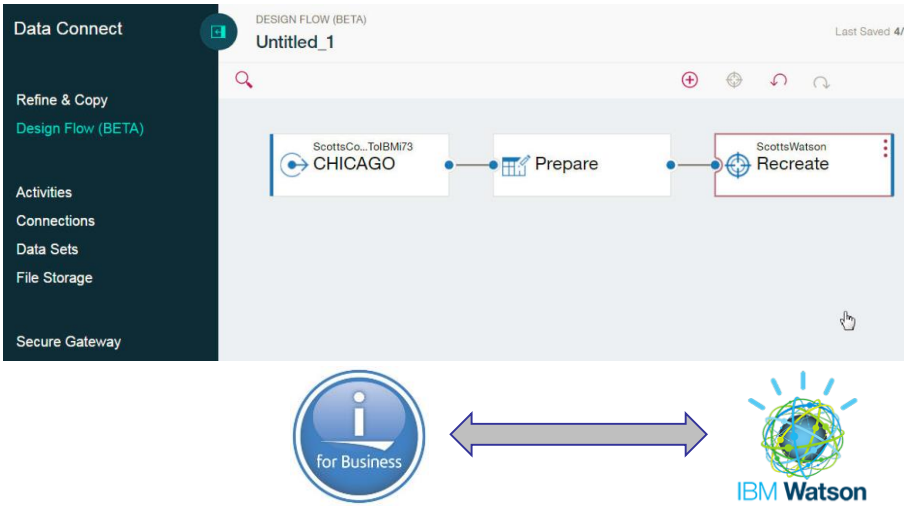
Moving data from DB2 for i to Watson Analytics



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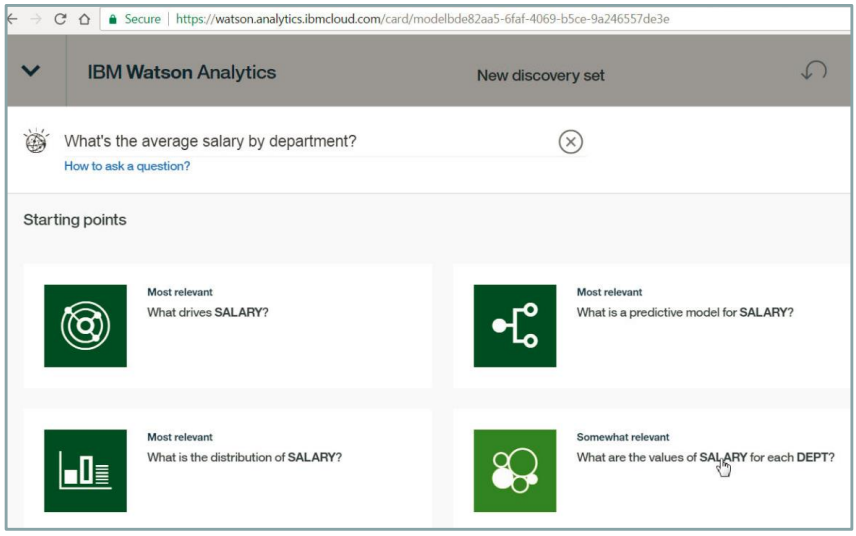
Watson Analytics



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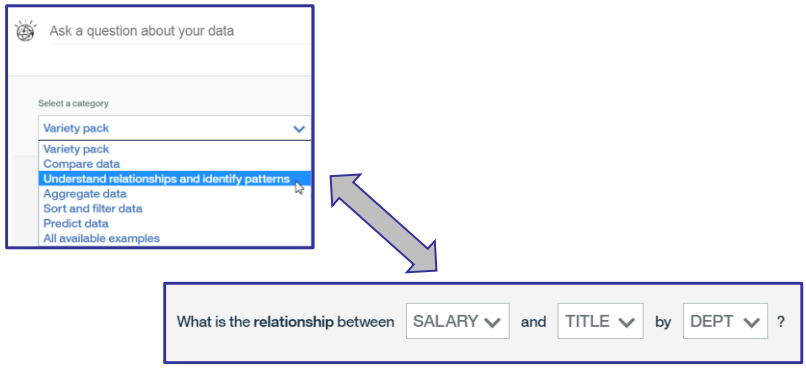
Learning how to ask a good question

Watson Analytics & DB2 for i data



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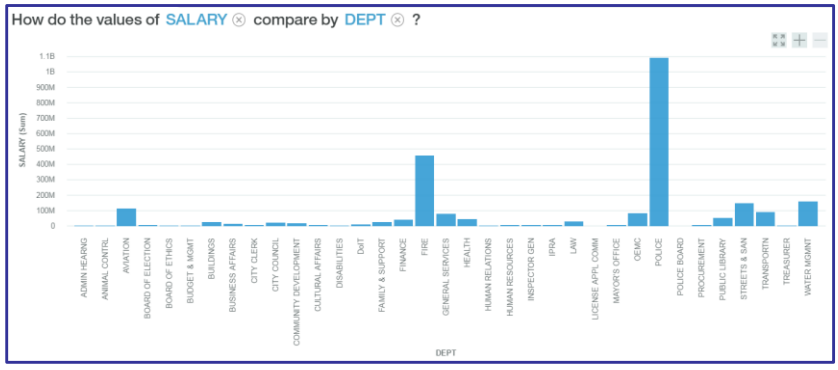
Controlled visualization

Watson Analytics & DB2 for i data



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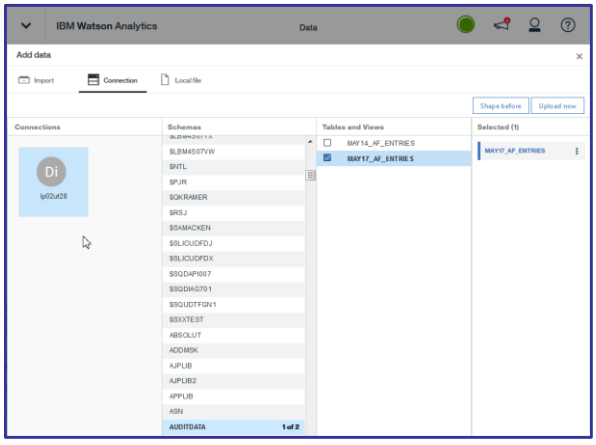
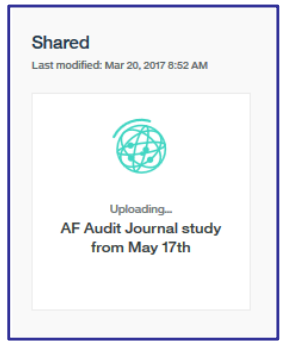
Moving data directly from DB2 for i into WA





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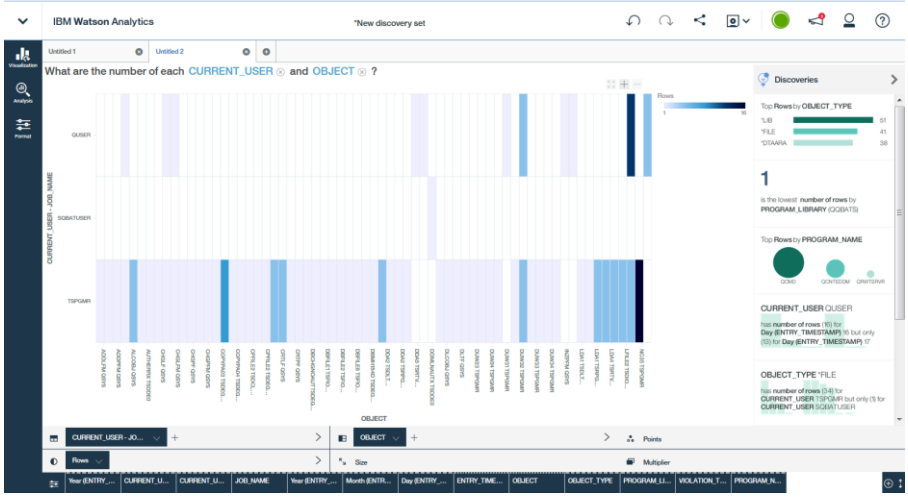
Analysis and Discovery



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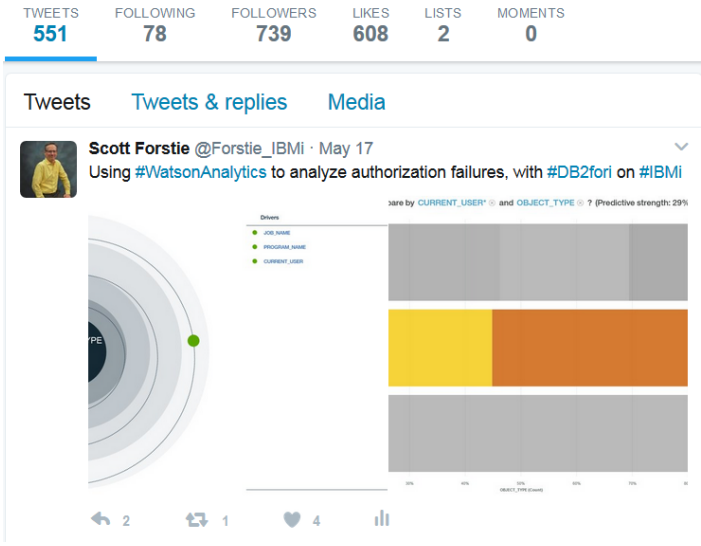
Many options for sharing insights



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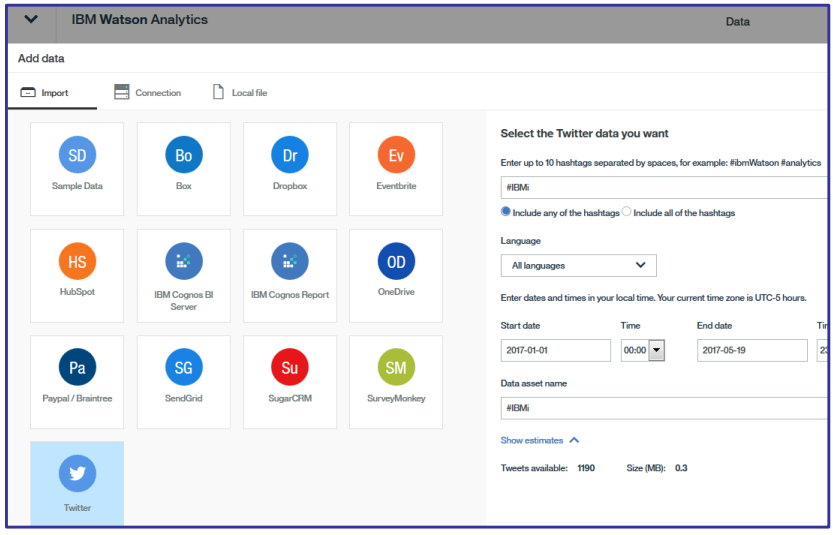
Incorporating Social Media content



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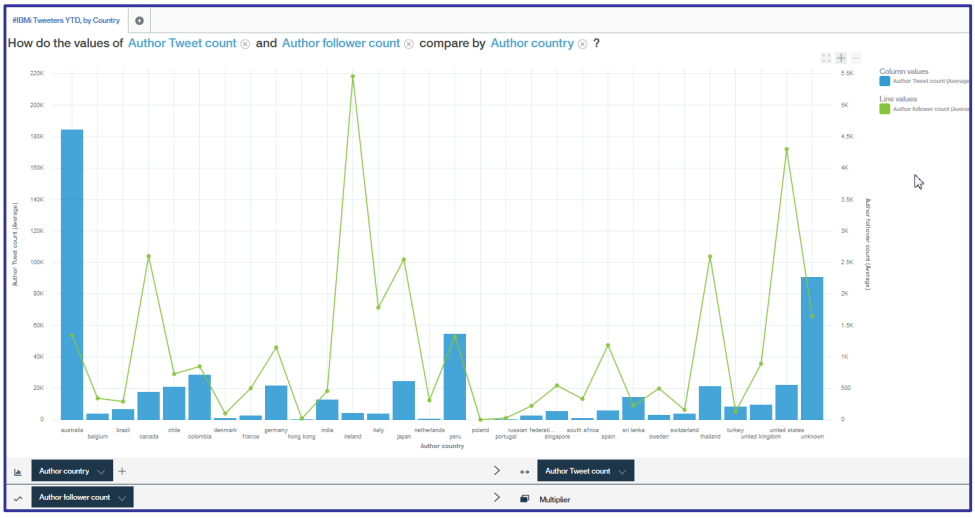
#IBMi Tweets



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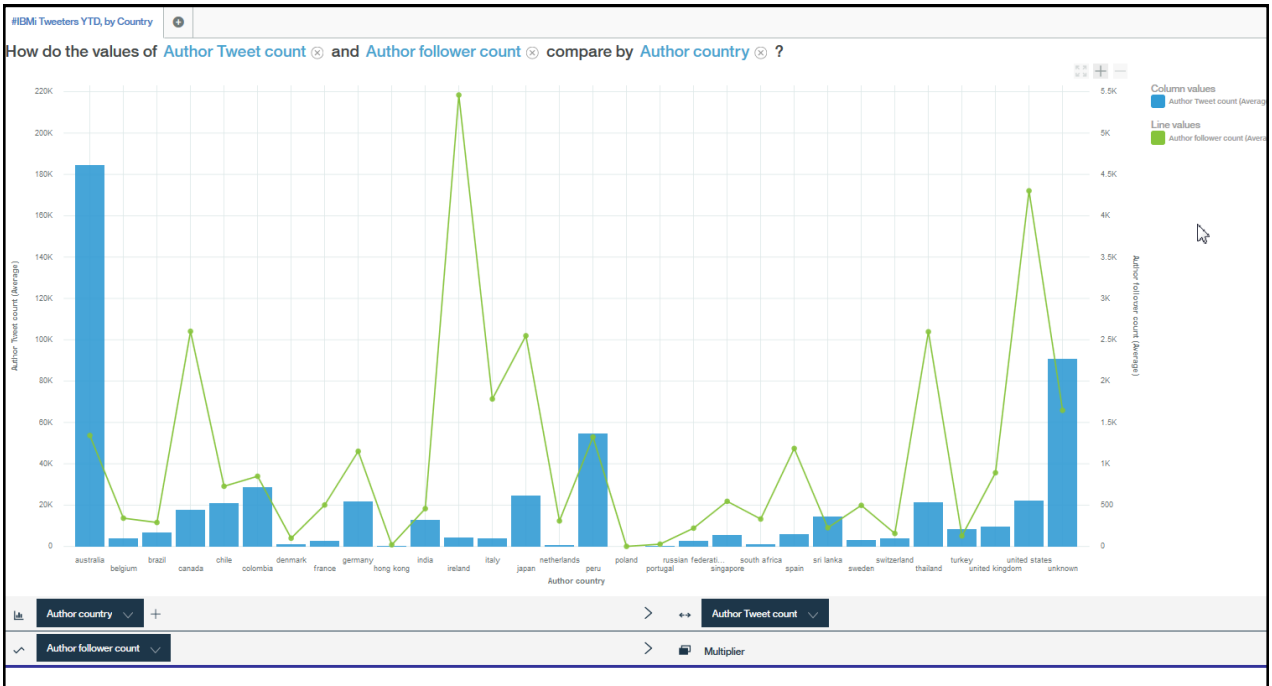

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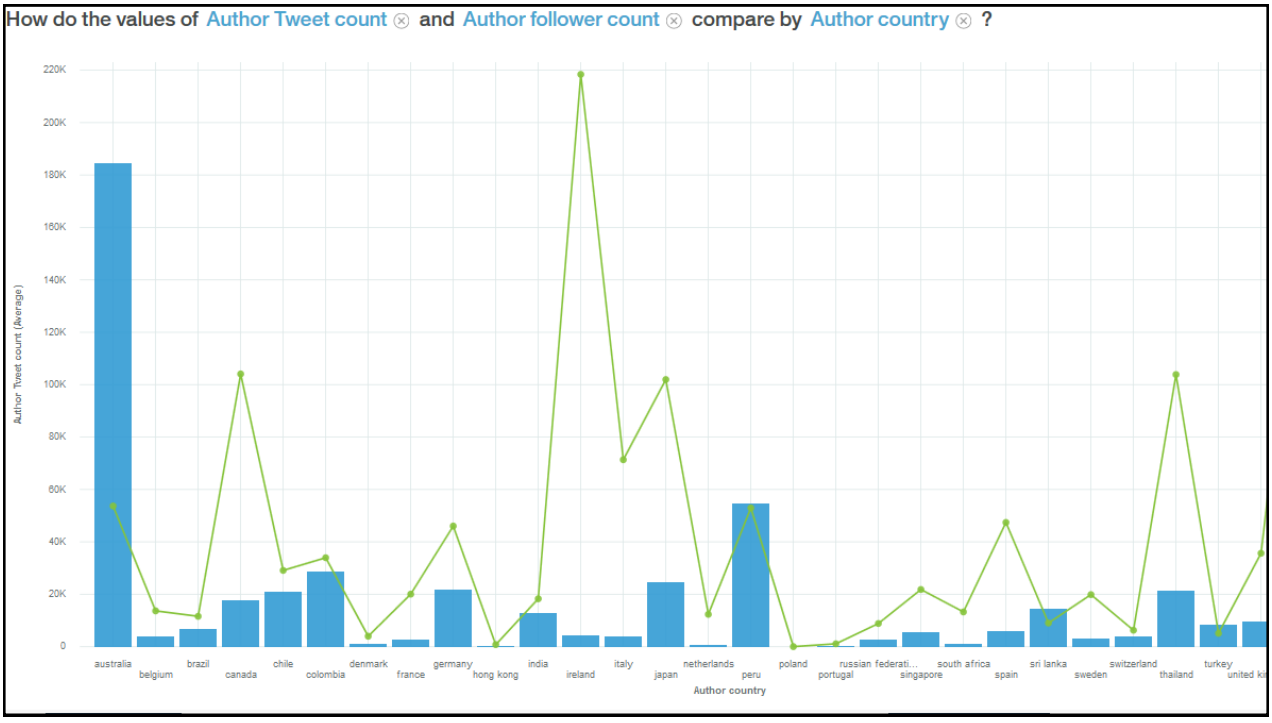
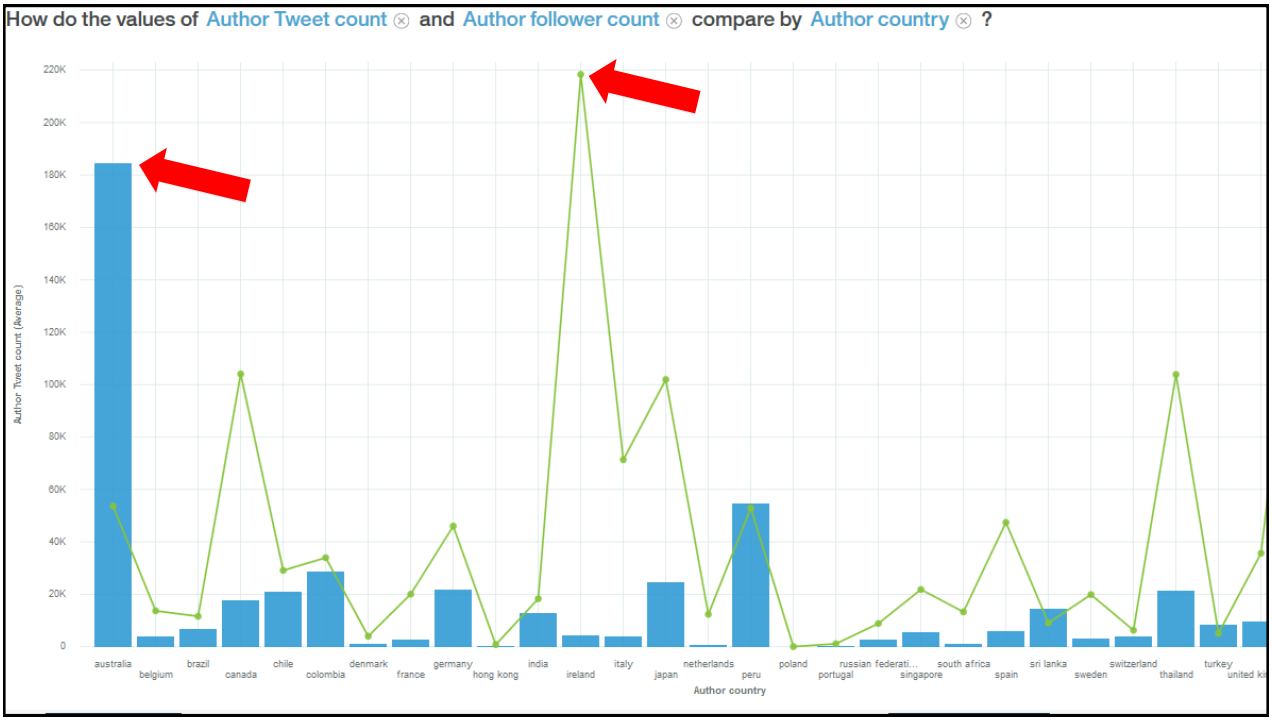

How do the values of Author Tweet count and Author follower count compare by Author country ?
Author Tweet count (Average)
220K
200K
180K
160K
140K
120K
100K
80K
60K
40K
20K
0
australia
belgium
brazil
canada
chile
colombia
denmark
france
germany
hong kong
india
ireland
italy
japan
netherlands
peru
poland
portugal
russian federati...
singapore
south africa
spain
sri lanka
sweden
switzerland
thailand
turkey
Author country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Author Tweet count (Average)
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100K
80K
60K
40K
20K
0
australia
belgium
brazil
canada
chile
colombia
denmark
france
germany
hong kong
india
ireland
italy
japan
netherlands
peru
poland
portugal
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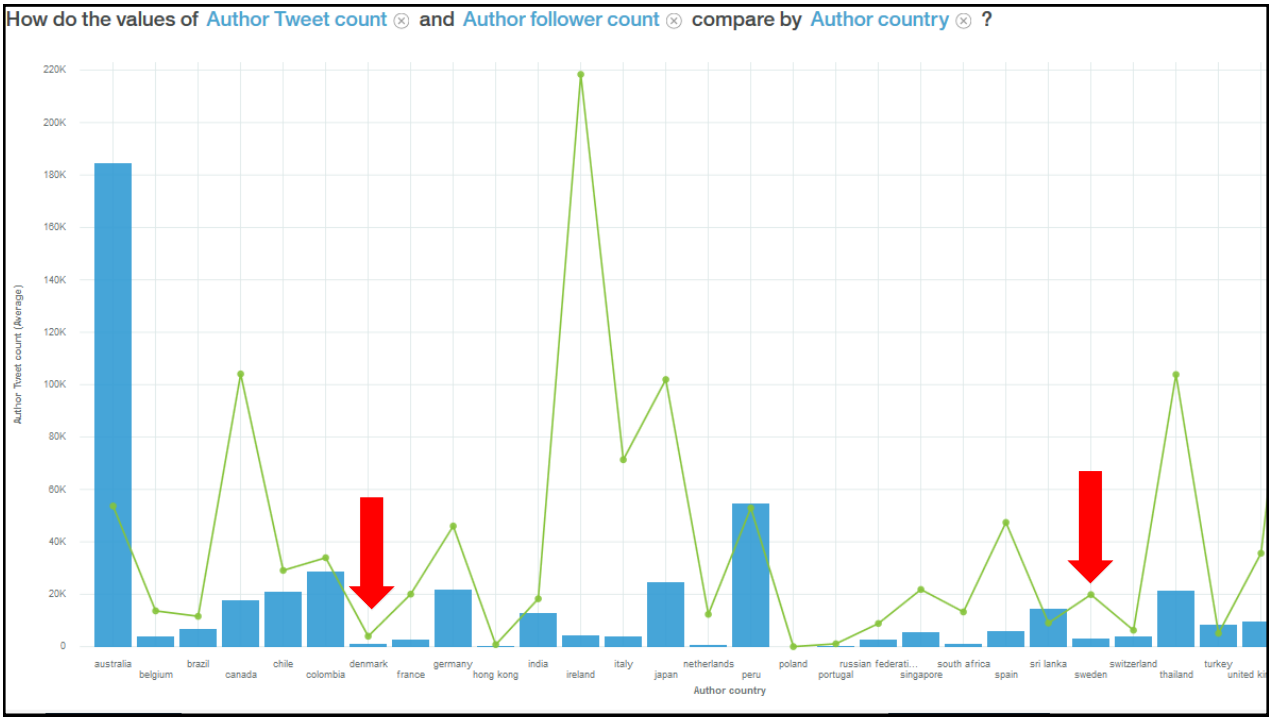
singapore
south africa
spain
sri lanka
sweden
switzerland
thailand
turkey
Author country



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What does it cost? (watson.analytics.ibmcloud.com)

Visit this site for complete pricing details: www.ibm.com/us-en/marketplace/watson-analytics/purchase

Free	Plus	Professional
Upload spreadsheets, get visualizations, discover insights and build dashboards-all on your own.	Get all the features of Free plus more storage and data sources, including databases and Twitter.	Get all the features of Plus plus a multi-user tenant to collaborate, more storage and more data.
$0.00 USD	Starting at $30.00 USD* per month per user	Starting at $80.00 USD* per month per user
Try free edition	Purchase now	Purchase now
1 user	1 user	1 or more users
1 MB of storage included	2 GB of storage included	100 GB of storage included
Professional single user trial for first 30 days	Add storage in 10GB increments for a minimal fee	Add storage in 50GB increments for a minimal fee
	Access relational databases, on prem and on cloud	Access relational databases, on prem and on cloud
	Access 18 data connectors	Access 19 data connectors including IBM Cognos reports
	Access Twitter data	Access Twitter data
Limited access to IBM Analytics Exchange offerings	Full access to IBM Analytics Exchange data & offerings	Full access to IBM Analytics Exchange data & offerings
*Price excludes sales tax and VAT		

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Data security in Watson Analytics

Details about the data security and other topics are answered here:

https://www.ibm.com/communities/analytics/watson-analytics-blog/ibm-watson-analytics-security-frequently-asked-questions-2/

Specifications for Watson Analytics	Standards	Encryption
Data centers	SOC2 and ISO 27001 http://www.softlayer.com/compliance	
Operating system	CentOS (see diagram A above)	
Data storage platform	DB2, MongoDB	
Certifications targeted	ISO 27001 certified	
Regulatory Acts	HIPAA Ready Moving forward with FFIEC enablement	
Encryption (data at rest)		aes-cbc-essiv:sha256
Encryption (data in transit)		SSL over http. HTTPS
Logging vendor access	Syslog	

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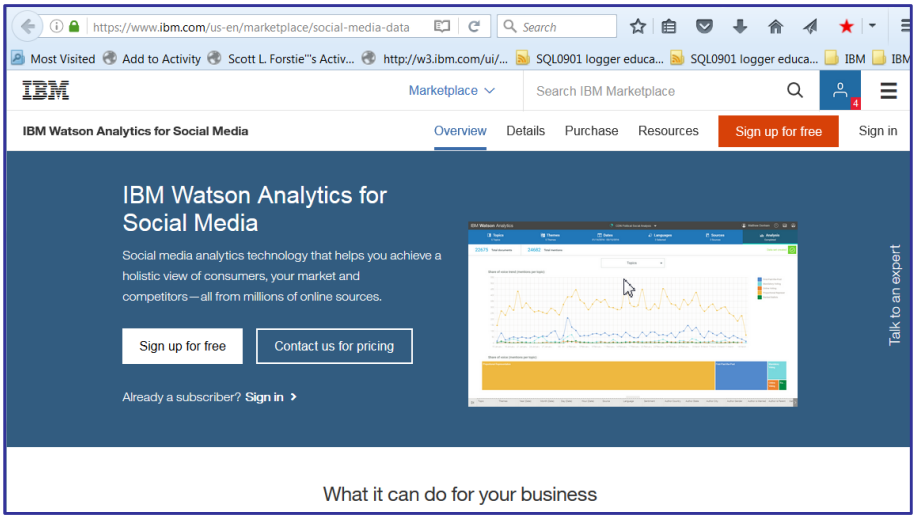

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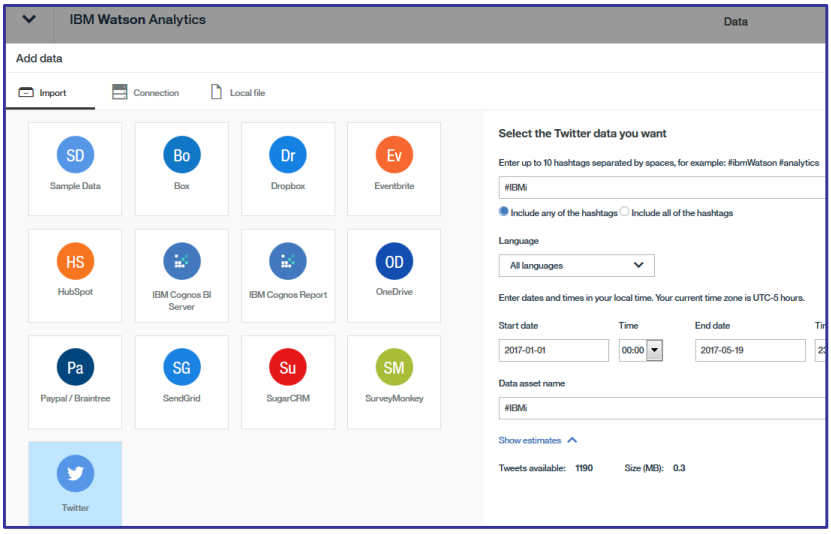

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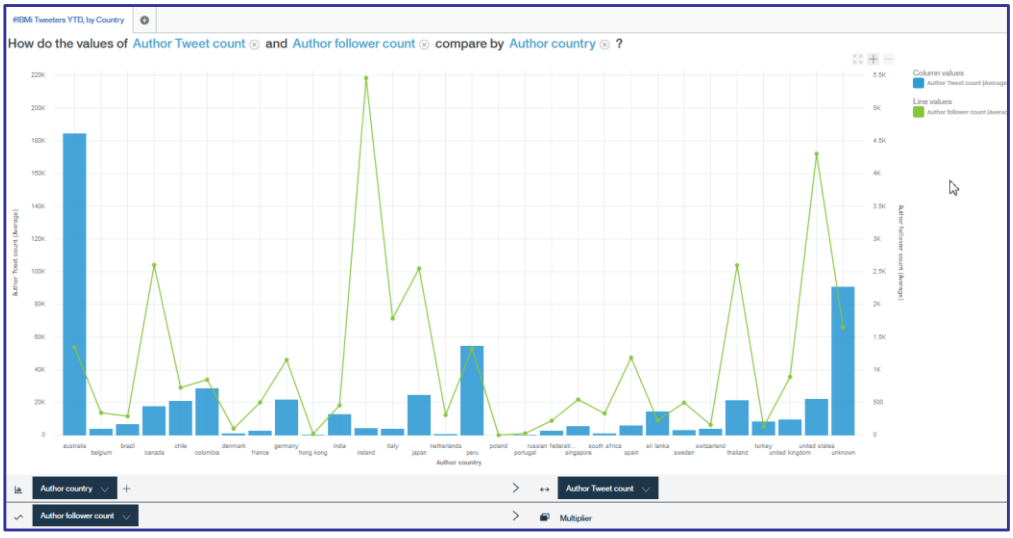
#IBMi Tweets YTD



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Watson and Data Preparation

Data needs to be in a certain state for input into Watson Services. And if this is an ongoing part of your analytics strategy, automating the Data prep will be desired and may consist of:

- Data Consolidation
  - Data spread across multiple application databases, multiple servers/LPARs – even some that is not in DB2 for i
- Data Reorganization
  - Watson services may expect data to be in certain formats
    - Creating single table/file or publishing XML or JSON
- Untangling Data
  - Only the RPG programmer understands how the data is stored:
    - "If field COMPANY = 001, join to File B, else join to File C" logic;
    - Dates stored in non date data types
    - Multiple data elements stored in a single field

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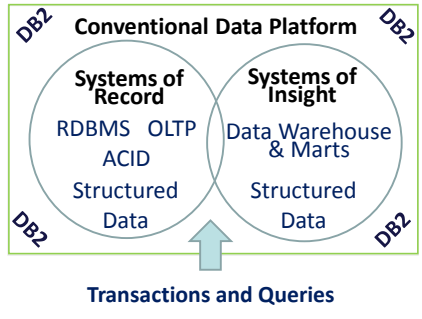
The Data Warehouse

- Data Warehousing or Data Mart Automation
  - The Data Warehouse is still a key system of insight to support advanced analytics
  - Untangled, cleansed data is automatically added to the warehouse nightly
  - The data warehouse becomes the feed for many analytics – advanced and classic Business Intelligence
- Automates processes to ingest or publish unstructured data between DB2 and Watson
  - And automates all the data prep
  - A meta data driven solution also documents the rules the RPG programmer built into the application



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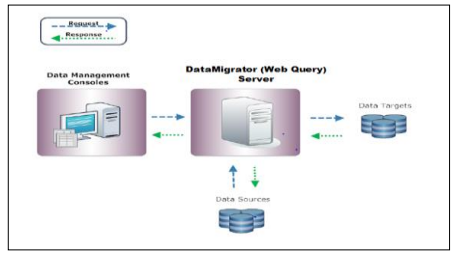
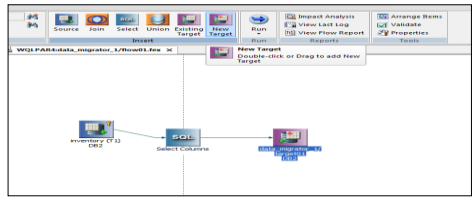
DB2 Web Query DataMigrator ETL Extension

- Meta Data Driven Data Prep
  - Automate consolidation, organization, "untangling" and optionally, the build of a data warehouse
  - Consolidate data from many different data sources
  - Build transforms through SQL, RPG, use of built in or DB2 functions, etc.
  - Can create flat files, relational, incorporate blobs (e.g., XML, JSON)
  - Run data flows off of IBM i job scheduler
- ETL (Extract, TRANSFORM, and Load)
  - All components run in IBM i
  - Multiple load types can be defined
- INTEGRATED with DB2 Web Query
  - Can leverage meta data created with DB2 Web Query or vice versa
  - Shared services and administration





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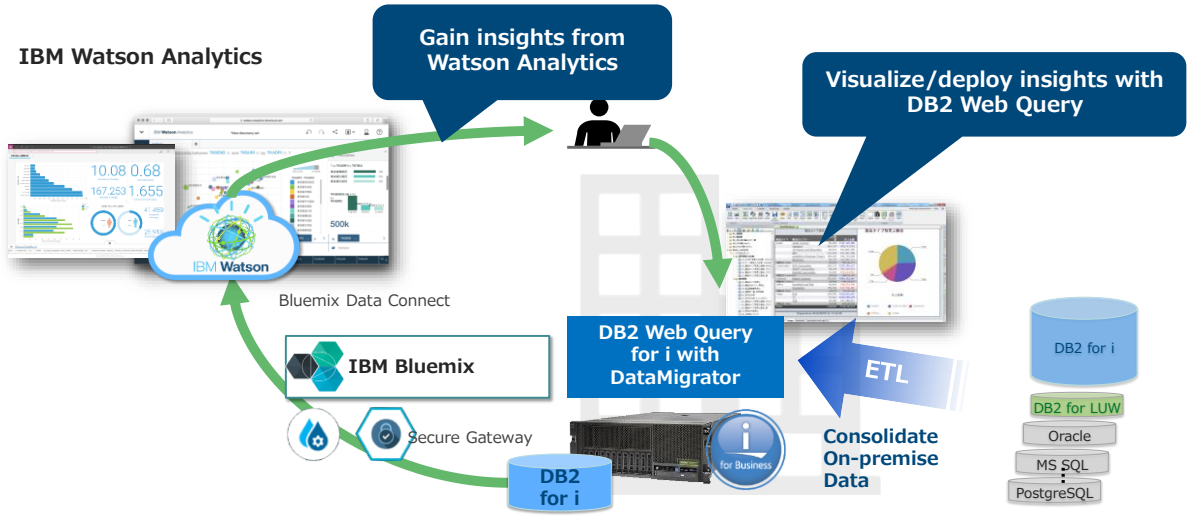
Preparing Data For Watson; Visualizing Insights with DB2 Web Query



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Data Connect

IBM Bluemix™

Data Connect

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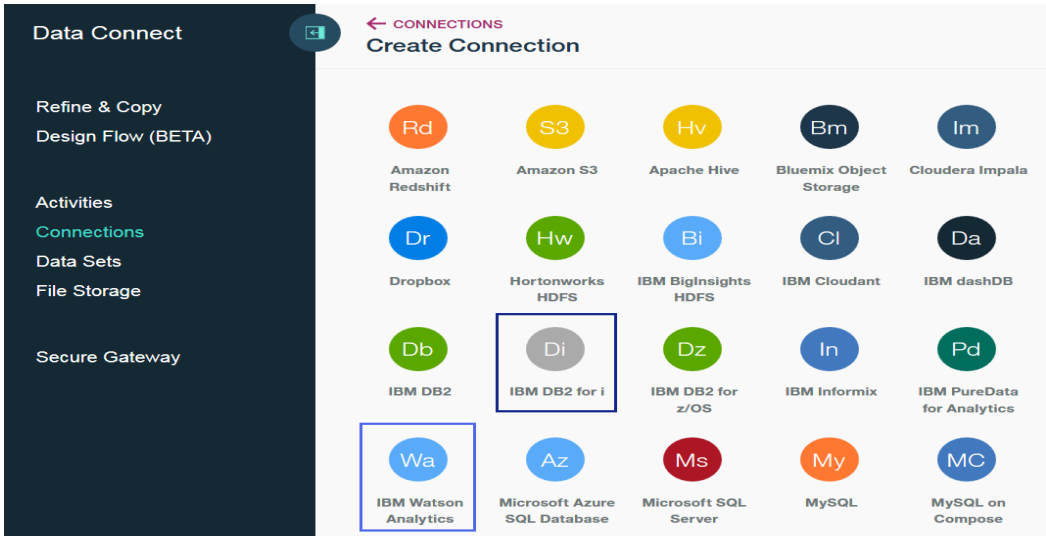
Data Connect



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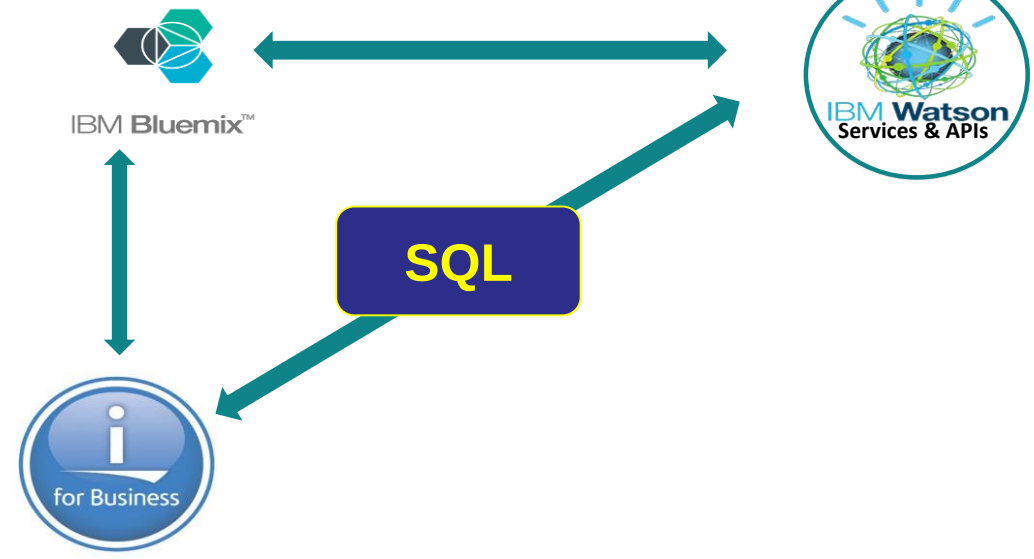
For the Developer…



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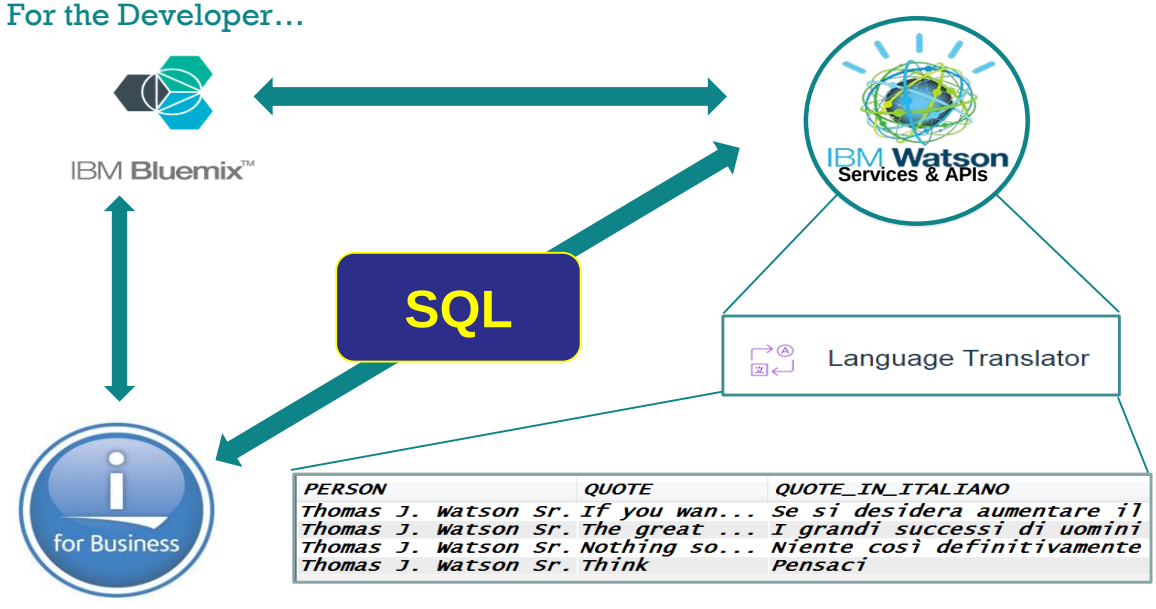
For the Developer…



PERSON	QUOTE	QUOTE_IN_ITALIANO
Thomas J. Watson Sr.	If you wan...	Se si desidera aumentare il
Thomas J. Watson Sr.	The great ...	I grandi successi di uomini
Thomas J. Watson Sr.	Nothing so...	Niente così definitivamente
Thomas J. Watson Sr.	Think	Pensaci

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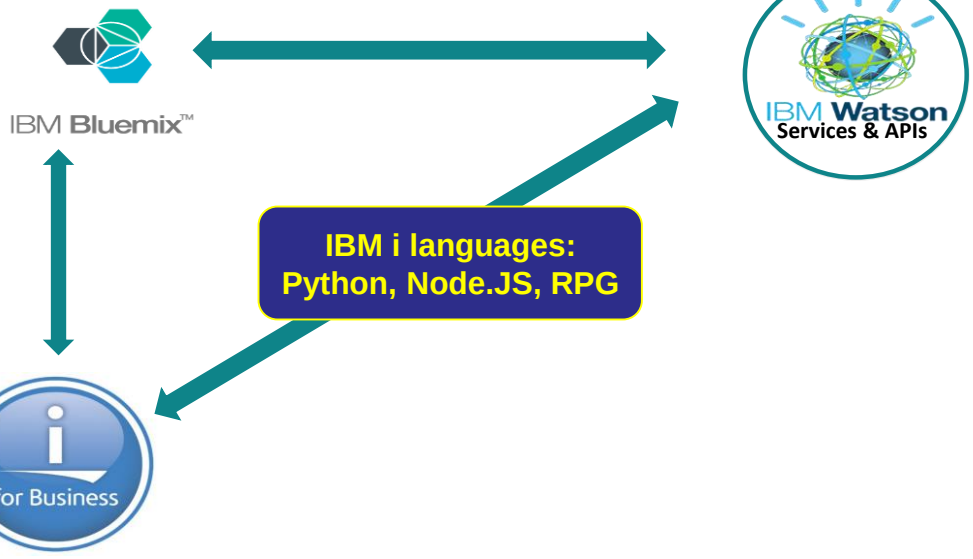
For the Developer…



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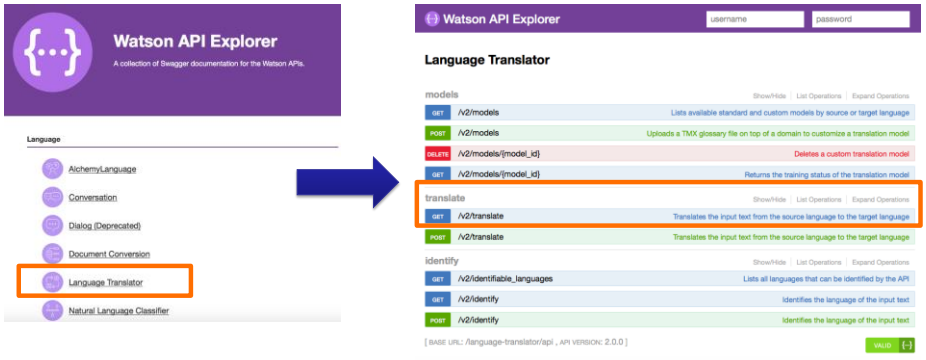
Watson API Explorer

- Use Watson API Explorer to test APIs and view live responses from the server.
  - Watson API Explorer : https://watson-api-explorer.mybluemix.net/
    "Language Translator" of Watson API Explorer is used in our sample program written by ILE RPG.



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Watson API : Watson Developer Cloud

- Enable cognitive computing capabilities in your app using IBM Watson's Language, Vision, Speech and Data APIs.

Language	**Natural Language Classifier** Classify text sentences	**Retrieve and Rank** Return answer candidates for natural language questions
	Conversation Automate interaction with end users by adding natural language interface to application	**Document Conversion** Convert a document to a new format
	Personality Insights Estimate an individual's characteristics from text	**Natural Language Understanding (Unsupported Japanese)** understand the language of short texts and make predictions about how to handle them.
	Tone Analyzer (Unsupported Japanese) Analyze text emotion, sociability and style	**Language Translator (Partially Unsupported Japanese) ※1** Translate text from one language to another
Vision	**Visual Recognition** Detect meaning included in image contents	
Speech	**Speech to Text** Convert speech to text	**Text to Speech** Convert text to speech
Data Insights	**Discovery (Unsupported Japanese)** Add cognitive search and content analysis engines to applications to identify patterns, trends, and actionable insights that help to make better decisions	
	Tradeoff Analytics (Unsupported Japanese) Support tp make better choices when faced with multiple	

https://www.ibm.com/watson/developercloud/services-catalog.html
※1 For the Language Translator, only in the news domain Japanese is supported.

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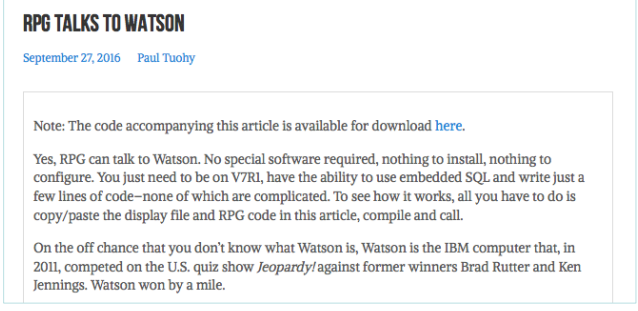
Connecting RPG to Watson

- Details on how to the following link.
  - Paul Tuohy "RPG TALKS TO WATSON" Copyright © 2017 IT Jungle
    https://www.itjungle.com/2016/09/27/fhg092716-story01/



RPG TALKS TO WATSON

September 27, 2016 Paul Tuohy

Note: The code accompanying this article is available for download here.

Yes, RPG can talk to Watson. No special software required, nothing to install, nothing to configure. You just need to be on V7R1, have the ability to use embedded SQL and write just a few lines of code–none of which are complicated. To see how it works, all you have to do is copy/paste the display file and RPG code in this article, compile and call.

On the off chance that you don't know what Watson is, Watson is the IBM computer that, in 2011, competed on the U.S. quiz show *Jeopardy!* against former winners Brad Rutter and Ken Jennings. Watson won by a mile.

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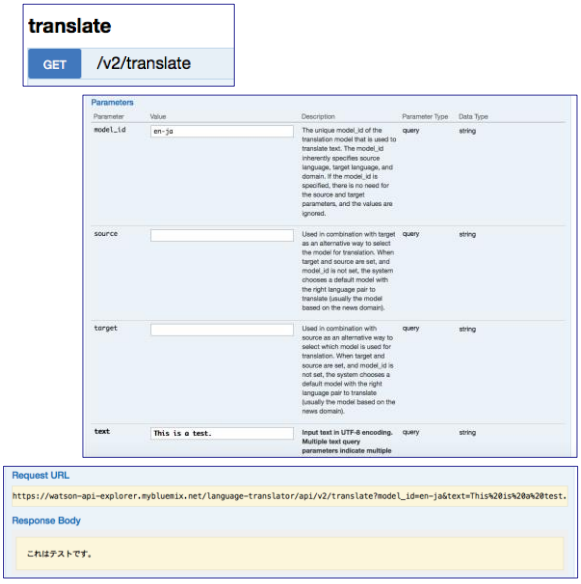
Language Translator - Request URL -

- Clicked on the link for Language translation
- Under Translate/Get, Click on the option to "Translates the input text from the source language to the target language."
  - Input the following and click Try it out!
    model_id : ja-en
    text : This is a test.
- "Request URL" is displayed
  - https://watson-api-explorer.mybluemix.net/language-translator/api/v2/translate?model_id=**en-ja**&text=**This%20is%20a%20test.**
  - The variable parts being the from and two languages (ja-en) and the encoded text (%20 is the encoding for a space).



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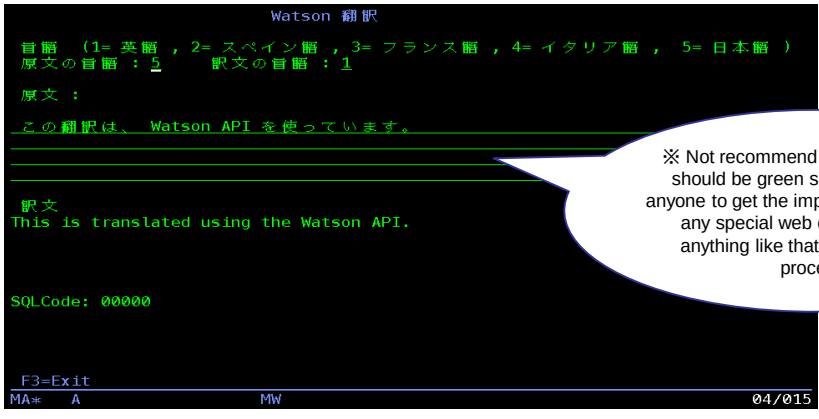
RPG Sample Program using Watson API

- This ILE RPG sample application uses the Watson API "Language Translator"
  - Translate the original sentence with "Language Translator" and output the result on the 5250 screen



※ Not recommend that your program should be green screen, don't want anyone to get the impression that there is any special web configuration, or anything like that, involved in this process.

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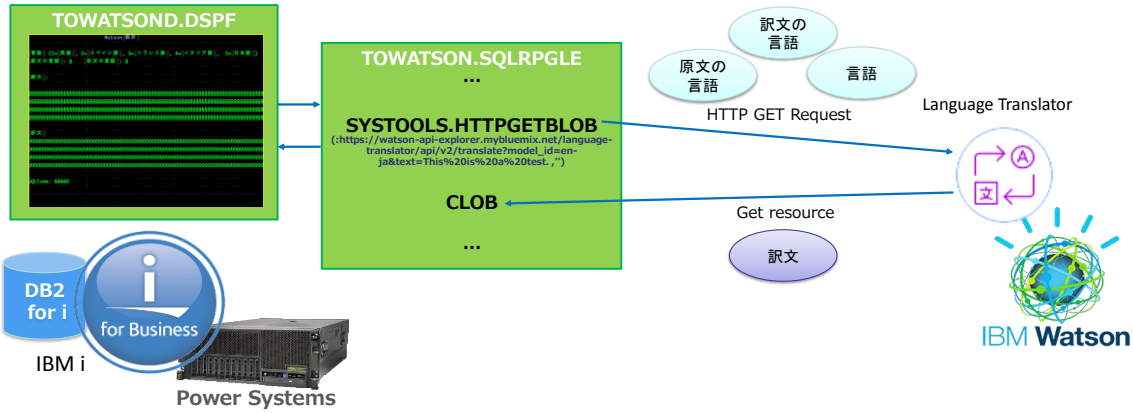
ILE RPG Sample Program using Watson API
- Cooperative image of ILE RPG and Watson API -

- Use DB2 for i HTTP functions available on IBM i 7.1 and later
  - Provide REST HTTP method sample SQL procedure (function) in "SYSTOOLS" schema
  - REST call to Watson API using HTTPGETBLOB function



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RPG Sample Program using Watson API
- Display File -

- Sample source : Display File “TOWATSOND.DSPF”
  - Input fields
    - FROMLANG
    - TOLANG
    - FROMTEXT
  - Output fields
    - TOTEXT
    - SQLCODEO
  - F3 : exit the program

```
     A                                      INDARA
     A                                      DSPSIZ(24 80 *DS3)
     A                                      CF03(03)
     A          R DATAR
     A                                  1 27'Watson翻訳'
     A                                      COLOR(BLU)
     A                                  3  1'言語 (1=英語, 2=スペイン語,'
     A                                  3 35'3=フランス語, 4=イタリア語,'
     A                                  3 67' 5=日本語)'
     A                                  4  1'原文の言語:'
     A            FROMLANG       1  0B  4 15VALUES(1 2 3 4 5)
     A                                      EDTCDE(X)
     A                                  4 20'訳文の言語:'
     A            TOLANG         1  0B  4 34VALUES(1 2 3 4 5)
     A                                      EDTCDE(X)
     A                                  6  1'原文:'
     A            FROMTEXT     320O  B  8  1CHECK(LC)
     A                                 13  1'訳文'
     A            TOTEXT       320A  O 14  1
     A                                 19  1'SQLCode:'
     A            SQLCODEO       5  0O 19 10
     A                                 24  2'F3=Exit'
     A                                      COLOR(BLU)
```

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RPG Sample Program using Watson API - Main Procedure -

- Sample source : ILERPG ”TOWATSON.SQLRPGLE” 1/3

A) The data structure defines an array of language codes. The codes correspond to the number entered for the from/to languages on the screen (1 = English (en), 2 = Spanish (es) etc.).

B) The program loops through displaying the screen until F3 is pressed.

C) On every iteration of the loop, the program calls the transLate_Text() subprocedure, passing parameters for the from language code, to language code, from text and to text.

```
**free
ctl-opt option(*srcStmt: *noDebugIO) dftactGrp(*no);
dcl-F toWatsonD workstn(*ext) usage(*input: *output) indDs(WSI);
dcl-Ds WSI qualified;
 F3Exit ind pos(3);
end-Ds;

A  dcl-Ds *n;
   *n char(10) inz('enesfritja');
   lang char(2) dim(5) pos(1);
   end-Ds;
   exec SQL
     set option naming = *SQL;
   exfmt dataR;
B  dow not WSI.F3Exit;
   transLate_Text(lang(fromLang) :
C                 lang(toLang) :
                  fromText :
                  toText);
   SQLCodeO = SQLCODE;
   exfmt dataR;
   endDo;
   *inLR = *on;
```

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RPG Sample Program using Watson API - transLate_Text() Sub procedure -

- Sample source : ILERPG ”TOWATSON.SQLRPGLE” 2/3

A) The HTTPGETCLOB function will return a CLOB. RPG does not recognize the CLOB data type so we define “textBack” as a variable with an SQL type of CLOB. When the program is compiled, this definition will result in a data structure with two sub fields – “textBack-Len” (which will contain the length of data returned) and “textBack_Data” (which will contain the data).

B) URLENCODE is called to encode the entered text. Encoding will translate any special characters that might cause problems (like & or <) to their coded equivalent.

```
dcl-Proc transLate_Text;
  dcl-Pi *n;
  fromLang char(2) const;
  toLang char(2) const;
  fromText char(320) const;
  toText char(320);
  end-Pi;
dcl-s str1 varchar(1000);
dcl-s str2 varchar(1000);
A  dcl-s textBack SQLType(CLOB: 320);
if (fromLang =toLang);
  toText = fromText;
  return;
endIf;

str1 =%trimR(fromText);
exec SQL
B  values trim(systools.urlencode(:str1, '')) into :str2;
```

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RPG Sample Program using Watson API - transLate_Text() Sub procedure -

- Sample source : ILERPG ”TOWATSON.SQLRPGLE” 3/3
  - C) Construct the URL to make a REST call to Watson to do the translation.
  - **D) Use HTTPGETCLOB to make a REST call to Watson. The returned value is placed in the “textBack” CLOB defined earlier.**
  - E) If data was returned, retrieve the indicated length of data “textBack_Len” from “textBack_Data”.

```
C  str1 ='https://watson-api-explorer.mybluemix.net/' +
                  'language-translator/api/v2/translate?model_id=' +
                  fromLang + '-' + toLang  + '&text='+ str2;
   exec SQL
D  values char(systools.httpgetclob(:str1, ''), 256)
   into :textBack;
   toText = *blanks;
E  if (textBack_Len >0);
   toText =%subSt(textBack_Data: 1: textBack_Len);
   endIf;
   return;
   end-Proc;
```

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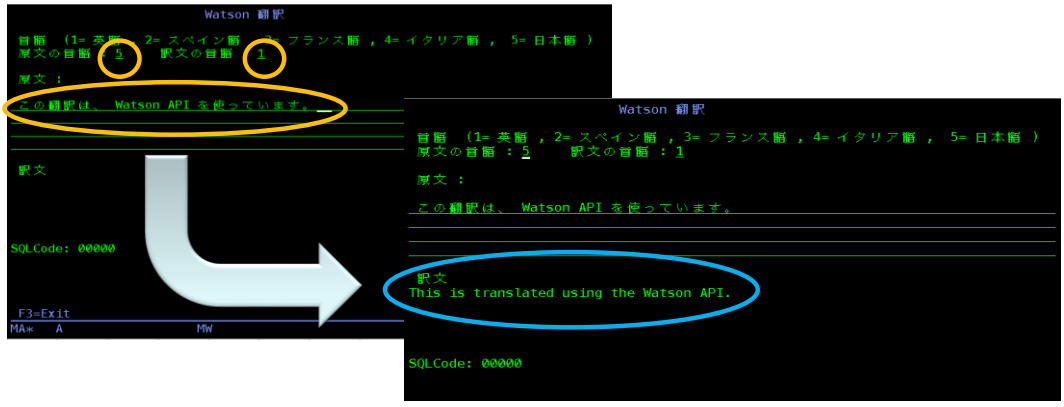
RPG Sample Program using Watson API - Call program -

- CALL TOWATSON
  - Input the parameters of "Original language", "Translation language", "Original sentence" and enter



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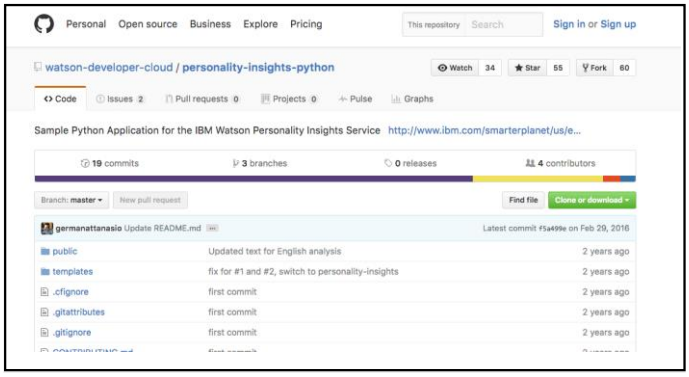
Python and Watson

- IBM has published many examples of how to talk to Watson.
  - e.g. Python "Personality Insights" app
  - https://github.com/watson-developer-cloud/personality-insights-python



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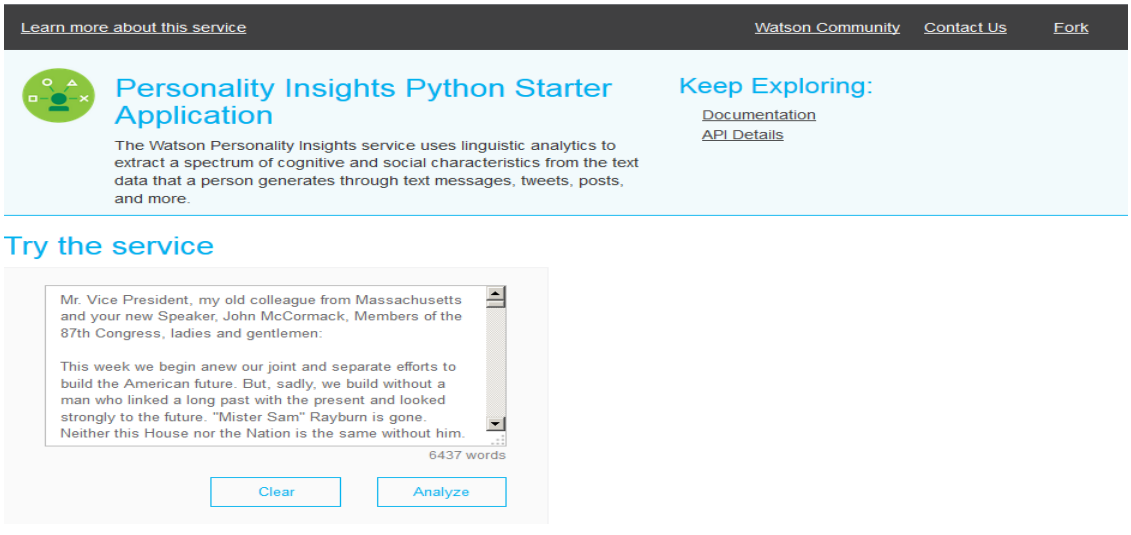
Python and Watson



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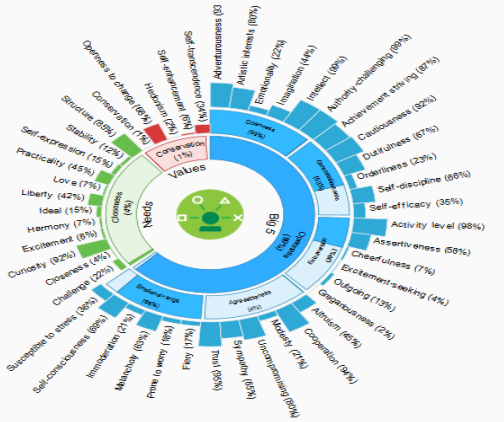
Python and Watson

Data Behind Your Personality

Name	Value ± Sampling Error
Big 5	
Openness	**99% (± 5%)**
Adventurousness	93% (± 5%)
Artistic interests	80% (± 10%)
Emotionality	21% (± 4%)
Imagination	44% (± 6%)
Intellect	99% (± 5%)
Authority-challenging	98% (± 8%)
Conscientiousness	**63% (± 7%)**
Achievement striving	87% (± 9%)
Cautiousness	92% (± 9%)
Dutifulness	66% (± 5%)
Orderliness	23% (± 6%)
Self-discipline	66% (± 4%)
Self-efficacy	34% (± 9%)
Extraversion	**39% (± 5%)**
Activity level	98% (± 7%)
Assertiveness	57% (± 8%)
Cheerfulness	7% (± 10%)
Excitement-seeking	3% (± 8%)
Outgoing	12% (± 7%)
Gregariousness	2% (± 5%)

Visualization of Personality Data



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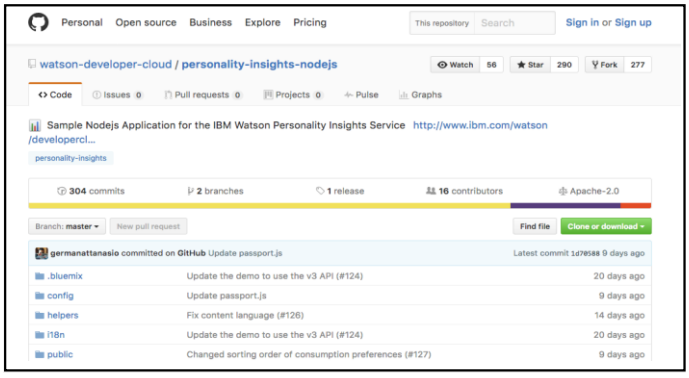
Node.JS and Watson

- Personality Insights
  - Node.JS version
  - Output in a different format
  - https://github.com/watson-developer-cloud/personality-insights-nodejs



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Node.JS and Watson

Summary

You are shrewd, excitable and guarded.

You are dispassionate: you do not frequently think about or openly express your emotions. You are independent: you have a strong desire to have time to yourself. And you are reserved: you are a private person and don't let many people in.

Your choices are driven by a desire for organization.

You are relatively unconcerned with both taking pleasure in life and tradition. You prefer activities with a purpose greater than just personal enjoyment. And you care more about making your own path than following what others have done.

How did we get this?

You are likely to_____

- be sensitive to ownership cost when buying automobiles
- like historical movies
- read often

You are unlikely to_____

- be influenced by social media during product purchases
- prefer style when buying clothes
- be influenced by brand name when making product purchases

*% = percentile

Personality

- Openness: 96%
- Emotional range: 95%
- Conscientiousness: 78%

*% = percentile

Consumer Needs

- Structure: 90%
- Practicality: 76%
- Curiosity: 75%

*% = percentile

Values

- Stimulation: 41%
- Helping others: 16%
- Achievement: 12%

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Node.JS and Watson

Tweets and Replies | Body of Text | Your Twitter Personality

Choose: @Oprah (EN) | @KingJames (EN) | @DonFranciscoTV (ES) | @pontifex_es (ES) | @trikaofficial (AR) | @faridyu (JA)

Analyze

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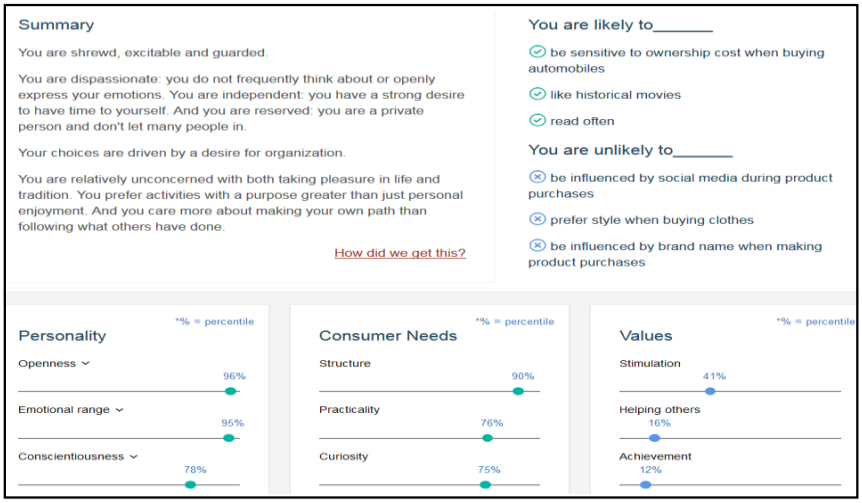
Node.JS and Watson



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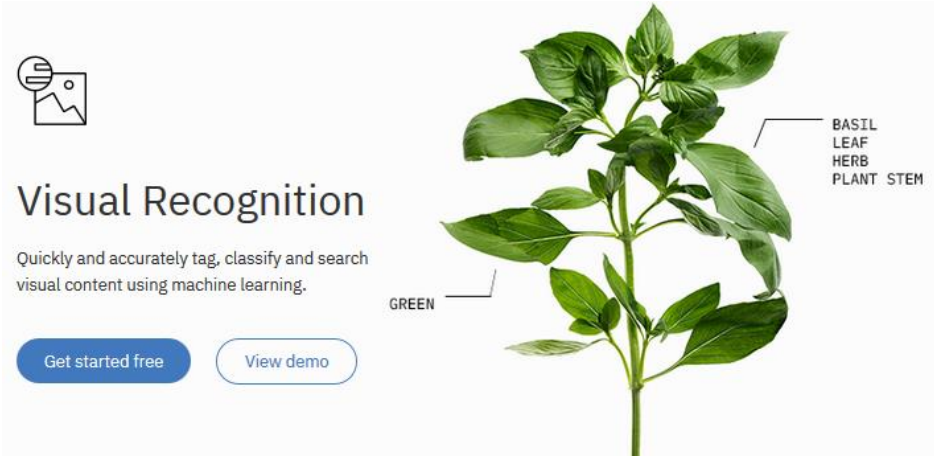
Visual Recognition



https://www.ibm.com/watson/services/visual-recognition/

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Visual Recognition

Classes	Score
Chihuahua dog	0.94
small dog	0.96
dog	0.96
domestic animal	0.96
animal	0.96
ivory color	0.71
light brown color	0.60

Type Hierarchy

/animal/domestic animal/dog/small dog/Chihuahua dog

Did We Wow You? ○ Yes ○ No

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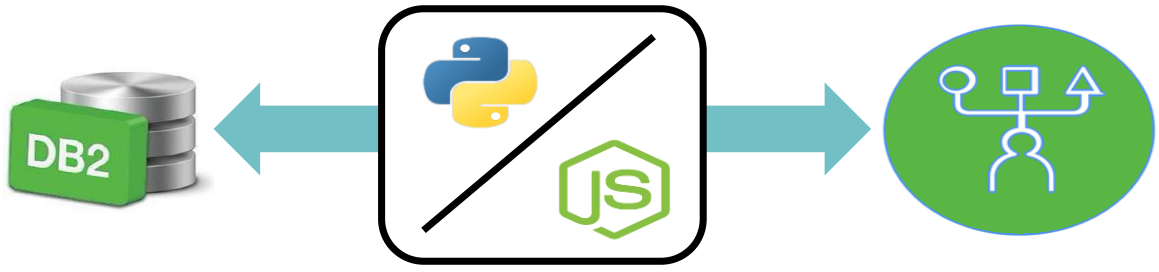
Can Node.JS and Python programs integrate with IBM i data? YES!

- IBM i integration delivered with the languages
- Watson integration delivered with the languages



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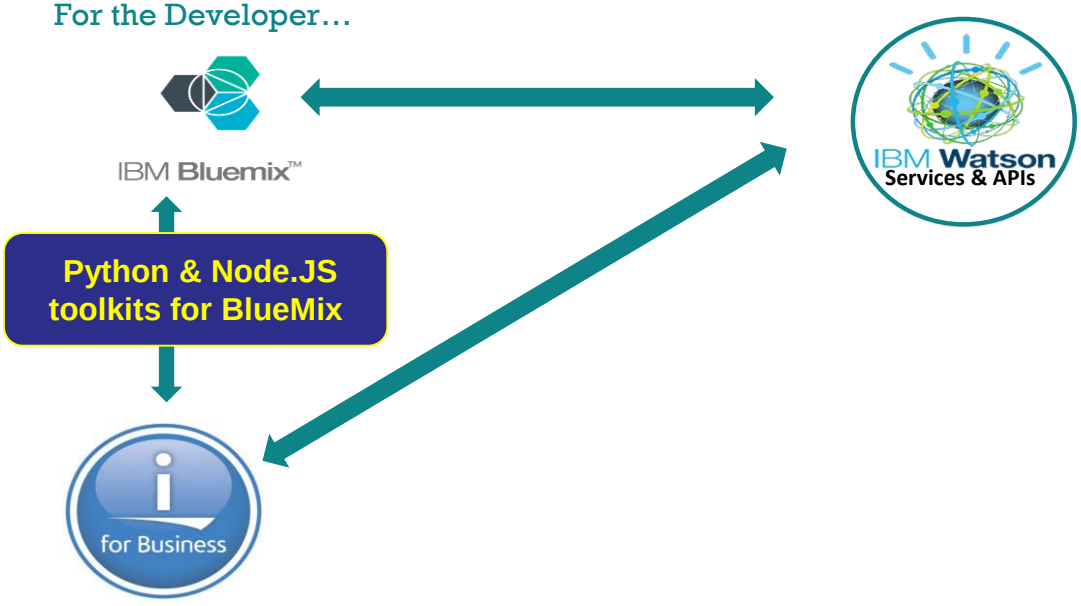
For the Developer…



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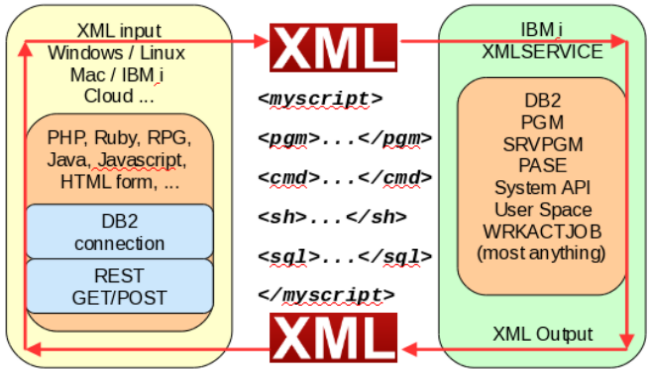
Enabling easy extension of OSS for IBM i - XMLService

- Allows access to IBM i programs, service programs, shell commands, and even DB2!
- Can be called locally or remotely, stateful or stateless, very flexible!
- Toolkits are written for several languages, to make it even easier!



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Python and Node.JS toolkits

- Node.JS itoolkit
  - https://bitbucket.org/litmis/nodejs-itoolkit

- Python itoolkit-lite
  - http://yips.idevcloud.com/wiki/index.php/XMLSERVICE/Python
  - https://bitbucket.org/litmis/python-itoolkit

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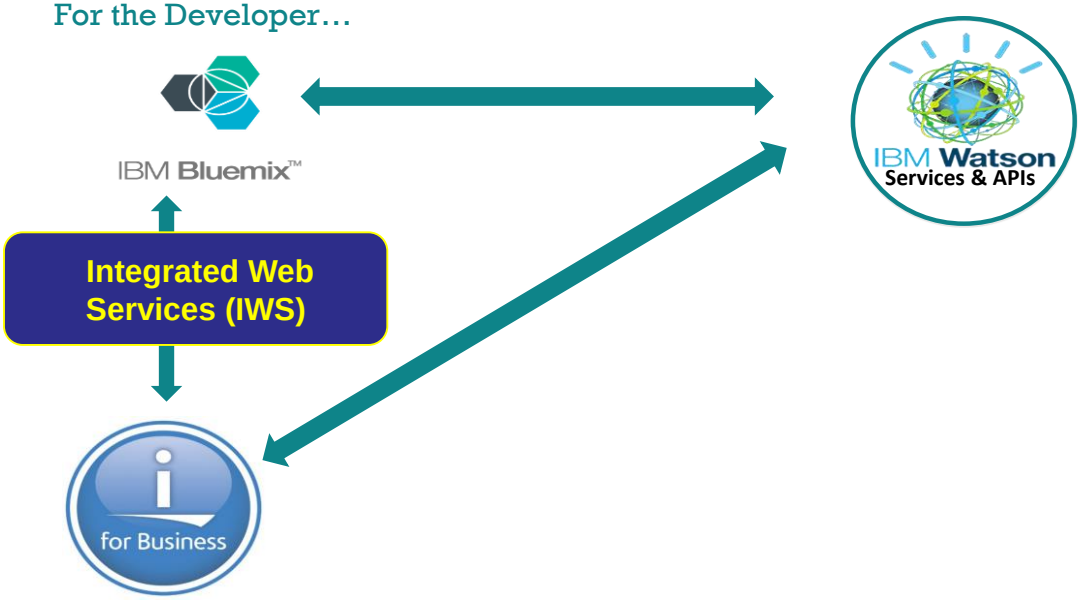
For the Developer…



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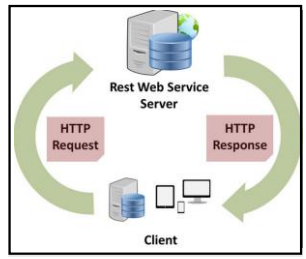
Integrated Web Services (IWS) server enables IBM i APIs

- IWS Integrated in IBM i
  - First delivered in 2008 – SOAP only
- Since 2016 also delivers RESTful APIs with Open API specifications
- Wizard based creation
  - intuitive web-based graphical interface – just point and click
  - developers with or without IBM i skills can create RESTful APIs
- No new programming languages or development environments to learn
- Supports standard JSON and XML message formats
  - Translates to and from format of IBM i programs



Note: z/OS Connect is comparable to what IBM i has but IBM i easier to use and seems to be a nicer way to deploy programs as RESTful web services (based on AIX development comments)

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Swagger is the key to integration

- A Swagger document is the REST API equivalent of a WSDL document for a SOAP-based web service
  - Specifies the list of resources that are available in the REST API and the operations that can be called on those resources
  - Specifies the list of parameters to an operation, including the name and type of the parameters
- Delivered on IWS end of 2016 (@ IBM i 7.1 and higher)
- Allows IBM i RESTful APIs to be exposed in various platforms, such as **IBM Bluemix Platform** and **IBM API Connect**

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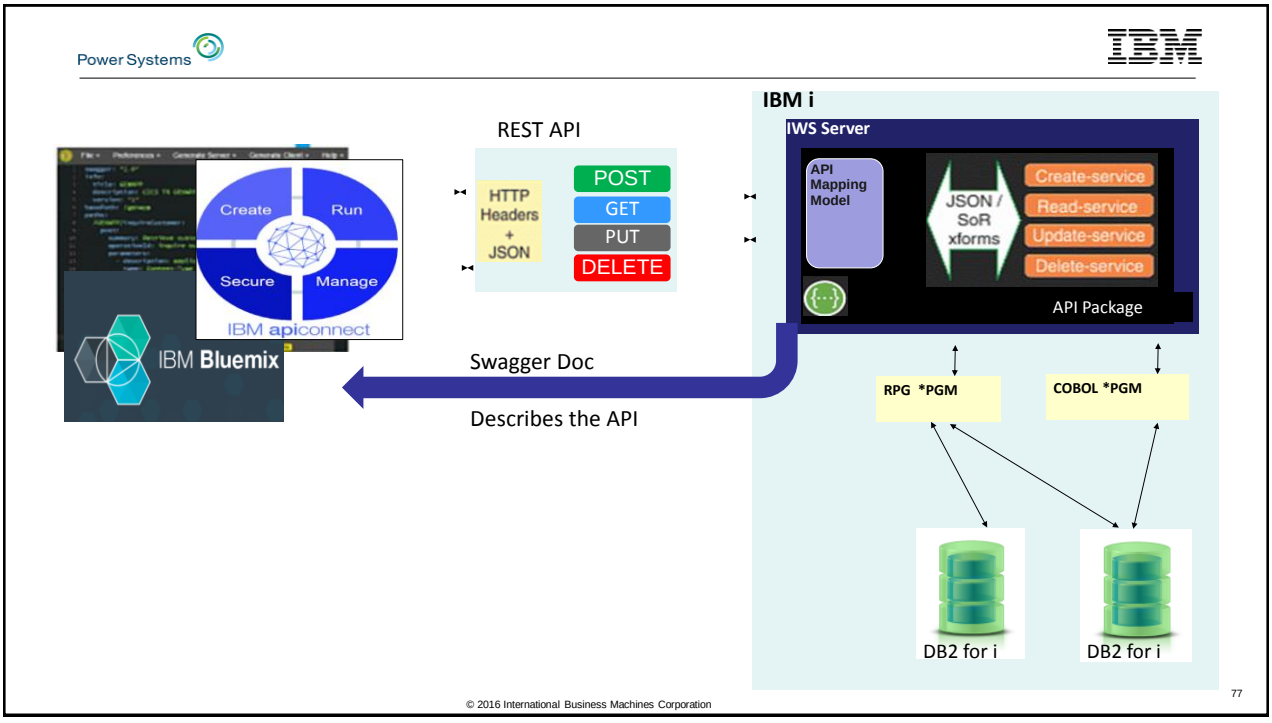
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REST API
HTTP Headers + JSON
POST
GET
PUT
DELETE
Create
Run
Secure
Manage
IBM apiconnect
IBM Bluemix
IBM i
IWS Server
API Mapping Model
JSON / SoR xforms
Create-service
Read-service
Update-service
Delete-service
API Package
Swagger Doc
Describes the API
RPG *PGM
COBOL *PGM
DB2 for i
DB2 for i
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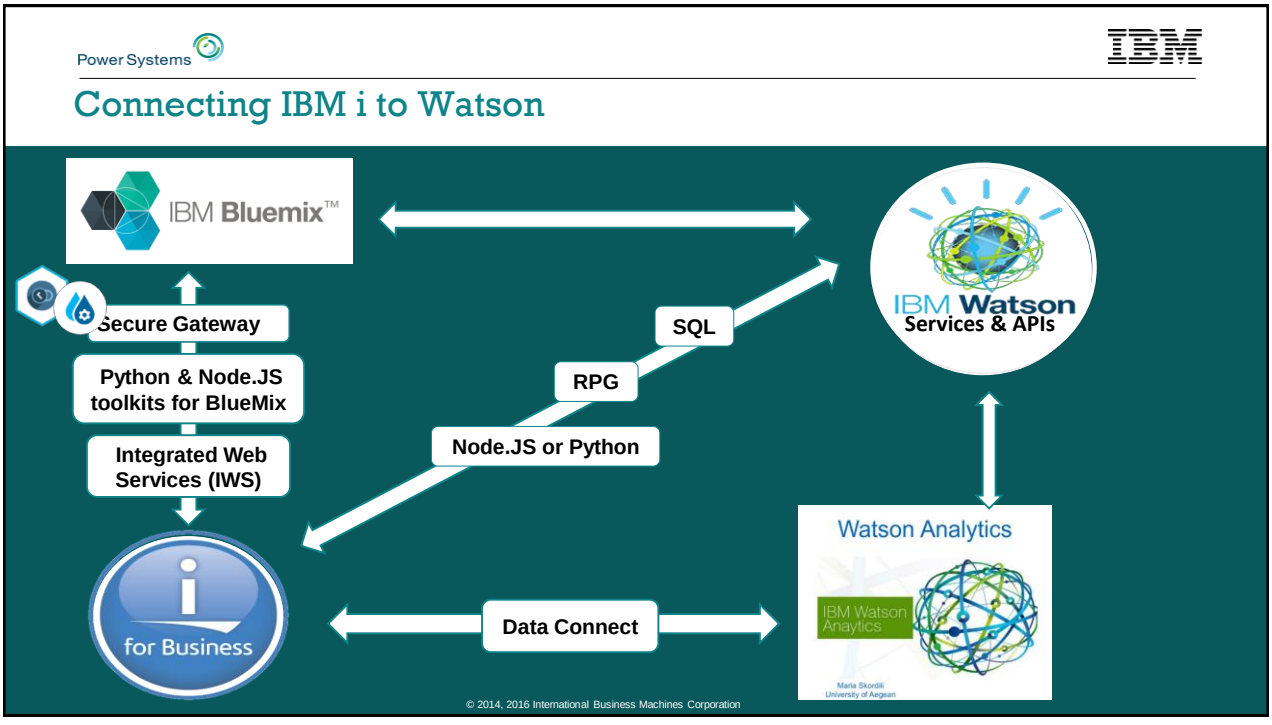
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IBM
Connecting IBM i to Watson
IBM Bluemix™
Secure Gateway
Python & Node.JS toolkits for BlueMix
Integrated Web Services (IWS)
for Business
SQL
RPG
Node.JS or Python
Data Connect
IBM Watson Services & APIs
Watson Analytics
IBM Watson Analytics
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IBM Systems Hardware Client Technical Team

TAKIGAWA CO.,LTD.

TAKIGAWA CO,. LTD. – Upgrade from POWER5 to POWER8 as IBM i Cognitive Platform

IMT/Japan, Industory: Enterprise

Client info: TAKIGAWA is trading company of hairdressing, beauty, esthetic and nail products in Japan.

Challenge

•TAKIGAWA has been using IBM i 5.4 on POWER5 for nine years as mission critical system.
•With its increasing computing demand, it requires the latest technology/solution to accelerate their business. Client wants to design the next system with IBM.
•Client needs:
- IBM as a technical advisor
- More performance
- Cost Optimization

Solution

•IBM proposed POWER8 and IBM i 7.3 with Watson Analytics as cognitive platform focused on BI. Demonstrate and hold a workshop of DB2 Web Query, DataMigrator for i, and Watson Analytics.
•Proposed solution has three BI levels because it's first BI for client:
- First level:
  DB2 WebQuery for i Standard Edition, to visualize and analyze IBM i data.
- Second level:
  In addition, include DataMigrator for i to BI with outside of IBM i.
- Third level:
  Watson Analytics helps DB2 WebQuery for i as full-time data scientist, to enables smart data discovery and get new insights from client data.

•Keep IBM i processor group and core license to get sufficient capacity to run new BI workload.
•Rational Developer for i to modernize development environment and to develop new application with open source language.

Benefits

•S814 POWER8 Server increase 2.6x performance(CPW) compared to their existing POWER5, client can run new workloads like BI to build new strategies for business.
•IBM i 7.3 provides new capabilities for driving their business, temporal support and enhanced OLAP function help client to perform more advanced analytics.
•Client choose the first level BI solution as a starting point of their IT transformation in 2017. and business partner provide education of DB2 Web Query for i and RDi to acquire new skills.
•Client is considering advanced analytics, IBM and business partner have second and third level BI capabilities with additional software/services. With DataMigrator for i, it enables them to increase data sources for analytics by gathering from outside of IBM i. With Watson Analytics, it helps more advanced analytics to gaining new insights from stored in IBM i.
•The client understood the advanced capabilities and potential of POWER8 and IBM i 7.3 to expand their business.

Team

•Takeshi Sugata:	POWER Tech. Sales
•Ayako Koichi:	Systems HW Sales
•IBM Business Partner:	NDI SOLUTIONS LTD.

Takeshi Sugata

Ayako Koichi

IBM Systems Hardware Client Technical Team

Proposed Solution Architecture

•H/W
- Power System 814 x1
- POWER8 3.02GHz 6 cores, 64GB Memory
- 283 GB 15Krpm HDD x18, Mirror
- IBM i 7.3
- One partition(non-LPAR)

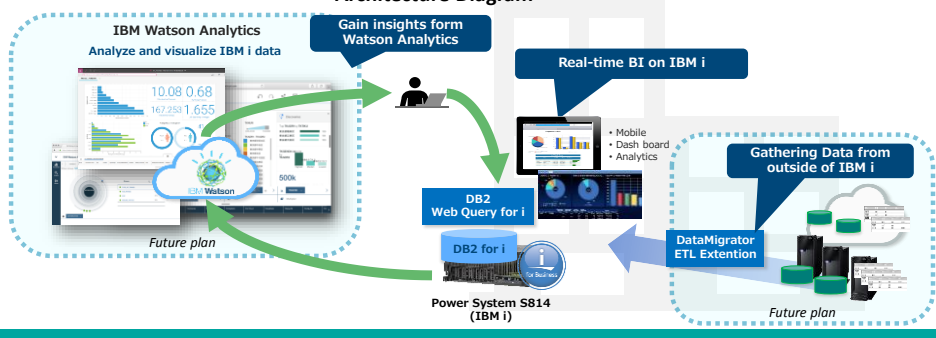
•S/W
- IBM i 7.3
- DB2 Web Query for i Standard Edition
- DB2 Web Query for i Developer Workbench User
- Rational Developer for i RPG and COBOL V9.5.1

•Revenue SHW: 0.11 M$

Technical Benefits and IBM Differentiation

•Proposed POWER8 server provides higher performance and then existing system with the same number of cores.(2.6x CPW/core)
•New server have 2.1x capacity to store increasing data.
•IBM i Architecture enables easy migration and version up.
•DB2 Web Query for i provides all in one BI, it is high security and real-time analytics.
•Developer workbench provides HTML composer component for dashboards.
•IBM demonstrated IBM I with Watson Analytics solution(third level solution), client recognized BI is important to build new strategy of business. Client decided to include BI solution.
•New system can be easily added DataMigrator ETL Extension and direct connection to Watson Analytics.
•IBM continues holding workshops with client to adapt higher level BI for expanding their business.

Architecture Diagram



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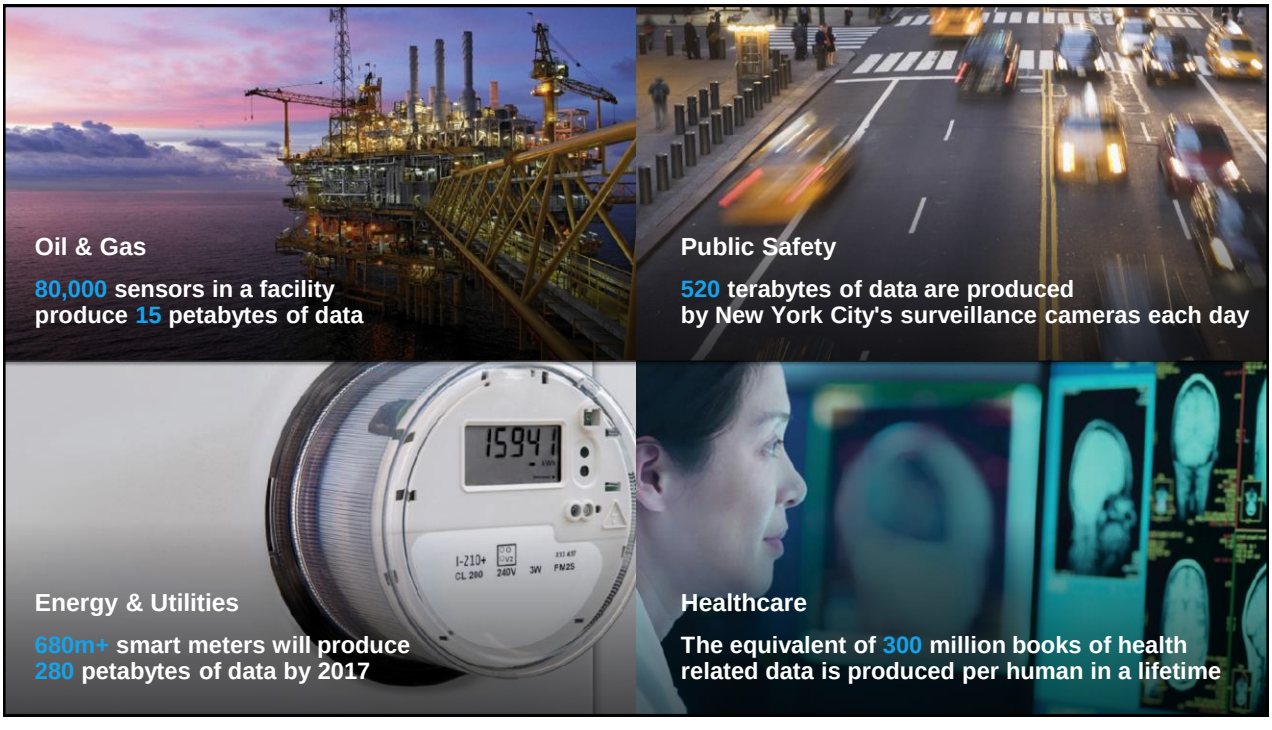
Oil & Gas
80,000 sensors in a facility
produce 15 petabytes of data
Public Safety
520 terabytes of data are produced
by New York City's surveillance cameras each day
Energy & Utilities
680m+ smart meters will produce
280 petabytes of data by 2017
Healthcare
The equivalent of 300 million books of health
related data is produced per human in a lifetime

What will you do with Watson?